

## Search history

Search 1: FT=(tube\* and tower\* and base\* and plate\* and aperture\*) and IC=(E04H12/00 or E04H12/22) (Results 101)

## 1) Family number: 29473000 (US4715503A)

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Title: INTERLOCKING JOINT WINE RACK

**Abstract:** A wine rack has no fasteners or adhesives at the three-dimensional joints, but rather the joints are all formed so that the three intersecting cross pieces interlock in such a way that a tight joint construction occurs strictly by virtue of the way the members are cut in the joint region, and the way in which the members are interlocked. The interlocking and connecting of cubic cells provides a rigid structure capable of accepting loads in any direction and allowing the rack to be mounted in any orientation, with single point wall mounting possible wherein the rack can withstand full loading with no distortion. The modular cell configuration is adapted to the construction of lattice beams and other arrangements besides wine racks.

**Classifications:**

**International (IPC 8-9):** A47B47/04 A47B73/00 B29C70/52 B65D6/08 E01D1/00 E04B1/19 E04B1/24 E04B1/58 E04C3/12 E04C3/28 E04C3/42 E04C3/46 E04G1/04 E04H12/02 E04H12/10 E04H12/24 E04H17/14 E06C7/08 F16B12/12 F16B7/04 (Advanced/Invention); E04B1/19 E04B1/24 E04B1/58 E04H12/24 (Advanced/Non-invention); A47B47/00 A47B73/00 B29C70/04 B65D6/00 E01D1/00 E04B1/19 E04B1/24 E04B1/58 E04C3/02 E04C3/12 E04C3/38 E04G1/00 E04H12/00 E04H17/14 E06C7/00 F16B7/04 (Core/Invention); E04B1/19 E04B1/58 (Core/Non-invention)

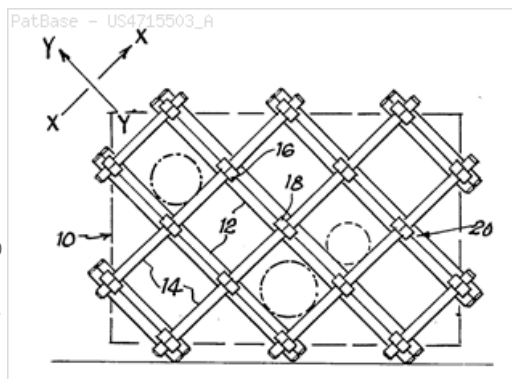
**International (IPC 1-7):** A47B47/00 A47B73/00 B29D22/00 B31F1/00 E04B1/24 E04B1/58 E04C3/02 E04C3/30 E04H12/02 E04H12/04 E04H12/10 E04H12/18 F16D1/00 F21L7/00

**CPC:** Y10S52/10 Y10T403/34 Y10T403/342 Y10T403/347 Y10T403/44 Y10T403/46 Y10T403/4602 Y10T403/7001 Y10T403/7096 Y10T156/1008 Y10T156/101 Y10T156/1051 Y10T428/1362 Y10T428/24033 Y10T428/24446 Y10T428/24645 Y10T428/24686

Y10T428/24785 A47B73/00 F16B12/125 A47B73/006 A47B47/04 Y10T403/447 E01D1/00 E01D2101/10 E01D2101/26 E01D2101/30 E01D2101/40 E04B1/19 E04B2001/1927 E04B2001/1945 E04B2001/1948 E04B2001/1963 E04B2001/1975 E04B2001/5893 E04C3/12 E04C3/42 E04G1/04 E04H17/1439 Y10T403/343 B29C70/525 E04B2001/1924 E04B2001/1933 E04B2001/1984 E04B2001/199 E04B2001/1993 E04C3/28 E04H12/02 E04H12/24 E04B2001/1957 E04C3/46 E06C7/08 F16B7/0446 F16B2200/10 F16B2200/205

**European:** A47B47/04 A47B73/00 A47B73/00E B29C70/52C E01D1/00 E04B1/19 E04C3/12 E04C3/28 E04C3/42 E04C3/46 E04G1/04 E04H12/02 E04H17/14E2 E06C7/08 F16B12/12M F16B7/04D2 P01D101/10 P01D101/26 P01D101/30 P01D101/40 P04B1/19C P04B1/19C1 P04B1/19C2 P04B1/19C6 P04B1/19C7 P04B1/19D P04B1/19D2 P04B1/19E P04B1/19G2 P04B1/19H P04B1/19K P04B1/58P P04H12/24

**US:** 156/166 156/200 156/201 156/227 156/242 156/245 174/45R 211/189 211/205 211/74 256/22 256/65 256/65.04 264/137 273/160 312/263 362/367 403/169 403/171 403/172 403/176 403/217 403/219 403/230 403/231 403/255 403/263 403/346 403/382 405/262 405/272 428/102 428/152 428/176 428/181 428/193 428/36.1 428/361 446/106 52/282.1 52/309.14 52/309.9 52/592.1 52/600 52/646 52/648 52/648.1 52/650.1 52/651.01 52/651.02 52/651.03 52/651.04 52/651.09 52/655.1 52/697 52/720 52/724 52/728 52/731.3 52/736.2 52/736.3 52/736.4 52/835 52/844 52/849 52/DIG.1 52/DIG.10 526/970 527/280

**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| AU199177976 A1     | 19920107         | AU19910077976      | 19910411         |
| AU199336039 A1     | 19930901         | AU19930036039      | 19930201         |
| CA2154341 AA       | 19950720         | CA19932154341      | 19930201         |
| CA2154341 C        | 20001226         | CA19932154341      | 19930201         |
| EP0742862 A1       | 19961120         | EP19930904804      | 19930201         |
| EP0742862 A4       | 19970226         | EP19930904804      | 19930201         |
| JP8509275 T2       | 19961001         | JP19930513480T     | 19930201         |
| US4715503 A        | 19871229         | US19860848573      | 19860407         |
| US4809146 A        | 19890228         | US19870137101      | 19871223         |
| US4825620 A        | 19890502         | US19870137100      | 19871223         |
| US4991726 A        | 19910212         | US19880231379      | 19880812         |
| US5024036 A        | 19910618         | US19900541547      | 19900621         |
| US5197818 A        | 19930330         | US19910715910      | 19910614         |
| US5222344 A        | 19930629         | US19910715908      | 19910614         |
| US5247774 A        | 19930928         | US19910715912      | 19910614         |
| US5285612 A        | 19940215         | US19910696922      | 19910508         |
| US5285613 A        | 19940215         | US19920828499      | 19920131         |
| US5319901 A        | 19940614         | US19930007079      | 19930121         |
| US5597629 A        | 19970128         | US19950325981      | 19950126         |
| US5617692 A        | 19970408         | US19940196650      | 19940214         |
| US5644888 A        | 19970708         | US19940259431      | 19940614         |
| US5749198 A        | 19980512         | US19930128800      | 19930928         |
| US5795424 A        | 19980818         | US19970806031      | 19970126         |
| US6286281 BA       | 20010911         | US19990311338      | 19990513         |
| WO9119871 A1       | 19911226         | WO1991US02434      | 19910411         |

**Priority:**

|                        |                        |                        |
|------------------------|------------------------|------------------------|
| US19860848573 19860407 | US19870137100 19871223 | US19870137101 19871223 |
| US19880231379 19880812 | US19900541547 19900621 | WO1991US02434 19910411 |
| US19910696922 19910508 | US19910715910 19910614 | US19910715908 19910614 |
| US19910715912 19910614 | US19910541547 19910621 | US19920828499 19920131 |
| US19930007079 19930121 | WO1993US00888 19930201 | US19930128800 19930928 |
| US19940196650 19940214 | US19940259431 19940614 | US19950325981 19950126 |
| US19970806031 19970126 | US19970881974 19970625 | US19990311338 19990513 |

**Probable Assignee:** EBERT COMPOSITES CORP

**Assignee(s):** (std): EBERT COMPOSITES CORP ; GEORGE KORZENIOWSKI ; GOLDSWORTHY W BRANDT ; KORZENIOWSKY GEORGE ; JOHNSON DAVID W ; KORZENIOWSKI GEORGE ; BRANDT GOLDSWORTHY W

**Assignee(s):** DAVID W JOHNSON ; EBERT COMPOSITES A CORP OF CA CORP ; GOLDSWORTHY W

**Inventor(s):** (std): JOHNSON DAVID W ; KORZENIOWSKY GEORGE ; KORZENIOWSKI GEORGE ; GOLDSWORTHY W BRANDT

**Inventor(s):** GEORGE KORZENIOWSKI ; DAVID W JOHNSON ; W BRANDT GOLDSWORTHY ; GOLDSWORTHY W

**Agent(s):** PATENT ATTORNEY SERVICES; BULL HOUSSEY AND TUPPER LLP

**Designated states:** AT AU BB BE BF BG BJ BR CA CF CG CH CI CM CZ DE DK ES FI FR GA GB GN GR HU IE IT JP KP KR LK LU MC MG ML MN MR MW NL NO NZ PL PT RO RU SD SE SK SN TD TG UA US

**2) Family number: 30734007 (US2004139665A)**

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**Title:** METHOD AND ARRANGEMENT FOR UTILITY POLE REINFORCEMENT

**Abstract:** Method and arrangement for reinforcing an elongated pole (3) including a plurality of anchorages (28,29), each of which are locatable at a different vertical position on pole (3) and having a tension member (30) configured to be coupled between at least a pair of said anchorages (28, 29) for increasing the load capacity of the receiving pole (3) when thereby fortified. Exemplarily, utility pole (5) is configured to receive above-ground appurtenances. In a complimentary embodiment, the arrangement further includes a compression member (36), which may take the same form as the tension member (30), but with oppositely acting forces imposed therein.

**Classifications:**

**International (IPC 8-9):** E04C3/32 E04C5/08 E04H12/08

E04H12/16 (Advanced/Invention);

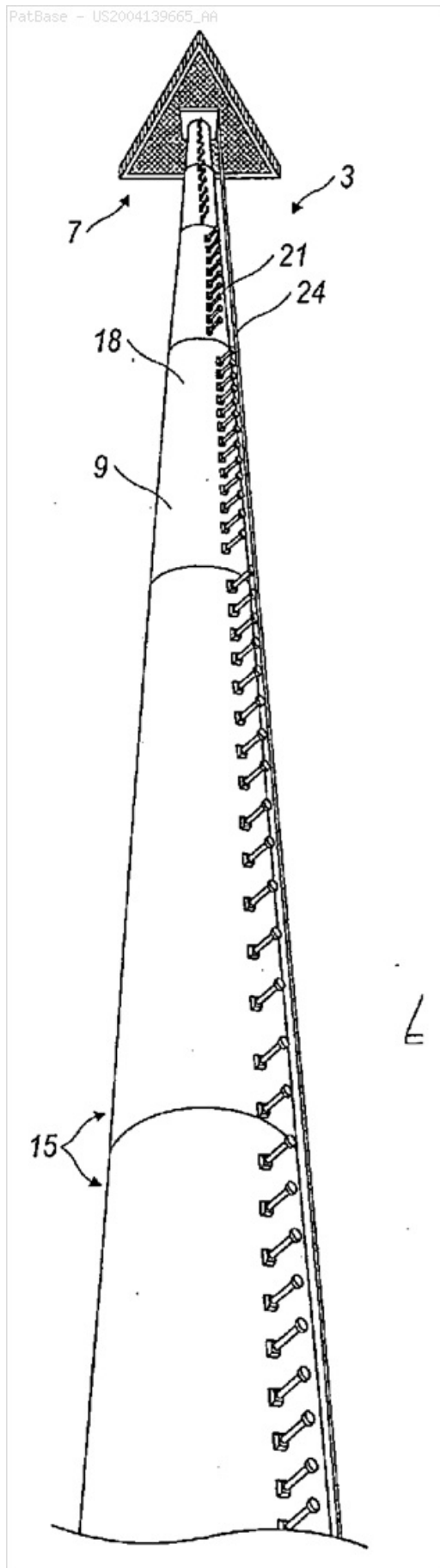
E04C3/30 E04C5/00 E04H12/00 (Core/Invention)

**International (IPC 1-7):** E02D27/00 E02D27/32 E02D5/74 E04C3/30

**CPC:** E04C3/32 E04C5/08 E04H12/08 E04H12/16 E04H12/085

**European:** E04C3/32 E04C5/08 E04H12/08F E04H12/16

**US:** 52/169.9

**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| AU2003252829 AA    | 20030922         | AU20030252829      | 20030307         |
| US2004139665 AA    | 20040722         | US20030476080      | 20031023         |
| WO03076737 A1      | 20030918         | WO2003US07088      | 20030307         |

**Priority:**

US20020362076P 20020307

WO2003US07088 20030307

US20030476080 20031023

**Probable Assignee:** COMMSTRUCTURES INC

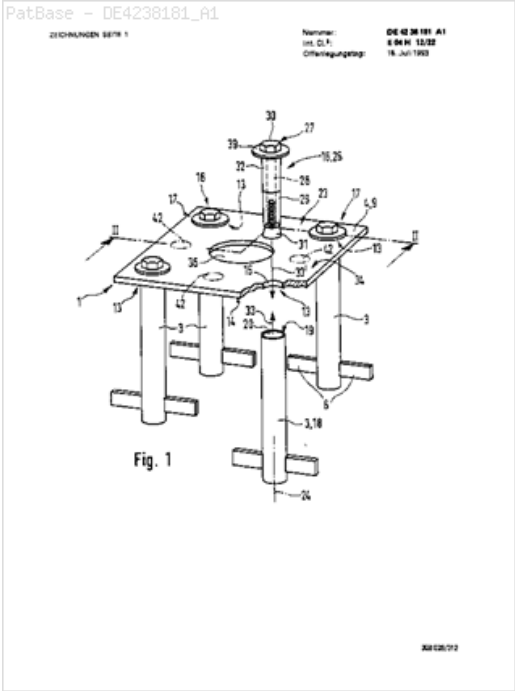
**Assignee(s):** (std): COMMSTRUCTURES INC ; HARPOLE JAMES ; HOBBS JAMES ; ULLRICH RAY  
**Inventor(s):** (std): HARPOLE JAMES ; HOBBS JAMES ; ULLRICH RAY  
**Inventor(s):** RAY ULLRICH ; JAMES HOBBS ; JAMES HARPOLE  
**Designated states:** AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE ES FI FR GA GB GD GE GH GM GN GQ GR GW HR HU ID IE IL IN IS IT JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MC MD MG MK ML MN MR MW MX MZ NE NI NL NO NZ OM PH PL PT RO RU SC SD SE SG SI SK SL SN SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW

**3) Family number: 29528012 (DE4238181A1)** © PatBase

**Title:** MOUNTING FOR COMMUNICATIONS MAST, E.G. FOR TRAFFIC SIGNAL UNIT - HAS TUBES SET IN CONCRETE AND RECEIVING FIXING BOLTS TIGHTENED TO SPREAD ELEMENTS AND GRIP INNER SURFACE.

**Abstract:** A communications mast is mounted on a support embedded into concrete within the ground. The base unit has a plate (1) with locations at each corner aligned with tube (3) set into concrete. The unit is secured by bolts (27) with stems that pass through tubes (28) having slotted ends (29). The threaded sections engage tapered plugs (31). When inserted into the main tubes (3), the bolts are tightened to cause the ends to spread and grip the side walls securely. **ADVANTAGE** - Simple mounting on ground based location.

**Classifications:**  
**International (IPC 8-9):** E01F9/011 E01F9/681  
E04H12/22 (Advanced/Invention);  
E01F9/011 E04H12/22 (Core/Invention)  
**International (IPC 1-7):** E01F9/01 E04H12/22  
**CPC:** E01F9/681 E04H12/22 E04H12/2261  
**European:** E01F9/011F4 E04H12/22 E04H12/22C1



**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| DE4238181 A1       | 19930715         | DE19924238181      | 19921112         |
| DE9200115 U1       | 19920423         | DE19920000115U     | 19920108         |

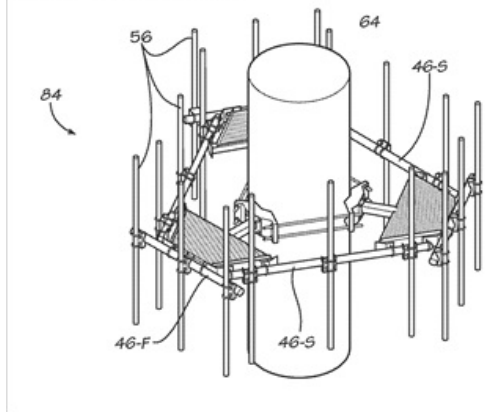
**Priority:**  
DE19920000115U 19920108      DE19924238181 19921112  
**Probable Assignee:** I AND V GMBH INDUKTIONSSCHLEIFEN  
**Assignee(s):** (std): I AND V GMBH INDUKTIONSSCHLEIFEN  
**Assignee(s):** I AND V GMBH INDUKTIONSSCHLEIFEN AND VERKEHRST ; I AND V GMBH INDUKTIONSSCHLEIFEN AND VERKEHRSTECHNIK 7306 DENKENDORF DE  
**Inventor(s):** (std): KLEBS MICHAEL  
**Inventor(s):** KLEBS MICHAEL 7300 ESSLINGEN DE

**4) Family number: 49950015 (US2011279347A)** © PatBase

**Title:** PLATFORM ASSEMBLIES FOR RADIO TRANSMISSION TOWERS

**Abstract:** Platform structures and platform assemblies are provided for supporting a plurality of radio frequency (RF) antennas and the weight of one or more workers. One platform structure provided herein includes a steel radial beam extending from an RF tower and a plurality of steel arms welded to the radial beam. The platform structure also includes a first front plate having a front facing portion and an angled portion, where the front facing portion of the first front plate is welded to a first steel arm. Also included is a second front plate having a front facing portion and an angled portion, where the front facing portion of the second front plate is welded to a second steel arm. The platform structure further includes a first side plate having a side facing portion and an angled portion. The side facing portion of the first side plate is welded to a third steel arm. The platform structure also includes a second side plate having a side facing portion and an angled portion, where the side facing portion of the second side plate is welded to a fourth steel arm.

**Classifications:**  
**International (IPC 8-9):** E04G1/15 E04G3/24 E04G5/14 E04H12/00  
H01Q1/12 (Advanced/Invention);  
H04W88/00 (Advanced/Non-invention)  
**CPC:** H01Q1/1242 E04G3/243 H01Q1/1207 E04G5/14  
**US:** 1/1 182/113 343/890 343/890P 52/173.1 52/173.100S

**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| CA2715414 AA       | 20111117         | CA20102715414      | 20100922         |
| CA2715414 C        | 20180605         | CA20102715414      | 20100922         |
| US2011279347 AA    | 20111117         | US20100887609      | 20100922         |
| US2016276732 AA    | 20160922         | US20160171343      | 20160602         |
| US2019123419 AA    | 20190425         | US20180220369      | 20181214         |
| US9385413 BB       | 20160705         | US20100887609      | 20100922         |
| US10170818 BB      | 20190101         | US20160171343      | 20160602         |

**Priority:**

US20100345429P 20100517 CA20102715414 20100922 US20100887609 20100922  
 US20160171343 20160602 US20180220369 20181214

**Probable Assignee:** KENWOOD TELECOM CORP

**Assignee(s):** (std): KENWOOD TELECOM CORP ; NOVIS MATTHEW J ; PASS CRAIG T ; REYNOLDS KIMBERLY

**Assignee(s):** KENWOOD TELECOM CORPORAITON

**Inventor(s):** (std): REYNOLDS KIMBERLY ; PASS CRAIG T ; NOVIS MATTHEW J

**Agent(s):** LEACH STEVEN H; RIDOUT AND MAYBEE LLP; TAYLOR ENGLISH DUMA LLP

**5) Family number: 11131018 (US2015075101A)**

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**Title:** LINK-PLATE CONNECTION FOR MONOPOLE REINFORCING BARS

**Abstract:** Reinforcing bars include load transfer connectors. A link plate includes openings that mate with the load transfer connectors to overlie the splice between reinforcing bars being spliced. A cover plate may be fastened over the link plate.

**Classifications:**

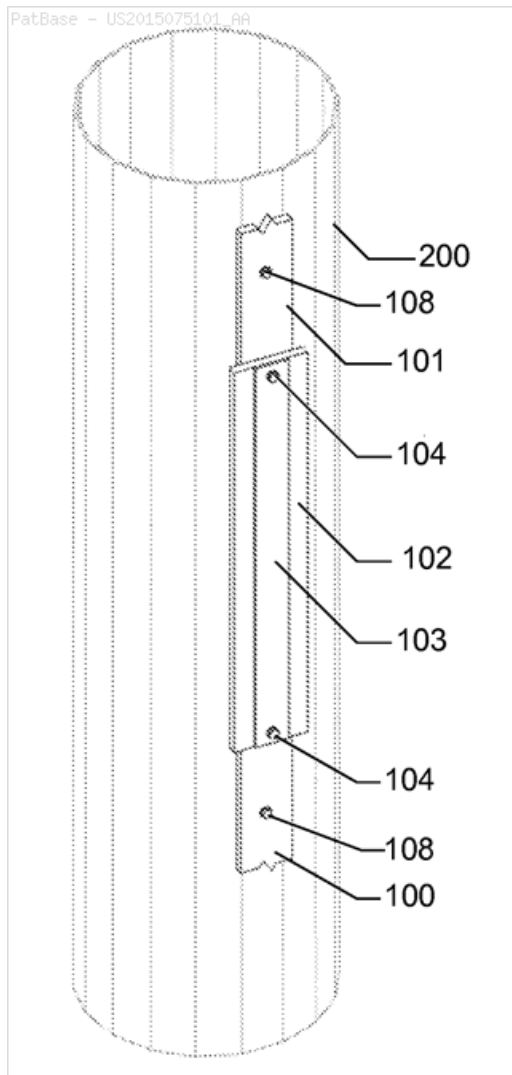
**International (IPC 8-9):** B23P17/00 C01B6/24 C07B31/00  
 C07D295/02 C07D295/03 E04C3/00 E04C5/06 E04G21/00  
 E04G21/14 E04H12/00 E04H12/02 E04H12/08 E04H12/22 H01Q1/12  
 H04W88/08 (Advanced/Invention);  
 C07D295/02 H01Q1/12 (Advanced/Non-invention);  
 C01B6/00 C07B31/00 C07D295/00 (Core/Invention)

**International (IPC 1-7):** B23P17/00 C01B6/24 C07B31/00 E04C3/00  
 E04G21/00 E04G21/14 E04H12/00

**CPC:** E04C5/06 C01B6/24 C07B31/00 C07D295/03 E04H12/08  
 E04H12/2292 H01Q1/1242

**European:** C01B6/24 C07B31/00 C07D295/03

**US:** 52/514

**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| AU199746514 A1     | 19980417         | AU19970046514      | 19970923         |
| BR112017010873 A2  | 20180109         | BR20171110873      | 20150924         |
| CA2968035 AA       | 20170523         | CA20152968035      | 20150924         |
| EP3212358 A1       | 20170906         | EP20150864303      | 20150924         |
| EP3212358 A4       | 20180509         | EP20150864303      | 20150924         |
| GB201609924 A0     | 20160720         | GB20160009924      | 20150924         |
| GB2552132 A1       | 20180117         | GB20160009924      | 20150924         |
| IN201717017436 A   | 20180223         | IN201717017436     | 20170518         |
| MX2017006675 A1    | 20180111         | MX20170006675      | 20150924         |
| US2015075101 AA    | 20150319         | US20140552263      | 20141124         |
| US2017081871 AA    | 20170323         | US20160371680      | 20161207         |
| US2017081872 AA    | 20170323         | US20160371708      | 20161207         |
| US2018163425 AA    | 20180614         | US20180894473      | 20180212         |
| US9546497 BB       | 20170117         | US20140552263      | 20141124         |
| US9896859 BB       | 20180220         | US20160371708      | 20161207         |
| US9926716 BB       | 20180327         | US20160371680      | 20161207         |
| WO17111878 A1      | 20170629         | WO2015051892       | 20150924         |
| WO9813319 A1       | 19980402         | WO1997US17191      | 19970923         |

**Priority:**

|                |          |               |          |                |          |
|----------------|----------|---------------|----------|----------------|----------|
| US19960026522P | 19960924 | WO1997US17191 | 19970923 | US20140026522P | 20140718 |
| US20140552263  | 20141124 | WO2015US51892 | 20150924 | US20160371680  | 20161207 |
| US20160371708  | 20161207 | US20180894473 | 20180212 |                |          |

**Probable Assignee:** TOWER ENGINEERING SOLUTIONS LLC**Assignee(s):** (std): ENGEL JOHN FRANCIS ; FLUID TECHNOLOGIES ENVIRONMENTAL LTD ; FMC CORP ; GRANGER ERIC JOHN ; PAUTARD COOPER ANNE ; RATHMAN TERRY LEE ; SIMS PHILIP F ; SCHWINDEMAN JAMES A ; SEMAAN ROBERT ; TOWER ENG SOLUTIONS LLC**Assignee(s):** TOWER ENGINEERING SOLUTIONS LLC**Inventor(s):** (std): ENGEL JOHN FRANCIS ; GRANGER ERIC JOHN ; RATHMAN TERRY LEE ; SCHWINDEMAN JAMES A ; SIMS PHILIP F ; PAUTARD COOPER ANNE ; SEMAAN ROBERT ; ROBERT SEMAAN**Inventor(s):** PHILIP F SIMS ; ANNE PAUTARD COOPER ; TERRY LEE RATHMAN ; JAMES A SCHWINDEMAN ; JOHN FRANCIS ENGEL ; ERIC JOHN GRANGER**Agent(s):** SMART AND BIGGAR; CARPMAELS AND RANSFORD LLP; BAKER AND HOSTETLER LLP; BAKER HOSTETLER LLP; QUICKER KATRINA M**Designated states:** AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN

**6) Family number: 68794023** (BR102016007876A)

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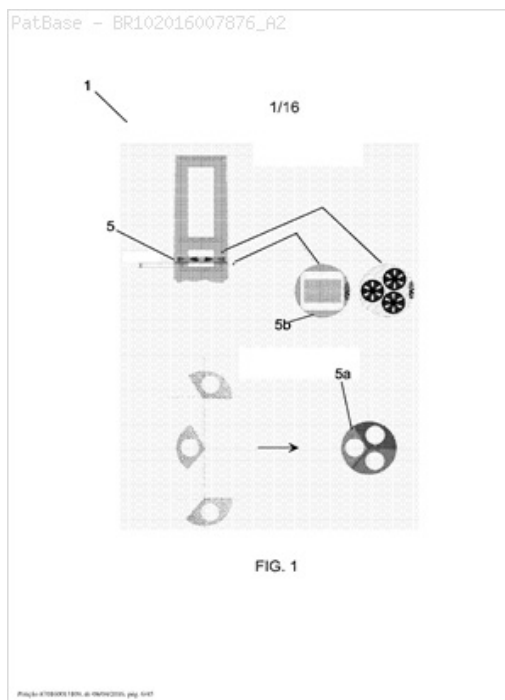
**Title:** ?SISTEMA DE ENERGIA E VENTILACAO PARA POSTE DE ILUMINACAO COM COMPARTIMENTOS DESTINADOS A EQUIPAMENTOS DE TELECOMUNICACOES? ?Power SYSTEM AND VENT FOR LIGHT POST WITH COMPARTMENTS FOR TELECOMMUNICATIONS EQUIPMENT? (Machine translation)

**Abstract:** Source: BR102016007876A [PT] RESUMO "SISTEMA DE ENERGIA E VENTILACAO PARA POSTE DE ILUMINACAO COM COMPARTIMENTOS DESTINADOS A EQUIPAMENTOS DE TELECOMUNICACOES" A presente patente de invencao refere-se aos sistemas de ventilacao e energia para postes de telecomunicacao. O presente sistema tem como objetivo contornar as desvantagens do estado da tecnica na medida em que prove uma solucao para empregar os sistemas de energia e ventilacao no espaco interno livre e limitado do poste de telecomunicacao, possibilitando uma adequada circulacao do ar para o respectivo resfriamento necessario. Peticao 870160013109, de 08/04/2016, pag. 42/45 **Machine translation:** Power SYSTEM AND VENTING FOR LIGHT POST WITH COMPARTMENTS FOR TELECOMMUNICATIONS EQUIPMENT" the present invention patent relates to ventilation systems and power for telecommunications poles. O present system aims to overcome the disadvantages of the prior art to the extent that provides a solution to employ power systems and vent in free internal space is limited telecommunication pole, allowing adequate air circulation to the respective cooling required. The 870160013109 repeat 08/04/2016, pp. 42/45

**Classifications:**

**International (IPC 8-9):** E04H12/00 H02B1/50  
H02B1/56 (Advanced/Invention)

**International (IPC 1-7):** E04H12/00 H02B1/50 H02B1/56

**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| BR102016007876 A2  | 20171017         | BR20161007876      | 20160408         |

**Priority:**

BR20161007876 20160408

**Probable Assignee:** OMIBRA MAQU E EQUIPAMENTOS LTDA

**Assignee(s):** (std): OMIBRA MAQU E EQUIPAMENTOS LTDA

**Assignee(s):** OMIBRA MAQUINAS E EQUIPAMENTOS LTDA

**Inventor(s):** (std): STEFANO REGGIANI

**7) Family number: 25150048** (US3204721A)

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**Title:** TRIANGULATION TOWER

**Abstract:** (Claim 1) 1. A triangulation tower comprising an outer open structure and an inner open structure, said structures being mutually independent, a vertical tubular member carried by the outer structure on the interior of the inner structure, said member being adapted to support a surveying device, and a platform surrounding the tubular member said platform being secured to the inner structure independently of the outer structure.

**Classifications:**

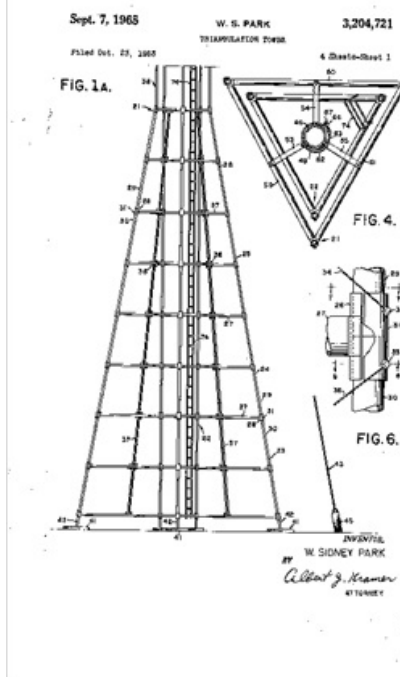
**International (IPC 8-9):** E04H12/00 G01C5/00 (Advanced/Invention);  
E04H12/00 G01C5/00 (Core/Invention)

**International (IPC 1-7):** E04G G01C15/02

**CPC:** E04H12/00 G01C5/00

**European:** E04H12/00 G01C5/00

**US:** 182/115 182/178.1 52/651.01

**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| CH411374 A         | 19660415         | CH19630015765      | 19631220         |
| US3204721 A        | 19650907         | US19630318314      | 19631023         |

**Priority:**

US19630318314 19631023

**Probable Assignee:** PARK WALLACE SIDNEY**Assignee(s):** (std): PARK WALLACE SIDNEY ; SIDNEY PARK WALLACE**Inventor(s):** (std): WALLACE SIDNEY PARK ; SIDNEY PARK WALLACE**Inventor(s):** PARK WALLACE SIDNEY**8) Family number: 35048 (US3291899A)**

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**Title:** Electric insulators in the form of framed structures incorporating rods of resin bonded fibre

**Abstract:** 1,034,224. Insulators. BRITISH INSULATED CALLENDER'S CABLES Ltd. April 20, 1965 [April 21, 1964], No. 16492/64. Heading H2C. Conductors 9 are supported by insulators each consisting of rods 2 of resin-bonded fibre of high tensile strength and cross-members 3 of insulating material rigidly joined to the rods at intervals along their length, acting both to restrain the rods from buckling and to increase the surface leakage path. Preferably at least three rods 2 are arranged symmetrically around the axes of the insulator and the cross members are in the form of discs. Sleeves 5 at one end of the rods 2 are welded to a baseplate 6 suitable for attachment to a tower, and sleeves 7 at the other end are welded to bracket 8 which receives the conductors 9. Two insulators may be arranged to form the limbs of a V-shaped frame lying in a horizontal plane, as in Fig. 2 (not shown). A tie member 12, consisting of a resin-bonded glass fibre rod 13 carrying discs 14 is attached to bracket 8 by metal sleeve 15 and to the tower by metal sleeve 16. The rods may be straight or curved, parallel or a varying distance apart while retaining the said symmetry. They may be solid, or hollow and filled with e.g. polyurethane foam or a fluid dielectric material. The fibres may be of glass, quartz or lava. The bonding resin may be an epoxy resin with a high resistance to tracking. Alternatively the rods may be coated with butyl or ethylene-propylene rubber or other tracking resistant resin. The cross-members also are preferably of tracking resistant material, e.g. epoxy resin bonded glass fibre, optionally containing alumina, which can be dough-moulded in situ on the rods, or preformed e.g. by vacuum casting and subsequently attached to the rods by an adhesive based on the same resin as the bonding resin. Alternatively they may be of structurally strong material coated with butyl or ethylene-propylene rubber. The preformed discs may have holes through which the rods pass. Adhesion between the in situ moulded discs is aided by interlocking means such as grooves, ribs, projections or recesses preformed on the rods. At least some of the cross-members and supplementary members which may also be attached to the rods, may be shaped, e.g. by having ribs, to increase further the surface leakage path. They may also be shaped to act as insulator sheds, e.g. as hollow cones or annuli of triangular or V cross-section.

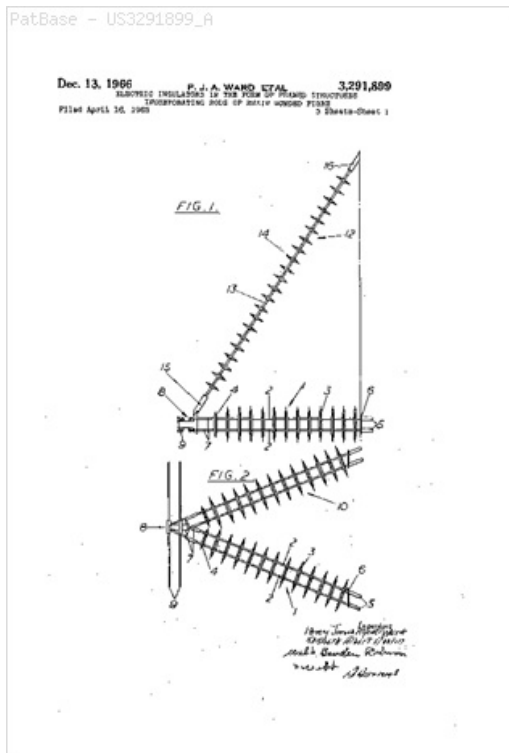
**Classifications:****International (IPC 8-9):** H01B17/00 H02G7/20 (Advanced/Invention);

E04H12/24 (Advanced/Non-invention);

H01B17/00 H02G7/20 (Core/Invention);

E04H12/00 (Core/Non-invention)

**International (IPC 1-7):** H01B17/04 H01B17/32 H02G7/20**CPC:** E04H12/24 H01B17/00 H02G7/20**European:** H01B17/00 H02G7/20 P04H12/24**US:** 174/137B 174/148 174/177 174/45R 52/697

**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| AU5757965 A1       | 19661013         | AU19650057579      | 19650413         |
| BE662840 A         | 19650817         |                    | 19650421         |
| FR1430757 A        | 19660304         | FR19650013896      | 19650420         |
| GB1034224 A        | 19660629         | GB19640016492      | 19640421         |
| NL6504980 A        | 19651022         | NL19650004980      | 19650420         |
| US3291899 A        | 19661213         | US19650448717      | 19650416         |

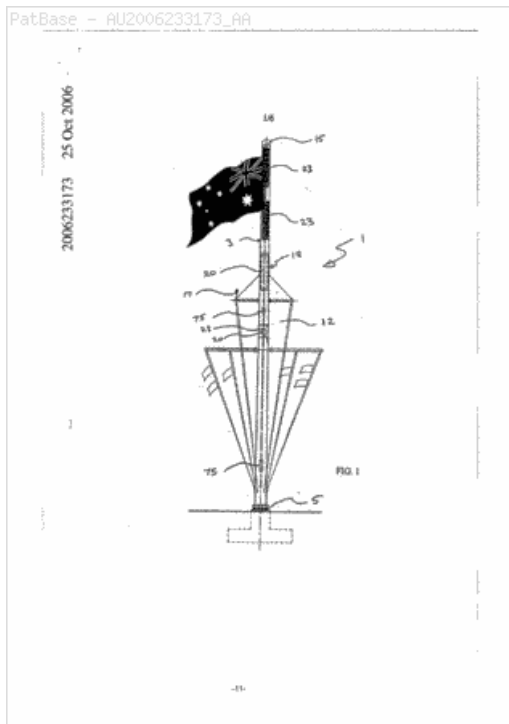
**Priority:**

GB19640016492 19640421 FR19650013896 19650420

**Probable Assignee:** BRITISH INSULATED CALLENDERS**Assignee(s):** (std): BRITISH INSULATED CALLENDAR S ; BRITISH INSULATED CALLENDERS**Assignee(s):** BRITISH INSULATED CALLENDAR S CABLES LIMITED ; BRITISH INSULATED CALLENDAR S CABLES LTD  
; BRITISH INSULATED CALLENDAR S CABLES LIMITED ; BRITISH INSULATED CALLENDAR S CABLES LTD**Inventor(s):** (std): WARD PERCY JAMES ALFRED ; ALFRED WARD PERCY JAMES ; ALBERT AUSTIN KENNETH ; WARD PERCY JAMES ALFRED ; AUSTIN KENNETH ALBERT**Inventor(s):** PERCY JAMES ALFRED WARD AND KENNETH ALBERT AUSTIN**9) Family number: 34967050 (AU2006233173A)**

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**Title:** A telecommunications tower**Abstract:** IO A TELECOMMUNICATIONS TOWER 0 0 Abstract c A telecommunications tower including: a pole having an internal cavity and a longitudinally extending external surface The surface (12) has an aperture (18) behind which the cavity (10) is located. The cavity (10) is provided to C receive telecommunications equipment A panel (23) covers the aperture (18) and is C formed to provide for the passage of radiated signals through the aperture A base O anchors the pole in a generally upright orientation so that in use the pole (3) N extends generally upwardly from the base [R:\LIBLL] 18992-speci doc.KEH (I fJ 0 0 p I'3**Classifications:****International (IPC 8-9):** E04H12/00 E04H12/20  
E04H12/32 (Advanced/Invention);  
E04H12/00 (Core/Invention)

**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| AU2006233173 AA    | 20070621         | AU20060233173      | 20061025         |

**Priority:**

AU20050906745 20051201 AU20060233173 20061025

**Probable Assignee:** MANDRAKE DESIGN PTY LTD

**Assignee(s):** (std): MANDRAKE DESIGN PTY LTD

**Inventor(s):** (std): CLAPHAM DONALD ; MAKHOUL MICHEL

**Inventor(s):** MICHEL MAKHOUL ; DONALD CLAPHAM

**Agent(s):** SPRUSON AND FERGUSON

**10) Family number: 99052 (GB1287156A)**

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**Title:** WATER TOWER

**Abstract:** 1287156 Water-storage tower PARKANO OY 27 Nov 1969 [28 Nov 1968] 58053/69 Heading E1T A water tower comprises a cistern 1 mounted on a concrete/steel column 5, the cistern being in the form of a polygonal ring shaped chamber built up from a number of sections of tubular steel plate. The cross sectional area of the ring opening is greater than that of the column and enable the cistern to be assembled around the base of the column and subsequently lifted into its final elevated position. A heat insulating shield 4 surrounds the cistern and the column may be provided with water pipes a staircase or elevator. A water tower provided with two cisterns is also described (Fig. 3).

**Classifications:**

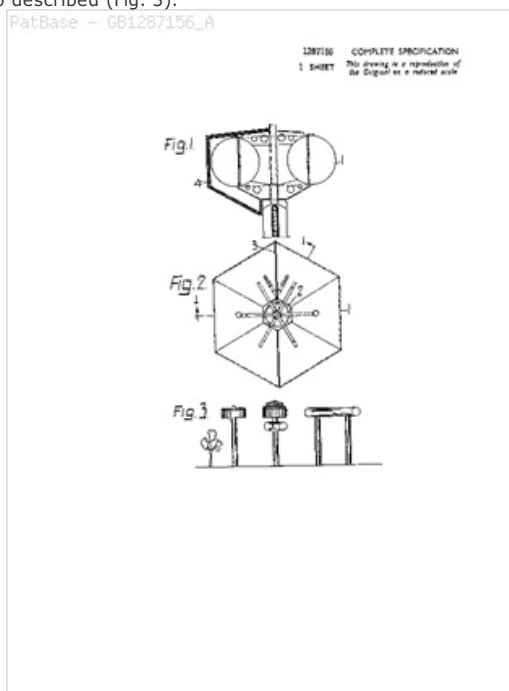
**International (IPC 8-9):** E04H12/30 (Advanced/Invention); E04H12/00 (Core/Invention)

**International (IPC 1-7):** E04H12/00 E04H12/30 E04H7/02 E04H7/06

**CPC:** E04H12/30

**European:** E04H12/30

PatBase - GB1287156\_A



**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| BE742297 A         | 19700504         |                    | 19691127         |
| DE1959623 A1       | 19700611         | DE19691959623      | 19691127         |
| DK129596 B         | 19741028         | DK19690006290      | 19691127         |
| DK129596 C         | 19750324         | DK19690006290      | 19691127         |
| FR2024419 A1       | 19700828         | FR19690040712      | 19691126         |
| GB1287156 A        | 19720831         | GB19690058053      | 19691127         |
| NL6917772 A        | 19700601         | NL19690017772      | 19691126         |
| SE353569 B         | 19730205         | SE19690016196      | 19691125         |

**Priority:**

FI19680003391 19681128

**Probable Assignee:**

PARKANO OY

**Assignee(s):** (std):

PARKANO OY

**Assignee(s):**

PARKANO OY SF

**Inventor(s):** (std):

HANS WESCH DIPL ING ; OESCH H

**Inventor(s):**

OESCH H SF ; HANS OESCH

**11) Family number: 53272054 (US2013067847A)**

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**Title:** SPACE TRUSS SYSTEM

**Abstract:** A space truss system for use in foundations, floors, walls, and roofs is provided. The space truss system comprises structural rods with each structural rod having a first portion having a first end and a second end, a middle portion having a first end and a second end, and a second end portion having a first end and a second end. The second end of the first portion is joined to the first end of the middle portion at a first predetermined angle and the second end of the middle portion is joined to the second end of the second portion at a second predetermined angle. The first portions of a portion of the structural rods are grouped together forming a first pyramid structure with the first ends of the middle portions forming an apex and the second ends of the middle portions forming a base.

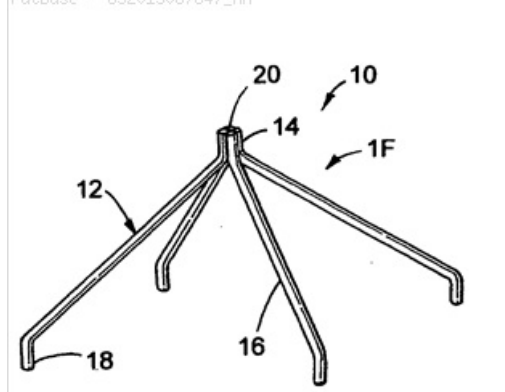
**Classifications:**

**International (IPC 8-9):** E04B1/18 E04B1/19 E04B9/00 E04C2/32 E04C3/02 E04C3/292 E04H12/00 E06B3/54 (Advanced/Invention); E04B5/40 E04C3/04 F27D1/00 (Advanced/Non-invention)

**CPC:** F27D1/004 E04B1/1909 E04B1/19 E04B5/40 E04B2001/1927 E04B2001/1975 E04B2001/1984 E04B2001/199 E04C2003/0495

**US:** 1/1 52/479 52/648.1 52/652.1

PatBase - US2013067847\_AA

**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| US2013067847 AA    | 20130321         | US20120604794      | 20120906         |
| US2014102034 AA    | 20140417         | US20130105596      | 20131213         |
| US8635831 BB       | 20140128         | US20120604794      | 20120906         |
| US9127450 BB       | 20150908         | US20130105596      | 20131213         |

**Priority:**

US20110533145P 20110909

US20120604794 20120906

US20130105596 20131213

**Probable Assignee:**

RIVERS PAUL

**Assignee(s):** (std):

RIVERS PAUL

**Inventor(s):** (std):

RIVERS PAUL

**Agent(s):**

MARGER JOHNSON AND MCCOLLOM PC

**12) Family number: 17759081 (DE20114324U1)**

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**Title:** BEFESTIGUNGSEINRICHTUNG FUER EINE ROHRFOERMIGE STANGE ZUM AUFSTELLEN VON FAHNENMASTEN Mounting DEVICE FOR A TUBULAR ROD FOR PLACING OF FLAG POLES (Machine translation)

**Abstract:** Source: DE20114324U1 [DE] (Claim 1) 1. Befestigungseinrichtung, mit der eine zumindest an ihrem Befestigungs- de (19) rohrfoermig ausgebildete Stange (1), wie beispielsweise ein Mast, Pfahl oder Pfosten, auf einer Aufstellebene (2) loesbar befestigt ist, mit ei- nem aus der Aufstellebene (2) herausragenden Aufsteckdorn (3), auf den das Befestigungs- de (19) der Stange (1) aufgesteckt ist, wobei die Quer- abmessung des Aufsteckdorns (3) geringer ist als die innere Querabmes- sung der Stange (1), derart, dass zwischen dem Aufsteckdorn (3) und der Stange (1) ein Ringraum (4) ausgebildet ist, dadurch gekennzeichnet, dass sich in dem Ringraum (4) zwischen dem Aufsteckdorn (3) und der Stange (1) ein koerniges Fuellgut (6) befindet.

**Machine translation:** (Claim 1) 1. Attachment mechanism, with the one at least to its attachment EN de (19) tubularly trained bar (1), as for example a mast, a stake or a post, on one setting up level (2) is solvable fastened, with egg nem plug-on thorn (3), outstanding from the setting up level (2), to which the attachment end (19) of the bar (1) is attached, whereby the crosswise dimension of the plug-on cathedral (3) is smaller than the internal Querabmes sung the bar (1), in such a manner that between the plug-on thorn (3) and the bar (1) an annular space (4) is trained, is characterized by that itself in

that Annular space (4) between the plug-on thorn (3) and the bar (1) a granular filling material (6) finds.

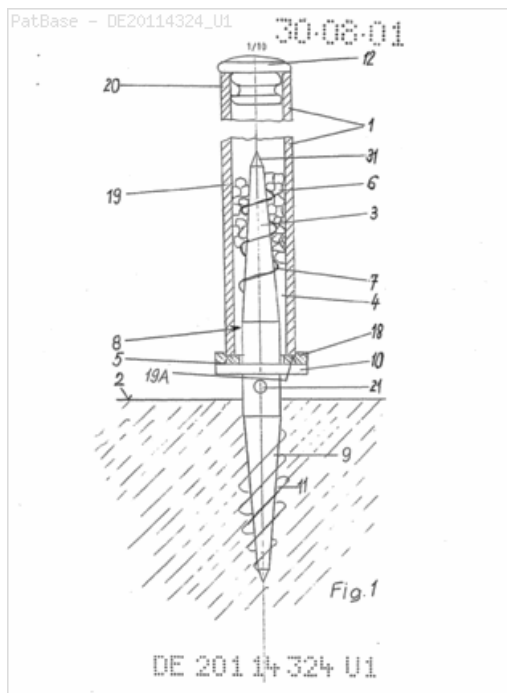
**Classifications:**

**International (IPC 8-9):** E04H12/22 (Advanced/Invention);  
E04H12/22 (Core/Invention)

**International (IPC 1-7):** E04H12/22

**CPC:** E04H12/2223 E04H12/2253

**European:** E04H12/22A1B E04H12/22C



**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| DE20114324 U1      | 20011220         | DE20012014324U     | 20010830         |

**Priority:**

DE20012014324U 20010830

**Probable Assignee:**

KRINNER KLAUS

**Assignee(s): (std):**

KRINNER KLAUS

**13) Family number: 2132092 (US4697959A)**

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**Title:** Method and apparatus for installing an in-ground support footing around an upstanding elongate object

**Abstract:** PCT No. PCT/US83/01878 Sec. 371 Date Aug. 1, 1985 Sec. 102(e) Date Aug. 1, 1985 PCT Filed Dec. 1, 1983 PCT Pub. No. WO85/02435 PCT Pub. Date Jun. 6, 1985. A method and apparatus for installing an in-ground support footing around subterranean and above-ground portions of an upstanding elongate object, such as a structural pole, post or the like, to enhance structural integrity thereof, includes providing a cylindrical casing of hollow construction having a cutting end concentrically positionable around a lower, above-ground region of the elongate object so that the cutting end engages the ground. A driver is then positionable about a circumferential portion of the casing means operable for engaging and rotating the casing means about its longitudinal axis while simultaneously imparting a downwardly-directed force against the upper edge of the casing means thereby to drive it in the ground to a predetermined depth. After the driving sequence has occurred, suitable stabilizing filler material is dispensed into a substantial portion of the relatively soil-free annulus which is created between the casing means and the corresponding exterior surface of the elongate object. The above sequence of establishing an in-ground support footing and the apparatus disclosed does not require that the elongate object be modified by replacement or cutting to establish a support footing over a "stump."

**Classifications:**

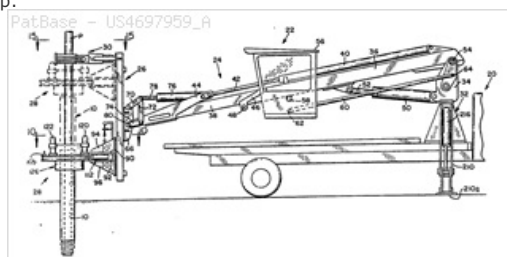
**International (IPC 8-9):** E02D5/64 E04H12/22 (Advanced/Invention);  
E02D5/22 E04H12/22 (Core/Invention)

**International (IPC 1-7):** E02D37/00 E02D5/64 E04H12/22

**CPC:** E02D5/64 E04H12/2292

**European:** E02D5/64 E04H12/22E

**US:** 175/394 37/2R 37/302 405/216 405/232 52/514



**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| AU198423467 A1     | 19850613         | AU19840023467      | 19831201         |
| AU2346784 A1       | 19850613         | AU19840023467D     | 19831201         |
| CA1246829 A1       | 19881220         | CA19840469016      | 19841130         |
| EP0165235 A1       | 19851227         | EP19840900214      | 19831201         |
| US4697959 A        | 19871006         | US19850763145      | 19851001         |
| WO8502435 A1       | 19850606         | WO1983US01878      | 19831201         |

**Priority:**

AU19840023467 19831201 WO1983US01878 19831201

**Probable Assignee:** KINNAN F R

**Assignee(s): (std):** KINNAN F R ; KINNAN FRANK ; KINNAN FRANK R ; UTILITECH INC

**Assignee(s):** KINNAN FR

**Inventor(s):** (std): KINNAN FRANK ; KINNAN FRANK R  
**Inventor(s):** KINNAN FR  
**Designated states:** AT AU BE BR CH DE FR GB JP LI LU NL SE US

**14) Family number: 55879094 (WO15092443A1)**

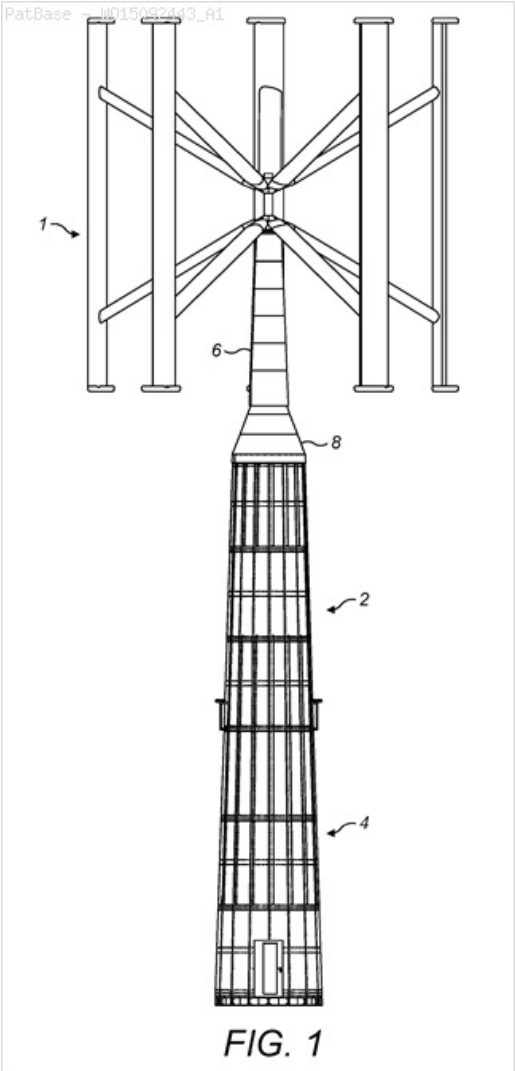
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**Title:** SUPPORT MAST FOR A VERTICAL AXIS WIND TURBINE

**Abstract:** A support structure for a VAWT comprises a lower mast section comprising a frame and an outer skin, an upper mast section having a smaller cross-sectional area than the lower mast section and being arranged to mount a rotatable drive shaft, and a transition mast section for mounting the upper mast section to the lower mast section.

**Classifications:**

**International (IPC 8-9):** F03D11/04 F03D3/00 (Advanced/Invention); E04H12/00 F03D1/00 (Advanced/Non-invention)  
**CPC:** F03D3/005 F05B2240/211 F05B2240/912 F05B2240/913 F05B2250/232 Y02E10/74 E04H12/10 E04H2012/006 Y02E10/728 F03D13/22 F03D80/80 F03D13/20



**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| GB201322802 A0     | 20140205         | GB20130022802      | 20131220         |
| GB2521468 A1       | 20150624         | GB20130022802      | 20131220         |
| GB2521468 B2       | 20151104         | GB20130022802      | 20131220         |
| WO15092443 A1      | 20150625         | WO2014GB53829      | 20141222         |

**Priority:**

GB20130022802 20131220

**Probable Assignee:** COLLINSON PLC

**Assignee(s):** (std): BRACEWELL MICHAEL SHAW ; COLLINSON ERNEST ROGER ; COLLINSON PLC ; COLLINSON SAMUEL

**Inventor(s):** (std): BRACEWELL MICHAEL SHAW ; COLLINSON ERNEST ROGER ; COLLINSON SAMUEL

**Inventor(s):** ERNEST ROGER COLLINSON ; MICHAEL SHAW BRACEWELL ; SAMUEL COLLINSON

**Agent(s):** HECTOR ANNABEL MARY

**Designated states:** AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

**15) Family number: 44121113 (US2009307998A)**

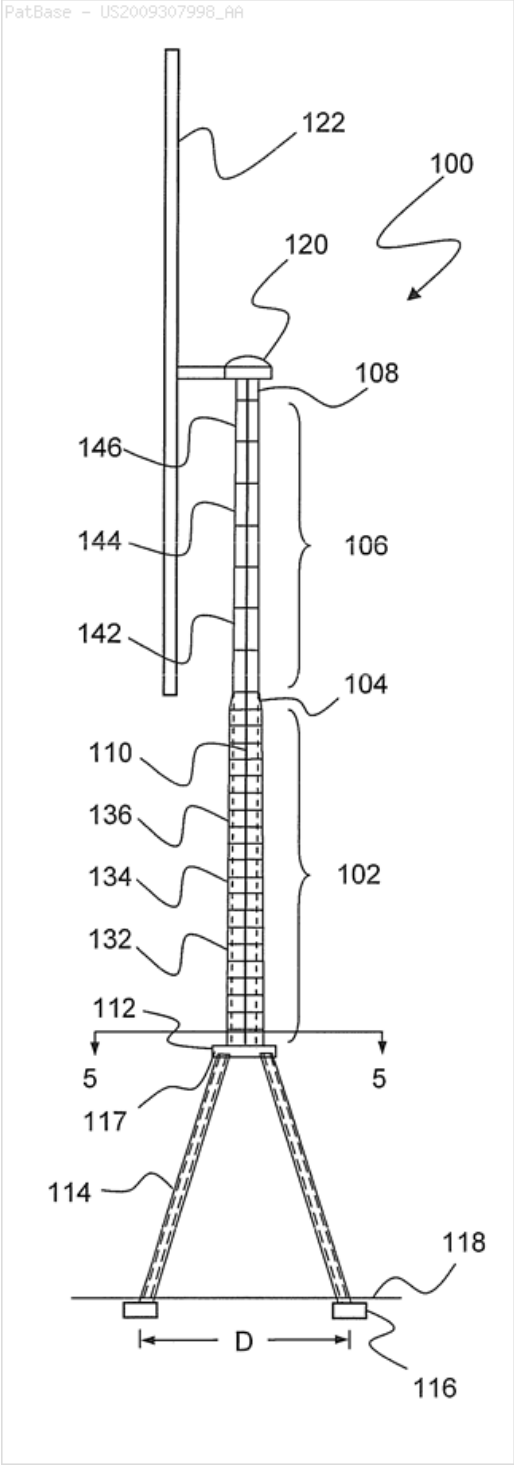
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**Title:** BASE SUPPORT FOR WIND-DRIVEN POWER GENERATORS

**Abstract:** Disclosed are apparatus and corresponding methodology for providing a base support, such as including concrete, and used such as for a wind-driven generator. Precast concrete cylinders are stacked in place upon a platform that may be partially precast and partially cast in place during assembly and supported, in certain embodiments, by plural concrete legs, the other ends of which are supported on a unitary or subdivided concrete foundation. In other embodiments, the platform may be supported by ribbed concrete panels. The concrete cylinders are glued together using an epoxy and then secured by an internal vertical post tension system extending from the platform to the upper most cylinder. Different types of concrete are used between upper and lower sections of the stacked cylinders. The lower section uses reinforced concrete while the upper section used ultra high performance fiber reinforced concrete.

**Classifications:**

**International (IPC 8-9):** B28B1/24 B28B13/06 B28B3/00 B28B7/00 B29C33/00 B29C39/04 E02D27/00 E02D27/32 E02D27/34 E02D27/42 E02D27/50 E04B1/00 E04B1/16 E04B1/20 E04C3/34 E04C5/00 E04G21/00 E04H12/02 E04H12/12 E04H12/16 E04H12/20 E04H12/34 F03D11/04 (Advanced/Invention); E04B1/16 (Advanced/Non-invention); B28B7/00 E02D27/00 E02D27/32 E04B1/00 E04B1/16 E04G21/00 E04H12/00 (Core/Invention)  
**CPC:** F05B2240/9121 F05B2240/913 Y02E10/728 E04H12/342 B28B1/24 Y10S416/06 B28B13/06 E04H12/12 E04H12/20 E04B1/20 E02D27/425 F03D13/22 F03D13/10  
**European:** E04H12/12 F03D1/00B F03D11/04B R05B240/9121 R05B240/913 Y02E10/72 Y02E10/72N  
**US:** 249/13 249/13S 249/141 249/141P 249/188 249/188S 264/31 264/327 264/333 264/35 264/35P 405/250 405/252 405/256 416/DIG.6 52/152 52/152P 52/169.13 52/223.3 52/223.4 52/223.5 52/247 52/274 52/292 52/292S 52/294 52/294P 52/296 52/297 52/299 52/299S 52/301 52/742.14 52/742.140P 52/745.03 52/745.030S 52/745.17 52/745.170S 52/745.18 52/745.19 52/745.190S 52/745.2 52/745.200S 52/745.21 52/745.210S 52/747.12 52/82 52/834 52/843 52/848



**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| CA2727720 AA       | 20091217         | CA20092727720      | 20090612         |
| CA2727720 C        | 20180904         | CA20092727720      | 20090612         |
| CN102084069 A      | 20110601         | CN200980131189     | 20090612         |
| EP2310576 A2       | 20110420         | EP20090763687      | 20090612         |
| EP2310576 A4       | 20150401         | EP20090763687      | 20090612         |
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| ES2629343 T3       | 20170808         | ES20090763687T     | 20090612         |
| MX2010013534 A1    | 20110404         | MX20100013534      | 20090612         |
| PL2310576 T3       | 20170929         | PL20090763687T     | 20090612         |
| US2009307998 AA    | 20091217         | US20090482634      | 20090611         |
| US2009308006 AA    | 20091217         | US20090482621      | 20090611         |
| US2009308019 AA    | 20091217         | US20090482642      | 20090611         |

|                 |          |               |          |
|-----------------|----------|---------------|----------|
| US2011278431 AA | 20111117 | US20110188775 | 20110722 |
| US2012043680 AA | 20120223 | US20110284108 | 20111028 |
| US2013042572 AA | 20130221 | US20120658358 | 20121023 |
| US2013269270 AA | 20131017 | US20130875692 | 20130502 |
| US2013326979 AA | 20131212 | US20130874741 | 20130501 |
| US2014097556 AA | 20140410 | US20130102590 | 20131211 |
| US2016002945 AA | 20160107 | US20150851548 | 20150911 |
| US8322093 BB    | 20121204 | US20090482634 | 20090611 |
| US8458970 BB    | 20130611 | US20090482621 | 20090611 |
| US8516774 BB    | 20130827 | US20120658358 | 20121023 |
| US8733045 BB    | 20140527 | US20130875692 | 20130502 |
| US8734705 BB    | 20140527 | US20090482642 | 20090611 |
| US8782966 BB    | 20140722 | US20130874741 | 20130501 |
| WO09152399 A2   | 20091217 | WO2009US47135 | 20090612 |
| WO09152399 A3   | 20110317 | WO2009US47135 | 20090612 |
| WO09152400 A1   | 20091217 | WO2009US47136 | 20090612 |

**Priority:**

|                         |                         |                         |
|-------------------------|-------------------------|-------------------------|
| US20080061173P 20080613 | US20080113354P 20081111 | US20090143460P 20090109 |
| US20090171965P 20090423 | US20090174700P 20090501 | US20090482642 20090611  |
| US20090482621 20090611  | US20090482634 20090611  | EP20090763687 20090612  |
| WO2009US47135 20090612  | US20110188775 20110722  | US20110284108 20111028  |
| US20120658358 20121023  | US20130874741 20130501  | US20130875692 20130502  |
| US20130102590 20131211  | US20150851548 20150911  |                         |

**Probable Assignee:** TINDALL CORP

**Assignee(s):** (std): KIRKLEY KEVIN L ; KIRKLEY KEVIN LEE ; KNOX ROGER C ; TINDALL CORP ; ZAVITZ BRYANT A ; ZAVITZ BRYANT ALLAN

**Inventor(s):** (std): KIRKLEY KEVIN L ; ZAVITZ BRYANT A ; KNOX ROGER C ; ZAVITZ BRYANT ALLAN ; KIRKLEY KEVIN LEE ; ZAVITZ BRYANT ; KIRKLEY KEVIN

**Inventor(s):** BRYANT A ZAVITZ ; KEVIN L KIRKLEY

**Agent(s):** SMART AND BIGGAR; SCHLIEF THOMAS P; AHNER PHILIPPE; BREVALEX; LINAGE RAFAEL; DORITY AND MANNING PA; DORITY AND MANNING P A; TRACY IP LAW FIRM PLLC; OBLON SPIVAK MCCLELLAND MAIER AND NEUSTADT LLP; MOOSE RICHARD M

**Designated states:** AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

**16) Family number: 3345118 (US4606674A)**

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**Title:** Structural wheel element

**Abstract:** At least two generally parallel compression rims are joined by tension element spokes, such as cables. A rim separating means, such as columns, holds the rims apart thus maintaining spoke tension. The resulting structural element, comprising rims, tension elements and separating means, becomes an efficient means of transferring external forces from one rim to the other.

**Classifications:**

**International (ipc 8-9):** B63B35/44 E02B17/00 E02D23/02 E04H7/02

F16S5/00 (Advanced/Invention);

B63B35/44 E02B17/00 E02D23/00 E04H7/00

F16S5/00 (Core/Invention)

**International (ipc 1-7):** E02D5/54 E04H12/00

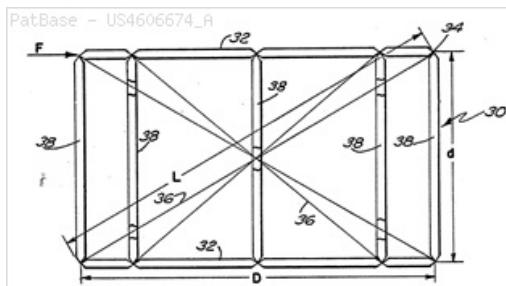
**CPC:** B63B35/44 E02B17/00 E02B17/0021 E02D23/02 E04H7/02

F16S5/00

**European:** B63B35/44 E02B17/00 E02B17/00D1 E02D23/02

E04H7/02 F16S5/00

**US:** 405/195.1 405/207 405/224 52/223.4 52/245



**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
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| US4606674 A        | 19860819         | US19840602795      | 19840423         |
| WO8504924 A1       | 19851107         | WO1985US00663      | 19850412         |

**Priority:**

|                        |                        |
|------------------------|------------------------|
| US19840602795 19840423 | WO1985US00663 19850412 |
|------------------------|------------------------|

**Probable Assignee:**

CAPRON M E

**Assignee(s):** (std):

CAPRON M E ; CAPRON MARK E

**Assignee(s):**

CAPRON ME

**Inventor(s):** (std):

CAPRON MARK E

**Designated states:**

AU BR GB JP NO

**17) Family number: 3198130 (US5070663A)**

© PatBase

**Title:** DAMPING DEVICE FOR TOWER-LIKE STRUCTURE

**Abstract:** A damping device for a tower-like structure, includes a liquid column tube having an arbitrary shape and a pair of

opposite upstanding end portions thereof where liquid levels are formed, and an orifice provided at an intermediate portion within the liquid column tube, the liquid column tube being mounted upon the tower-like structure. The damping property of the damping device can be quantitatively defined by employing the orifice. Furthermore, as the intermediate portion of the liquid column tube defined between the opposite upstanding end portions can be appropriately configured, the installation space for the damping device is optimized.

#### Classifications:

**International (IPC 8-9):** E04B1/98 E04H9/02 E04H9/14 F16F11/00 F16F15/00 F16F15/02 F16F15/023 (Advanced/Invention); E04B1/98 E04H9/02 F16F11/00 F16F15/00 F16F15/023 (Core/Invention)

**International (IPC 1-7):** E02D27/34 E04B1/98 E04H12/00 E04H9/02 E04H9/14 F16F11/00 F16F15/00 F16F15/02 F16F5/00 F16F9/10 F16F9/32

**CPC:** E04B1/985 F16F15/023

**European:** E04B1/98A F16F15/023

**US:** 52/167.1 52/167.2 52/167R

PatBase - US5070663\_A

U.S. Patent

Dec. 10, 1991

Sheet 1 of 11

5,070,663

FIG. 1

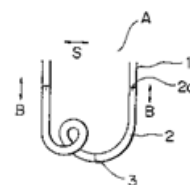
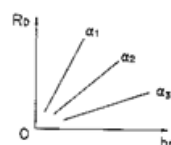


FIG. 3



#### Family:

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| AU198940907 A1     | 19900315         | AU19890040907      | 19890830         |
| AU619889 B2        | 19920206         | AU19890040907      | 19890830         |
| BRPI8905623 A      | 19900821         | BR1989PI05623      | 19891101         |
| CA1314570 A1       | 19930316         | CA19890609866      | 19890830         |
| CN1016877 B        | 19920603         | CN19891006976      | 19890907         |
| CN1041200 A        | 19900411         | CN19891006976      | 19890907         |
| DE68900179 D1      | 19910905         | DE19896000179      | 19890901         |
| EP0361125 A1       | 19900404         | EP19890116181      | 19890901         |
| EP0361125 B1       | 19910731         | EP19890116181      | 19890901         |
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| HK25392 A          | 19920416         | HK19920000253      | 19920409         |
| JP2089607 C3       | 19960902         | JP19890174273      | 19890707         |
| JP3055367 A2       | 19910311         | JP19890174273      | 19890707         |
| JP8003286 B4       | 19960117         | JP19890174273      | 19890707         |
| KR1990005035 A     | 19900413         | KR19890012878      | 19890906         |
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| NZ230525 A         | 19920129         | NZ19890230525      | 19890901         |
| SG9190985 A        | 19920117         | SG19910090985      | 19911123         |
| US5070663 A        | 19911210         | US19890401894      | 19890830         |

#### Priority:

JP19880223498 19880908 JP19890098694 19890420 JP19890174273 19890707  
CA19890609866 19890830 EP19890116181 19890901

**Probable Assignee:** JUKOGYO KK

**Assignee(s):** (std): JUKOGYO KABUSHIKI KAISHA ; JUKOGYO KK ; KAWASAKI HEAVY IND LTD

**Assignee(s):** KAWASAKI JUKOGYO K K ; KAWASAKI JUKOGYO K K KOBE HYOGO JP ; KAWASAKI JUKOGYO KABUSHIKI KAISHA ; KAWASAKI JUKOGYO KK ; SAKAI FUJIKAZU ; TAMAKI TOSHIHIRO ; TAKAEDA SHINGO

**Inventor(s):** (std): FUJIKAZU SAKAI ; SAKAI FUJIKAZU ; TAKAEDA SHINGO ; TAMAKI TOSHIHIRO ; TAKAEDA SHINGO ; SAKAI TOICHI ; AL FUJIKAZU SAKAI ET

**Inventor(s):** TAKAEDA SHINGO FUNABASHI SHI CHIBA 273 JP ; TAMAKI TOSHIHIRO FUNABASHI SHI CHIBA 274 JP ; TOSHIHIRO TAMAKI ; SAKAI FUJIKAZU SUGINAMI KU TOKYO 168 JP ; SHINGO TAKAEDA ; FUJIKAZU SAKAI ET AL

**Agent(s):** SPRUSON AND FERGUSON; ROBIC

**Designated states:** BE DE ES FR GB IT NL

**18) Family number: 52531144** (WO12163802A1)

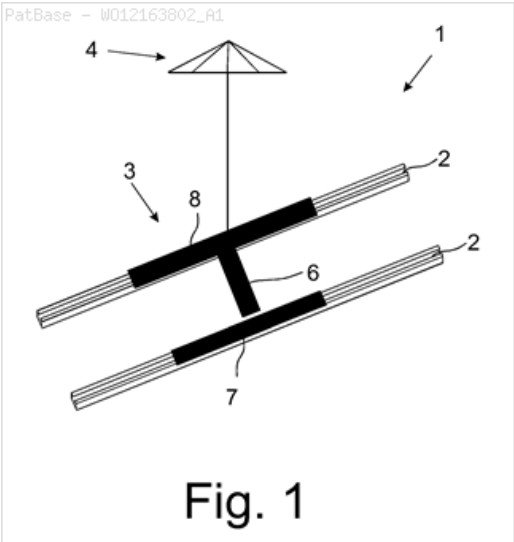
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**Title:** RAIL DEVICE, DISPLACEMENT DEVICE AND PARASOL STAND

**Abstract:** The invention relates to a rail device for parasols, having at least one rail, wherein the at least one rail has a substantially C-shaped design for receiving at least one roller.

**Classifications:**

**International (IPC 8-9):** A45B23/00 E04H12/22 (Advanced/Invention)  
**CPC:** A45B23/00 A45B2023/0012 E04H12/2238  
**European:** A45B23/00 K45B23/00B



**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| DE102011053039 A1  | 20121206         | DE201110053039     | 20110826         |
| EP2715016 A1       | 20140409         | EP20120723675      | 20120524         |
| EP2715016 B1       | 20181226         | EP20120723675      | 20120524         |
| WO12163802 A1      | 20121206         | WO2012EP59742      | 20120524         |

**Priority:**

DE201110105860 20110603      DE201110053039 20110826      WO2012EP59742 20120524

**Probable Assignee:** HUBNER REINHOLD

**Assignee(s):** (std): HUBNER REINHOLD

**Assignee(s):** HUBNER

**Inventor(s):** (std): HUBNER REINHOLD

**Agent(s):** GOETZ GEORG ALOIS; GOETZ LL M GEORG

**Designated states:** AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT QA RO RS RU RW SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

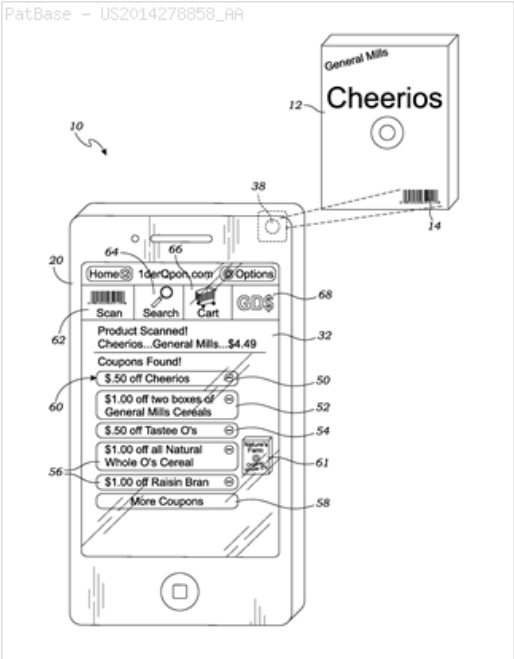
**19) Family number: 57413158 (US2014278858A)** © PatBase

**Title:** METHOD FOR GENERATING, DISTRIBUTING, AND REDEEMING ELECTRONIC COUPONS

**Abstract:** A method is provided for offering and distributing digital coupons from promoters to users via a network. The method includes the steps of receiving the digital coupons, storing them on a central computer, and associating them with a product identifier. The user selects a selected product identifier, and the digital coupons associated with the selected product identifier are then transmitted to the user, who can then select a selected digital coupon, for use. The promoter pays a fee for the placement of and/or use of each of the digital coupons.

**Classifications:**

**International (IPC 8-9):** A45B17/00 A45B23/00 A45F3/44 E02D5/80 G06Q30/00 G06Q30/02 (Advanced/Invention); E04H12/22 (Advanced/Non-invention)  
**CPC:** G06Q30/0273 G06Q30/0238 A45B23/00 A45B17/00 E02D5/80 A45B2023/0018 A45B2023/0037 E04H12/2215 A45B11/00 A45B2023/0006 A45F3/44 E04H12/2223 E02D5/801  
**US:** 1/1 705/14.1 705/14.15 705/14.38 705/14.39



**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
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| US2014278906 AA    | 20140918         | US20130927882      | 20130626         |
| US2015220965 AA    | 20150806         | US20150616733      | 20150208         |
| US9232836 BA       | 20160112         | US20140522424      | 20141023         |
| WO14145033 A2      | 20140918         | WO2014US29671      | 20140314         |
| WO14145033 A3      | 20141127         | WO2014US29671      | 20140314         |

#### Priority:

US20130802032P 20130315 US20130927819 20130626 US20130927882 20130626  
US20140522424 20141023 US20150616733 20150208

**Probable Assignee:** TECH FUSION CORP

**Assignee(s):** (std): TECH FUSION CORP ; ZACCARO JEFFREY T ; ZACCARO MICHAEL J

**Inventor(s):** (std): CORBETT CHRIS ; HACHIYA DALE ; LEMONS SEAN ; SULLIVAN WILLIAM ; AU DENNIS ; ZACCARO JEFFREY T ; ZACCARO MICHAEL J

**Agent(s):** ERIC ; KARICH AND ASSOCIATES; KARICH ERIC

**Designated states:** AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

**20) Family number: 40925194** (US2009090070A)

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**Title:** RAILWAY ARCH LININGS AND MEZZANINE FLOORS

**Abstract:** A system for lining arched structures, particularly railway arches (1), provides a plurality of elongate, flexible frame elements (70), each protected by a flexible shield (149) and engaged frictionally against the curved soffit (5) by hoop stress applied at either end, preferably by a pair of installation tools (300) mounted on stanchions (40). Each tool includes a pivoting ratchet which allows the flexible frame element (70) to be formed into an arched shape on the ground and then raised into a vertical plane prior to installation. Each frame element (70) may comprise a unitary "top-hat" profile with deformable hinges, each hinge having an associated deformation structure which distributes bending forces evenly during installation. The frame elements (70) are fixed to the stanchions (40) to support them at either end in their installed position, providing a self-supporting, arched framework which relies upon the masonry soffit (5) for its shape and stability. Alternatively, each frame element may comprise joints which are remotely locked in the installed position, allowing the frame element to be decoupled from the soffit. The framework is installed from ground level, and the stanchions support a temporary mezzanine floor made from modular interlocking panels, which provides access to the soffit for installation of cooperating, flat lining panels, each panel comprising a foamed plastics body with downwardly directed channels and interlocking upper and lower edges which cooperate to form an angularly adjustable joint. A column mounting assembly comprises a base element (1050) adapted for attachment to an upwardly facing support surface (7') of a concrete slab (7), and having a mounting structure for supporting the column (1000). The base element may form a cantilever which overhangs an edge of the support surface, with part of the vertical load being transferred from the column to a flat plate (1070) arranged on the ground surface (16') beneath the mounting structure. The mounting structure may comprise a central support (1064?, 1068) on which the column is pivotably balanced, and which is vertically adjustable so as to adjust the overall height of the column, with a plurality of independently adjustable lateral supports (1065?, 1069, 1069'; 1066?, 1069, 1069') arranged around it to support the column in a vertical orientation. Conveniently, the mounting structure comprises a set of threaded rods (1064, 1065, 1066) which are advanced downwardly through the overhanging portion (1057) so as to transfer the vertical load from the column to the plate. The assembly may be used in supporting columns above a soakaway (10?) in a railway arch. A roll-formed stanchion generally of "top-hat" form and defining a stiffening tubular section is also disclosed.

#### Classifications:

**International (IPC 8-9):** E01D21/00 E01D4/00 E04B1/32 E04B9/06 E04C2/52 E04C3/04 E04D13/15 E04F13/02 E04F13/08 E04F15/02 E04F15/024 E04F21/00 E04H12/22 E21D11/04

E21D11/18 (Advanced/Invention);

E04C3/04 (Advanced/Non-invention);

E04B1/00 E04B1/32 E04B9/00 E04B9/06 E04F13/00 E04F13/08

E21D11/14 (Core/Invention)

**International (IPC 1-7):** E04B1/32 E04B9/06 E04F13/08

**CPC:** E04F13/0803 E04B9/061 E04B9/064 E04B9/065

E04C2003/0473 E04C2/52 E04F13/0805 E04F13/0869 E04H12/2238

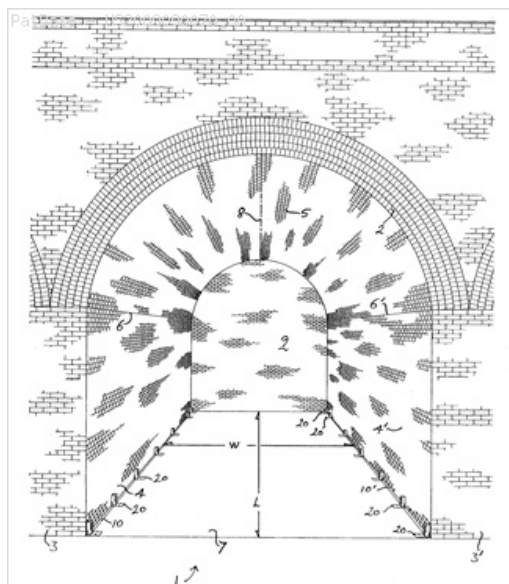
E04H12/2284 E04F15/02 E04F15/02405 E04B1/3205 E04B9/06

E04F13/081

**European:** E04B1/32B E04B9/06 E04B9/06A E04B9/06E E04B9/06F

E04F13/08B2C P04C3/04S3U P04F13/08B2

**US:** 52/94 52/94P



#### Family:

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| AU2008306580 AA    | 20090409         | AU20080306580      | 20081003         |
| AU2008306580 BB    | 20140731         | AU20080306580      | 20081003         |
| DE602008038091 D1  | 20150618         | DE200860038091T    | 20081003         |
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| GB201017665 A0  | 20101201 | GB20100017665  | 20081003 |
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| GB201017667 A0  | 20101201 | GB20100017667  | 20081003 |
| GB201017669 A0  | 20101201 | GB20100017669  | 20101019 |
| GB2453362 A1    | 20090408 | GB20070019407  | 20071003 |
| GB2453362 A8    | 20090506 | GB20070019407  | 20071003 |
| GB2453840 A1    | 20090422 | GB20080018127  | 20081003 |
| GB2453840 B2    | 20101229 | GB20080018127  | 20081003 |
| GB2474936 A1    | 20110504 | GB20100017665  | 20081003 |
| GB2474936 B2    | 20120516 | GB20100017665  | 20081003 |
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| GB2475137 B2    | 20120516 | GB20100017666  | 20081003 |
| GB2475138 A1    | 20110511 | GB20100017667  | 20081003 |
| GB2475138 B2    | 20120516 | GB20100017667  | 20081003 |
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| WO09044277 A2   | 20090409 | WO2008IB03091  | 20081003 |
| WO09044277 A3   | 20090911 | WO2008IB03091  | 20081003 |

#### Priority:

GB20070019407 20071003 US20070977534P 20071004 GB20070022955 20071122  
US20070989871P 20071123 GB20080002370 20080208 GB20080012300 20080704  
EP20080835682 20081003 GB20080018127 20081003 US20080245695 20081003  
WO2008IB03091 20081003 GB20100017665 20081003

#### Probable Assignee: FINCH STEVEN CAFFALL

**Assignee(s):** (std): FINCH STEVEN ; FINCH STEVEN C ; FINCH STEVEN CAFFALL ; NELSON ANTOINE ; STEVEN CAFFALL  
FINCH ; STEVEN FINCH

**Inventor(s):** (std): FINCH STEVEN CAFFALL ; FINCH STEVE

**Inventor(s):** STEVEN CAFFALL FINCH ; STEVE FINCH

**Agent(s):** FINCH STEVEN CAFFALL; STEVEN CAFFALL FINCH; FINCH STEVE

**Designated states:** AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU  
CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL  
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SY SZ TD TG TJ TM TN TR TT TZ UA UG UZ VC VN ZA ZM ZW

## 21) Family number: 43682194 (US2009217607A)

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#### Title: TOWER FOUNDATION SYSTEM

**Abstract:** Described herein are various embodiments of a tower foundation system for an above-ground tower. For example, according to one representative embodiment, a tower for supporting a structure above the ground includes a foundation and a second support column section. The foundation includes a first support column section and a plurality of arms that extend radially outward away from an outer surface of the first support column. Additionally, the foundation includes a plurality of elongate anchors coupled to the plurality of arms. The first and second support column sections include each include a plurality of engagement elements engageable with each other to splice the first and second support column sections together. More specifically, the second support column section is insertable into and rests upon the first support column section such that the plurality of engagement elements engage each other.

#### Classifications:

**International (IPC 8-9):** E02D27/00 E02D27/42 E02D27/50

E04C5/12 E04H12/22 E04H12/34 (Advanced/Invention);

E02D27/32 E04C5/12 (Core/Invention)

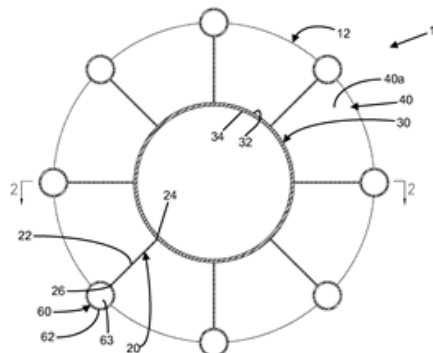
**International (IPC 1-7):** E02D27/42

**CPC:** E02D27/42 E04H12/2215 E04H12/2269

**European:** E02D27/42 E04H12/22A1 E04H12/22C2

**US:** 248/156 248/530 248/679 405/231 405/232 405/244 52/158  
52/165 52/297 52/298 52/298P 52/704 52/704S

PatBase - US2009217607\_AA



#### Family:

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| AP201005410 A0     | 20101031         | AP20100005410      | 20080303         |
| AU2008352042 AA    | 20090911         | AU20080352042      | 20080303         |
| CA2721414 AA       | 20090911         | CA20082721414      | 20080609         |
| CN101981258 A      | 20110223         | CN200880127780     | 20080303         |
| CN101981258 B      | 20140730         | CN200880127780     | 20080303         |
| EP2265771 A1       | 20101229         | EP20080731288      | 20080303         |
| EP2265771 A4       | 20131113         | EP20080731288      | 20080303         |
| IN02097MN2010 A    | 20110121         | IN2010MN02097      | 20101001         |
| US2009217607 AA    | 20090903         | US20080041557      | 20080303         |

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| US8109057 BB  | 20120207 | US20080041557 | 20080303 |
| WO09110886 A1 | 20090911 | WO2008US55713 | 20080303 |

**Priority:**

US20080041557 20080303 WO2008US55713 20080303

**Probable Assignee:** STARK FOUNDATIONS INC

**Assignee(s):** (std): DANIEL STARK ; STARK DANIEL

**Assignee(s):** STARK FOUNDATIONS INC

**Inventor(s):** (std): DANIEL STARK ; STARK DANIEL

**Agent(s):** PETER MAXWELL AND ASSOCIATES; PAWLYN ANTHONY NEIL; KUNZLER AND MCKENZIE; KUNZLER NEEDHAM MASSEY AND THORPE; MASSEY BRYAN ET AL

**Designated states:** AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

**22) Family number: 58567204 (US2015052846A)**

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**Title:** TOWER PORTION

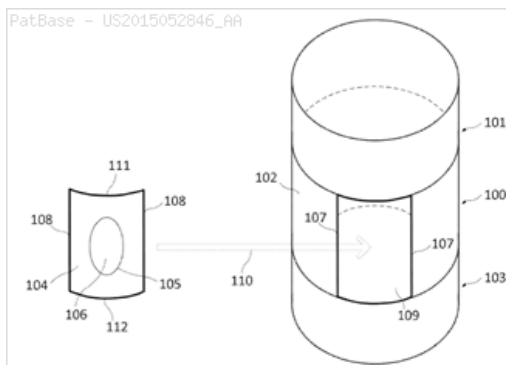
**Abstract:** A tower portion for a wind turbine includes at least one wall segment and at least one opening segment. The opening segment includes an opening, one or more inner edges, two side edges, an upper edge and a lower edge, the opening being delimited by the one or more inner edges. The wall segment is shaped as less than a full 360 degrees ring. The opening segment is coupled with the wall segment by the side edges. The opening segment and the wall segment form segments of a ring and when coupled form a full 360 degrees ring. The opening segment has a variable thickness increasing from the side edges to the inner edges.

**Classifications:**

**International (IPC 8-9):** E04H12/00 E04H12/34 F03D1/00 F03D11/00 F03D11/04 (Advanced/Invention)

**CPC:** E04H12/003 F05B2240/912 Y02E10/728 F03D80/00 F03D13/20 F03D80/50

**US:** 52/651.01



**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| EP2840259 A1       | 20150225         | EP20130382337      | 20130823         |
| US2015052846 AA    | 20150226         | US20140465743      | 20140821         |

**Priority:**

EP20130382337 20130823

**Probable Assignee:** ALSTOM SA

**Assignee(s):** (std): ALSTOM RENEWABLE TECHNOLOGIES ; ALSTOM RENOVABLES ESPANA S L ; ALSTOM SA

**Assignee(s):** ALSTOM RENOVABLES ESPANA SL

**Inventor(s):** (std): ARGUDO YUSTE IVAN ; GONZALES DEL EGIDO ALBERTO ; GONZALEZ DEL EGIDO ALBERTO ; HERENCIA MORA RUBEN

**Agent(s):** ZBM PATENTS ZEA BARLOCCI AND MARKVARDSEN

**Designated states:** AL AT BA BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL NO PL PT RO RS SE SI SK SM TR

**23) Family number: 64708206 (US2017030045A)**

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**Title:** BEAM AND PILE ANCHOR FOUNDATION FOR TOWERS

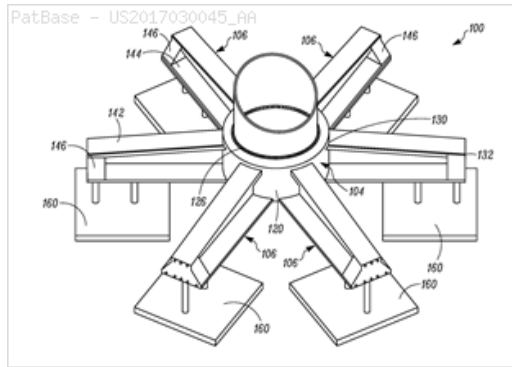
**Abstract:** A foundation system for a tower, such as a wind turbine, includes a central hub assembly, a plurality of post-tensioned concrete beams, and an anchoring system associated with each beam. In use the foundation system is arranged so that the bottom surfaces of the concrete beams bear on soil and the anchoring is disposed within the soil. The beams can be inverted bulb-T beams having post-tensioning cables inserted there-through and cooperating with an oppositely disposed related beam. The central hub assembly can include a plurality of stacked disk elements or steel frame elements that are post-tensioned together to form a single hub structure.

**Classifications:**

**International (IPC 8-9):** A61B17/00 A61B17/221 A61F9/007 E02D27/42 E04B1/21 E04B1/22 E04B1/24 E04C5/01 E04C5/08 E04C5/12 E04C5/16 E04H12/16 E04H12/22 (Advanced/Invention)

**CPC:** E02D27/425 E04B1/24 E04B1/22 E04B1/215 E04H12/16 E04B2001/2463 E02D27/42 E04H12/2238 E04H12/2269 F03D13/22 A61F9/00736 Y02E10/728 A61B17/22031 A61B17/221 A61B17/320016 A61B17/32053 A61B17/32056 A61B2017/2217 A61B2017/306 A61B2017/32004 A61B2017/32006 Y02B10/30

**US:** 52/223.8



#### Family:

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| CN107923136 A      | 20180417         | CN201680041239     | 20160714         |
| EP3322858 A1       | 20180523         | EP20160825196      | 20160714         |
| EP3322858 A4       | 20190109         | EP20160825196      | 20160714         |
| EP3416599 A2       | 20181226         | EP20170708938      | 20170217         |
| US2017030045 AA    | 20170202         | US20160210653      | 20160714         |
| US2018187389 AA    | 20180705         | US20180906699      | 20180227         |
| US9938685 BB       | 20180410         | US20160210653      | 20160714         |
| WO17011681 A1      | 20170119         | WO2016US42323      | 20160714         |
| WO17011681 A8      | 20180215         | WO2016US42323      | 20160714         |
| WO17143272 A2      | 20170824         | WO2017US18490      | 20170217         |
| WO17143272 A3      | 20171123         | WO2017US18490      | 20170217         |

#### Priority:

|                         |                         |                         |
|-------------------------|-------------------------|-------------------------|
| US20150192874P 20150715 | US20160297725P 20160219 | US20160297724P 20160219 |
| US20160210653 20160714  | WO2016US42323 20160714  | US20160363149P 20160715 |
| WO2017US18490 20170217  | US20180906699 20180227  |                         |

**Probable Assignee:** RUTE FOUND SYSTEMS INC

**Assignee(s):** (std): NEW WORLD MEDICAL INC ; RUTE FOUND SYSTEMS INC

**Assignee(s):** RUTE FOUNDATION SYSTEMS INC

**Inventor(s):** (std): KRAUSE DOUGLAS E ; WILLMAN BRIAN ; MANSOUR KHALID ; TRAN JOEY ; KAHOOK MALIK ; PORTEOUS ERIC ; CHEN PATRICK ; ABDULLAH SUHAIL

**Agent(s):** ORR ROBERT; EPPING HERMANN FISCHER; HAMRE SCHUMANN MUELLER AND LARSON PC; LARSON JAMES A; HALES M TODD

**Designated states:** AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DJ DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KH KM KN KP KR KW KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

**24) Family number: 72254214** (US2018347142A)

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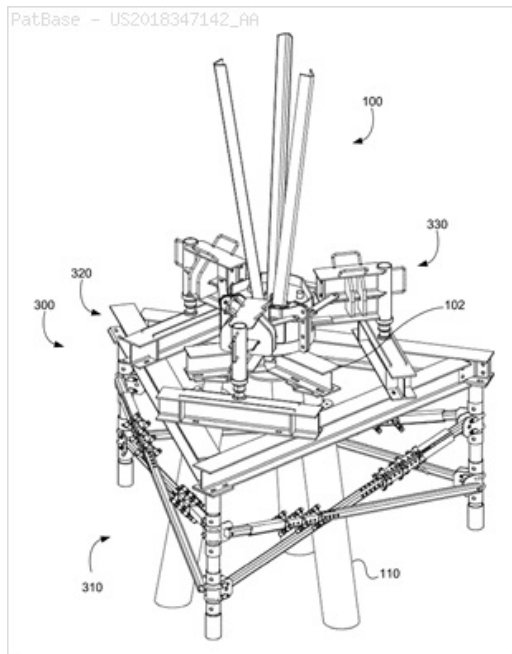
**Title:** TEMPORARY SUPPORT STRUCTURE

**Abstract:** The disclosed technology includes temporary support structures for use in the repair of a transmission tower. A typical transmission tower includes a tripod that receive the load of the tower and distributes it to piles embedded in the ground. A temporary support structure may temporarily remove the load of the transmission tower from the tripod to allow the tripod to be removed and replaced with a new tripod. A temporary support system may include a pile temporary support system, a beam support structure supported by the pile temporary support system, and a flower pot adapter lifting assembly configured to attach to a portion of the transmission tower to transfer a load of the transmission tower to the beam support structure.

#### Classifications:

**International (IPC 8-9):** E02D37/00 E02D5/22 E04B1/34 E04C3/30 E04C3/32 E04G23/02 E04H12/00 E04H12/08 E04H12/10 E04H12/20 E04H12/34 F16M11/24 H01Q1/12 H02G1/02 (Advanced/Invention)

**CPC:** E02D37/00 E02D2220/00 F16M11/24 F16M11/245 F16M2200/021

**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| US2018347142 AA    | 20181206         | US20180994399      | 20180531         |
| US2018347745 AA    | 20181206         | US20180994379      | 20180531         |
| WO18222911 A1      | 20181206         | WO2018US35453      | 20180531         |
| WO18222913 A1      | 20181206         | WO2018US35458      | 20180531         |

**Priority:**

|                         |                         |                         |
|-------------------------|-------------------------|-------------------------|
| US20170512944P 20170531 | US20170513014P 20170531 | US20170513072P 20170531 |
| US20170513097P 20170531 | US20180994399 20180531  | US20180994379 20180531  |

**Probable Assignee:** OSMOSE UTILITIES SERVICES INC**Assignee(s):** (std): OSMOSE UTILITIES SERVICES INC**Assignee(s):** GOLDMAN SACHS LENDING PARTNERS LLC**Inventor(s):** (std): NEIGHBOR KRISTOPHER MARK ; NEIGHBOR KRISTOPHER**Agent(s):** SCHUTZ JAMES E ET AL

**Designated states:** AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DJ DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JO JP KE KG KH KM KN KP KR KW KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

**25) Family number: 30776223 (US2006220386A)**

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**Title:** METHOD FOR THE ERECTION OF A WIND ENERGY PLANT AND WIND ENERGY PLANT

**Abstract:** The object of the invention is to develop a method by means of which the erection of wind power installations can be effected even more advantageously but in particular also more quickly. A further aim of the invention is to provide in particular a solution which is suitable for offshore wind power installations. A wind power installation comprising a pylon which is based on a foundation and a power module, wherein the power module has at least one transformer, by means of which the electrical energy provided by the generator of the wind power installation is transformed to a medium voltage or a high voltage, wherein the power module also includes further units, by means of which the electrical energy produced by the generator of the wind power installation is controlled and/or supplied and/or converted, wherein the power module has a support which is placed on the foundation of the wind power installation, and the support accommodates the electrical devices of the power module such as for example the transformer and the width and/or length of the power module are less than the diameter of the pylon of the wind power installation in the foundation region, characterised in that the power module is accommodated by a container, wherein the wall of the container is disposed between the pylon wall and the power module.

**Classifications:**

**International (IPC 8-9):** E04G11/00 E04H12/00 E06B5/10 F03D1/00 F03D11/00 F03D11/04 F03D13/20 F03D80/80 F03D9/00 H01F27/02 H01F27/06 H01F27/12 H02P9/04 (Advanced/Invention); F03D11/00 H02M7/48 (Advanced/Non-invention); E04H12/00 F03D1/00 F03D11/00 H01F27/00 (Core/Invention)

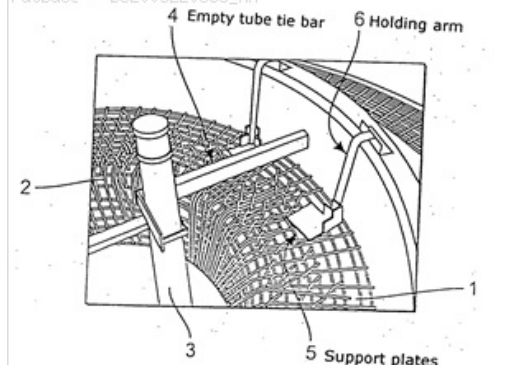
**International (IPC 1-7):** E04H12/00 F03D1/00 F03D11/00 F03D11/04 H01F27/02 H01F27/06

**CPC:** H01F27/085 Y02E10/727 Y02P70/523 Y02E10/72 F03D13/25 F03D80/50 F03D80/82 F03D9/25 F03D13/10 F03D80/60 F03D13/22 F03D13/20 F05B2230/60 F05B2240/14 F05B2240/95 F05B2250/231 F05B2260/64 H01F27/025 F03D80/00 F05B2260/20

**European:** F03D1/00B F03D11/00 F03D11/04 F03D11/04B R05B230/60 R05B240/14 R05B240/95 R05B250/231 R05B260/20 R05B260/64 T01F27/02B T01F27/08A Y02E10/72 Y02E10/72H Y02E10/72J Y02E10/72L Y02E10/72N

**US:** 290/44 290/44P 290/55 290/55P 52/302.1 52/40 52/40S

PatBase - US2006220386\_AA

**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
|--------------------|------------------|--------------------|------------------|

|                   |          |                 |          |
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| AR042997 AA       | 20050713 | AR2004P100307   | 20040202 |
| AU2004207180 AA   | 20040812 | AU20040207180   | 20040202 |
| AU2004207180 BB   | 20080117 | AU20040207180   | 20040202 |
| AU2004207180 CA   | 20100325 | AU20040207180   | 20040202 |
| AU2008201590 AA   | 20080501 | AU20080201590   | 20080410 |
| AU2008201590 BB   | 20120705 | AU20080201590   | 20080410 |
| BRPI0406933 A     | 20060103 | BR2004PI06933   | 20040202 |
| BRPI0406933 B1    | 20140408 | BR2004PI06933   | 20040202 |
| CA2513303 AA      | 20040812 | CA20042513303   | 20040202 |
| CA2513303 C       | 20100420 | CA20042513303   | 20040202 |
| CN100398814 C     | 20080702 | CN200480003127  | 20040202 |
| CN1745248 A       | 20060308 | CN200480003127  | 20040202 |
| CY1117111 T1      | 20170405 | CY20151101153T  | 20151216 |
| DE10310036 A1     | 20040812 | DE20031010036   | 20030306 |
| DE10362067 B4     | 20160929 | DE20031062067   | 20030306 |
| DE502004015051 D1 | 20151126 | DE200450015051T | 20040202 |
| DE502004015674 D1 | 20180524 | DE200450015674T | 20040202 |
| DK1592886 T3      | 20160125 | DK20040707228T  | 20040202 |
| DK2278160 T3      | 20180716 | DK20100180856T  | 20040202 |
| EP1592886 A1      | 20051109 | EP20040707228   | 20040202 |
| EP1592886 B1      | 20151014 | EP20040707228   | 20040202 |
| EP2278160 A1      | 20110126 | EP20100180856   | 20040202 |
| EP2278160 B1      | 20180425 | EP20100180856   | 20040202 |
| ES2557154 T3      | 20160122 | ES20040707228T  | 20040202 |
| ES2676643 T3      | 20180723 | ES20100180856T  | 20040202 |
| HU026611 T2       | 20160628 | HU20040707228T  | 20040202 |
| IN01346KN2005 A   | 20061110 | IN2005KN01346   | 20050712 |
| IN231407 B        | 20090306 | IN2005KN01346   | 20050712 |
| JP2006515400 T2   | 20060525 | JP20050518656T  | 20040202 |
| JP4282667 B2      | 20090624 | JP20050518656T  | 20040202 |
| KR100707111 B1    | 20070416 | KR20057013672   | 20040202 |
| KR20050096157 A   | 20051005 | KR20057013672   | 20040202 |
| NZ541284 A        | 20100827 | NZ20040541284   | 20040202 |
| NZ586660 A        | 20120224 | NZ20040586660   | 20040202 |
| PL214873 B1       | 20130930 | PL20040376599   | 20040202 |
| PL376599 A1       | 20060109 | PL20040376599   | 20040202 |
| PT1592886 T       | 20160204 | PT20040707228T  | 20040202 |
| SI1592886 T1      | 20160129 | SI20040032285T  | 20040202 |
| TR201600472 T4    | 20160121 | TR20160000472T  | 20040202 |
| US2006220386 AA   | 20061005 | US20040543020   | 20040202 |
| US2007152449 AA   | 20070705 | US20070713151   | 20070302 |
| US2007187956 AA   | 20070816 | US20070713382   | 20070302 |
| US2008143118 AA   | 20080619 | US20080072143   | 20080225 |
| US2010007153 AA   | 20100114 | US20090564141   | 20090922 |
| US7436084 BB      | 20081014 | US20040543020   | 20040202 |
| US7482707 BB      | 20090127 | US20070713382   | 20070302 |
| US7504742 BB      | 20090317 | US20070713151   | 20070302 |
| US7610723 BB      | 20091103 | US20080072143   | 20080225 |
| US8291646 BB      | 20121023 | US20090564141   | 20090922 |
| WO04067959 A1     | 20040812 | WO2004EP00918   | 20040202 |

**Priority:**

|               |          |               |          |               |          |
|---------------|----------|---------------|----------|---------------|----------|
| DE20031004026 | 20030201 | DE20031010036 | 20030306 | AU20040207180 | 20040202 |
| US20040543020 | 20040202 | EP20040707228 | 20040202 | NZ20040541284 | 20040202 |
| DE20031010036 | 20040202 | EP20100180856 | 20040202 | WO2004EP00918 | 20040202 |
| WO2004US00918 | 20040202 | WO2004EP00918 | 20050725 | US20060543020 | 20060329 |
| US20070713151 | 20070302 | US20070713382 | 20070302 | US20080072143 | 20080225 |
| AU20080201590 | 20080410 | US20090564141 | 20090922 |               |          |

**Probable Assignee:** WOBLEN PROPERTIES GMBH

**Assignee(s):** (std): ALOYS WOBLEN ; WOBLEN ALOYS ; WOBLEN PROPERTIES GMBH

**Inventor(s):** (std): ALOYS WOBLEN ; WOBLEN ALOYS

**Agent(s):** PIZZEYS; PIZZEYS PATENT AND TRADE MARK ATTORNEYS PTY LTD; OYEN WIGGS GREEN AND MUTALA LLP; EISENFUEHR SPEISER PATENTANWALTE RECHTSANWALTE PARTGMBB; EISENFUEHR SPEISER; GOEKEN KLAUS G; ROEB MARIA; CENK SEVINC; NEIL A STEINBERG; NEIL STEINBERG; STEINBERG NEIL A; NEIL A; STEINBERG NEIL S; NEIL S

**Designated states:** AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GW HR HU ID IE IL IN IS IT JP KE KG KP KR KZ LC LI LK LR LS LT LU LV MA MC MD MG MK ML MN MR MW MX MZ NA NE NI NL NO NZ OM PG PH PL PT RO RU SC SD SE SG SI SK SL SN SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW

**26) Family number: 50527234** (AU2011213840A)

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**Title:** Space frame connection node arrangement

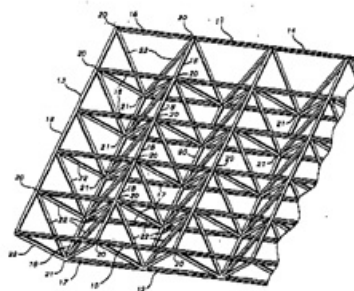
**Abstract:** SPACE FRAME CONNECTION NODE ARRANGEMENT 5 There is disclosed herein a pinned connection of an end of an internodal framing member in a double layer grid space frame to a node of the frame via at least one framing member connection element at the node. The framing member end and the connection element define pin receiving holes in which a connection pin is received to connect the framing member to the node. The pin and the holes are cooperatively defined to have substantially a zero 10 clearance fit of the pin within all of the holes in the member and the connection element upon insertion of the pin into the holes. -38-

**Classifications:**

2011213840 23 Aug 2011

1/17

FIG.1

**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| AU2011213840 AA    | 20110915         | AU20110213840      | 20110823         |
| AU2011213840 BB    | 20130307         | AU20110213840      | 20110823         |

**Priority:**

US20060525721 20060922 AU20070300713 20070308 AU20110213840 20110823

**Probable Assignee:** GOSSAMER SPACE FRAMES**Assignee(s):** (std): GOSSAMER SPACE FRAMES**Inventor(s):** (std): CURTIS GARY N ; HACKBARTH DEAN R ; REYNOLDS GLENN A**Agent(s):** FB RICE; FB RICE PTY LTD**27) Family number: 30362246 (US5757335A)**

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**Title:** DISH ANTENNA STRUCTURES AND HYDRAULIC CONTROL OF THE ORIENTATION THEREOF

**Abstract:** PCT No. PCT/AU93/00588 Sec. 371 Date Jul. 12, 1995 Sec. 102(e) Date Jul. 12, 1995 PCT Filed Nov. 17, 1993 PCT Pub. No. WO94/11918 PCT Pub. Date May 26, 1994A dish antenna framework is constructed from tetrahedral strut assemblies. Each assembly is made up of six struts joined at their ends to four nodes. The nodes also constitute dish mounting points for the dish on the dish antenna framework. These points are located on the envelope of the dish. The framework supported on base frame is rotated about the vertical axis using a movable hydraulic ram arrangement wherein a ram cylinder is attached by an arm to the base frame to be rotated, a ram piston is removably attached to anchor members fixed to a platform. Rotation is effected by expanding and contracting the hydraulic ram. The ram is guided between anchor members by guiding means.\!

**Classifications:**

**International (IPC 8-9):** E04B1/19 E04H12/10 F15B11/12 F15B15/06  
F24J2/10 F24J2/40 F24J2/54 H01Q1/12  
H01Q3/08 (Advanced/Invention);

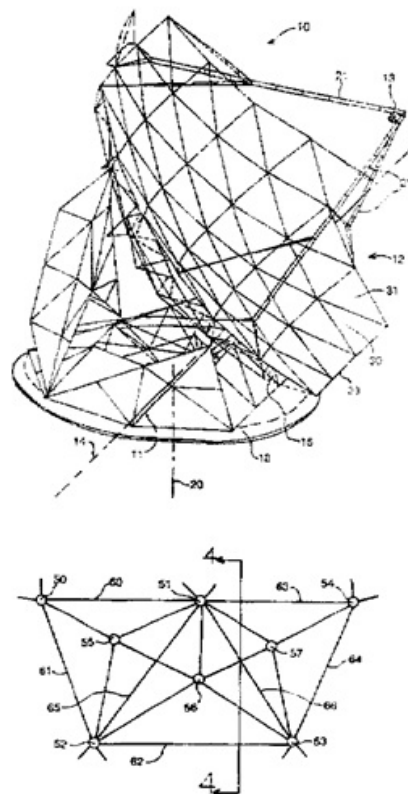
E04B1/19 E04H12/00 F15B15/00 H01Q1/12 (Core/Invention)

**International (IPC 1-7):** E04B1/19 E04H12/10 F15B11/12 F15B15/06  
F24J2/40 H01Q1/12 H01Q3/02

**CPC:** F24S23/70 F24S25/13 F24S30/452 F24S2030/115 H01Q3/08  
H01Q1/1207 Y02E10/47

**European:** F24J2/10 F24J2/54 F24J2/54C2 H01Q1/12B H01Q3/08  
R24J2/52A8C R24J2/54P4B Y02E10/47

**US:** 343/840 343/880 343/882 343/915

**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| AT330336 E         | 20060715         | AT19930900012T     | 19931117         |
| AU199454589 A1     | 19940608         | AU19940054589      | 19931117         |
| AU677257 B2        | 19970417         | AU19940054589      | 19931117         |
| DE69334032 D1      | 20060727         | DE19936034032      | 19931117         |
| DE69334032 T2      | 20061214         | DE19936034032T     | 19931117         |
| EP0681747 A1       | 19951115         | EP19940900012      | 19931117         |
| EP0681747 A4       | 19980318         | EP19940900012      | 19931117         |
| EP0681747 B1       | 20060614         | EP19940900012      | 19931117         |
| EP1182356 A2       | 20020227         | EP20010121066      | 19931117         |
| EP1182356 A3       | 20021218         | EP20010121066      | 19931117         |
| EP1182356 B1       | 20060628         | EP20010121066      | 19931117         |
| ES2264798 T3       | 20070116         | ES19940900012T     | 19931117         |
| ES2267643 T3       | 20070316         | ES20010121066T     | 19931117         |
| IL107647 A0        | 19940530         | IL19930107647      | 19931117         |
| IL107647 A1        | 19970218         | IL19930107647      | 19931117         |
| IN181052 A         | 19980418         | IN1993CA00703      | 19931117         |
| US5757335 A        | 19980526         | US19950436222      | 19950712         |
| WO9411918 A1       | 19940526         | WO1993AU00588      | 19931117         |

**Priority:**

|                        |                        |                        |
|------------------------|------------------------|------------------------|
| AU1992PL05900 19921117 | AU1992PL05901 19921117 | AU19940054589 19931117 |
| EP19940900012 19931117 | EP19940900012 19931117 | WO1993AU00588 19931117 |

**Probable Assignee:** ANUTACH PTY LTD**Assignee(s):** (std): ANUTECH PTY LTD ; KANEFF STEPHEN ; WHELAN ROBERT EDGAR**Assignee(s):** ANUTACH PTY LTD ; ANUTECH PTY LIMITED**Inventor(s):** (std): KANEFF STEPHEN ; ROBERT EDGAR WHELAN ; STEPHEN KANEFF ; WHELAN ROBERT EDGAR ; WHELAN EDGAR**Agent(s):** DAVIES COLLISON CAVE; DAVIES COLLISON CAVE PTY LTD; REINHOLD COHN AND PARTNERS**Designated states:** AT AU BE CH DE DK ES FR GB GR IE IT LI LU MC NL PT SE US**28) Family number: 32273256** (US2007261321A)

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**Title:** METHOD OF BUILDING A DIRECT SMELTING PLANT

**Abstract:** Method of building a direct smelting plant comprising a metal smelting vessel (11) and ancillary plant components such as the components of a hot air supply station (24), an offgas treatment station (32), a solids feed station (41), a hot metal desulphurization station (47) and hot metal and slag launders extending from the smelting vessel (11). The ring track (53) of a ringer crane (51) is installed in front of location at which vessel (11) is to be installed. Crane boom (54) is laid out along elongate stretch of the building site which becomes a corridor (60) between major ancillary components when plant is fully erected. Boom (54) is connected to crane carriage (52) and hoisted to provide high lift capacity over a ground area embracing proposed site of vessel (11) and ancillary components. Prefabricated components are then lifted by crane (51) into appropriate position for final installation. After installation is completed boom (54) is laid down along corridor (60) and crane (51) is dismantled and removed, leaving corridor (60) as an access laneway.

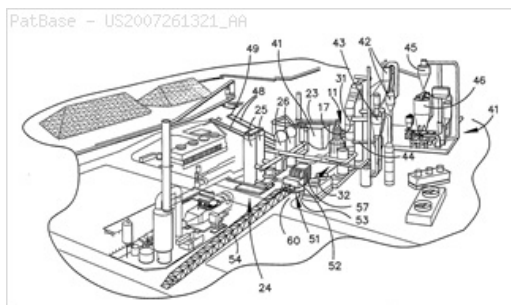
**Classifications:**

**International (IPC 8-9):** C21B11/00 C21B13/00 C21B7/00 C21C5/56 E04B1/00 E04B1/08 E04B1/343 E04F17/04 E04G21/00 E04G21/14 E04H12/00 E04H5/00 E04H5/02 F27B1/10 F27B1/16 F27B1/21 F27B1/24 F27B3/02 F27B3/10 F27B3/19 F27B3/20 F27B3/24 F27D17/00 F27D23/00 F27D3/14 F27D3/15 F27D99/00 G09B29/00 (Advanced/Invention); C21B11/00 C21B13/00 C21C5/28 C21C5/52 (Advanced/Non-invention)

**International (IPC 1-7):** C21B11/00 C21B13/00 E04B1/08 E04B1/343 E04G21/00 E04G21/14 E04H5/00 E04H5/02 F27B1/10 F27B3/10 F27D23/00 G09B29/00

**CPC:** Y10S266/90 Y10S266/901 C21B9/00 C21B13/00 C21C5/285 C21C5/5294 Y02P10/136 Y02P10/216 C21C5/56 C21B13/0006 F27B1/16 F27B1/21 F27B1/24 F27B3/19 F27B3/20 F27B3/24 F27D3/14 F27D3/1509 F27D3/159 C21B2100/64 C21B11/00

**European:** C21B11/00 C21B13/00 C21B13/00A C21C5/56 E04G21/00 F27B1/16 F27B1/21 F27B1/24 F27B3/19 F27B3/20 F27B3/24 F27D3/14 F27D3/15A F27D3/15B2 M21C5/28A M21C5/52P



**US:** 222/611.2 222/611.200S 266/142 266/143 266/177 266/197 266/900 266/901 52/111 52/122.1 52/122.100P 52/127.1 52/127.100S 52/131 52/135 52/169.5 52/169.6 52/74.1 52/741.15 52/741.150P 52/741.4 52/741.400S 52/745 52/745.02 52/745.03 52/745.18 52/745.180S 52/745.2 52/745.200S 52/747.13 52/747.130S

#### Family:

| Publication number | Publication date | Application number | Application date |
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| AU2005224287 AA    | 20050929         | AU20050224287      | 20050317         |
| AU2005224287 BB    | 20100826         | AU20050224287      | 20050317         |
| BRPI0508821 A      | 20070807         | BR2005PI08821      | 20050317         |
| CA2558967 AA       | 20060907         | CA20052558967      | 20050317         |
| CN100432239 C      | 20081112         | CN200580008691     | 20050317         |
| CN100535129 C      | 20090902         | CN200580008692     | 20050317         |
| CN1934278 A        | 20070321         | CN200580008692     | 20050317         |
| CN1934325 A        | 20070321         | CN200580008691     | 20050317         |
| EP1725688 A1       | 20061129         | EP20050714262      | 20050317         |
| EP1725688 A4       | 20101117         | EP20050714262      | 20050317         |
| JP2007529622 T2    | 20071025         | JP20070503154T     | 20050317         |
| JP4939395 B2       | 20120523         | JP20070503154T     | 20050317         |
| KR101203524 B1     | 20121121         | KR20067020612      | 20050317         |
| KR20060135863 A    | 20061229         | KR20067020612      | 20050317         |
| US2007261321 AA    | 20071115         | US20050593062      | 20050317         |
| US2008202061 AA    | 20080828         | US20050593063      | 20050317         |
| US7901616 BB       | 20110308         | US20050593062      | 20050317         |
| US8156709 BB       | 20120417         | US20050593063      | 20050317         |
| VN10978 A1         | 20130125         | VN20060001711      | 20050317         |
| WO05090613 A1      | 20050929         | WO2005AU00390      | 20050317         |
| WO05090711 A1      | 20050929         | WO2005AU00389      | 20050317         |

#### Priority:

AU20040901418 20040317 AU20040901688 20040329 AU20050224287 20050317  
WO2005AU00389 20050317 WO2005AU00390 20050317

**Probable Assignee:** TECHNOLOGICAL RESOURCES PTY LTD

**Assignee(s):** (std): HAYTON MARK ; IONS PHILIP J ; IONS PHILIP JAMES ; TECH RESOURCES PTY LTD ; TECHNICAL RESOURCES PTY LTD

**Assignee(s):** TECHNOLOGICAL RESOURCES PTY LTD ; TECHNOLOGICAL RESOURCES PTY LTD ; TECHNOLOGICAL RESOURCES PTY LIMITED

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**Inventor(s):** IONS PHILIP JAMES MARK HARTON ; MARK HARTON ; MARK HAYTON ; PHILIP JAMES IONS ; IONS PHILIP

**Agent(s):** GRIFFITH HACK; OGILVY RENAULT LLP SENCRL SRL; FINNEGAN HENDERSON FARABOW GARRETT AND DUNNER, LLP; FINNEGAN HENDERSON FARABOW GARRETT AND DUNNER LLP

**Designated states:** AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GW HR HU ID IE IL IN IS IT JP KE KG KP KR KZ LC LI LK LR LS LT LU LV MA MC MD MG MK ML MN MR MW MX MZ NA NE NI NL NO NZ OM PG PH PL PT RO RU SC SD SE SG SI SK SL SM SN SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW

#### 29) Family number: 48845256 (AU2010226975A)

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**Title:** Precast Concrete Foundation Block and Foundation

**Abstract:** A precast concrete foundation block 101 has a reinforcing structure that is partially embedded in the block. Portions of the reinforcing structure extend through through-holes in a plate 104 at a 5 top face 106 of the block for attachment to a base end of a tower or other superstructure to be supported on the block. Reinforcing rods 322 of a substructure, for example a poured in-situ pile 300 or one or more precast concrete pads, can extend upward through holes 122 in the block. Fasteners 330 can be fitted to the upper ends of the reinforcing rods to secure the block to the substructure. The invention also includes foundations incorporating the block, and methods of 10 constructing such foundations. Figure 7 7/10 330 122 114 ga 10410 101 -112 322 325 300 303 302 Figure 7

#### Classifications:

**International (IPC 8-9):** E02D27/42 E04H12/22 (Advanced/Invention)

2010226975 06 Oct 2010

1/10

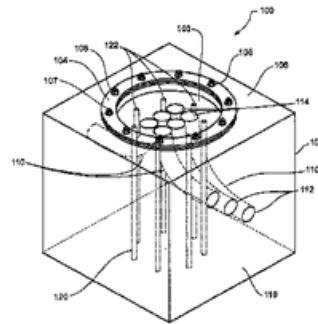


FIGURE 1

COMP ID No. AUCB 10/10/10 Printed in P. Australia Time 21:01:10 Date 01-10-2010-10:08

20

**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| AU2010226975 AA    | 20110421         | AU20100226975      | 20101006         |

**Priority:**

NZ20090580206 20091006

NZ20090581016 20091106

**Probable Assignee:**

GRIFFITHS CIVIL BUILD LTD

**Assignee(s): (std):**

GRIFFITHS CIVIL BUILD LTD

**Assignee(s):**

GRIFFITHS CIVIL BUILD LIMITED

**Inventor(s): (std):**

GRIFFITHS MELVYN THOMAS

**Inventor(s):**

MELVYN THOMAS GRIFFITHS

**Agent(s):**

A J PARK; AJ PARK

**30) Family number: 33039265 (US2007296220A)**

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**Title:** WIND TURBINE, A METHOD FOR ASSEMBLING AND HANDLING THE WIND TURBINE AND USES HEREOF

**Abstract:** The invention relates to a wind turbine including a foundation and a tower positioned on the foundation where the tower includes more than one modules, where the modules each include a separate strengthening structure defining the outer edges of the module and wind turbine equipment, and where the more than one module are positioned substantially vertically on top of each other in an upright position within the tower. The modules are connected directly and/or indirectly through the strengthening structure, to the foundation (18). The invention further relates to a method for assembling a wind turbine at a wind turbine site and a method for handling more than one wind turbine modules.

**Classifications:****International (IPC 8-9):** B66B9/187 E04H12/00 E04H12/08 E04H5/02

F03B13/04 F03D1/00 F03D11/00 F03D11/04 F03D13/10

F03D9/00 (Advanced/Invention);

E04H12/00 E04H5/00 F03B13/00 F03D1/00

F03D11/00 (Core/Invention)

**International (IPC 1-7):** F03D1/00 F03D11/04**CPC:** F05B2230/50 F05B2240/916 Y02P70/523 Y02E10/72 F03D13/10

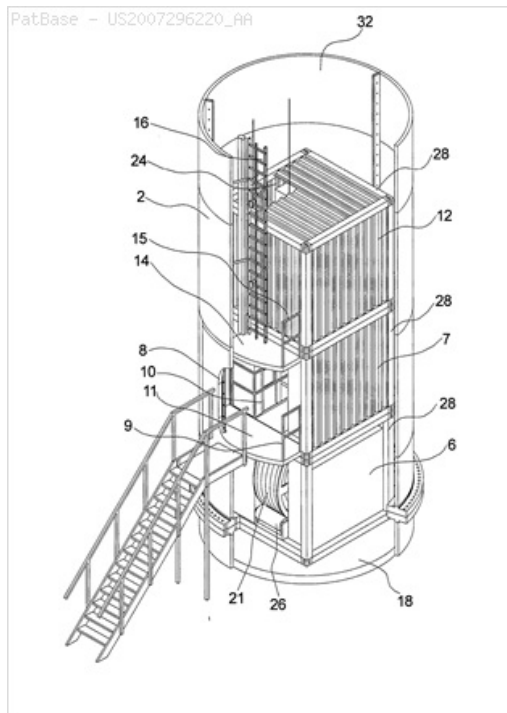
Y02E10/728 B66B9/187

**European:** B66B11/00 F03D1/00B R05B230/50 R05B240/916

Y02E10/72N

**US:** 290/55 414/800 52/651.01 52/651.02 52/745.18 52/745.180

52/834

**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| AU2004325168 AA    | 20060601         | AU20040325168      | 20041123         |
| CA2591536 AA       | 20070518         | CA20042591536      | 20041123         |
| CN101065576 A      | 20071031         | CN200480044463     | 20041123         |
| EP1834088 A1       | 20070919         | EP20040797473      | 20041123         |
| EP1834088 B1       | 20181010         | EP20040797473      | 20041123         |
| ES2693981 T3       | 20181217         | ES20040797473T     | 20041123         |
| IN01964KN2007 A    | 20070810         | IN2007KN01964      | 20070531         |
| IN282728 B         | 20170428         | IN2007KN01964      | 20070531         |
| JP2008520861 T2    | 20080619         | JP20070541687T     | 20041123         |
| MX2007005513 A1    | 20070911         | MX20070005513      | 20041123         |
| NZ556051 A         | 20090925         | NZ20040556051      | 20041123         |
| US2007296220 AA    | 20071227         | US20040719978      | 20041123         |
| US2012306214 AA    | 20121206         | US20120564510      | 20120801         |
| US8671643 BB       | 20140318         | US20120564510      | 20120801         |
| WO06056196 A1      | 20060601         | WO2004DK00812      | 20041123         |

**Priority:**

NZ20040556051 20041123 WO2004DK00812 20041123 US20070719978 20070622  
 US20120564510 20120801

**Probable Assignee:** VESTAS WIND SYSTEMS A S

**Assignee(s):** (std): KRISTENSEN JONAS ; VESTAS WIND SYS AS ; VESTAS WIND SYSTEMS AS

**Assignee(s):** VESTAS WIND SYSTEMS A AND S ; VESTAS WIND SYSTEMS A S

**Inventor(s):** (std): KRISTENSEN JONAS ; KRISTENSEN J

**Inventor(s):** JONAS KRISTENSEN ; J KRISTENSEN

**Agent(s):** PHILLIPS ORMONDE FITZPATRICK; MARKS AND CLERK; VESTAS PATENTS DEPARTMENT; KATO NOBUAKI; TAKAHASHI SEIICHIRO; OCHI TAKAO; USUI SHINICHI; MATSUI TAKAO; OKABE MASAO; YOSHIZAWA HIROSHI; OKABE YUZURU; CANTOR COLBURN LLP; WOOD HERRON AND EVANS LLP

**Designated states:** AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GW HR HU ID IE IL IN IS IT JP KE KG KP KR KZ LC LI LK LR LS LT LU LV MA MC MD MG MK ML MN MR MW MX MZ NA NE NI NL NO NZ OM PG PH PL PT RO RU SC SD SE SG SI SK SL SN SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW

**31) Family number: 47097265** (US2010257794A)

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**Title:** LATERAL SUPPORT DEVICE

**Abstract:** According to one embodiment, a lateral support device for an anchor embedded in the ground includes a central body defining an interior channel sized to receive the embedded anchor. The lateral support device also includes a plurality of fins coupled to and extending outwardly away from the central body. The central body and plurality of fins are embeddable within the ground to position the embedded anchor within the interior channel.

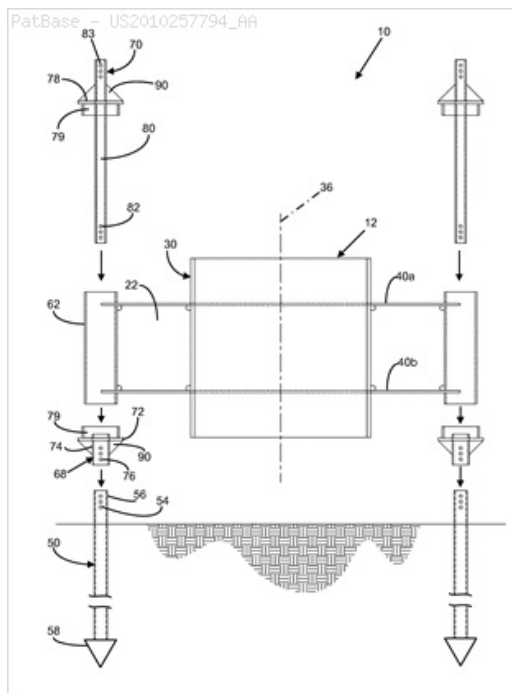
**Classifications:**

**International (IPC 8-9):** E02D27/42 E02D5/80 E04B1/38  
 E04H12/00 (Advanced/Invention)

**CPC:** E02D5/80 E04H12/2215

**European:** E02D5/80 E04H12/22A1

**US:** 52/158 52/158P 52/165 52/165S 52/298 52/298S 52/745.21  
 52/745.210S



#### Family:

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| US2010257794 AA    | 20101014         | US20100758693      | 20100412         |

#### Priority:

US20090168509P 20090410 US20100758693 20100412

#### Probable Assignee:

STARK N DANIEL W

#### Assignee(s): (std):

STARK N DANIEL W

#### Inventor(s): (std):

STARK N DANIEL W

#### Agent(s):

KUNZLER NEEDHAM MASSEY AND THORPE

### 32) Family number: 31487270 (US2005016109A)

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#### Title: RADIAL-HINGE MECHANISM

**Abstract:** A radial-hinge mechanism includes one or more elongated members arranged and interconnected into a unique, geometry-based, closed-loop assembly often resembling a multi-point star when in its fully-closed mode. The mechanism's signature function is its variable nature of pivoting open from a centralized hinge-core as its substantially circular inner-aperture concurrently contracts in its own circular dimensions. Additionally, the mechanism has a natural susceptibility to spring-biasing techniques to further modify its versatility and performance. Applications for the mechanism include numerous support frameworks along with devices and apparatus encompassing the likes of: sheaves and spools; weight-scales and elevators; shock and impact absorbers; throwers and grabbers; interfaces with bellows for valves and pumps; interfaces with fans, props and cutters; interfaces with shafts for functions of braking, clutching, gripping, and a stacking of radial-hinge mechanisms or casting in arrays; in addition to combinations of forms and attachments applicable to the mechanism's multi-functional propensities.

#### Classifications:

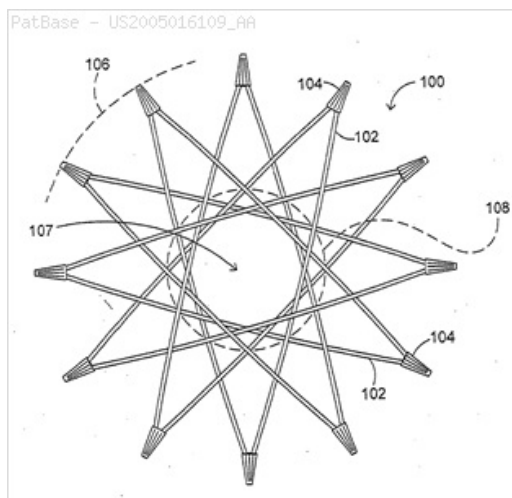
**International (ipc 8-9):** A47B3/00 A47C4/00 A47C4/42 E04B1/19 E04B1/32 E04B1/343 E04B1/344 E04C3/00 E04H15/48 E04H15/50 F16M11/38 (Advanced/Invention); F21V21/06 (Advanced/Non-invention); A47B3/00 A47C4/00 E04B1/19 E04B1/32 E04B1/343 E04B1/344 E04C3/00 E04H15/34 F16M11/20 (Core/Invention); F21V21/06 (Core/Non-invention)

**International (ipc 1-7):** E04H12/00

**CPC:** A47C4/42 A47B3/002 A47C4/286 E04B1/3211 E04B1/3441 E04H15/48 E04H15/50 F16M11/38 F16M2200/065 F21V21/06 F16M11/043 F16M11/121 F16M2200/04 Y10T403/342 Y10T403/347 Y10T403/45

**European:** A47B3/00F A47C4/28E A47C4/42 E04B1/32C E04B1/344B E04H15/48 E04H15/50 F16M11/38 R21V21/06

**US:** 108/118 297/16.2 297/162 297/18 343/881 403/171 403/176 403/220 428/12 52/108 52/632 52/633 52/633P 52/646 52/648.1 52/648.100S 52/655.1 52/664 526/460



#### Family:

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| US2005016109 AA    | 20050127         | US20030623787      | 20030721         |
| US7278245 BB       | 20071009         | US20030623787      | 20030721         |

#### Priority:

**Probable Assignee:** ROUSE GLENN R  
**Assignee(s):** (std): ROUSE GLENN R  
**Inventor(s):** (std): ROUSE GLENN R  
**Inventor(s):** ROUSE GLENN  
**Agent(s):** PRICE HENEVELD COOPER DEWITT AND LITTON LLP

**33) Family number: 56941294** (US2016068373A)

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**Title:** WEATHER MAINTENANCE SYSTEM FOR AN OFFSHORE WIND TURBINE MAINTENANCE PROGRAM

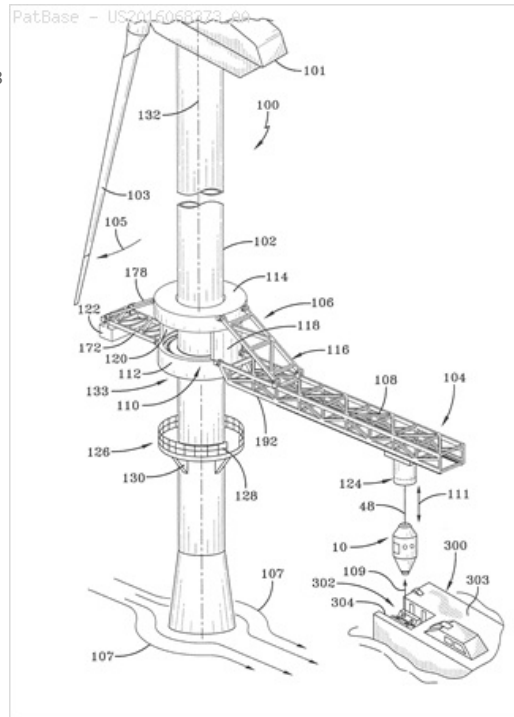
**Abstract:** An all-weather maintenance system for an offshore wind turbine maintenance program includes a maintenance capsule for transporting tools, parts and maintenance personnel to and from respective wind turbine towers, a maintenance vessel with a capsule support apparatus for transporting capsules supported on board by the capsule support apparatus to and from respective wind turbine towers, and a crane assembly with a trolley for transporting capsules between the respective wind turbine towers and the maintenance vessel.

**Classifications:**

**International (IPC 8-9):** B63B23/00 B63B27/10 B63B27/30  
 B63B27/32 B63B35/00 B63B35/44 B63B9/00 B66B20/00 B66B9/00  
 B66B9/187 B66C11/12 B66C13/02 B66C23/18 B66C23/20 B66C9/08  
 B66F11/00 E04G3/28 E04H12/00 F03D11/00 F03D11/04 F03D13/20  
 F03D13/25 F03D80/50 (Advanced/Invention);  
 B63C9/03 E02B17/00 (Advanced/Non-invention)

**CPC:** B66C23/18 B66C11/12 B63B27/10 F03D13/20 F03D80/50  
 B63B27/32 B63C2009/035 B66C23/207 E02B17/0034  
 E02B2017/0091 B66B9/187

**US:** 114/362 187/239 212/223 212/253 212/273 212/346 414/138.1

**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| CA2849463 AA       | 20140423         | CA20142849463      | 20140312         |
| CA2849463 C        | 20150922         | CA20142849463      | 20140312         |
| CA2866998 AA       | 20140715         | CA20142866998      | 20140312         |
| CA2866998 C        | 20150922         | CA20142866998      | 20140312         |
| CA2866999 AA       | 20140715         | CA20142866999      | 20140312         |
| CA2866999 C        | 20150714         | CA20142866999      | 20140312         |
| CA2867001 AA       | 20140715         | CA20142867001      | 20140312         |
| CA2867001 C        | 20150922         | CA20142867001      | 20140312         |
| CA2867025 AA       | 20140715         | CA20142867025      | 20140312         |
| CA2867025 C        | 20150714         | CA20142867025      | 20140312         |
| CN105050935 A      | 20151111         | CN201480015856     | 20140312         |
| CN105050935 B      | 20190312         | CN201480015856     | 20140312         |
| DE602014031376 D1  | 20180927         | DE201460031376T    | 20140312         |
| DK2969883 T3       | 20181217         | DK20140769220T     | 20140312         |
| EP2969883 A2       | 20160120         | EP20140769220      | 20140312         |
| EP2969883 A4       | 20161123         | EP20140769220      | 20140312         |
| EP2969883 B1       | 20180829         | EP20140769220      | 20140312         |
| EP3486207 A1       | 20190522         | EP20180191292      | 20140312         |
| IN06384CN2015 A    | 20160701         | IN2015CN06384      | 20151014         |
| US2016068373 AA    | 20160310         | US20140775456      | 20140314         |
| US2016068373 AA    | 20160310         | US20140775456      | 20140312         |
| US2018057321 AA    | 20180301         | US20170722105      | 20171002         |
| US9821984 BB       | 20171121         | US20140775456      | 20140312         |
| WO14150950 A2      | 20140925         | WO2014US24634      | 20140312         |
| WO14150950 A3      | 20141113         | WO2014US24634      | 20140312         |
| WO14150950 A4      | 20150108         | WO2014US24634      | 20140312         |

**Priority:**

|                |          |               |          |               |          |
|----------------|----------|---------------|----------|---------------|----------|
| US20130793822P | 20130315 | CA20142849463 | 20140312 | US20140775456 | 20140312 |
| EP20140769220  | 20140312 | WO2014US24634 | 20140312 | WO2014US24634 | 20140314 |
| CA20142849463  | 20141017 | CA20142849463 | 20141028 | US20150775456 | 20150911 |
| US20170722105  | 20171002 |               |          |               |          |

**Probable Assignee:** CHIN HOWAARD M

**Assignee(s):** (std): CARRAHA KIMBERLY A ; CHIN HOWAARD M ; CHIN HOWARD M

**Assignee(s):** CHIN HOWARD M14 BRACKNELL AVENUEKINGSTON, 6KINGSTON6JM ; CARRAHA KIMBERLY A WESTON ; CARRAHA KIMBERLY A1505 HARBOURSIDE DRIVEWESTONFL33326US

**Inventor(s):** (std): CHIN HOWARD M ; CARRAHA KIMBERLY A ; CARRERA KIMBERLY A

**Inventor(s):** CARRAHA KIMBERLY A WESTON ; CHIN HOWARD M14 BRACKNELL AVENUEKINGSTON, 6KINGSTON6JM ; CARRAHA KIMBERLY A1505 HARBOURSIDE DRIVEWESTONFL33326US

**Agent(s):** ENGFIELD PROFESSIONAL CORP; OYEN WIGGS GREEN AND MUTALA LLP; SCHMITT NILSON SCHRAUD WAIBEL WOHLFROM PATENTANWAELTE PARTNERSCHAFT MBB; TWELMEIER MOMMER AND PARTNER; D PETER; SEAN F; WALTER HAVERFIELD LLP; HOCHBERG PETER D ET AL

**Designated states:** AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

**34) Family number: 34708314 (US2007151194A)**

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**Title:** LIFTING SYSTEM AND APPARATUS FOR CONSTRUCTING WIND TURBINE TOWERS

**Abstract:** The disclosed invention is utilized for mounting a wind turbine and blade upper end of a wind turbine tower. The invention generally includes a frame or tally secured to the top bay assembly of the tower. A transverse beam is e frame or truss and extends fore of the tower when the frame or truss is in a first erally above the tower when in a second position. When in the first position, a blade assembly can be hoisted to the top of the tower. The wind turbine or blade n moved into position for mounting to the tower as the frame or truss is pivoted to n. When the turbine and blade assembly are secured to the tower, the frame or ected from the tower and lowered to the ground.

**Classifications:**

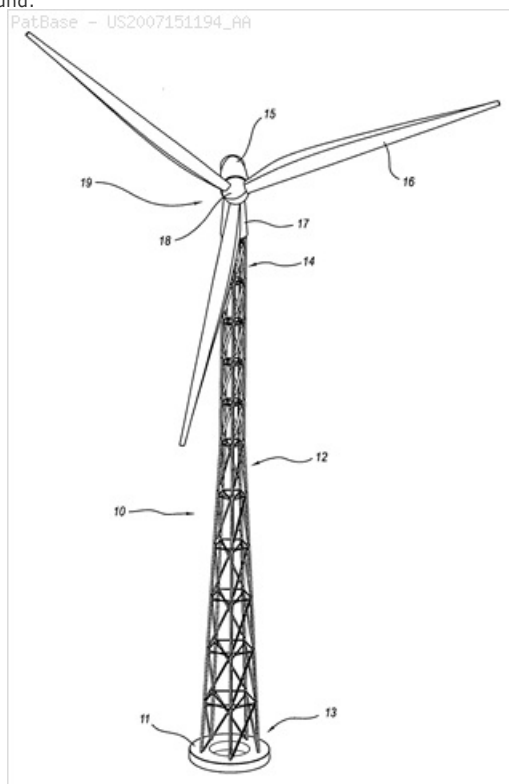
**International (IPC 8-9):** B23P11/00 B66C23/18 B66C23/26 B66C23/62 E04B1/00 E04B1/38 E04C2/38 E04G21/14 E04H12/00 E04H12/34 F03D1/00 F03D11/00 F03D11/04 F03D13/20 F16B35/00 F16B39/04 F16B39/10 F16B43/00 (Advanced/Invention); B23P11/00 B66C23/00 E04B1/38 E04C2/38 E04G21/14 E04H12/00 F03D11/00 F16B35/00 F16B39/00 F16B43/00 (Core/Invention)

**International (IPC 1-7):** B66C23/62 E04H12/00

**CPC:** B66C23/06 F05B2230/61 F03D1/00 F05B2240/14 F05B2240/916 F16B5/0258 F05B2240/9121 F05B2260/301 F16B19/00 Y10T29/49963 Y02P70/523 B66C23/207 Y02E10/72 Y02E10/728 F03D13/40 F03D13/10 F03D13/20

**European:** B66C23/06 B66C23/18 B66C23/20T F03D1/00 F03D1/00B F03D11/04 F16B19/00 F16B5/02G R05B230/610 R05B240/14 R05B240/9121 R05B240/916 R05B260/301 Y02E10/72 Y02E10/72J Y02E10/72N

**US:** 29/525.11 29/525.110 411/120 411/426 411/533 411/54.1 411/54.100 52/120 52/125.2 52/125.200P 52/296 52/40 52/40P 52/578 52/578S 52/651.05 52/651.050P 52/651.050S 52/651.07 52/651.070S 52/745.17 52/745.170S 52/745.18 52/745.180S 52/745.21 52/745.210S 52/848



**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| BRPI0719789 A2     | 20141125         | BR2007PI19789      | 20071002         |
| CA2635656 AA       | 20080627         | CA20072635656      | 20070103         |
| CA2635656 C        | 20140708         | CA20072635656      | 20070103         |
| CA2663754 AA       | 20090401         | CA20072663754      | 20071002         |
| CA2663754 C        | 20141202         | CA20072663754      | 20071002         |
| CN101432216 A      | 20090513         | CN200780006920     | 20070103         |
| CN101432216 B      | 20120829         | CN200780006920     | 20070103         |
| CN101535582 A      | 20090916         | CN200780042415     | 20071002         |
| CN101535582 B      | 20130327         | CN200780042415     | 20071002         |
| EP1974111 A2       | 20081001         | EP20070716207      | 20070103         |
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| EP2069591 A2       | 20090617         | EP20070872185      | 20071002         |
| EP2069591 A4       | 20101201         | EP20070872185      | 20071002         |
| EP2280138 A2       | 20110202         | EP20100186734      | 20070103         |
| EP2280138 A3       | 20111116         | EP20100186734      | 20070103         |
| IN02676DN2009 A    | 20090619         | IN2009DN02676      | 20090422         |
| IN06541DN2008 A    | 20081024         | IN2008DN06541      | 20080728         |
| US2007151194 AA    | 20070705         | US20070649033      | 20070103         |
| US2008078128 AA    | 20080403         | US20070906771      | 20071002         |
| US2008080946 AA    | 20080403         | US20070906766      | 20071002         |
| US2010236161 AA    | 20100923         | US20100696297      | 20100129         |

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| US7877934 BB  | 20110201 | US20070649033 | 20070103 |
| US8069634 BB  | 20111206 | US20070906771 | 20071002 |
| WO07092106 A2 | 20070816 | WO2007US00023 | 20070103 |
| WO07092106 A3 | 20080626 | WO2007US00023 | 20070103 |
| WO08088408 A2 | 20080724 | WO2007US21250 | 20071002 |
| WO08088408 A3 | 20081120 | WO2007US21250 | 20071002 |

#### Priority:

US20050755615P 20051230 US20060848725P 20061002 US20060848726P 20061002  
EP20070716207 20070103 US20070649033 20070103 WO2007US00023 20070103  
US20070932731P 20070601 US20070906766 20071002 US20070906771 20071002  
WO2007US21250 20071002 US20100696297 20100129

**Probable Assignee:** GE WIND ENERGY LLC

**Assignee(s):** (std): ANDERSEN TODD ; DAUGHERTY HARRY ; LIVINGSTON TRACY ; GOLDHARDT JAMES ; LOTT JAMES ; GEN ELECTRIC ; SCHRADER TERRY ; OLIPHANT DAVID ; QUILTER JARED ; WIND TOWER SYSTEMS LLC ; TRACY LIVINGSTON

**Assignee(s):** SCHRADER TERRY1385 LAKEVIEW DRIVESOUTHLAKETX76092US ; WIND TOWER SYSTEMS LLC - 357 WEST 910 SOUTHHEBER CITYUT84032US ; LOTT JAMES6211 PFAFFLIN LAKE BLVD.NEWBURGHIN47630US ; WASATCH WIND INC ; WASATCH WIND DEVELOPMENT LLC ; SONY CORP ; WIND TOWER SYSTEM LLC ; LIVINGSTON TRACY ; GOLDHARDT JAMES ; LOTT JAMES ; SCHRADER TERRY ; GE WIND ENERGY LLC - 357 WEST, 910 SOUTHHEBER CITYUT84032US ; LIVINGSTON TRACY4320 LAKE CREEK FARMS ROADHEBER CITYUT84032US ; GOLDHARDT JAMES5 - 2707 SOUTH ADAMS STREETSALT LAKE CITYUT84115US ; GENERAL ELECTRIC CO ; GENERAL ELECTRIC COMPANY ; DFJ ELEMENT LP ; DFJ ELEMENT LP SECURED PARTY AND AGENT AS ; GE WIND ENERGY LLC

**Inventor(s):** (std): DAVID OLIPHANT ; GOLDHARDT JAMES ; HARRY DAUGHERTY ; JAMES GOLDHARDT ; JAMES LOTT ; LIVINGSTON TRACY ; LOTT JAMES ; TERRY SCHRADER ; TRACY LIVINGSTON ; QUILTER JARED ; OLIPHANT DAVID ; DAUGHERTY HARRY ; ANDERSEN TODD ; SCHRADER TERRY

**Inventor(s):** SCHRADER TERRY1385 LAKEVIEW DRIVESOUTHLAKETX76092US ; SCHRADER TERRYUS ; DAUGHERTY HARRYUS ; GE WIND ENERGY LLC ; LOTT JAMES6211 PFAFFLIN LAKE BLVD.NEWBURGHIN47630US ; LOTT JAMESUS ; OLIPHANT DAVIDUS ; LIVINGSTON TRACY4320 LAKE CREEK FARMS ROADHEBER CITYUT84032US ; LIVINGSTON TRACYUS ; GOLDHARDT JAMES5 - 2707 SOUTH ADAMS STREETSALT LAKE CITYUT84115US ; GOLDHARDT JAMESUS

**Agent(s):** OYEN WIGGS GREEN AND MUTALA LLP ; CRAIG WILSON AND CO ; GILMOUR DAVID CEDRIC FRANKLYN ; WOMBWELL FRANCIS ; VAN COTT BAGLEY CORNWALL AND MCCARTHY ; GRANT R CLAYTON CLAYTON HOWARTH AND CANNON PC ; CLAYTON HOWARTH AND CANNON PC ; DORITY AND MANNING PA ; CLAYTON GRANT R

**Designated states:** AE AG AL AM AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

### 35) Family number: 19120369 (ES2117526A)

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**Title:** Process for mounting a tower and platform used therein

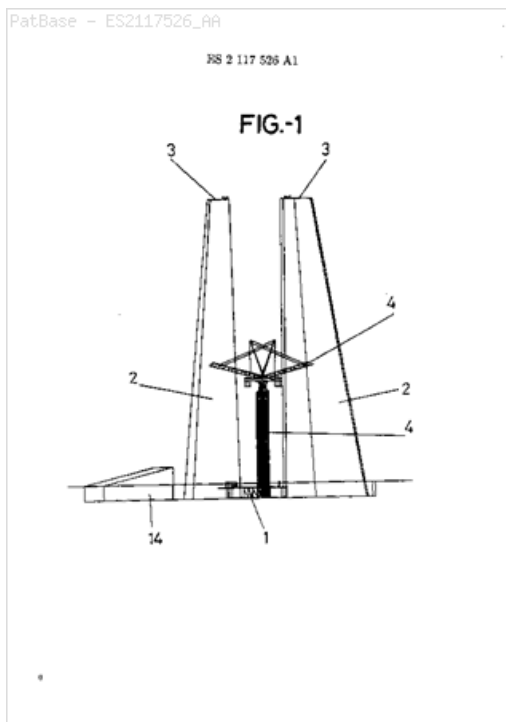
**Abstract:** The process is provided to mount a steel structure 6 on a concrete structure 2, forming, overall, a tower of great height, and in which the construction 2 is formed by three large vertical pillars arranged equidistant from one another in order to define a central space in which the mounting or construction of a principal platform 1 takes place, the latter being raised as far as the upper part 3 of the construction 2 in order to allow, simultaneously, the installation of a metallic support structure 5 and the vertical elevation, above this support, of the steel structure 6 which will project vertically over a great height above the actual construction 2. This steel structure 6 is mounted on the ground and, during its elevation, on passing via the principal platform 1 and a secondary, upper platform 7, mounting of final elements, such as coverings 12 and the like, takes place.

#### Classifications:

**International (IPC 8-9):** E04H12/34 (Advanced/Invention);

E04H12/00 (Core/Invention)

**International (IPC 1-7):** E04H12/34



**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| ES2117526 AA       | 19980801         | ES19940002665      | 19941229         |
| ES2117526 BA       | 19990316         | ES19940002665      | 19941229         |

**Priority:**

ES19940002665 19941229

**Probable Assignee:** WAAGNER BIRO STAHL AND MASCHB**Assignee(s):** (std): WAAGNER BIRO STAHL AND MASCHB ; WAAGNER BIRO STAHL U MASCHINENBAU GMBH**Assignee(s):** WAAGNER BIRO STAHL UND MASCHINENBAU GES M B H**Inventor(s):** (std): SIESCHKA JOHANN ; STAINDL ADOLF**36) Family number: 95375 (US3469358A)**

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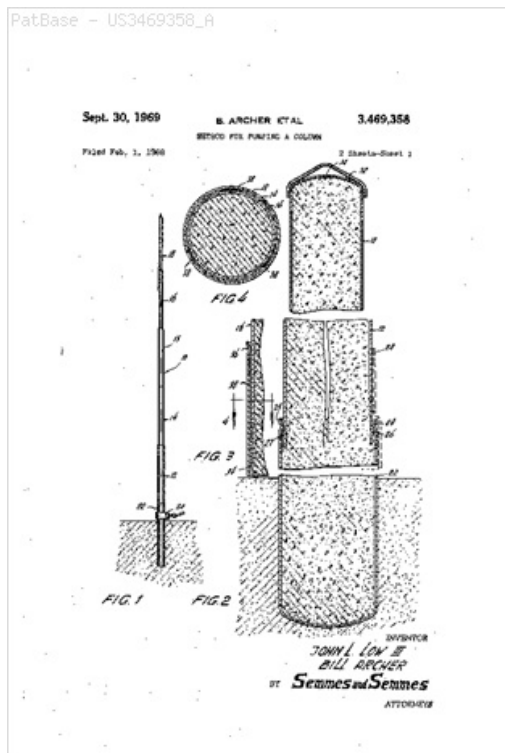
**Title:** METHOD FOR PUMPING A COLUMN**Abstract:** ABSTRACT OF THE DISCLOSURE

Method for pumping a telescoping column or utility pole by pumping concrete into one of several aligned, telescoping portions, so as to longitudinally extend said sections from a rigid base within which the sections are anchored. The telescoping sections may be removed or left in place, as the concrete sets. CROSS-REFERENCES TO RELATED APPLICATIONS A continuation-in-part of Method for Developing a Column (Ser. No. 676,286, filed Oct. 13, 1967), the parent application disclosing a method for developing a telescoping column wherein the telescoping forms are locked to a rigid precast base. The present application differs from the parent in that the rigid base is not necessarily precast nor are locking bolts required. According to the present invention, the lowermost telescoping section includes an anchoring form which extends within the rigid base and which may be pumped simultaneously with concrete. The filled anchoring form may be compacted or set within the rigid base, thus eliminating the necessity for bolting or locking the telescoping section to a rigid base. B

**Classifications:****International (IPC 8-9):** E04C3/34 E04H12/12

E04H12/34 (Advanced/Invention);

E04C3/30 E04H12/00 (Core/Invention)

**International (IPC 1-7):** E02D5/22 E04H12/08 E04H12/12 E04H12/18 E04H12/34**CPC:** E04H12/34 E04C3/34 E02D27/52 E04H12/12**European:** E04C3/34 E04H12/12 E04H12/34**US:** 405/233 405/287.1 425/111 425/64 52/115 52/2.15 52/723.1 52/726.3 52/742.14 52/745.17 52/834 521/150**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| BE737578 A         | 19700202         |                    | 19690818         |
| US3469358 A        | 19690930         | US19680702406      | 19680201         |
| US3471980 A        | 19691014         | US19670006286      | 19671018         |

**Priority:**

US19670676286 19671018

US19680702406 19680201

**Probable Assignee:**

ARLO INC

**Assignee(s):** (std):

ARLO INC

**Inventor(s):** (std):

ARCHER BILL ; LOW JOHN LEWIS

**Inventor(s):**

BILL ARCHER ; JOHN LEWIS LOW

**37) Family number: 1608407 (DE2636973A1)**

© PatBase

**Title:** MAINTENANCE-FREE STEEL POST FOR STREET LAMPS AND TRAFFIC LIGHTS - COMPRISES STEEL TUBE EMBEDDED IN STRUCTURAL FOAM, ESP. OF POLYURETHANE, WITH THERMOPLASTIC OUTER TUBE, ESP. OF POLYCARBONATE

**Abstract:** Maintenance-free steel post for modern street lamps and traffic lights, opt. with one-way bending stress on the post, comprises a steel tube with apertures over its length and circumference, completely embedded in structural foam e.g.,

polyurethane foam. The other surface of the post consists of a thin-walled outer tube of thermoplastic material pref. polycarbonate. The steel tube pref. consists of several sections of different dia., and in the lower region of the post is an opening for introducing switch components. The post is protected from weather and environmental influences and hence does not require surface treatment e.g., cleaning and painting.

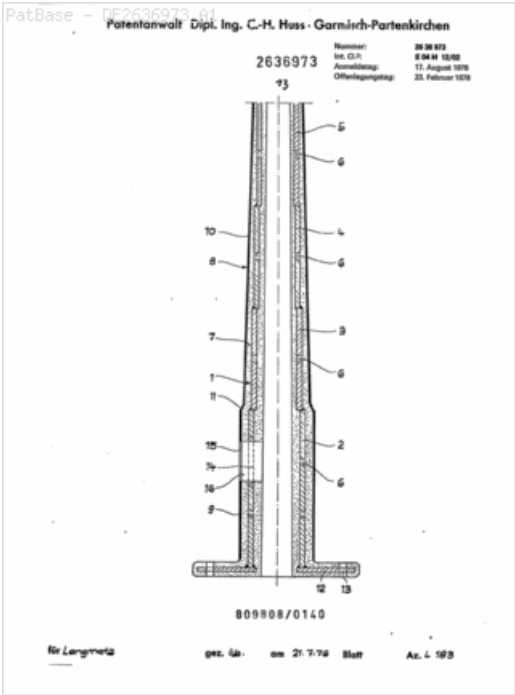
**Classifications:**

**International (IPC 8-9):** E04H12/02 E04H12/08 (Advanced/Invention); E04H12/00 (Core/Invention)

**International (IPC 1-7):** B29D27/00 E04H12/02

**CPC:** E04H12/02 E04H12/08

**European:** E04H12/02 E04H12/08



**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| DE2636973 A1       | 19780223         | DE19762636973      | 19760817         |

**Priority:**

DE19762636973 19760817

**Probable Assignee:**

LANGMATZ HANS

**Assignee(s):** (std):

LANGMATZ HANS

**Inventor(s):** (std):

LANGMATZ HANS

**38) Family number: 22121413** (US2804950A) © PatBase

**Title:** TV ANTENNA MAST

**Abstract:** (Claim 1) 1. A tiltable antenna supporting tower structure which is self supporting without the use of guy wires and which may be raised from or lowered to the ground by two men without the use of special tools, said tower structure comprising a flat metal base including three straight beams each having one end fastened at substantially the mid point of an adjacent beam to provide an inner triangular portion with anchoring arms extending outwardly from its angles, a lower tower section of upwardly tapered open work construction having a triangular lower end of substantially the same area as the triangular portion of the base and a wedge-shaped upper end, said section comprising four metal bars forming legs connected by brace rods, two of said leg bars having their lower ends associated with two of the angles of the triangular portion of the base and having their converging upper ends spaced apart, the other two of said leg bars having their upper ends fixed to said spaced upper ends of said first two leg bars and being disposed in downwardly converging relation with their lower ends fixed to each other at the third angle of the triangular portion of the base, means hingedly connecting the lower ends of the first mentioned two leg bars to the base at the said associated angles, means for rigidly securing the lower ends of the lower section to the base when the former is in an upright position the last mentioned means including a detachable fastening means between the connected lower ends of said other two leg bars and the base at the said third angle, whereby the lower section may be fixed in an upright position or swing to a horizontal position on said hinge means, an upper tower section of open work construction and of triangular shape in cross section, said upper tower section being wide at its intermediate portion and tapering toward each end, means hingedly connecting one side of said intermediate portion of the upper section to the connected upper ends of the two first mentioned leg bars to dispose the said one side of the upper section against the two second mentioned leg members when the upper section is in an upright position, a flexible pull line attached to the lower end of the upper section, means at the upper end of the upper section to fasten an antenna pole thereto, and means to detachably fasten together said contacting portions of the two sections when the upper section is in an upright position,

**Classifications:**

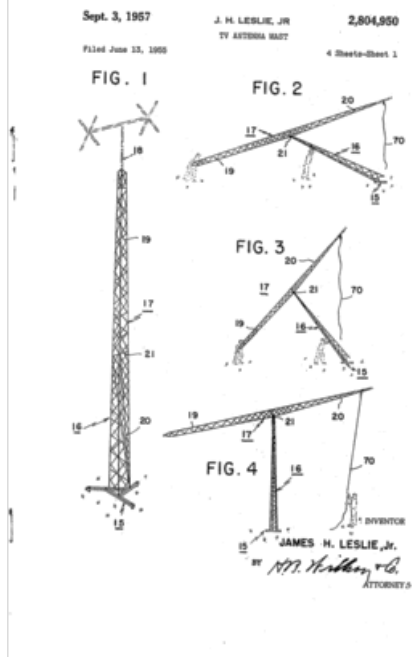
**International (IPC 8-9):** E04H12/18 H01Q1/12 (Advanced/Invention); E04H12/00 H01Q1/12 (Core/Invention)

**International (IPC 1-7):** E04H12/18

**CPC:** E04H12/187 H01Q1/1242

**European:** E04H12/18D H01Q1/12D

**US:** 52/117 52/119 52/295 52/646 52/651.07 52/694

**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| US2804950 A        | 19570903         | US19550514896      | 19550613         |

**Priority:**

US19550514896 19550613

**Probable Assignee:**

LESLIE JR JAMES H

**Assignee(s):** (std):

LESLIE JR JAMES H

**Inventor(s):** (std):

LESLIE JR JAMES H

**Inventor(s):**

JR JAMES H LESLIE

**39) Family number: 20591415** (GB978678A)

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**Title:** Triangulation tower

**Abstract:** 978,678. Triangulation towers. W. S. PARK. Dec. 17, 1963, No. 49728/63. Heading E1B. In a tower used as a surveying station comprising inner and outer lattice structures which are independent of each other, the outer structure 21 supports a tubular member 46 and receives surveying instruments, the member 46 extending through a tubular windshield 75 supported on a working platform 68 that is fixed to the inner structure. The structures are each of triangular section, the outer structure being wider at its base and being built up in sections which are clamped together. The inner structure is supported by wire stays 43 extending to the ground. Both the windshield 75 and the tubular member 46 are adjustably clamped in position.

**Classifications:**

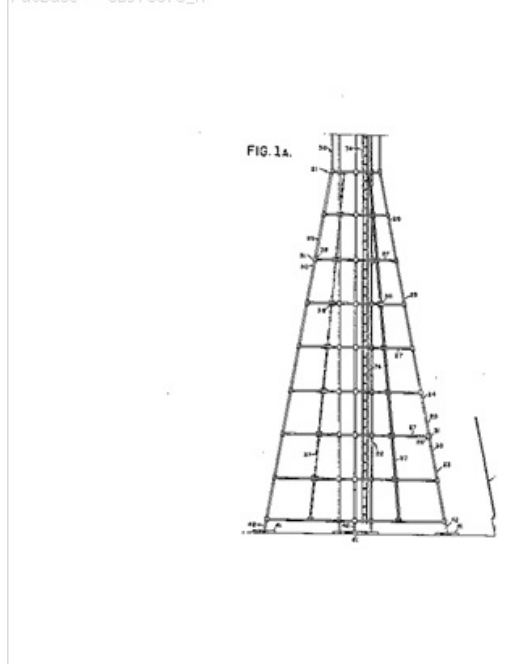
**International (IPC 8-9):** E04H12/00 (Advanced/Invention);  
E04H12/00 (Core/Invention)

**International (IPC 1-7):** E04H12/00 E04H12/08

**CPC:** E04H12/00

**European:** E04H12/00

PatBase - GB978678\_A



**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| GB978678 A         | 19641223         | GB19630049728      | 19631217         |

**Priority:**

GB19630049728 19631217

**Probable Assignee:**

WALLACE SIDNEY PARK

**Assignee(s): (std):**

WALLACE SIDNEY PARK

**40) Family number: 47809416 (US2010307097A)**

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**Title:** STRUCTURAL FLANGE CONNECTION SYSTEM AND METHOD

**Abstract:** A structural flange connection system and method that utilizes structural flanges having a standard bolted connection and a mechanical bond to effectively manage and assist the retention of bolt preloads and substantially eliminate movement between the flange faces due to a reduction in the need for friction load being generated by the bolt clamping force in the flange connection. The structural flanges of the structural flange connection system and method each include an outer rim and a flange lip having a face and a shoulder. The structural flange connection system and method may be utilized in the manufacture and installation of a wind turbine tower, which may be made up of one or more tower sections, and each tower section may terminate in structural flanges of the structural flange connection system and method. When properly aligned, the structural flanges may be bolted together. When each tower section is properly aligned and bolted, the mechanical bond of the structural flanges is also joined together. Such manufacture of the wind turbine tower may occur in the field during installation of the wind turbine tower.

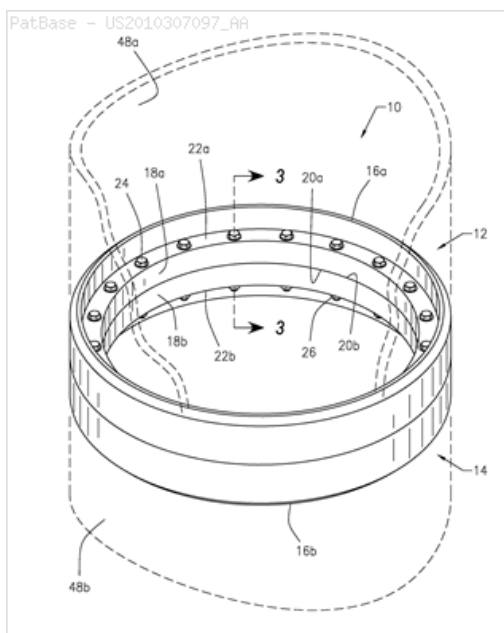
**Classifications:**

**International (IPC 8-9):** E04B1/38 E04H12/00 F16L23/02 F16L23/024 F16L23/032 F16L23/18 (Advanced/Invention)

**CPC:** E04H12/085 F05B2230/604 F05B2240/912 F05B2260/301

**European:** E04H12/08F R05B230/604 R05B240/912 R05B260/301

**US:** 52/40 52/584.1 52/585.1 52/588.1 52/651.07 52/651.070P 52/655.1 52/655.100S 52/745.17 52/745.170S

**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| US2010307097 AA    | 20101209         | US20100783763      | 20100520         |
| US8490337 BB       | 20130723         | US20100783763      | 20100520         |
| WO11146080 A1      | 20111124         | WO2010US35937      | 20100524         |

**Priority:**

US20090185238P 20090609

US20100783763 20100520

**Probable Assignee:** HARTMAN JR CECIL LEON

**Assignee(s): (std):** HARTMAN JR CECIL LEON ; WORD III THOMAS NOTT

**Inventor(s): (std):** WORD III THOMAS NOTT ; HARTMAN JR CECIL LEON

**Agent(s):** HEAD JOHNSON AND KACHIGIAN; HEAD JOHNSON AND KACHIGIAN PC; DELLEGAR SHAWN M

**Designated states:** AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

**41) Family number: 21296446 (US2213870A)**

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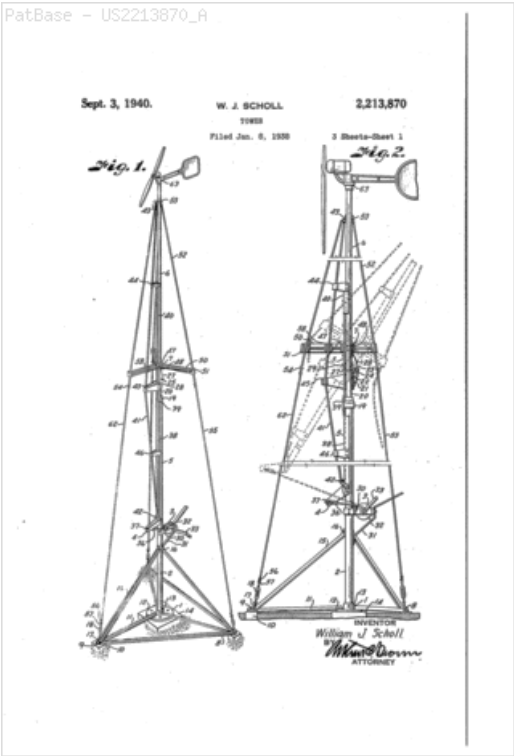
**Title:** TOWER

**Abstract:** 1. A tower of the character described including a mast having a base adapted to seat'on ,a suitable support, an extension pivotally mounted on the upper end of said mast, a truss member mounted on the extension, means on the mast engaged with the truss member for raising and lowering the extension on its pivot relative to the mast, a bracket mounted on the mast, and an auxiliary truss member engaged with the base, bracket and pivot on which the extension hinges for cooperating in maintaining the extension in upright condition relative to the mast, said bracket having spaced arms forming a channel for the reception oi the truss member as the extension is pivoted relative to the mast.

**Classifications:**

**International (IPC 8-9):** E04H12/18 (Advanced/Invention);

E04H12/00 (Core/Invention)  
**International (IPC 1-7):** F03D11/04  
**CPC:** E04H12/187  
**European:** E04H12/18D  
**US:** 52/117 52/125.2



Family:

| Publication number | Publication date | Application number | Application date |
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| US2213870 A        | 19400903         | US19380184114      | 19380108         |

Priority:

US19380184114 19380108

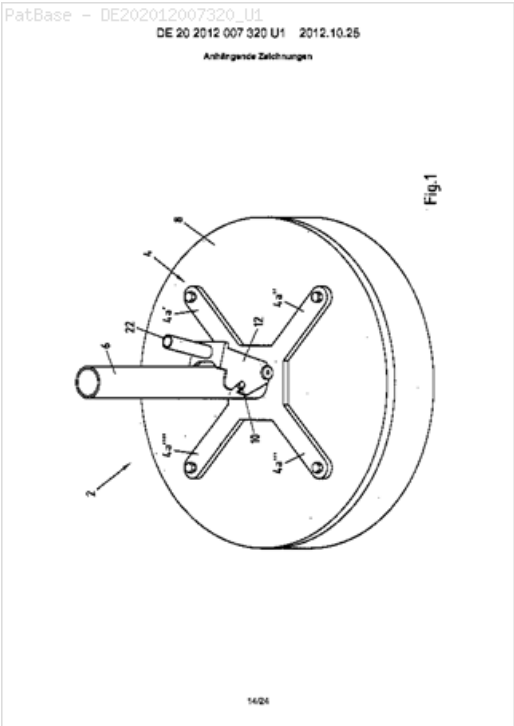
**Probable Assignee:** SCHOLL WILLIAM J  
**Assignee(s):** (std): SCHOLL WILLIAM J  
**Inventor(s):** (std): SCHOLL WILLIAM J

42) Family number: 52141447 (DE202012007320U1) © PatBase

**Title:** MOBILER STAENDER MOBILE STAND (Machine translation)

**Abstract:** Source: DE202012007320U1 [DE] Mobiler Staender, insbesondere mobiler Schirmstaender, mit - einem Rollentraeger, - einem Mast, - einem zumindest zweiteiligen Standfuss, dadurch gekennzeichnet, dass - der Standfuss einen Deckel und einen Sockel aufweist, - der Deckel mit dem Sockel zumindest entlang einer Umfangsflaeche kraftschliessig verbunden ist. **Machine translation:** Mobile stands, especially mobile Umbrella Stands, with - a Rollentraeger, - a mast - an at least two-piece Stand, characterized in that - the Stand has a lid and a base, - the lid to the base, at least along a Umfangsflaeche kraftschliessig is connected.

**Classifications:**  
**International (IPC 8-9):** A45B23/00 E04H12/22 F16M11/12  
F16M11/20 (Advanced/Invention)  
**CPC:** E04H12/2238 E04H12/2269



**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| DE202012007320 U1  | 20121025         | DE201220007320U    | 20120731         |

**Priority:**

DE201220007320U 20120731

**Probable Assignee:** TESKE HEIKO**Assignee(s):** (std): NERGER JUERGEN ; TESKE HEIKO**Assignee(s):** NERGER ; TESKE**43) Family number: 56340449** (US2014115978A)

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**Title:** ADJUSTABLE MONOPOLE SUPPORT STRUCTURE

**Abstract:** A support assembly includes a plurality of support arms coupled to a pole or tower structure. The plurality of support arms project radially from the pole or tower structure in a spaced relationship. A plurality of adjustable foot assemblies are coupled to respective distal ends of the plurality of support arms. Each of the plurality of adjustable foot assemblies is configured for coupling to an embedded helical pier. Each of the plurality of adjustable foot assemblies is capable of movement in each of three dimensions relative to the respective support arm to which it is coupled during installation of the support assembly.

**Classifications:****International (IPC 8-9):** E02D27/42 E04H12/22 E04H12/34

F03D11/04 H01Q1/12 (Advanced/Invention);

E04H12/08 (Advanced/Non-invention)

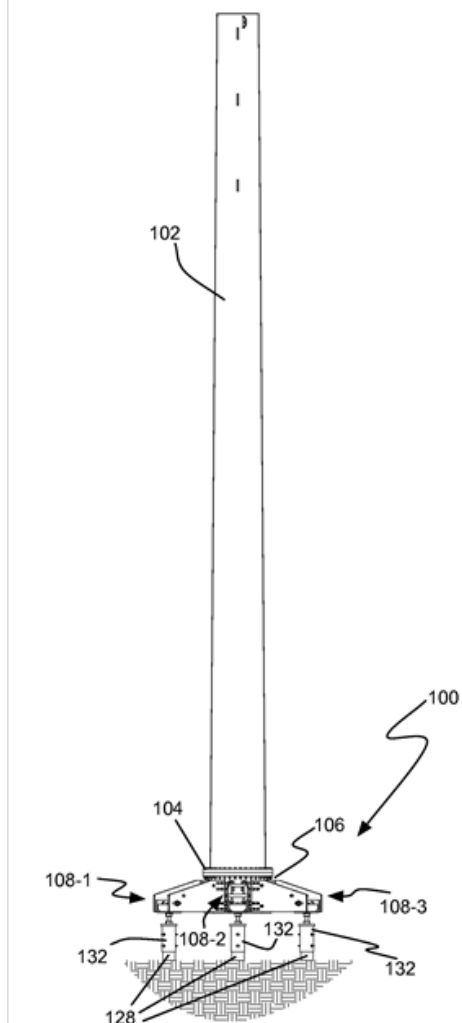
**CPC:** E04H12/08 E04H12/2253 H01Q1/12 H01Q1/1242 E04H12/2284

E04H12/2269 E04H12/2261 E04H12/2276 E02D27/42 F03D13/22

E02D27/425

**US:** 1/1 52/126.1 52/292 52/298 52/299

PatBase - US2014115978\_AA

**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| CA2831782 AA       | 20140501         | CA20132831782      | 20131030         |
| CA2831782 C        | 20160816         | CA20132831782      | 20131030         |
| US2014115978 AA    | 20140501         | US20130056639      | 20131017         |
| US2016017630 AA    | 20160121         | US20150798559      | 20150714         |
| US9091037 BB       | 20150728         | US20130056639      | 20131017         |

**Priority:**

US20120721167P 20121101

US20130056639 20131017

US20150798559 20150714

**Probable Assignee:** THOMAS AND BETTS INT INC**Assignee(s):** (std): THOMAS AND BETTS INT ; TRINITY MEYER UTILITY STRUCTURES LLC**Assignee(s):** FAIRBAIRN MARK H ; MCKINLEY 2014 ACQUISITION CO ; MCKINLEY 2014 ACQUISITION LLC ; MEYER UTILITY STRUCTURES LLC ; THOMAS AND BETTS INT INC ; THOMAS AND BETTS INT LLC

**Inventor(s):** (std): FAIRBAIRN MARK H  
**Agent(s):** FASKEN MARTINEAU DUMOULIN LLP; MACRAE AND CO; BAKER BOTTS LLP

**44) Family number: 2108456** (US4690560A) © PatBase

**Title:** OPTICALLY BASED MEASUREMENT OF FLUID PARAMETERS

**Abstract:** PCT No. PCT/AU84/00122 Sec. 371 Date Feb. 28, 1985 Sec. 102(e) Date Feb. 28, 1985 PCT Filed Jun. 29, 1984 PCT Pub. No. WO85/00426 PCT Pub. Date Jan. 31, 1985. Optical measurement apparatus includes a cell (12) adapted to receive fluid for testing and a light source (16) arranged to direct an incident light beam (5) into the cell. A hollow intergration sphere (14) and light-sensitive detector (26) are provided to detect at least a pre-determined portion of light emitted by a segment (13) of the cell transversely of the direction of said incident light beam. The light source (16) and the cell (12) are arranged so that the light incident on the cell is not collimated but, as it traverses segment of the cell, is confined to the cell by total internal reflection, unless otherwise scattered by particles in the cell.

**Classifications:**

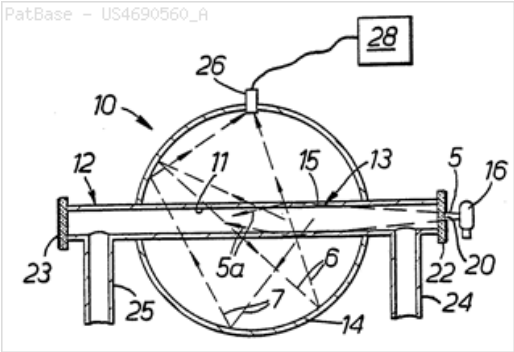
**International (IPC 8-9):** E04H12/20 E04H12/22 E04H17/22 F16M13/02 G01N21/05 G01N21/49 G01N21/51 G01N21/63 G01N21/64 (Advanced/Invention); G01N21/05 (Advanced/Non-invention); E04H12/00 E04H12/22 E04H17/14 G01N21/47 G01N21/63 G01N21/64 (Core/Invention); G01N21/03 (Core/Non-invention); E04H (Subclass/Invention)

**International (IPC 1-7):** E02D27/42 E04H12/00 E04H12/20 E04H12/22 E04H17/22 F16M13/02 G01N15/06 G01N21/49 G01N21/63 G01N21/64

**CPC:** E04H12/2292 G01N21/51 G01N21/05 G01N2021/4702 G01N2021/6482 G01N2201/065

**European:** E04H12/22E G01N21/51 S01N201/065 S01N21/05 S01N21/47A S01N21/64P10

**US:** 356/236 356/246 356/338 52/170 52/295 52/514 52/728 52/736.4 52/741.14 52/835



**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| AT58945 E          | 19901215         | AT19840901722T     | 19840504         |
| AU198428640 A1     | 19841119         | AU19840028640      | 19840504         |
| AU198431056 A1     | 19850208         | AU19840031056      | 19840629         |
| AU571232 B2        | 19880414         | AU19840028640      | 19840504         |
| AU576774 B2        | 19880908         | AU19840031056      | 19840629         |
| CA1218248 A1       | 19870224         | CA19840457916      | 19840629         |
| CA1219429 A1       | 19870324         | CA19840453541      | 19840504         |
| DE3483720 D1       | 19910117         | DE19843483720      | 19840504         |
| EP0149632 A1       | 19850731         | EP19840902577      | 19840629         |
| EP0149632 A4       | 19861121         | EP19840902577      | 19840629         |
| EP0169206 A1       | 19860129         | EP19840901722      | 19840504         |
| EP0169206 A4       | 19860821         | EP19840901722      | 19840504         |
| EP0169206 B1       | 19901205         | EP19840901722      | 19840504         |
| FR2549224 A1       | 19850118         | FR19840010474      | 19840702         |
| GB2158853 A1       | 19851120         | GB19850013804      | 19840504         |
| GB8513804 A0       | 19850703         | GB19850013804      | 19840504         |
| JP60501221 T2      | 19850801         | JP19840501864      | 19840504         |
| JP60501719 T2      | 19851011         | JP19840502579T     | 19840629         |
| KR850002320 A      | 19850630         | KR19840003818      | 19840630         |
| NZ208067 A         | 19900129         | NZ19840208067      | 19840504         |
| NZ223190 A         | 19900129         | NZ19840223190      | 19840504         |
| US4690560 A        | 19870901         | US19850717264      | 19850228         |
| US4697396 A        | 19871006         | US19840691189      | 19841218         |
| WO8404348 A1       | 19841108         | WO1984AU00075      | 19840504         |
| WO8500426 A1       | 19850131         | WO1984AU00122      | 19840629         |
| ZA8403367 A        | 19841128         | ZA19840003367      | 19840504         |

**Priority:**

|                        |                        |                        |
|------------------------|------------------------|------------------------|
| AU1983PF09168 19830504 | AU1983PG00051 19830630 | AU1983PG00518 19830727 |
| CA19840453541 19840504 | AU19840028640 19840504 | NZ19840208067 19840504 |
| EP19840901722 19840504 | EP19840901722 19840504 | WO1984AU00075 19840504 |
| CA19840457916 19840629 | WO1984AU00122 19840629 |                        |

**Probable Assignee:** RFD CONSULTANTS

**Assignee(s):** (std): COMMW SCIENT IND RES ORG ; RFD CONSULTANTS ; RFD CONSULTANTS PTY LTD

**Assignee(s):** MYTTON'S LTD ; UTILITY SERVICES CORP LTD ; RESEARCH ACT 1949 ; R F D CONSULTANTS PTY LTD MELBOURNE VICTORIA AU ; COMMONWEALTH SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANISATION ; COMMONWEALTH SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANIZATION ; COMMONWEALTH SCIENTIFIC INDUSTRI ; COMMW SCIENTIFIC AND INDUSTRIAL RESEARCH OR ; MYTTON S MYTTON RODD 10 MIRRA CT LTD ; COMMW SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANIZAT ; MYTTON S LTD ; MYTTON'S LTD ; COMMW SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANISATION ; KNIGHT JOHN K ; COOGAN CLIVE K ; COMMW SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANIZATION ; COMMW SCIENTIFIC INDUSTRI ; COMMW SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANIZATION LESTONE AVENUE CAMPBELL AUSTRALIAN CAPITAL TERRITORY COMMW OF AUSTRALIA A BODY CORPORATE ESTAB ; RESEARCH ACT ; R F D CONSULTANTS PTY LTD

**Inventor(s):** (std): KNIGHT KEITH ; KNIGHT JOHN KEITH ; KNIGHT JOHN K ; KNIGHT J K ; COOGAN CLIVE K ; KEITH COOGAN CLIVE ; KEITH KNIGHT JOHN ; COOGAN CLIVE KEITH

**Inventor(s):** KNIGHT KEITH JOHN DONCASTER VIC 3108 AU ; JOHN KEITH KNIGHT ; CLIVE KEITH COOGAN

**Agent(s):** TECHNOLOGY EXCHANGE PTY LTD; DAVIES COLLISON CAVE; DAVIES COLLISON CAVE PTY LTD; RIDOUT AND MAYBEE LLP; FETHERSTONHAUGH AND CO

Designated states: AT AU BE CH DE FR GB JP LI LU NL SE US

45) Family number: 29780467 (ZA9610079A)

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Title: TOWER STRUCTURE

**Abstract:** There is described a tower structure for supporting telecommunications transmission equipment. The structure is in the form of a tubular mast having a first set of arm members extending radially outwards from the top of the mast and a second set of arm members aligned with the first set of arm members and extending radially from the mast below the first arm members. The structure further is provided with elongate bracing members joining the arm members.

**Classifications:**

**International (IPC 8-9):** E04H12/16 H01Q1/12 (Advanced/Invention);

E04H12/00 H01Q1/12 (Core/Invention);

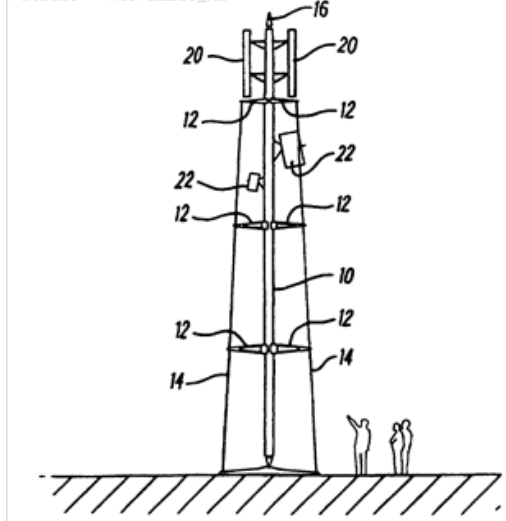
E04H F16S (Subclass/Invention)

**International (IPC 1-7):** E04H E04H12/16 F16S H01Q1/12

**CPC:** E04H12/16 H01Q1/1242

**European:** E04H12/16 H01Q1/12D

PatBase - W09721258\_A1



Family:

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| AU199677014 A1     | 19970627         | AU19960077014      | 19961129         |
| EP0864185 A1       | 19980916         | EP19960940005      | 19961129         |
| GB2322650 A1       | 19980902         | GB19980011554      | 19961129         |
| GB2322650 B2       | 19990929         | GB19980011554      | 19961129         |
| GB9524666 A0       | 19960131         | GB19950024666      | 19951201         |
| GB9610457 A0       | 19960724         | GB19960010457      | 19960518         |
| GB9811554 A0       | 19980729         | GB19980011554      | 19961129         |
| WO9721258 A1       | 19970612         | WO1996GB02931      | 19961129         |
| ZA9610079 A        | 19970708         | ZA19960010079      | 19961129         |

**Priority:**

GB19950024666 19951201 GB19960010457 19960518 GB19980011554 19961129  
WO1996GB02931 19961129

**Probable Assignee:** DYNAMIC CONCEPTS

**Assignee(s):** (std): DYNAMIC CONCEPTS ; HILL GRAEME ; HILL GRAHAM ; NEILSON WILLIAM ; SINCLAIR DALE

**Inventor(s):** (std): DALE SINCLAIR ; GRAEME HILL ; HILL GRAEME ; NEILSON WILLIAM ; SINCLAIR DALE ; WILLIAM NEILSON

**Designated states:** AL AM AT AU AZ BB BE BF BG BJ BR BY CA CF CG CH CI CM CN CU CZ DE DK EE ES FI FR GB GE GR HU IE IL IS IT JP KE KG KP KR KZ LI LK LR LS LT LU LV MC MD MG MK MN MW MX NL NO NZ PL PT RO RU SD SE SG SI SK SZ TJ TM TR TT UA UG US UZ VN

46) Family number: 49092468 (US2011138706A)

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Title: WIND TURBINE ANCHOR ELEMENT

**Abstract:** An anchor element for a tower includes an anchor plate element including an upper surface, a lower surface, and at least one first through-hole extending between the upper surface and the lower surface; and at least one first nut having a female thread, the at least one first nut being provided at the at least one first through-hole at the lower surface of the anchor plate element so as to cover the at least one first through-hole, wherein the at least one first nut is non-releasably connected to the lower surface of the anchor element.

**Classifications:**

**International (IPC 8-9):** E02D27/42 E02D37/00 E04B1/38 E04H12/00

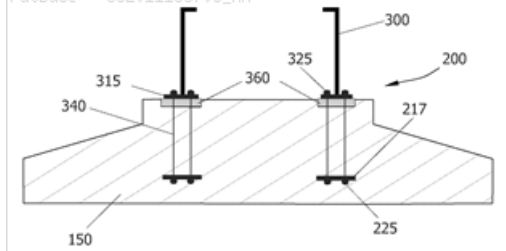
E04H12/22 E04H14/00 F03D1/00 F03D11/04 (Advanced/Invention)

**CPC:** E02D27/42 F05B2260/301 Y02E10/728 F03D13/22 F03D13/10 E04B1/4157

**European:** E02D27/42 E04B1/41E F03D1/00B F03D11/04B R05B260/301 Y02E10/72 Y02E10/72N

**US:** 52/173.1 52/173.100P 52/705 52/705S 52/745.21 52/745.210S

PatBase - US2011138706\_AA



Family:

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
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|                   |          |                |          |
|-------------------|----------|----------------|----------|
| CN102374138 A     | 20120314 | CN201110238176 | 20110812 |
| DE102011052610 A1 | 20120216 | DE201110052610 | 20110811 |
| DK201170427 A5    | 20120214 | DK20110070427  | 20110803 |
| US2011138706 AA   | 20110616 | US20100856024  | 20100813 |

**Priority:**

US20100856024 20100813

**Probable Assignee:** GENERAL ELECTRIC CO

**Assignee(s):** (std): GEN ELECTRIC ; PAURA INGO ; VOSS STEFAN ; SCHWEDE STEFAN

**Assignee(s):** GENERAL ELECTRIC CO ; GENERAL ELECTRIC COMPANY ; GE WIND ENERGY GMBH

**Inventor(s):** (std): PAURA INGO ; VOSS STEFAN ; SCHWEDE STEFAN ; STEFAN SCHWEDE ; INGO PAURA ; STEFAN VOSS

**47) Family number: 54261469 (US2013243989A)**

© PatBase

**Title:** LATTICE SUPPORT STRUCTURE

**Abstract:** The present disclosure is drawn to a lattice support structures and methods of making such structures, including tooling and articles used therein. In one embodiment, a method for forming a composite lattice support structure can comprise: obtaining a semi-rigid mold having semi-rigid channels, at least some of the semi-rigid channels intersecting at strategic locations; laying up a fiber material, in the presence of a resin, within the semi-rigid channels forming a lay-up within the semi-rigid channels, such that the lay-up extends above the surface of the mold; consolidating the lay-up to form composite cross supports having a pre-determined lateral cross-sectional area controlled by a cross-sectional area of the channels, and that intersect to form nodes, thereby forming the composite lattice support structure; and subjecting the composite lattice support structure to a particulate, wherein the composite lattice support structure is at least partially submerged in the particulate and systematically rotated to cause the particulate to contact the various surfaces of the cross supports and nodes thereby reducing at least of portion of material on the surfaces.

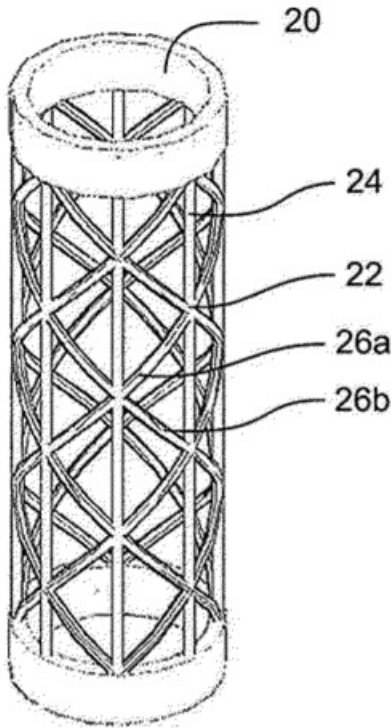
**Classifications:**

**International (IPC 8-9):** B29C53/56 B29C70/06 B32B1/08 E04B1/19 E04H12/00 F16S3/08 (Advanced/Invention)

**CPC:** B32B1/08 E04C3/36 E04H12/10 B29C53/566 B29C53/822 Y10T428/1393 B29C70/222 B29C70/30

**US:** 156/161 156/169 156/443 156/446 428/36.91

PatBase - US2013243989\_AA



**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| US2013243989 AA    | 20130919         | US20120732250      | 20121231         |
| WO13102221 A1      | 20130704         | WO2012US72334      | 20121231         |

**Priority:**

US20110582207P 20111230 US20120732250 20121231

**Probable Assignee:** SIGMA TEK LLC

**Assignee(s):** (std): SIGMA TEK LLC

**Inventor(s):** (std): KIPP MICHAEL D ; RIDGES MICHAEL D ; WILSON ERICH A

**Agent(s):** JOHNSON CHRISTOPHER L ET AL

**Designated states:** AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

**48) Family number: 43198488 (US2009107567A)**

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**Title:** COMBINATION WATER TOWER AND ELECTRICAL WIND TURBINE GENERATOR

**Abstract:** A combination tower includes a first elevating section, a second elevating section, a storage tank located above the first elevating section, and a wind turbine attached to the top of the second elevating section. The first elevating section is capable of supporting the second elevating section, storage tank, and wind turbine.

**Classifications:**

**International (IPC 8-9):** E03B11/00 E04H12/30

F03D9/00 (Advanced/Invention);

E03B11/00 E04H12/00 F03D9/00 (Core/Invention)

**CPC:** E04H12/30 E03B11/02 E03B11/12 F05B2240/91 F05B2240/911

Y02E10/725 Y02E10/728 Y10T137/8376 Y10T137/85978 Y02A20/104

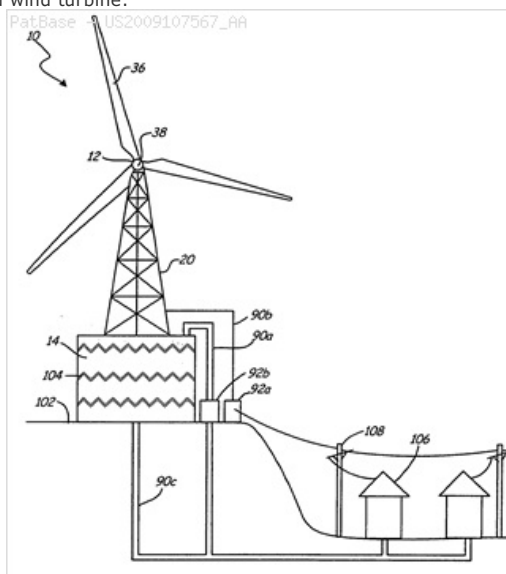
Y02A20/106 F03D9/14 F03D9/255 F03D13/20 F03D15/10 F03D80/80

**European:** E03B11/02 E03B11/12 E04H12/30 F03D11/04

R05B240/91 R05B240/911 Y02E10/72H Y02E10/72N

**US:** 137/560 137/565.01 137/565.010S 290/55 290/55S 52/40

52/40S



**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| US2009107567 AA    | 20090430         | US20080288628      | 20081022         |

**Priority:**

US20070000529P 20071026 US20080288628 20081022

**Probable Assignee:**

CRARY PETER B

**Assignee(s): (std):**

CRARY PETER B

**Inventor(s): (std):**

CRARY PETER B

**Agent(s):**

KINNEY AND LANGE PA

**49) Family number: 1354490 (US3999340A)**

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**Title:** INSULATING COVER AND CLAMP FOR GUY WIRES OR COVERS

**Abstract:** An insulating protective cover sleeve assembly for a guy wire consisting of a longitudinally slit sleeve of insulating material having an enlarged bottom end portion. In the lower end portion of the sleeve is secured a clamp, likewise of insulating material. The clamp consists of two opposing jaws integrally connected by a flexible band. The jaws are formed with two sets of different-sized opposing arcuate recesses to receive different sizes of guy wires therebetween. One of the jaws has a counterbore hole to receive a clamping screw which is threadably engageable in the other jaw to tighten the clamp. The wall of the enlarged sleeve portion has a hole registering with the counterbored hole so that a screwdriver or Allen wrench may be drivingly engaged with the clamping screw. A channel-shaped clip engages over the top corner portions of the sleeve segments adjacent the top of the sleeve slit and is secured to one segment. The assembly allows the sleeve to expand or contract without causing distortion thereof. In a modified arrangement, clamps are provided in both the top and bottom of the sleeve, but the top clamp is loose, allowing unrestricted expansion and contraction of the sleeve. The enlarged bottom end portion may be omitted and the clamp may be secured in the normal cross-section at the bottom end of the slit sleeve.

**Classifications:**

**International (IPC 8-9):** E04H12/20 H01B17/12 (Advanced/Invention);

E04H12/00 H01B17/02 (Core/Invention)

**International (IPC 1-7):** E04H12/20 F16G11/00 H01B17/58

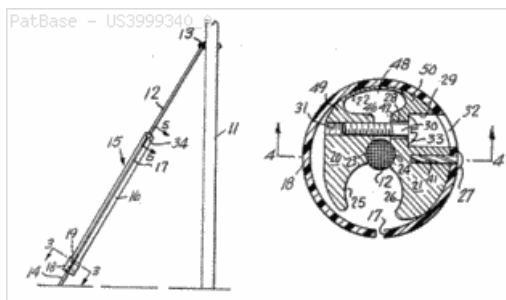
**CPC:** Y10T24/39 Y10T24/3936 Y10T24/3956 Y10T24/3962

Y10T24/44009 Y10T24/44684 H01B17/12 E04H12/20

**European:** E04H12/20 H01B17/12

**US:** 138/103 138/108 138/156 174/136 24/115R 24/132R 24/132WL

24/135K 24/456 24/535 52/147 52/741.3



**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| US3999340 A        | 19761228         | US19750625385      | 19751024         |
| US4135336 A        | 19790123         | US19760753871      | 19761223         |

**Priority:**

US19750625385 19751024

**Probable Assignee:** VIRGINIA PLASTICS

**Assignee(s): (std):** VIRGINIA PLASTICS

**Assignee(s):** VIRGINIA PLASTICS CO ; VIRGINIA PLASTICS COMPANY

**Inventor(s): (std):** BOGESE CHARLES E ; BOGESE II STEPHEN B ; BOGESE STEPHEN B

**Title:** System for assembling and disassembling a mast

**Abstract:** An apparatus for assembling or disassembling a mast comprising a plurality elongate mast sections adapted to be attached together in end-to-end configuration. The apparatus includes a lifting assembly for raising or lowering the mast from its bottom end, and a plurality of winches for reeling in or feeding out guy lines attached to the mast. The apparatus also includes a computer for controlling the operation of the winches so as to ensure the length of guy line fed out of the winches is such that the mast is supported in a substantially vertical position.

**Classifications:**

**International (IPC 8-9):** B23P21/00 E04H12/20

E04H12/34 (Advanced/Invention);

E04H12/00 (Core/Invention)

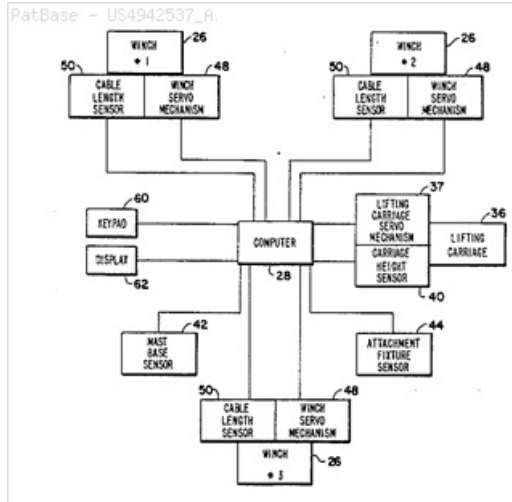
**International (IPC 1-7):** B23P21/00 B66F11/02 E04H12/00

E04H12/20 E04H12/34 G06F15/20

**CPC:** E04H12/20 E04H12/34

**European:** E04H12/20 E04H12/34

**US:** 52/110 52/111 52/123.1 52/726 52/726.4 700/275 703/1



**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| CA2003302 AA       | 19900615         | CA19892003302      | 19891117         |
| DE3940905 A1       | 19900621         | DE19893940905      | 19891211         |
| FR2640668 A1       | 19900622         | FR19890016483      | 19891213         |
| GB2226802 A1       | 19900711         | GB19890025837      | 19891115         |
| GB2226802 B2       | 19920729         | GB19890025837      | 19891115         |
| GB8925837 A0       | 19900104         | GB19890025837      | 19891115         |
| JP2213574 A2       | 19900824         | JP19890324144      | 19891215         |
| US4942537 A        | 19900717         | US19880285051      | 19881215         |

**Priority:**

US19880285051 19881215 CA19892003302 19891117

**Probable Assignee:** FIBER MATERIALS

**Assignee(s):** (std): FIBER MATERIALS ; FIBER MATERIALS INC

**Assignee(s):** FIBER MATERIALS INC BIDDEFORD ME US ; VERRY EDWARD H

**Inventor(s):** (std): VERRY EDWARD H ; VERRY EDWARDS H ; EDOWAADO ETSUCHI BUERII

**Inventor(s):** EDWARDS H VERRY ; EDWARD H VERRY ; VERRY EDWARD H YARMOUTH ME US

**Agent(s):** MACRAE AND CO

**Title:** STACKABLE TOWER TRAILER

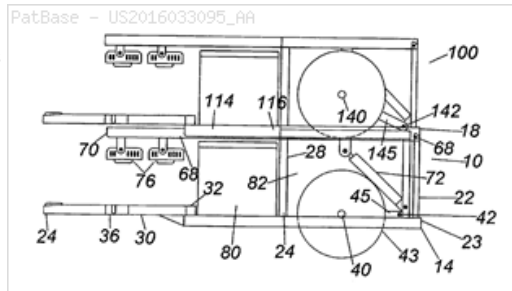
**Abstract:** A portable tower trailer having a light tower housing constructed to allow for both stacking and nesting which is beneficial in both storage and shipping of light towers is disclosed. The portable tower trailer employs a frame having a hinged axle that allows the wheels to operate in a conventional manner. The hinged axle further allows the wheels to be rotated upward allowing the frame to rest flush on the ground or stacked upon a similar shaped portable tower. The stackable light tower is constructed having a base employing an engine system and a fuel tank; and a mast pivotally coupled to the base and movable between a storage configuration and a positioning configuration. The storage configuration is when the mast is folded over an upper surface of the base whereby an additional light tower base or tower trailer may be placed or stacked over the top of the first light tower base.

**Classifications:**

**International (IPC 8-9):** B60D1/145 B60P3/18 B60Q1/02 B60S9/02 B62D33/04 B62D63/06 B62D63/08 E01F9/615 E04H12/00 E04H12/18 E04H12/34 F02B63/04 F16M11/20 F16M11/26 F16M11/28 F21L13/00 F21L14/04 F21L4/08 F21V21/00 F21V21/14 (Advanced/Invention); B60P3/18 E04H12/18 (Advanced/Non-invention)

**CPC:** E04H12/187 B60D1/145 B60S9/02 B60D2001/008 B62D33/04 B60Q1/02 F02B63/047 B62D63/061 B62D63/062 B62D63/08 E04H12/345 F21L4/08 F21L13/00 F21V21/14 F21V21/22 B60P3/06 F21V21/38 F21W2131/10 E04H5/02 E04H12/182 E04H12/22 E04H17/22

**US:** 362/192 52/116



**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| CA3024236 AA       | 20190516         | CA20183024236      | 20181115         |
| US2016033095 AA    | 20160204         | US20150732128      | 20150605         |
| US2018073691 AA    | 20180315         | US20170818215      | 20171120         |

|                 |          |               |          |
|-----------------|----------|---------------|----------|
| US2018201175 AA | 20180719 | US20170815153 | 20171116 |
| US2018273121 AA | 20180927 | US20180897993 | 20180215 |
| US9897268 BB    | 20180220 | US20150732128 | 20150605 |

**Priority:**

US20140008848P 20140606 US20150145002P 20150409 US20150732128 20150605  
US20170815153 20171116 US20170818215 20171120 US20180897993 20180215

**Probable Assignee:** GENERATOR CONCEPTS INC

**Assignee(s):** (std): GENERATOR CONCEPTS INC ; KENNEDY GINO

**Inventor(s):** (std): KENNEDY GINO

**Agent(s):** FINLAYSON AND SINGLEHURST; MCHALE AND SLAVIN PA

**52) Family number: 12784567 (US5557892A)**

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**Title:** Power mast

**Abstract:** A power mast for the automatic vertical elevation and retraction of various devices, such as an antenna mounted on a communications vehicle. The mast is cable-driven, having a plurality of individual telescoping sections which allow for an overall collapsed height the same as or only slightly higher than the tallest such individual section. The cable is threaded around a series of pulleys, and is driven by a motor. Constant tension is maintained in the system, so that when in its operating or "up" position, the device is held in a stable condition until retracted.

**Classifications:**

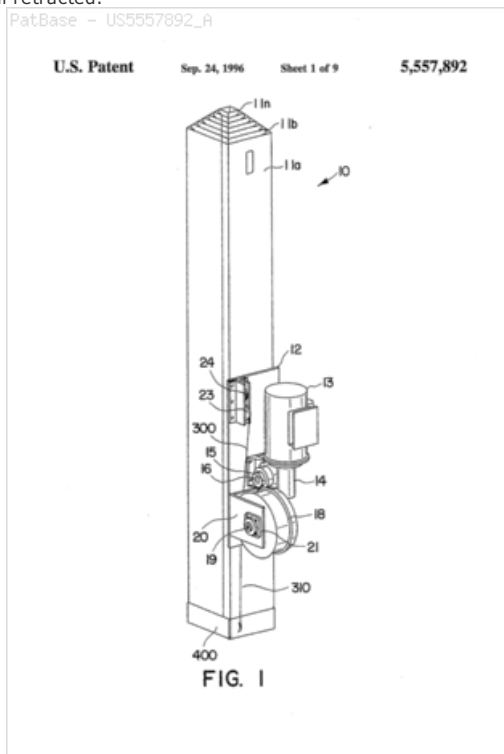
**International (IPC 8-9):** E04H12/18 H01Q1/12 (Advanced/Invention);  
E04H12/00 H01Q1/12 (Core/Invention)

**International (IPC 1-7):** B66C23/06

**CPC:** E04H12/182 H01Q1/1235

**European:** E04H12/18B H01Q1/12C

**US:** 343/883 52/111 52/118 52/121 521/210



**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| US5557892 A        | 19960924         | US19940207926      | 19940308         |

**Priority:**

US19940207926 19940308

**Probable Assignee:** WOLF COACH INC

**Assignee(s):** (std): WOLF COACH INC

**Assignee(s):** DAIMLER BENZ AG ; DAIMLERCHRYSLER AG

**Inventor(s):** (std): LAVIN KEVIN R

**53) Family number: 2999578 (US4740334A)**

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**Title:** Tower packing element with embossed surfaces

**Abstract:** An efficient embossed packing element for exchange columns is made up of a plurality of preformed embossed vertical sheets, each having a plurality of elongated inclined troughs including converging embossed sidewalls, valleys, and ridges extending between upper inlet edges and lower outlet drip edges and projecting alternately outwardly from one side and then the opposite side of the median plane of each sheet. Projecting from the converging sidewalls of the troughs are a plurality of hollow protuberances with perforated peaks including small openings surrounded by edges of the wall about the peaks. The embossed sheets are arranged so that the inclined rows of the embossed troughs in adjacent sheets are oppositely inclined and in criss-crossing relation to the inclined rows of the adjacent sheet of the packing element causing frequent changes in direction of liquid flow and whereby both embossed sides of each sheet are more easily and uniformly wetted by the frequently diverted liquid flowing downwardly over the surfaces thereof.

**Classifications:**

**International (IPC 8-9):** B01D3/26 B01D53/18 B01J19/00 B01J19/32  
F28F25/08 (Advanced/Invention);  
B01J19/00 (Advanced/Non-invention);

B01D3/14 B01D53/18 B01J19/00 B01J19/32

F28F25/00 (Core/Invention)

**International (IPC 1-7):** B01D3/26 B01D3/28 B01D53/18 B01D53/20 B01F3/04 B01J19/00 B01J19/30 B01J19/32 E04H12/00 F16J15/00 F16J15/02 F16J15/44 F28C1/00 F28F25/08

**CPC:** B01J19/32 B01J2219/3221 B01J2219/32213 B01J2219/32227 B01J2219/32237 B01J2219/32251 B01J2219/32408

**European:** B01J19/32 L01J219/322B10 L01J219/322B12B L01J219/322B4 L01J219/322B6 L01J219/322B8B L01J219/324D

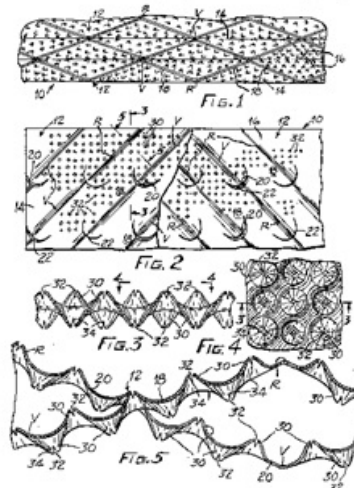
**US:** 261/112 261/112.2 261/113

PatBase - US4740334\_R

U.S. Patent

Apr. 26, 1988

4,740,334



#### Family:

| Publication number | Publication date | Application number | Application date |
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| AT101805 E         | 19940315         | AT19880108530T     | 19880527         |
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| IN171304 A         | 19920912         | IN1988CA00433      | 19880527         |
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| MX166450 B         | 19930111         | MX19880011672      | 19880527         |
| NO170058 B         | 19920601         | NO19880002354      | 19880527         |
| NO170058 C         | 19920909         | NO19880002354      | 19880527         |
| NO882354 A         | 19881130         | NO19880002354      | 19880527         |
| NO882354 A0        | 19880527         | NO19880002354      | 19880527         |
| NO882354 L         | 19881130         | NO19880002354      | 19880527         |
| US4740334 A        | 19880426         | US19870055579      | 19870529         |
| ZA8803648 A        | 19890125         | ZA19880003648      | 19880523         |

#### Priority:

US19870055579 19870529 CA19880564375 19880418 EP19880108530 19880527

**Probable Assignee:** KOCH GLITSCH LP

**Assignee(s):** (std): NORTON CO

**Assignee(s):** NORTON CO A CORP OF MA ; NORTON CO WORCESTER MASS ; NORTON COMPANY ; NORTON CO WORCESTER MASS US ; RUKOVENA FRANK JR ; APPLIED IMMUNESCIENCES INC ; KOCH GLITSCH LP ; NOOTON CO

**Inventor(s):** (std): RUK OVENA FRANK JR ; RUKOVENA FRANK ; RUKOVENA FRANK JR ; FRANK RUKOVENA JR ; FURANKU RUKOBENA JIYUNIA ; RUKOVENA JR FRANK

**Inventor(s):** FURANKU RUKOBENA JUNIA ; RUKOVENA FRANK JR TALLMADGE OH 44278 ; RUKOVENA FRANK JR TALLMADGE OH 44278 US ; FRANK RUKOVENA

**Agent(s):** SPRUSON AND FERGUSON; ASPEN PHARMA PTY LTD; GOWLING LAFLEUR HENDERSON LLP

**Designated states:** AT BE CH DE FR GB IT LI NL SE

**54) Family number: 20150588** (GB417467A)

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**Title:** Improvements in or relating to towers for use as or for carrying electrical conductors

**Abstract:** [Class 40 (v).] A mast for use as an aerial is supported on insulators at three or more points with freedom of movement thereon, and is anchored to the ground within the area enclosed by the points of support. The insulator supports 4, 5 are disposed in the line of the corner supports 6 and consist of truncated cones of refractory material loosely connected

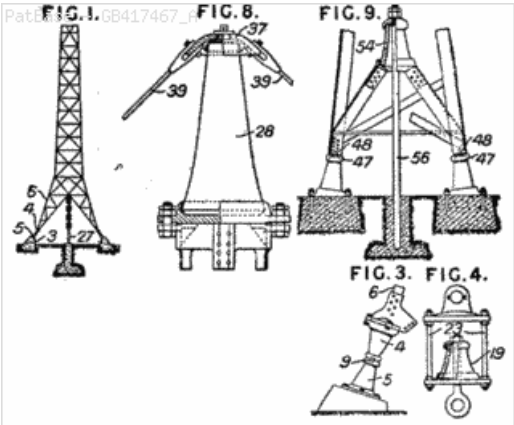
together by a dowel 9, Fig. 3. The anchoring device, Fig. 4, is formed of alternate metal-tension and porcelain-compression members 23, 19, respectively, a turnbuckle 27 being used to regulate the pull on the mast. In a modification, Fig. 8, the pull on the mast is adjusted by tension rods 39 attached to the anchoring point 3 and to an insulated cap 37 supported by an insulator 28 carried in a socket supported by bars from the main mast supports 6. In a further modification, Fig. 9, the mast is supported at four points by pins 48 on the insulator caps 47, and the pull on the mast is adjusted by a centre rod 56 and nuts through a central insulator 54.

**Classifications:**

**International (IPC 8-9):** E04H12/10 (Advanced/Invention);  
E04H12/00 (Core/Invention)

**CPC:** E04H12/10

**European:** E04H12/10



**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| GB417467 A         | 19341005         | GB19330010242      | 19330405         |

**Probable Assignee:** BLAW KNOX CO  
**Assignee(s): (std):** BLAW KNOX CO  
**Assignee(s):** BLAW KNOX COMPANY

**55) Family number: 1170599 (US3905168A)**

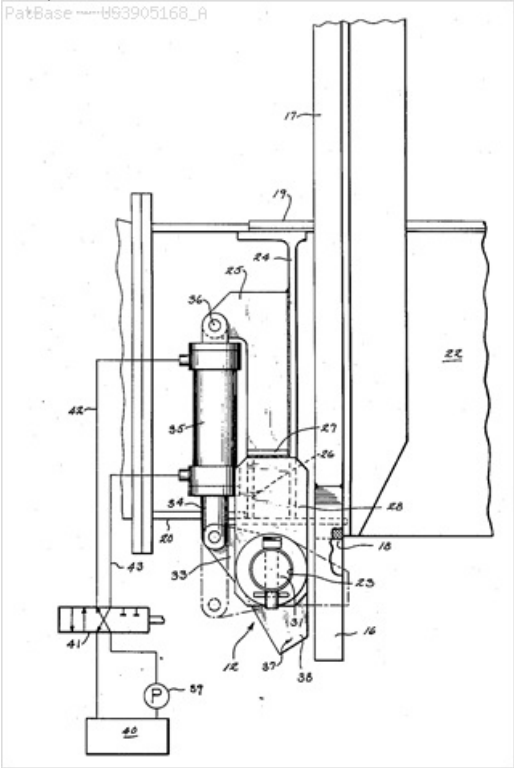
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**Title:** Mast locking mechanism

**Abstract:** A mechanism for locking a tiltable mast and a machinery platform of a drilling apparatus together includes a tapered latch pivotable into and out of complementary wedging relationship with a tapered slot formed in a catch at the foot of the mast. The tapered latch is secured on a pivoted shaft, and a hydraulic actuator provides an operating force for rotating the shaft to move the tapered latch into and out of engagement with the tapered slot of the catch.

**Classifications:**

**International (IPC 8-9):** E04H12/34 E21B15/00 E21B15/04  
E21B7/02 (Advanced/Invention);  
E04H12/00 E21B15/00 E21B7/02 (Core/Invention)  
**International (IPC 1-7):** E04H12/34 E21B15/00 E21B7/02 E21B7/04  
**CPC:** E21B7/02 E21B7/027 E21B15/04  
**European:** E21B15/00 E21B15/04 E21B15/04C E21B7/02  
E21B7/02S  
**US:** 173/28 173/42 248/654 52/116 521/160



**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| AU197579256 A1     | 19760923         | AU19750079256      | 19750319         |
| CA1010223 A1       | 19770517         | CA19750222548      | 19750319         |
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| US3905168 A        | 19750916         | US19740452730      | 19740320         |

**Priority:**

US19740452730 19740320

**Probable Assignee:** BECOR WESTERN INC

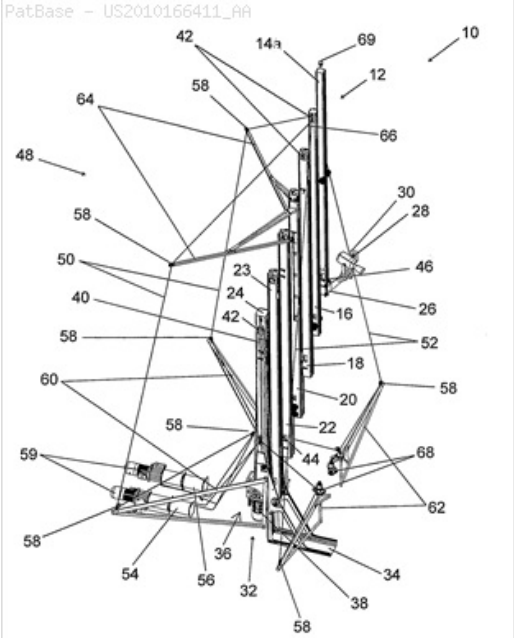
**Assignee(s):** (std): BUCYRUS ERIE CO ; RUSTON BUCYRUS LTD  
**Assignee(s):** SMITH MATTHEW ; BUCYRUS ERIE COMPANY ; NELMARK JACK D ; BECOR WESTERN INC  
**Inventor(s):** (std): NELMARK JACK D ; SMITH MATTHEW ; NELMARK JACK DENNIS  
**Inventor(s):** MATTHEW SMITH ; JACK DENNIS NELMARK

**56) Family number: 32820609** (US2010166411A) © PatBase

**Title:** MAST ASSEMBLY

**Abstract:** A camera mast assembly comprising two or more sections movable with respect to one another from an unextended to an extended configuration, and a carriage attached to one of the sections for mounting a camera on the assembly, wherein the carriage is continuously movable in a substantially uniform manner from a first position wherein the sections are in the unextended configuration to a second position wherein the sections are in the extended configuration.

**Classifications:**  
**International (IPC 8-9):** E04H12/18 F16M11/04  
G03B17/00 (Advanced/Invention);  
E04H12/00 F16M11/02 G03B17/00 (Core/Invention)  
**CPC:** E04H12/182 B66F11/048 E04H12/20 E04H12/18  
**European:** B66F11/04D E04H12/18 E04H12/18B E04H12/20  
**US:** 248/122.1 396/419



**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| EP1984589 A1       | 20081029         | EP20070712667      | 20070202         |
| GB200602222 A0     | 20060315         | GB20060002222      | 20060203         |
| GB200814241 A0     | 20080910         | GB20080014241      | 20070202         |
| GB2434806 A1       | 20070808         | GB20060002222      | 20060203         |
| GB2448277 A1       | 20081008         | GB20080014241      | 20070202         |
| GB2448277 B2       | 20091111         | GB20080014241      | 20070202         |
| US2010166411 AA    | 20100701         | US20070278143      | 20070202         |
| WO07088379 A1      | 20070809         | WO2007GB00366      | 20070202         |

**Priority:**

GB20060002222 20060203      WO2007GB00366 20070202

**Probable Assignee:** REDMAN ANDREW

**Assignee(s):** (std): GLADSTONE MATTHEW ; REDMAN ANDREW

**Assignee(s):** MATTHEW GLADSTONE

**Inventor(s):** (std): REDMAN ANDREW ; GLADSTONE MATTHEW

**Inventor(s):** MATTHEW GLADSTONE ; ANDREW REDMAN

**Agent(s):** BARNFATHER KARL JON ET AL; LAW OFFICE OF JAMES TROSINO

**Designated states:** AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD MG MK ML MN MR MW MX MY MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

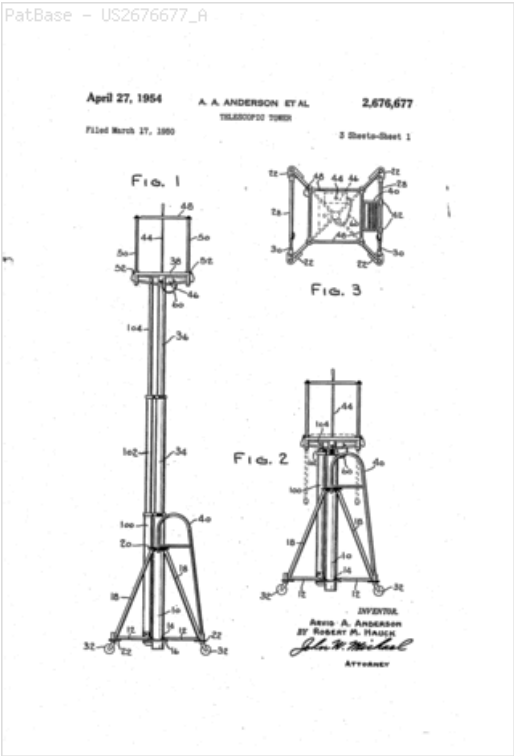
**57) Family number: 21703611** (US2676677A) © PatBase

**Title:** TELESCOPIC TOWER

**Abstract:** (Claim 1) 1. Telescopic apparatus comprising first, second ' and third tubes, hydraulic ram means having one part fixed with respect to said first tube and its other part movable with respect to said first tube, a pulley fixed with respect to said first tiibe, a sheave mounted on said other part of said ram means, a cable connected to said other part of\_ said ram means and to said second tube and reeved over said pulley and said sheave, another sheave fixed to the bottom of said second tube, another cable reeved over said other sheave and being connected to said third tube and to said first tube, and means for regulating fluid flow to and from said ram means. .

**Classifications:**  
**International (IPC 8-9):** E04H12/18 (Advanced/Invention);  
E04H12/00 (Core/Invention)  
**International (IPC 1-7):** B66B9/04

CPC: E04H12/182  
European: E04H12/18B  
US: 182/101 182/113 182/148 182/69.4 254/386 254/93R 52/115 52/121 92/137



Family:

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| US2676677 A        | 19540427         | US19500150282      | 19500317         |

Priority:

US19500150282 19500317

Probable Assignee: SAFEWAY STEEL PRODUCTS INC  
Assignee(s): (std): SAFEWAY STEEL PRODUCTS INC  
Inventor(s): (std): HAUCK ROBERT M ; ANDERSON ARVID A

58) Family number: 49957618 (US2011283640A)

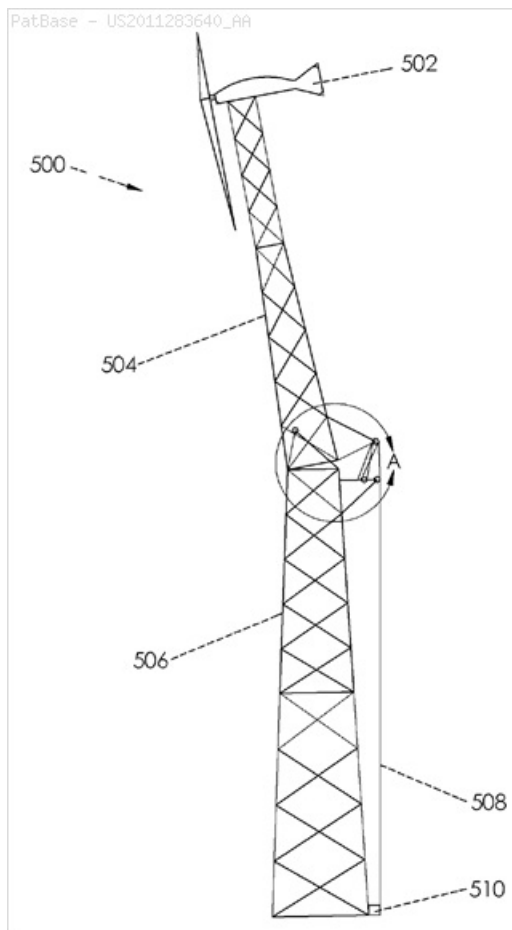
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Title: FOLDING TOWER

**Abstract:** A multi-section folding tower for supporting wind turbines, windmills, power generation, communication, lighting, and measurement machines comprises an upper tower section and a lower tower section pivotally connected at an upper hinge, a lever, and a lower hinge attaching the lower tower section to an anchor foundation not requiring concrete wherein equipment mounted to the top of the tower is accessible by lowering a portion of the tower. The two tower sections and lever are assembled on the ground by connecting the upper and lower sections with a hinge, and the lower tower section is hinged to the tower foundation. The hinged tower sections are raised by first pulling the lower tower section to a vertical position, and a removable installation wheel attached to the tower top enables the lower section to be raised to a vertical position. The upper section is raised to a vertical position by pulling the lever.

Classifications:

**International (IPC 8-9):** E02D27/42 E04H12/00 E04H12/18 E04H12/34 F03D11/04 (Advanced/Invention)  
**CPC:** E04H12/10 E02D27/42 E04H12/187 F05B2240/9121 F05B2240/9152 F05B2240/91521 Y02E10/728 E04H2012/006 F03D13/20 E02D27/425 F03D13/10 F03D13/22  
**European:** E02D27/42 E04H12/10 E04H12/18D F03D11/04 R05B240/9121 R05B240/9152 R05B240/91521 Y02E10/72 Y02E10/72N  
**US:** 52/292 52/292P 52/646 52/646S 52/651.01 52/651.010S



#### Family:

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| US2011283640 AA    | 20111124         | US20110111809      | 20110519         |
| WO11146773 A2      | 20111124         | WO2011US37243      | 20110519         |
| WO11146773 A3      | 20140724         | WO2011US37243      | 20110519         |

#### Priority:

US20100396083P 20100521 US20110111809 20110519

**Probable Assignee:** CATADON SYSTEMS INC

**Assignee(s):** (std): CATADON SYSTEMS INC ; MILLER DONALD C

**Inventor(s):** (std): MILLER DONALD C

**Agent(s):** MALLON JOSEPH J

**Designated states:** AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

#### 59) Family number: 22822625 (US2954559A)

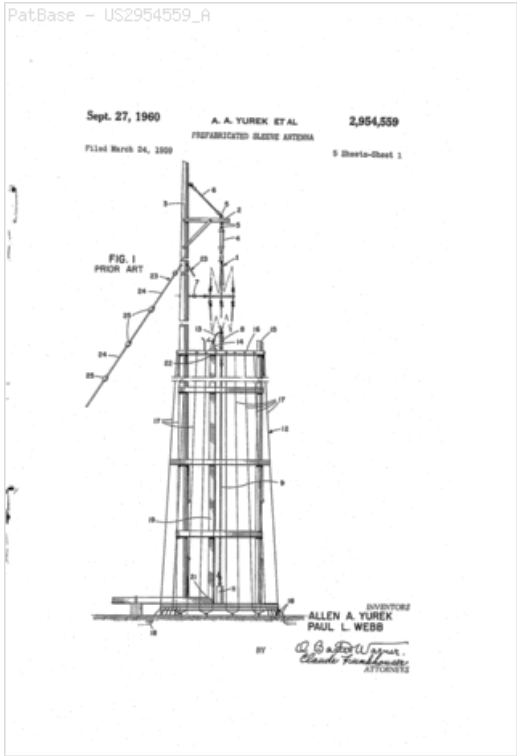
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**Title:** PREFABRICATED SLEEVE ANTENNA

**Abstract:** 1. A high performance prefabricated sleeve-type antenna and shielded supporting tower system of the type described, comprising an antenna sleeve comprised of a plurality of cage-like elements and a pair of truncated right conical section-like elements, said cage-like elements comprising a pair of spaced flanges and a plurality of rod-like elements connecting said spaced flanges, said right conical section-like members comprising a flange, a tip member spaced from the flange and a plurality of rod-like elements connecting said flange and said tip member, one of said flanges on each cage-like element having a different diameter than the other of said flanges but having the same diameter as the next adjacent flange of the next adjacent element such that when the elements are connected a double-ended right cone configuration is achieved, means for securing said cage-like elements and said right conical section-like elements together to form an assembled antenna sleeve, a shielded supporting tower comprising a plurality of prefabricated pyramidal elements having an upper and a lower frame member, vertically extending members connecting the upper and lower frame members and a plurality of shielding rods attached to the frame members in equally spaced relation about the outer peripheral edge, the lower frame member of each pyramidal element having a greater inside length and width than the outside length and width of the upper frame member of the next adjacent pyramidal element and the lower frame member of each pyramidal element having the same outside length and width as the upper frame member of the next adjacent pyramidal element such that the uppermost pyramidal element will nest within the next adjacent pyramidal element and this pyramidal element will nest within the next adjacent lower pyramidal element, such that the entire tower may be transported or handled as a package the size of the lowermost pyramidal element, a uniform potential grounding system comprising a plurality of radially disposed conducting elements extending outwardly from the base of the tower, means on the base pyramidal element of said tower for connecting said conducting elements to said tower, supporting means mounted on the uppermost pyramidal element of said tower for removable mounting reception of the lower end of said antenna sleeve, said supporting means being of a material providing electrical insulation of said sleeve with respect to said shielding tower, an impedance matching coaxial transmission line connected to extend at least from the tower base through the interior of said tower to said antenna sleeve, and a plurality of guying means attached to extend between the centermost flange of said antenna sleeve and the earth ground.

**Classifications:**

**International (IPC 8-9):** H01Q9/40 (Advanced/Invention);  
E04H12/24 (Advanced/Non-invention);  
H01Q9/04 (Core/Invention);  
E04H12/00 (Core/Non-invention)  
**International (IPC 1-7):** H01Q1/00  
**CPC:** E04H12/24 H01Q9/40  
**European:** H01Q9/40 P04H12/24  
**US:** 343/875 343/880 343/890 343/896 52/148 52/40 52/637



Family:

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| US2954559 A        | 19600927         | US19590801676      | 19590324         |

Priority:

US19590801676 19590324

**Probable Assignee:** YUREK ALLEN A  
**Assignee(s):** (std): YUREK ALLEN A  
**Inventor(s):** (std): YUREK ALLEN A

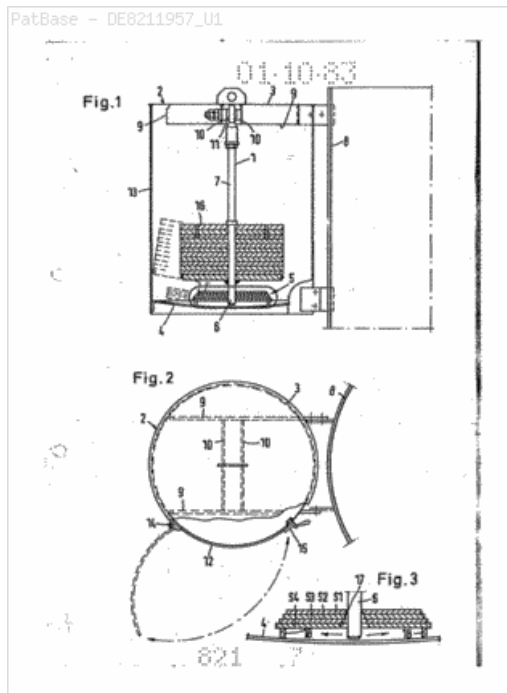
60) Family number: 16448641 (DE8211957U1) © PatBase

**Title:** VORRICHTUNG ZUR SCHWINGUNGSDAEMPfung AN TURMARTIGEN BAUWERKEN WIE SCHORNSTEINEN, SENDEMASTEN O.DGL. DEVICE FOR TOWER-LIKE STRUCTURES HOW TO SCHWINGUNGSDAEMPfung of chimneys, TRANSMISSION TOWERS or the like. (Machine translation)

**Abstract:** Source: DE8211957U1 [DE] (Claim 1) 1. Vorrichtung zur Schwingungsdaempfung an turm- artigen Bauwerken, wie Schornsteinen, Sende- masten od. dgl., mit einem an einer Krag- stuetze des Bauwerks zur Durchfuehrung raeum- licher Schwingungen aufgehaengten, als Pen- delstange ausgebildeten Schwingungskoeper dessen unteres Pendelende lose in einen nach oben offenen Hohlraum eines Reibgewichts eingreift, welches auf einer Reibplatte all- seitig verschiebbar aufliegt und aus mehre- ren aufeinandergestapelten Platten besteht, dadurch gekennzeichnet, dass die Platten (S1 bis S4) unverbunden auf- einanderliegen und sich von Platte zu Platte wenigstens teilweise ueberschneidende, zusam- men den Hohlraum fuer den Eingriff des unte- ren Pendelendes (6) bildende oeffnungen auf- weisen, die von der obersten Platte (S1) zur untersten Platte (S4) zunehmend groesser werden.

**Machine translation:** (Claim 1) 1 Apparatus for the vibration of tower-like structures, such as chimneys, transmission towers, or the like, with one on a cantilever support of the building to carry out spatially vibrations hanged in a pen- dels tange trained Schwingungskoeper pendulum whose lower end by a loose open-topped cavity of a Reibgewichts intervenes, which is based on a friction plate of all-sided rests displaced and of a plurality of stacked plates is characterized in that the plates (S1 to S4) unconnected to each other are and at least from plate to plate partially overlapping, the cavity together men for engaging the lower end-Ren pendulum (6) Fine-openings have to be from the top plate (S1) to the bottom plate (S4) becomes increasingly larger.

**Classifications:**  
**International (IPC 8-9):** E04B1/98 E04H12/00 E04H12/28  
H01Q1/20 (Advanced/Invention);  
E04B1/98 E04H12/00 H01Q1/20 (Core/Invention)  
**International (IPC 1-7):** E04B1/98 E04H12/00 E04H12/28 H01Q1/20  
**CPC:** E04B1/98 E04H12/00 E04H12/28 H01Q1/20

**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| DE8211957 U1       | 19840105         | DE19820011957U     | 19820424         |

**Priority:**

DE19820011957U 19820424

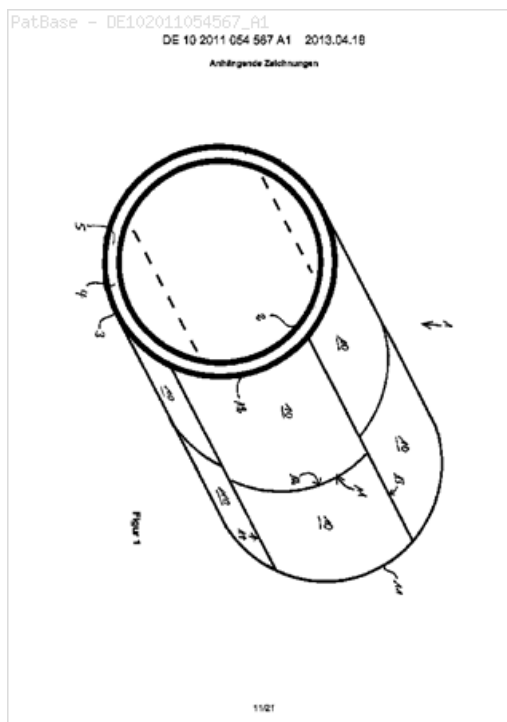
**Probable Assignee:** FRIEDRICH MAURER SOEHNE GMBH AND CO 8000 MUENCHEN DE KG**Assignee(s):** FRIEDRICH MAURER SOEHNE GMBH AND CO 8000 MUENCHEN DE KG ; FRIEDRICH MAURER SOEHNE GMBH AND CO KG 8000 MUENCH ; FRIEDRICH MAURER SOEHNE GMBH AND CO KG 8000 MUENCHEN DE**61) Family number: 53502649** (DE102011054567A1)

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**Title:** TOWER STRUCTURE FOR ESTABLISHMENT OF WIND TURBINE, HAS PARTIAL SHELL WITH ENGAGING UNIT OR RECEIVING UNIT PROVIDED ALONG LONGITUDINAL EDGES, SUCH THAT ENGAGING OR RECEIVING UNIT ARE FRICTIONALLY ENGAGED WITH CONNECTING ELEMENT**Abstract:** The tubular tower structure (1) has wall (3) consisting of several tower structure elements (10) that are formed as partial shells. The transverse edges (11,12) and longitudinal edges (13,14) extending relative to the longitudinal extension of the tower structure are interconnected to form the wall. The partial shell has an engaging unit or receiving unit provided along the longitudinal edges, such that engaging or receiving unit are frictionally engaged with connecting element. Independent claims are included for the following: (1) tower building element; and (2) method for building tower structure using tower building elements.**Classifications:****International (IPC 8-9):** E04H12/00 (Advanced/Invention)**CPC:** E04H12/08 Y02E10/728

DE 10 2011 054 567 A1 2013.04.18

Anhängende Zeichnungen



**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| DE102011054567 A1  | 20130418         | DE201110054567     | 20111018         |

**Priority:**

DE201110054567 20111018

**Probable Assignee:** SIAG ENGINEERING GMBH**Assignee(s):** (std): SIAG ENGINEERING GMBH**Inventor(s):** (std): KAISER AXEL ; KEINDORF CHRISTIAN**62) Family number: 11016649** (DE4224631C2)

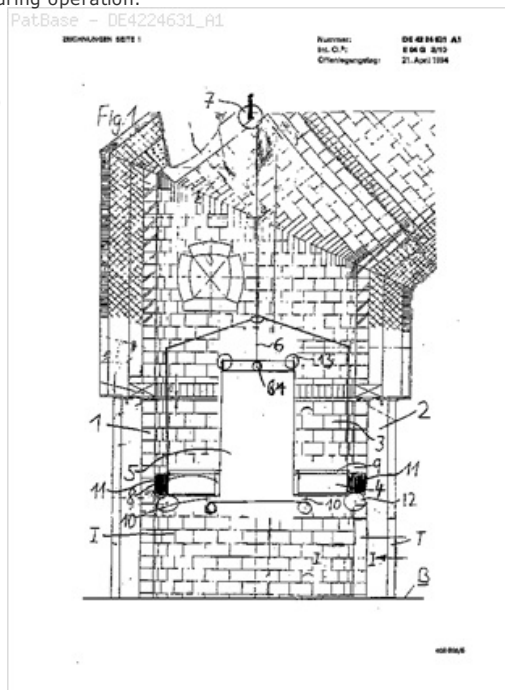
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**Title:** Platform for working in towers, chimneys, shafts etc. - has winding cage for material and/or personnel with platform assistable at devised height in shaft etc.

**Abstract:** There is a movable cage (5) for material and/or personnel, which have been supplied to the shaft (2), bottom (B). At the desired working height the platform is assistable (11,12). The cage is attached by a winch cable (6). The platform is fitted with a proof-shaped frame with an aperture for the winch cable. The bottom of the cage has followers (10) for engaging and carrying the platform. A protective roof is pref. fitted to the frame. Peripheral wheels (12) guide the platform along the shaft inner wall (1). ADVANTAGE - Increased work rate and safety during operation.

**Classifications:****International (IPC 8-9):** B66F11/04 E04G1/36 E04G3/00 E04G3/24 E04G3/30 (Advanced/Invention);

B66F11/04 E04G1/36 E04G3/00 E04G3/24 E04G3/28 (Core/Invention)

**International (IPC 1-7):** B66F11/04 E04G21/14 E04G21/32 E04G3/10 E04H12/00**CPC:** B66F11/04 E04G3/30 E04G3/246 E04G2003/286**European:** B66F11/04 E04G1/36 E04G3/00 E04G3/00G2 E04G3/24 E04G3/30**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| DE4224631 A1       | 19940421         | DE19924224631      | 19920725         |
| DE4224631 C2       | 19940818         | DE19924224631      | 19920725         |

**Priority:**

DE19924224631 19920725

**Probable Assignee:** SIEGFRIED SCHLUESSLER FEUERUNG**Assignee(s):** (std): SIEGFRIED SCHLUESSLER FEUERUNG**Assignee(s):** SIEGFRIED SCHLUESSLER FEUERUNGSBAU GMBH ; SIEGFRIED SCHLUESSLER FEUERUNGSBAU GMBH 29646 BISP ; SIEGFRIED SCHLUESSLER FEUERUNGSBAU GMBH 29646 BISPINGEN DE**Inventor(s):** VERZICHT DES ERFINDERS AUF NENNUNG**63) Family number: 46544651** (US2010313495A)

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**Title:** MAST ASSEMBLY FOR WIND TURBINE

**Abstract:** A mast assembly having a base, and a mast pivotally connected to the base for movement between a horizontal and an upright position. A linear actuator is connected between the base and the mast and is extensible to move mast about the pivot. A strut is selectively positioned between the mast and the base to inhibit pivotal movement toward the horizontal position during lifting of the mast. A plurality of abutments on the base permits selective connection between the actuator and the base. The strut position supports the mast while said actuator is moved between the abutments.

**Classifications:****International (IPC 8-9):** B66F1/02 B66F19/00 B66F3/30 E04G21/00 E04H12/00 E04H12/18 E04H12/34 F03D11/04

F03D13/20 (Advanced/Invention);

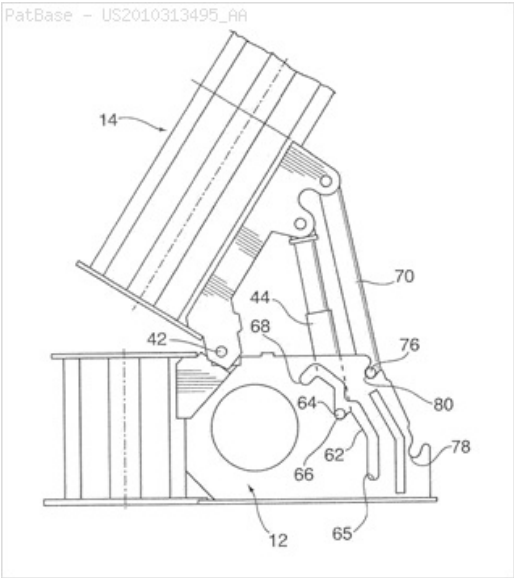
B66F1/00 B66F19/00 B66F3/24 E04H12/00 F03D11/00 (Core/Invention)

**CPC:** E04H12/187 B66F1/025 B66F3/30 F05B2240/913

F05B2240/91521 F05B2260/507 Y02E10/728 F03D13/20

**European:** B66F1/02B B66F3/30 E04H12/18D F03D11/04

R05B240/913 R05B240/91521 R05B260/507 Y02E10/72 Y02E10/72N



Family:

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| AU2010246858 AA    | 20101118         | AU20100246858      | 20100514         |
| AU2010246858 BB    | 20151001         | AU20100246858      | 20100514         |
| BRPI1010594 A2     | 20160315         | BR2010PI10594      | 20100514         |
| CA2702146 AA       | 20100727         | CA20102702146      | 20100514         |
| CA2702146 C        | 20120103         | CA20102702146      | 20100514         |
| CL2011002871 A1    | 20120706         | CL20110002871      | 20111115         |
| CL52516 B          | 20160512         | CL20110002871      | 20111115         |
| CN201794728 U      | 20110413         | CN201020198708U    | 20100517         |
| DE602010031455 D1  | 20160504         | DE201060031455T    | 20100514         |
| EP2459822 A1       | 20120606         | EP20100774461      | 20100514         |
| EP2459822 A4       | 20150114         | EP20100774461      | 20100514         |
| EP2459822 B1       | 20160323         | EP20100774461      | 20100514         |
| IN09902DN2011 A    | 20130125         | IN2011DN09902      | 20111215         |
| JP2012526929 T2    | 20121101         | JP20120510081T     | 20100514         |
| JP5680623 B2       | 20150304         | JP20120510081T     | 20100514         |
| MX2011012100 A1    | 20120628         | MX20110012100      | 20100514         |
| TR201605861 T4     | 20160523         | TR20160005861T     | 20100514         |
| US2010313495 AA    | 20101216         | US20100780504      | 20100514         |
| US8371074 BB       | 20130212         | US20100780504      | 20100514         |
| WO10130039 A1      | 20101118         | WO2010CA00719      | 20100514         |

Priority:

|                         |                        |                        |
|-------------------------|------------------------|------------------------|
| US20090178682P 20090515 | CA20102702146 20100514 | EP20100774461 20100514 |
| WO2010CA00719 20100514  | US20100780504 20100514 |                        |

Probable Assignee: ORENDA ENERGY SOLUTIONS INC

Assignee(s): (std): CHONGFU DRIVE POWER CO ; CHONGFU DRIVE POWER COMPANY ; GRANT CHRISTOPHER BERNARD ; REDRIVEN POWER INC ; ORENDA ENERGY SOLUTIONS INC

Assignee(s): ORENDA ENERGY SOLUTIONS INC IROQUOIS ; HARVEY CLAPP ; CLAPP HARVEY

Inventor(s): (std): GRANT CHRISTOPHER BERNARD

Inventor(s): CHRISTOPHERBERNARDGRANT ; GRANT CHRISTOPHER ; CHRISTOPHER BERNARD GRANT

Agent(s): PHILLIPS ORMONDE FITZPATRICK; BLAKE CASSELS AND GRAYDON LLP; ALESSANDRI AND COMPANIA LIMITADA; WEBER JEAN FRANCOIS; PINAR ARIKAN; JOHN R S; ORANGE JOHN R S ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

64) Family number: 52164665 (WO12139149A1)

© PatBase

Title: A POST RETAINER, POST RETAINING SYSTEM AND METHOD FOR RETAINING A POST AT A VARIABLE DEPTH

Abstract: A post retainer (10) comprising a sleeve (12) having a tapered internal profile; a top flange (18) extending from an end (14) of the sleeve (12); and a plurality of mid-section flanges (20) extending around the external profile of the sleeve (12) in the same direction as the top flange (18) and being spaced from one another. To meet the desired depth of a hole (46) into which the post retainer (10) is to be installed, one or more post retainers (10) are first connected together, where applicable, by sliding one post retainer (10) over the other such that the top flange (18) of one of the post retainers (10) abuts the lowest mid-section flange (20) of the other post retainer (10). The connected post retainers (10b) are then connected to a second post retainer (10a), the second post retainer (10a) being truncated at a space between mid-section flanges (20) such that the portion of the second post retainer (10a) remaining after truncation is the portion including the top flange (18). A reverse tapering configuration is also contemplated.

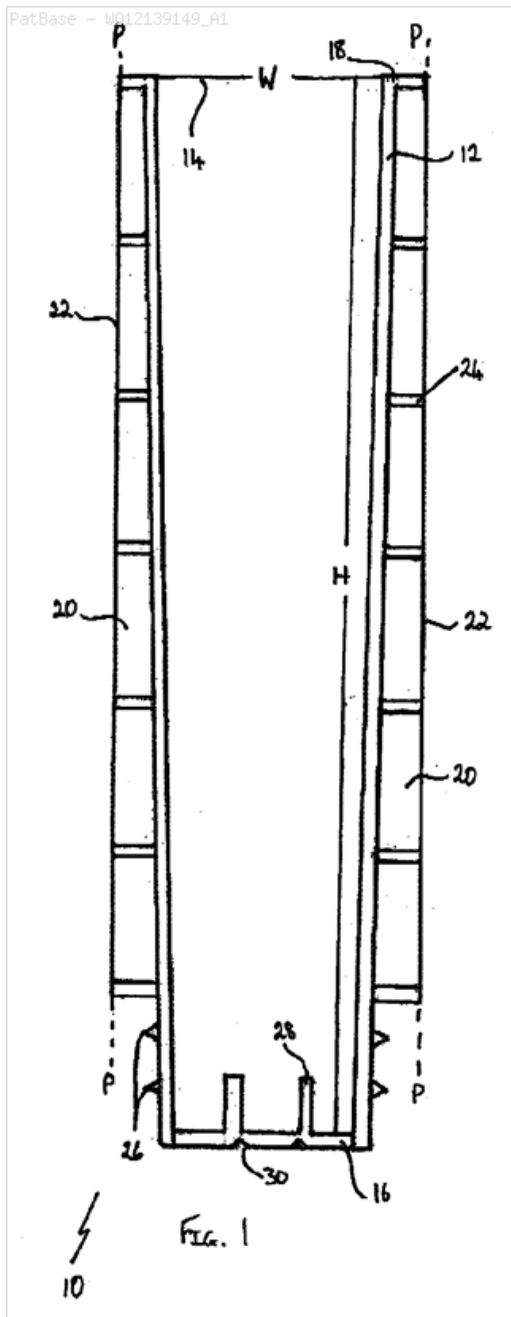
Classifications:

International (IPC 8-9): E01F9/013 E01F9/677 E04H12/22

E04H17/22 (Advanced/Invention)

CPC: E01F9/685

European: E01F9/011F6

**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| WO12139149 A1      | 20121018         | WO2011AU00414      | 20110411         |

**Priority:**

WO2011AU00414 20110411

**Probable Assignee:** SMART URBAN PTY LTD**Assignee(s):** (std): KASTEN BRIAN ; SMART URBAN PTY LTD**Inventor(s):** (std): KASTEN BRIAN**Agent(s):** ELLIPTIC LEGAL AND PATENT SERVICES

**Designated states:** AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

**65) Family number: 47719668** (US2012068464A)

© PatBase

**Title:** HYDROELECTRIC IN-PIPE TURBINE BLADES

**Abstract:** The special circumstances of working with hydroelectric turbines in pipes require innovations in blade shapes and systems that are presented here. An example is streamlining of the blades greater than that found in traditional hydroelectric turbines.

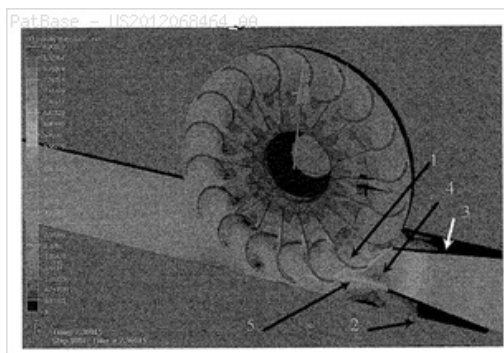
**Classifications:**

**International (IPC 8-9):** E04H12/00 F01D1/22 F01D15/00 F01D15/10 F01D5/14 F02B63/04 F03B1/00 F03B1/02 F03B1/04 F03B13/00 F03B13/06 F03B13/10 F03B15/06 F03B17/06 F03B3/12 F03D F03D1/00 F03D1/04 F03D11/00 F03D11/04 F03D3/02 F03D3/06

F03D7/02 F03D7/04 F03D9/00 F03G3/00 F03G3/04 F03G7/08  
F16D19/00 F24J2/52 H02K7/18 (Advanced/Invention);  
F01D15/10 F03B13/10 (Advanced/Non-invention);  
F03D (Subclass/Invention)  
**CPC:** F03D3/005 F05B2240/9121 H02K49/06 H02K49/102  
Y02T10/641 F03B1/00 F03B1/04 Y02E10/223 F03D3/061  
Y10T29/4932 Y10T29/49346 F03D1/04 F03D3/062 F05B2220/7068  
F05B2240/301 F05B2240/40 F05B2250/71 F05B2280/5008  
Y02E10/28 Y02E10/728 Y02E10/74 Y02P70/523 F03B13/00 F03D9/10  
F05B2220/20 F05B2220/602 Y02B10/50 Y02E10/72 Y02E60/17  
F03D11/04 F03D13/20 F03B15/06 F03B1/02 F05B2220/32  
F05B2220/706 F03B13/06 F01D15/10 Y02E10/725

**European:** F03B1/00 F03B1/04 F03B13/00 F03D11/04 F03D3/00D  
F03D3/06D F03D3/06E F03D9/02 H02K49/06 H02K49/10B  
R05B220/602 R05B220/7068 R05B240/301 R05B240/40  
R05B240/9121 R05B250/71 R05B280/5008 Y02B10/50 Y02E10/22B  
Y02E10/72 Y02E10/72N Y02E10/74 Y02T10/64B

**US:** 1/1 29/889.2 29/890.01 290/52 290/52P 290/55 290/55P 290/7 415/1 415/182.1 415/182.100S 415/1S 415/201 415/202  
415/221 415/221S 416/223R 416/243 416/243S 52/173.3 52/173.300P 52/651.01 52/651.010S



#### Family:

| Publication number | Publication date | Application number | Application date |
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| AU2010252559 AA    | 20101202         | AU20100252559      | 20100526         |
| AU2010252559 BB    | 20160728         | AU20100252559      | 20100526         |
| AU2010252560 AA    | 20101202         | AU20100252560      | 20100526         |
| AU2010252560 BB    | 20160721         | AU20100252560      | 20100526         |
| AU2010252561 AA    | 20101202         | AU20100252561      | 20100526         |
| AU2010252562 AA    | 20101202         | AU20100252562      | 20100526         |
| AU2010272260 AA    | 20110120         | AU20100272260      | 20100621         |
| CA2800765 AA       | 20121126         | CA20102800765      | 20100526         |
| CA2800765 C        | 20170822         | CA20102800765      | 20100526         |
| CN102369352 A      | 20120307         | CN201080023417     | 20100526         |
| CN102369353 A      | 20120307         | CN201080023421     | 20100526         |
| CN102369354 A      | 20120307         | CN201080023420     | 20100526         |
| CN102449269 A      | 20120509         | CN201080023401     | 20100526         |
| CN102483041 A      | 20120530         | CN201080023400     | 20100526         |
| CN102510947 A      | 20120620         | CN201080030387     | 20100621         |
| EP2435666 A2       | 20120404         | EP20100780142      | 20100526         |
| EP2435689 A2       | 20120404         | EP20100780140      | 20100526         |
| EP2435690 A2       | 20120404         | EP20100780141      | 20100526         |
| EP2435694 A2       | 20120404         | EP20100780138      | 20100526         |
| EP2435694 A4       | 20140521         | EP20100780138      | 20100526         |
| EP2435694 B1       | 20170712         | EP20100780138      | 20100526         |
| EP2435700 A2       | 20120404         | EP20100780139      | 20100526         |
| EP2435700 A4       | 20140423         | EP20100780139      | 20100526         |
| IL216596 A0        | 20120229         | IL20100216596      | 20100526         |
| IL216596 A1        | 20160731         | IL20100216596      | 20100526         |
| IN00156CN2012 A    | 20121026         | IN2012CN00156      | 20120104         |
| IN09592CN2011 A    | 20130524         | IN2011CN09592      | 20111220         |
| IN09614CN2011 A    | 20130329         | IN2011CN09614      | 20111220         |
| IN09630CN2011 A    | 20130215         | IN2011CN09630      | 20111221         |
| IN09637CN2011 A    | 20130329         | IN2011CN09637      | 20111221         |
| IN09652CN2011 A    | 20160831         | IN2011CN09652      | 20111221         |
| JP2012528271 T2    | 20121112         | JP20120512507T     | 20100526         |
| JP2012528272 T2    | 20121112         | JP20120512508T     | 20100526         |
| JP2012528273 T2    | 20121112         | JP20120512509T     | 20100526         |
| JP2012528274 T2    | 20121112         | JP20120512510T     | 20100526         |
| US2012068464 AA    | 20120322         | US20100322574      | 20100526         |
| US2012068470 AA    | 20120322         | US20100322580      | 20100526         |
| US2012192514 AA    | 20120802         | US20100383419      | 20100621         |
| US2013129495 AA    | 20130523         | US20100322576      | 20100526         |
| US2013142657 AA    | 20130606         | US20100322578      | 20100526         |
| US2013207390 AA    | 20130815         | US20100322573      | 20100526         |
| US2016341065 AA    | 20161124         | US20160224698      | 20160801         |
| US9080555 BB       | 20150714         | US20100322574      | 20100526         |
| US9255567 BB       | 20160209         | US20100322578      | 20100526         |
| US9453496 BB       | 20160927         | US20100322580      | 20100526         |
| US9523344 BB       | 20161220         | US20100322573      | 20100526         |
| WO10136975 A2      | 20101202         | WO20101B52334      | 20100526         |
| WO10136975 A3      | 20110120         | WO20101B52334      | 20100526         |
| WO10136976 A2      | 20101202         | WO20101B52335      | 20100526         |
| WO10136976 A3      | 20110120         | WO20101B52335      | 20100526         |
| WO10136977 A2      | 20101202         | WO20101B52336      | 20100526         |
| WO10136977 A3      | 20110120         | WO20101B52336      | 20100526         |
| WO10136978 A2      | 20101202         | WO20101B52337      | 20100526         |
| WO10136978 A3      | 20110120         | WO20101B52337      | 20100526         |
| WO10136979 A2      | 20101202         | WO20101B52338      | 20100526         |
| WO10136979 A3      | 20110421         | WO20101B52338      | 20100526         |
| WO11007274 A1      | 20110120         | WO20101B52782      | 20100621         |
| WO11033490 A1      | 20110324         | WO20101B54253      | 20100921         |

#### Priority:

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|-------------------------|-------------------------|-------------------------|
| US20090180949P 20090526 | US20090224925P 20090713 | US20090244083P 20090921 |
| US20100322574 20100526  | US20100322576 20100526  | US20100322573 20100526  |
| WO20101B52334 20100526  | WO20101B52336 20100526  | WO20101B52335 20100526  |

US20100322580 20100526  
WO20101052338 20100526  
US20120322573 20120315

US20100322579 20100626  
US20160224698 20160801

WO20101052332 20100626

**Probable Assignee:** LEVIATHAN WIND ENERGIZER LLC

**Assignee(s):** (std): FARB DANIEL ; HARELI GADI ; FARKASH AVNER ; KOLMAN KEN ; JOE VAN ZWAREN ; GADI HARELI ; KEN KOLMAN ; LEVIATHAN ENERGY HYDROELECTRIC LTD ; VAN ZWAREN JOE ; LEVIATHAN ENERGY WIND LOTUS LTD ; LEVIATHAN ENERGY MAGNETICS LTD ; LEVIATHAN WIND FARM AERODYNAMICS LTD ; ZWAREN JOE VAN ; AVNER FARKASH ; DANIEL FARB

**Assignee(s):** DR MARK FRIEDMAN LTD ; LEVIATHAN WIND ENERGIZER LLC ; LEVIATHAN ENERGY HYDROELECTRIC LLC ; FLOWER TURBINES LLC

**Inventor(s):** (std): GADI HARELI ; KEN KOLMAN ; JOE ZWAREN VAN ; AVNER FARKASH ; DANIEL FARB ; KOLMAN KEN ; FARKASH AVNER ; HARELI GADI ; VAN ZWAREN JOE ; FARB DANIEL ; JOE VAN ZWAREN

**Inventor(s):** FARB DANEIL ; ZWAREN JOE VAN

**Agent(s):** ELLIS TERRY; SPRUSON AND FERGUSON; CULLENS PTY LTD; INTEGRAL IP; MODIANO MICAELA NADIA; DR MARK FRIEDMAN LTD; MARK M

**Designated states:** AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

**66) Family number: 29550682 (US3284972A)**

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**Title:** PORTABLE TOWER

**Abstract:** 1,073,058. Lattice masts. GRANGER ASSOCIATES. May 3. 1965 [May 15, 1964], No. 18574/65. Headings E1B and E1K. A portable aerial or lighting mast of triangular cross-section comprises upper and lower halves detachably hinged together, each half comprising telescopic sections 8-11 and 12-15 whereby the mast may be collapsed into two packages. Each section comprises three vertical tubes cross-braced in a "tetrahedral" pattern, (Figs. 3, 8, not shown) the upper end of each tube carrying a U-shaped guide (17- 19, Fig. 4, not shown.) and a mounting for a pair of quick-release self-locking pins (20) whereby adjacent telescopic sections are guided and locked together. To erect the mast: (a) the lower half is laid on the ground with its telescopic section 8-11 extended and locked together; (b) the section 8 is pivoted to a base plate (23, Fig. 6, not shown) located on a marking rod (24); (c) the plate (23) is rotated about rod (24) until the tower points in the required direction and is then staked to the ground; (d) the upper half is extended along the ground and its section 12 hinged to section 11 by a locking pin (20) engaging brackets (26) thereon; (e) an A-frame erection boom 28, pivotally carrying an auxiliary boom 29, is pivoted on the hinge pin (20), the booms being located by a rod 36 and cables 31, 34, 37; (f) an erection cable 38, staked to the ground at 42, is attached to the end of boom 28 and laid so that it will fall in a groove in the end of boom 29 as the mast is lifted. The lower half is then manhandled to a vertical position, using the upper half as a pushing pole, and the upper half itself raised by a winch 43 whose line 44 carries a pulley 41 engaging the cable 38. The mast is supported by six guys 6, 7 and carries catenary wires supporting and feeding the dipoles of a high-frequency antenna, Fig. 1 (not shown).

**Classifications:**

**International (ipc 8-9):** E04H12/18 E04H12/34

H01Q1/12 (Advanced/Invention);

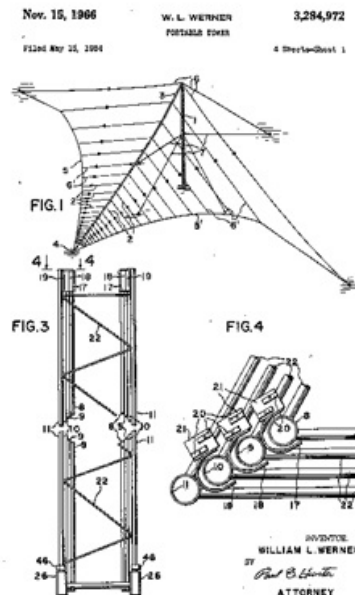
E04H12/00 H01Q1/12 (Core/Invention)

**CPC:** E04H12/182 E04H12/34 H01Q1/1235

**European:** E04H12/18B E04H12/34 H01Q1/12C

**US:** 52/118 52/146 52/646 52/694

PatBase - US3284972\_A



**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| DE1559162 B1       | 19691211         | DE19651559162      | 19650428         |
| GB1073058 A        | 19670621         | GB19650018574      | 19650503         |
| US3284972 A        | 19661115         | US19640367850      | 19640515         |

**Priority:**

US19640367850 19640515

**Probable Assignee:** GRANGER ASSOCIATES

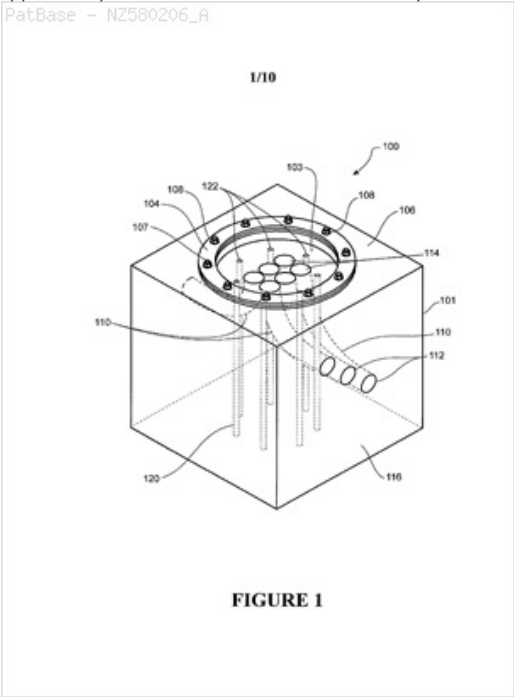
**Assignee(s):** (std): GRANGER ASSOCIATES

**Inventor(s):** (std): WERNER WILLIAM LAWRENCE ; WERNER WILLIAM L

**Title:** A foundation interface assembly comprising a precast reinforced concrete block and a top plate

**Abstract:** Disclosed is a foundation interface assembly for supporting a superstructure attached to the foundation interface assembly when the foundation interface assembly is placed on and attached to an underlying structure. The foundation interface assembly includes a precast concrete block, a block reinforcing structure and a top plate. The block is reinforced by the block reinforcing structure. The block reinforcing structure is partially embedded in the block during casting of the block. Portions of the block reinforcing structure extend above a top surface of the block for attachment to a base end of the superstructure to be supported by the foundation interface assembly. The block has a plurality of through-holes, each through-hole extends upwardly from a downward facing surface of the block, through the block, to an upward-facing surface of the block. The top plate is at the top surface of the block and has a plurality of through-holes. The portions of the block reinforcing structure which extend above the top surface of the block, extend respectively through the through-holes in the top plate for attachment to the base end of the superstructure to be supported by the foundation interface assembly.

**Classifications:**  
**International (IPC 8-9):** E02D27/00 E02D27/12 E02D27/42  
E02D5/00 E04B1/00 E04C1/39 E04H12/22 (Advanced/Invention)



**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
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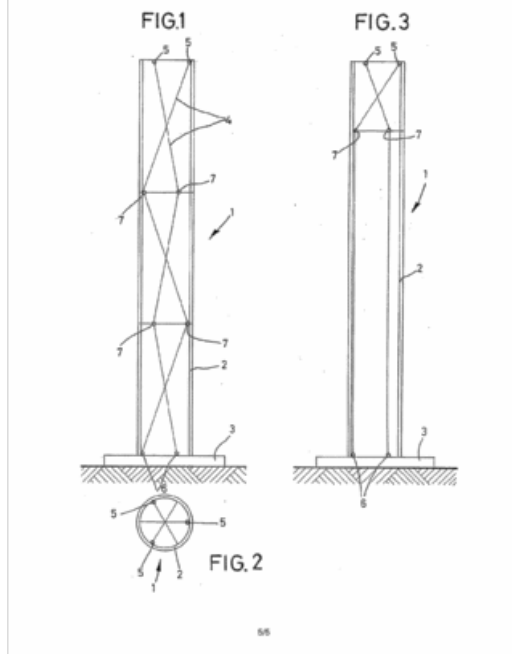
**Priority:**  
NZ20100580206 20101222

**Probable Assignee:** GRIFFITHS CIVIL BUILD LTD  
**Assignee(s): (std):** GRIFFITHS CIVIL BUILD LTD  
**Assignee(s):** GRIFFITHS CIVIL BUILD LIMITED  
**Inventor(s): (std):** GRIFFITHS MELVYN THOMAS

**Title:** TOWER FRAME HAS TUBE WITH INTERNAL TENSIONING CABLES ATTACHED TO EXTERNAL TENSIONERS

**Abstract:** The tower frame (1) has a tubular structure (2) and tensioner cables (4) for stiffening the structure extending vertically inside it. The lower anchor point for each tensioner cable is offset by forty five degrees to the upper anchor point. The cables can have tension adjusters. The cables can extend through apertures in the wall of the tube to external tensioners.

**Classifications:**  
**International (IPC 8-9):** E04H12/08 E04H12/16  
E04H12/20 (Advanced/Invention);  
E04H12/00 (Core/Invention)  
**International (IPC 1-7):** E04H12/08 E04H12/16  
**CPC:** E04H12/08 E04H12/16 E04H12/20  
**European:** E04H12/08 E04H12/16 E04H12/20

**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| DE20313486 U1      | 20040108         | DE20032013486U     | 20030830         |

**Priority:**

DE20032008150U 20030524      DE20032013486U 20030830

**Probable Assignee:**

MAAS GMBH

**Assignee(s):** (std):

MAAS GMBH

**69) Family number: 57274698** (US8820025B)

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**Title:** UNIVERSAL NODE FOR SPACE FRAME STRUCTURES

**Abstract:** A structural apparatus for carrying loads and transferring forces to ground, the apparatus having a plurality of nodes, each having a spherical core, the core having a spherical surface. Each one of the nodes having a plurality of housing frames secured in fixed selected positions in contact with the surface. Each one of the nodes having a plurality of housing hubs secured by the housing frames in contact with the surface and free to circularly rotate about a radius of the core, and each one of the nodes has a plurality of fasteners, each of the fastener having a head and a shaft extending from the head, the head constrained between the surface and a housing hub positioning the shaft in a radial attitude relative to the core. A plurality of struts interconnect the nodes and the struts are joined with the shafts at their opposing ends.

**Classifications:**

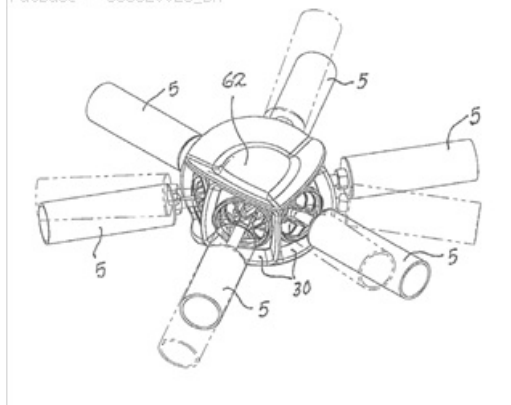
**International (IPC 8-9):** E04B1/19 E04B7/08

E04H12/00 (Advanced/Invention)

**CPC:** E04B1/1906 E04B1/1903 E04B2001/1927 E04B2001/196

**US:** 52/638 52/648.1 52/653.2 52/655.2 52/81.3

PatBase - US8820025\_BA

**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| US8820025 BA       | 20140902         | US20120540449      | 20120702         |

**Priority:**

US20110503323P 20110630      US20120540449 20120702

**Probable Assignee:**

ROCHAS ALEXIS

**Assignee(s):** (std):

ROCHAS ALEXIS

**Inventor(s):** (std):

ROCHAS ALEXIS

**Agent(s):**

GENE; PATENT LAW AND VENTURE GROUP

**Title:** SEA WATER DESALINATION TOWER IS CONSTRUCTED ON PILES IN THE SEA NEAR THE SHORE ON A BASE ABOUT 10 M ABOVE MAXIMUM SEA LEVEL

**Abstract:** The desalination tower is constructed in the sea close to the shore where the water is 10 - 20 m deep. It has a cylindrical base (1) supported by piles (10) set on a reinforced ring (11) which can also have piles (12), depending on the nature of the sea bed, with the base set about 10 m above maximum seal level. The base of the tower tapers upwards towards a neck (2), and then diverges towards its summit (3). The neck has an internal diameter of about 100 m for a tower 300 m tall, and is situated at a height of about 140 m. The summit has an internal diameter of about 130 m and has an annular platform (4) some 15 m wide on which wind-driven turbines of about 1.5 MW each are installed. A second platform (5) is located just above the neck, and the two platforms are supported by ribs (6, 7). Inside the tower there is a condenser above neck level. A breaker wall with apertures to let water pass through can be constructed on piles round the tower at a distance equivalent to at least the radius of its base to give protection against storms.

**Classifications:**

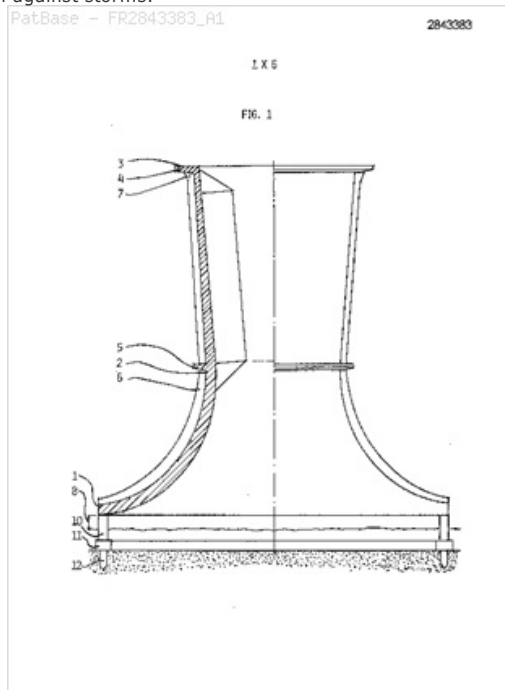
**International (IPC 8-9):** C02F1/04 C02F1/10 C02F1/14 E04H12/00 F03D1/00 (Advanced/Invention);

C02F1/04 C02F1/10 C02F1/14 E04H12/00 F03D1/00 (Core/Invention)

**International (IPC 1-7):** C02F1/10 E04H12/00 F03D1/00

**CPC:** Y02A20/128 Y02A20/129 Y02A20/142 Y02A20/212 C02F1/04 C02F1/14

**European:** C02F1/04 C02F1/14



**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| FR2843383 A1       | 20040213         | FR20020010210      | 20020812         |
| FR2843383 B1       | 20060303         | FR20020010210      | 20020812         |

**Priority:**

FR20020010210 20020812

**Probable Assignee:** DEJOUX ANDRE

**Assignee(s):** (std): DEJOUX ANDRE ; FRANCA TEL CLAUDE ; SIRAGNA MARCEL

**Inventor(s):** (std): DEJOUX ANDRE ; FRANCA TEL CLAUDE ; SIRAGNA MARCEL

**Title:** Lighting tower mast support

**Abstract:** A mobile lighting mast supported from a vehicle comprising a pivot supported from an upstanding face of the vehicle, the pivot adapted to pivotally receive a pivot post at a plurality of spaced locations to enable the pivot post to enable pivotal movement of the post about an upstanding axis, the upper end of the post supporting an elongate mast at an intermediate position, one end of the mast adapted to support a light assembly, the other end adapted to be lockingly engaged with the lower end of the pivot post when the mast is in the raised position. S 0 0 sse S S

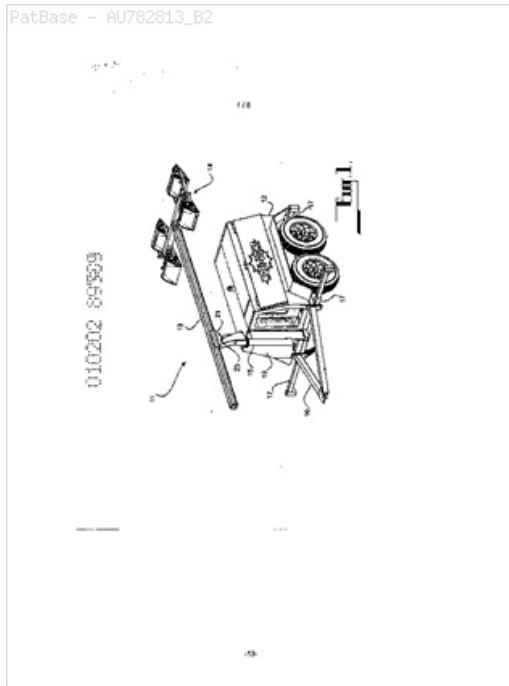
**Classifications:**

**International (IPC 8-9):** B60Q1/24 E04H12/18 E04H12/22

F21V21/28 (Advanced/Invention);

B60Q1/02 E04H12/00 E04H12/22 F21V21/14 (Core/Invention)

**International (IPC 1-7):** B60Q1/24 E04H12/18 E04H12/22 F21V21/28

**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| AU133900 A0        | 20001130         | AU2000PR01339      | 20001110         |
| AU2000001339 A0    | 20001130         | AU2000PR01339      | 20001110         |
| AU200189389 A1     | 20020516         | AU20010089389      | 20011112         |
| AU200189389 A5     | 20020516         | AU20010089389D     | 20011112         |
| AU782813 B2        | 20050901         | AU20010089389      | 20011112         |

**Priority:**

AU2000PR01339 20001110      AU20010089389 20011112

**Probable Assignee:** JOHNSON R A

**Assignee(s):** (std): JOHNSON R A ; JOHNSON ROSS ALAN ; MR ROSS ALAN JOHNSON ; ROSS ALAN JOHNSON

**Inventor(s):** (std): JOHNSON ROSS ALAN ; ROSS ALAN JOHNSON

**Agent(s):** WRAYS PTY LTD; WRAYS

**72) Family number: 25737721 (GB112494A)**

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**Title:** Improvements in Extensible Masts or Elevators.

**Abstract:** 112,494. Seymour, B. F. Jan. 5, 1917. Field carriages mounting and housing.-Consists in forming extensible masts or elevators for carrying a gun of a number of collapsible standards geared so as to rotate together, the sections at the same level extending or collapsing successively and independently to the limit of their movement. In the construction shown the mast comprises three telescopic standards each having a base member 2 secured to a floor 3 which may be a solid foundation on land or the deck of a warship or part of a motor vehicle. Mounted within the base members are the controlling members 4 longitudinally immovable and provided with gear wheels 22 for synchronous rotation from any suitable driving mechanism. The controlling members are braced by truss rods 6 which connect with a head 7 placed in grooves in the upper ends of these members. Inside the upper portions of the members 4, ridges or threads 9 are formed which co-operate with grooves 10 in the rotatable members 12 of the first longitudinally extensible section. The members 12 are connected together by three interconnected rings 17 and have, adjacent their upper ends, ridges or threads 18 engaging grooves in the members of the next section. The members 20 of the top section may be solid and are non-rotatably connected together by a platform 21 carrying the gun and c. When the mast is mounted on a vehicle, the floor 3 of the base section is hinged to a suitable plate so that it can be lowered, by means of a suitable gearing, to a horizontal position. Fig. 9 shows a modified construction in which the fixed base section comprises four standards 12' with which the hollow screw shafts 15<1> operated by the handle a<1> engage. The members of each section are connected together by cross-shafts 19<1>, 24' and c. carrying gears which engage internally-threaded nuts on the members 12', 15<1> and c. The top section carrying the platform 29<1> is inverted so as to lie, when not extended, within the members 22<1> comprising the lower section.

**Classifications:**

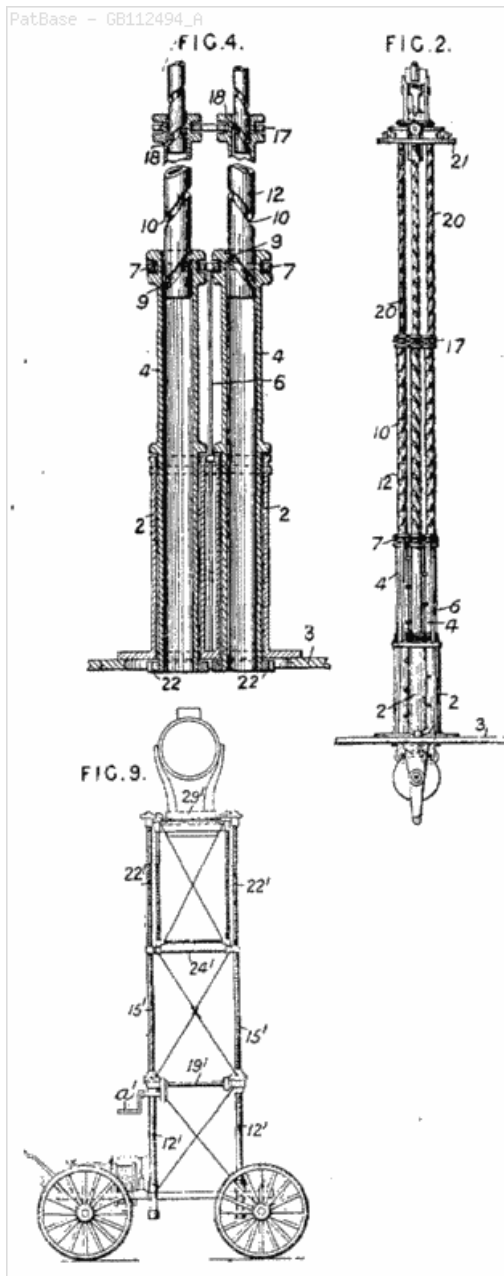
**International (IPC 8-9):** E04H12/18 (Advanced/Invention);

E04H12/00 (Core/Invention)

**International (IPC 1-7):** E04H12/18 F41G11/00 F41H13/00

**CPC:** B60Q1/2657 E04H12/182

**European:** B60Q1/26H E04H12/18B

**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| GB112494 A         | 19180107         | GB19170000278      | 19170105         |

**Priority:**

GB19170000278 19170105

|                            |                           |
|----------------------------|---------------------------|
| <b>Probable Assignee:</b>  | SEYMOUR BENJAMIN FRANKLIN |
| <b>Assignee(s):</b> (std): | SEYMOUR BENJAMIN FRANKLIN |
| <b>Assignee(s):</b>        | BENJAMIN FRANKLIN SEYMOUR |
| <b>Inventor(s):</b> (std): | SEYMOUR BENJAMIN FRANKLIN |
| <b>Inventor(s):</b>        | BENJAMIN FRANKLIN SEYMOUR |

**73) Family number: 22301743** (US2625815A)

© PatBase

**Title:** ADJUSTABLE ANCHORAGE

**Abstract:** (Claim 1) 1. 1 claim: L. An adjustable anchorage anchoring a leg of a structure, comprising: a foundation; an elongated rod, embedded for part of its length in said foundation, the upper end of said rod being externally threaded; an elongated adjusting member, disposed concentrically with said rod; one end of said member terminating in a tubular, internally threaded portion, in threaded engagement with said externally threaded portion; means near the other end of said member to facilitate rotation of said member; a base plate sustained both directly by the foundation and also indirectly by the foundation by way of the member, the leg of the structure being sustained by said base plate; strap means loosely encircling said member and secured to said leg; and hold down means on said member to prevent said strap means from moving upward relative to said member.

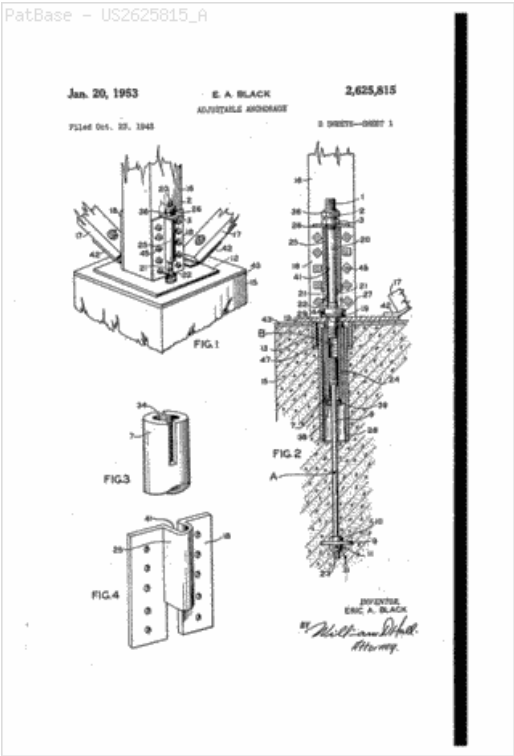
**Classifications:**

**International (IPC 8-9):** E04H12/22 (Advanced/Invention);  
E04H12/22 (Core/Invention)

**International (IPC 1-7):** E04B1/41 E04H12/22

**CPC:** E04H12/2261

**European:** E04H12/22C1



Family:

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| US2625815 A        | 19530120         | US19430507356      | 19431023         |

Priority:

US19430507356 19431023

Probable Assignee:

BLACK ERIC A

Assignee(s): (std):

BLACK ERIC A

Inventor(s): (std):

BLACK ERIC A

74) Family number: 20132753 (GB724932A)

© PatBase

Title: Telescopic tower

**Abstract:** 724,932. Load-handling machines. SAFWAY STEEL PRODUCTS, Inc. Feb. 6, 1953, No. 3426/53. Class 78 (3). [Also in Group X] A telescopic tower for supporting a work platform 38, Fig. 1, comprises telescopic tubes 10, 34, 36, containing a hydraulic ram and cylinder and a system of cables and pulleys, so arranged that an extension of the ram and cylinder through a given distance extends the tower through six times that distance. The hydraulic cylinder 54, Fig. 5, is secured in the tube 36 and the hydraulic ram 64 is rigidly connected to a pulley block 72 slidable in the tube 34. A pulley 58 is mounted at the upper end of the cylinder 54. One end of a cable 70 is attached to the ram 64 and passes around pulleys 58, 72 and is connected at its other end to the top of the tube 34. A given extension of the ram and cylinder acts through cable 70 and causes the tube 36 to rise three times that distance within the tube 34. A pulley 94 is mounted at the bottom of the tube 34 and one end of a cable 92 is attached to the lower end of the tube 36, passes around the pulley 94 and is connected at its other end to the top of the tube 10. When the tube 36 rises a given distance within the tube 34, the cable 92 acts upon the pulley 94 and lifts the tube 34 through the same distance with respect to the tube 10. The total extension of the tower is the sum of the extensions of the tubes 34 and 36. A pump having a hand lever 44, Fig. 1, is provided for pumping oil into the hydraulic cylinder. Alternatively, a motor driven pump may be employed. A telescopic air ram formed by tubes 100, 102, 104 is mounted alongside the lifting column and serves to prevent the platform 38 from rotating and retards the gravitational descent of the extensions in the event of failure of the lifting mechanism. The platform 38 has a guard rail 48 which may be lowered on to the platform and the tower is mounted upon a wheeled base formed by legs 12 which are swingable to a position in which the tower may be moved through narrow spaces. The tower may be mounted on a truck or other vehicle in which case a power take-off may be employed to operate the hydraulic ram instead of a manual pump. Specification 532,050, [Group XIV], is referred to.

Classifications:

**International (IPC 8-9):** E04H12/18 (Advanced/Invention); E04H12/00 (Core/Invention)

**International (IPC 1-7):** B66F11/04

**CPC:** E04H12/182

**European:** E04H12/18B

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| GB724932 A         | 19550223         | GB19530003426      | 19530206         |

GB19530003426 19530206

**Assignee(s):** (std): SAFWAY STEEL PRODUCTS INC

**Inventor(s):** (std): ANDERSON ARVID ASTRID ; HAUCK ROBERT MARTIN

**Abstract:** A foundation driller for anchoring of components in soil is provided that includes an apparatus in which the foundation driller comprises a base body with at least one cylindrical area and at least one cutting blade that provides forward advancement, in which the base body comprises at least two cylindrical areas with different diameters, wherein the area nearer to the soil has a smaller diameter and the at least one cutting blade providing forward advancement is attached at the area nearer to the soil and has an even incline.

**Classifications:**

E04B1/38 E04C5/00 E04H12/22 F16M13/00

F24J2/52 (Advanced/Invention);

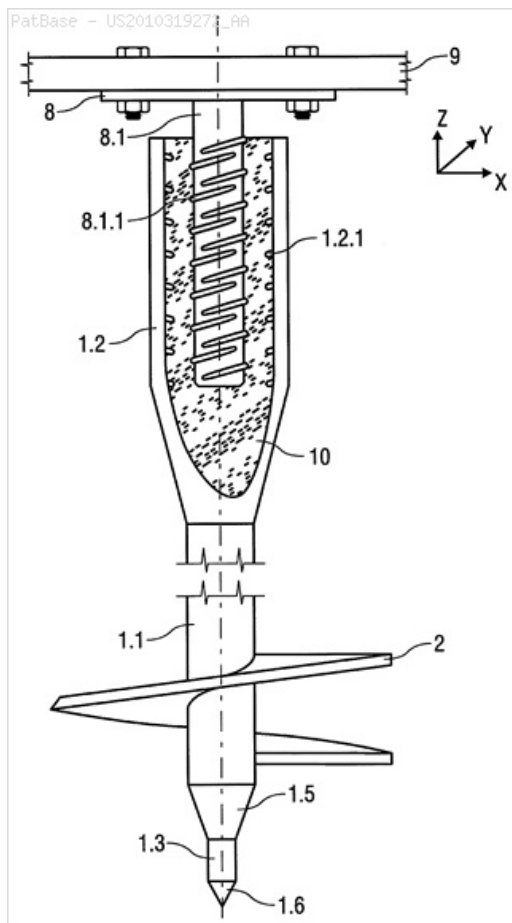
E02D27/32 E02D5/80 E04H12/22 (Core/Invention)

**CPC:** F24S25/617 E04H12/2223 E02D5/801 E04H12/2269 Y02E10/47

**European:** E02D5/80B E04H12/22A1B E04H12/22C2 F24J2/52A20B8

Y02E10/47

**US:** 248/156 248/545 52/155 52/157 52/157P 52/166 52/705



#### Family:

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| CN101970777 A      | 20110209         | CN200980106662     | 20090220         |
| CN101970777 B      | 20140611         | CN200980106662     | 20090220         |
| DE102008011869 A1  | 20090910         | DE200810011869     | 20080229         |
| DE102008022458 A1  | 20091112         | DE200810022458     | 20080508         |
| DE102008026215 A1  | 20091203         | DE200810026215     | 20080530         |
| DE502009009652 D1  | 20140828         | DE200950009652T    | 20090220         |
| EP2171179 A1       | 20100407         | EP20090716239      | 20090220         |
| EP2171179 B1       | 20140716         | EP20090716239      | 20090220         |
| US2010319272 AA    | 20101223         | US20100870643      | 20100827         |
| US8407949 BB       | 20130402         | US20100870643      | 20100827         |
| WO09109474 A1      | 20090911         | WO2009EP52091      | 20090220         |
| WO09109474 A9      | 20091112         | WO2009EP52091      | 20090220         |

#### Priority:

DE200810011869 20080229 DE200810022458 20080508 DE200810026215 20080530  
WO2009EP52091 20090220 EP20090716239 20090220

**Probable Assignee:** KELLNER PETER

**Assignee(s):** (std): KELLNER PETER ; PETER KELLNER

**Inventor(s):** (std): KELLNER PETER ; PETER KELLNER

**Agent(s):** PATENTANWALTE LIEDTKE AND PARTNER; LIEDTKE MARKUS; MUNCY GEISSLER OLDS AND LOWE PLLC; LIEDTKE AND PARTNER

**Designated states:** AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

**76) Family number: 11051775** (US5787649A)

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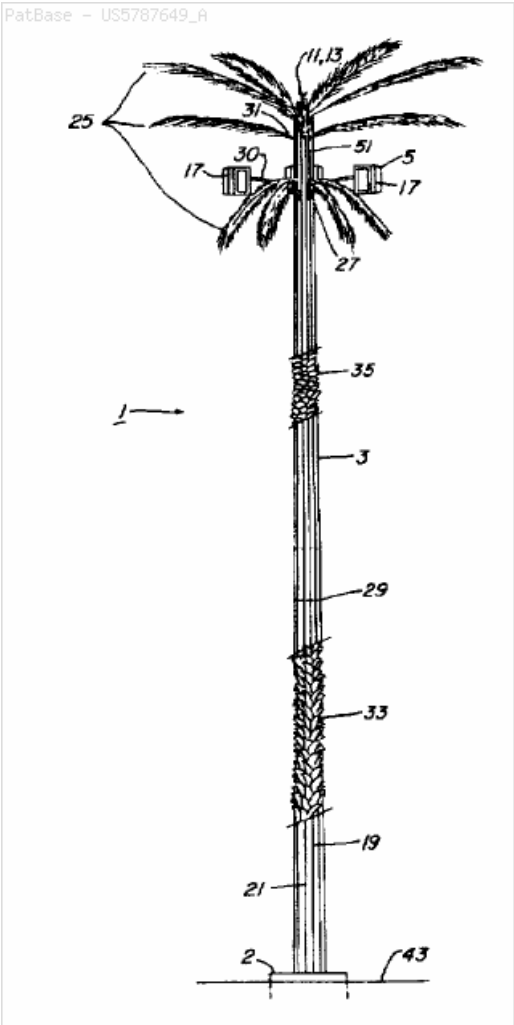
**Title:** Tree styled monopole tower

**Abstract:** A modified monopole tower is described, consisting primarily of a galvanized steel truncated pyramidal monopole capped by wireless electronic communications antennae and equipment. In the preferred embodiment, the simulated trunk containing the monopole exhibits protruding receptors which in turn support artificial palm fronds, and artificial pine boughs and branches. The artificial palm fronds, branches, and boughs are attached to the receptors primarily by mechanical and adhesive means. The modified monopole tower is designed to function optimally under all weather conditions, while imitating the landscape with attachment of indigenous tree components.

#### Classifications:

**International (IPC 8-9):** E04H12/08 H01Q1/12  
H01Q1/44 (Advanced/Invention);  
E04H12/24 (Advanced/Non-invention);  
E04H12/00 H01Q1/12 H01Q1/44 (Core/Invention)

**International (IPC 1-7):** E04H12/00 E04H12/08  
**CPC:** E04H12/08 E04H12/24 H01Q1/1242 H01Q1/44  
**European:** E04H12/08 H01Q1/12D H01Q1/44 P04H12/24  
**US:** 52/40 52/651.02 52/651.07 52/721.2 52/736.2 52/834



**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| US5787649 A        | 19980804         | US19950381504      | 19950131         |
| US6286266 BA       | 20010911         | US19940202444      | 19940228         |

**Priority:**

US19940202444 19940228      US19950381504 19950131

**Probable Assignee:** FWT LLC

**Assignee(s):** (std): POPOWYCH NESTOR T ; SRIVER III HAROLD H ; FWT INC ; MOORE ROY J

**Assignee(s):** PNC BANK NATIONAL ASSOCIATION ; BNP PARIBAS ; BROCKO INC ; BROOKSIDE MEZZANINE FUND II LP ; BT COMMERCIAL CORP ; CH2M HILLPAL TELECOM GROUP LLC ; KAO LOUIS KEN HON ; TOWER 50 FAMILY INC ; FWT LLC ; TEXAS CAPITAL BANK NATIONAL ASSOCIATION

**Inventor(s):** (std): SRIVER III HAROLD H ; POPOWYCH NESTOR T ; MOORE ROY J ; KAO LOUIS KEN HON

**77) Family number: 531787** (US3796018A) © PatBase

**Title:** STRUCTURAL ELEMENTS FOR THE ERECTION OF MASTS, SUCH AS HOIST AND CRANE MASTS, ANTENNA MASTS ETC.

**Abstract:** A hoist mast composed of planar structural elements each consisting of tube means and cantilever means extending therefrom. The tube means has a male member at one end, a female member at the opposite end, which members together form a bayonet catch, a fastening portion and locking means. When at the erection of a mast two tube means are assembled with the aid of the bayonet catch, the end of the cantilever means is swung into engagement with the fastening portion of another tube means and is interlocked with it, and the locking means of the tube means is swung into locking engagement with the fastening portion of a third tube means to prevent unintentional release of a cantilever means engaging the fastening portion.

**Classifications:**

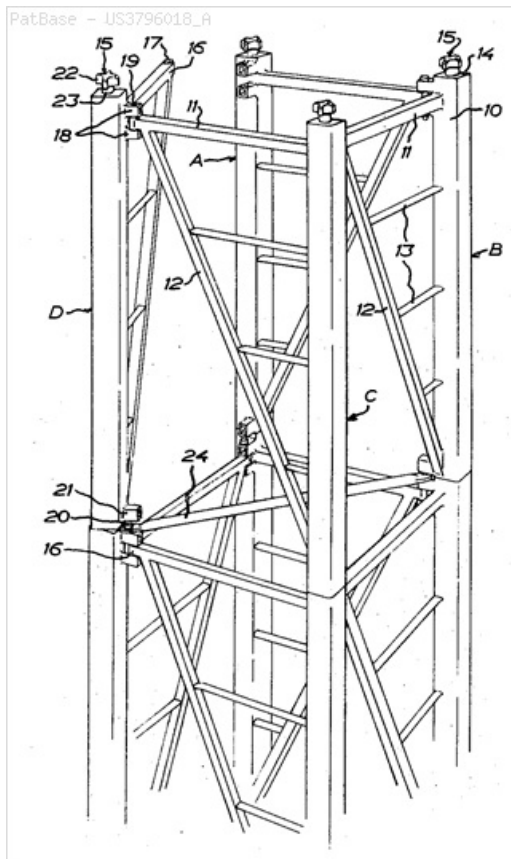
**International (IPC 8-9):** B66C23/28 E04H12/10 (Advanced/Invention);  
B66C23/00 E04H12/00 (Core/Invention)

**International (IPC 1-7):** B66C23/00 B66C23/26 B66C23/62  
B66F9/08 E04B1/24 E04B1/40 E04G1/14 E04G7/00 E04H12/00  
E04H12/10 F16B21/02 F16B7/00

**CPC:** Y10T403/7007 B66C23/286 E04H12/10

**European:** B66C23/28B2 E04H12/10

**US:** 403/349 52/63.8 52/638 52/646 52/726.3

**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| DE2156392 A1       | 19720518         | DE19712156392      | 19711112         |
| FR2113922 A1       | 19720630         | FR19710040411      | 19711110         |
| FR2113922 B1       | 19760430         | FR19710040411      | 19711110         |
| GB1333460 A        | 19731010         | GB19710052665      | 19711112         |
| IT940580 A         | 19730220         | IT19710031043      | 19711112         |
| JP52016328 B4      | 19770509         | JP19710090038      | 19711112         |
| SE348445 B         | 19720904         | SE19700015330      | 19701113         |
| US3796018 A        | 19740312         | US19710198390      | 19711112         |

**Priority:**

SE19700015330 19701113

**Probable Assignee:**

AMACO MASKIN AB

**Assignee(s): (std):**

AMACO MASKIN AB

**Assignee(s):**

AMACO MASKIN AB SW

**Inventor(s): (std):**

HOLMSTROM N ; HOLMSTROEM F

**Inventor(s):**

HOLMSTROM N SW

**78) Family number: 50110819** (US2013081350A)

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**Title:** TOWER COMPRISING AN ADAPTER PIECE AND METHOD FOR PRODUCING A TOWER COMPRISING AN ADAPTER PIECE

**Abstract:** The invention relates to a tower (1) comprising a lower tubular tower section (2) made of concrete, an upper tubular tower section (3) made of steel and an adapter piece (7) for connecting the two tower sections (2, 3). The adapter piece (7) consists of an annular concrete element (8) and a steel element (9), the steel element (9) containing at least one annular flange (9a) that covers preferably entirely a surface of the concrete element (8), said surface being at the top in the installed state. The steel element (9) is directly cast together with the concrete element (8), wherein the annular flange (9a) is completely underpoured, essentially without air inclusions. In a method for producing a tower (1) comprising an adapter piece (7), a steel element (9) having an annular flange (9a) is placed head down into an annular formwork in order to produce said adapter piece (7). A concrete material is then introduced into the formwork in order to produce an annular concrete element (8) of the adapter piece (7), whereby the concrete material is directly applied onto the subsequent bottom side of the flange (9a).

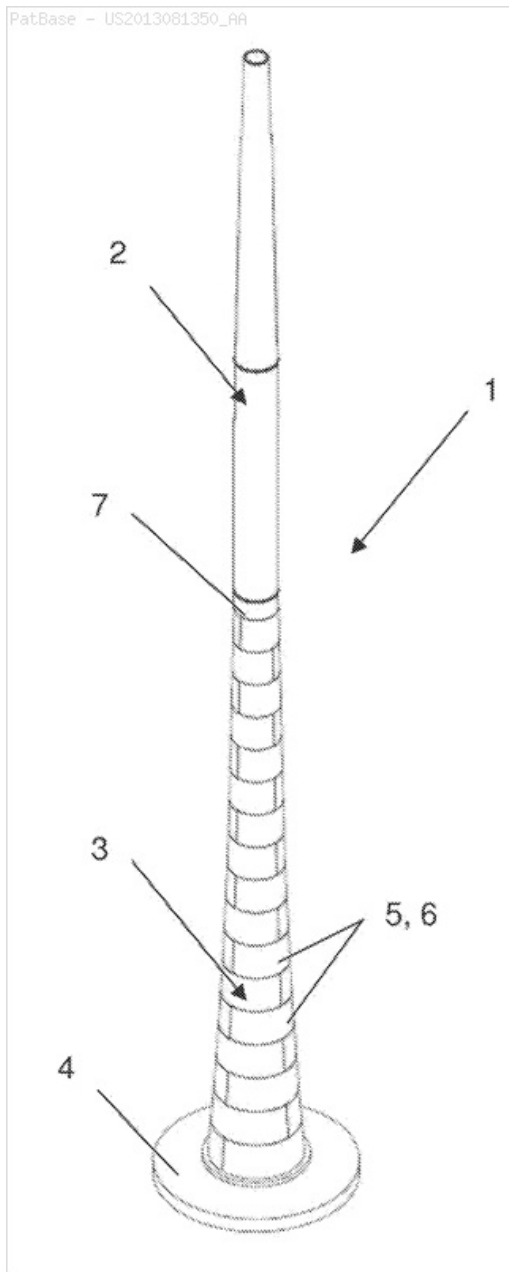
**Classifications:**

**International (IPC 8-9):** B24B27/00 B24B7/16 B24B7/22 B28B1/14 B28B11/00 B28B11/08 C07C E04H12/00 E04H12/02 E04H12/08 E04H12/12 E04H12/16 F03D1/00 F03D11/00 F03D11/04 F03D13/10 F03D13/20 F03D80/00 H01J (Advanced/Invention)

**CPC:** B24B7/16 B24B27/0069 F05B2230/10 F05B2250/231 F05B2260/301 F05B2270/305 E04H12/08 E04H12/085 E04H12/16 Y02P70/177 Y02P70/523 B24B7/22 F05B2230/60 F05B2240/912 F05B2250/141 Y02E10/728 F03D13/10 E04H12/12 Y02E10/72 F03D13/20

**European:** E04H12/08 E04H12/12 E04H12/16 F03D1/00B F03D11/04 R05B230/10 R05B230/60 R05B240/912 R05B250/141 R05B250/231 R05B260/301 R05B270/305 Y02E10/72 Y02E10/72N

**US:** 1/1 52/651.01 52/745.18

**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| AU2011267203 AA    | 20111222         | AU20110267203      | 20110610         |
| AU2011267203 BB    | 20140925         | AU20110267203      | 20110610         |
| AU2011267375 AA    | 20111222         | AU20110267375      | 20110504         |
| AU2011267375 BB    | 20141030         | AU20110267375      | 20110504         |
| BR112012031422 A2  | 20161108         | BR20121131422      | 20110504         |
| BR112012031424 A2  | 20161108         | BR20121131424      | 20110610         |
| CA2802432 AA       | 20121212         | CA20112802432      | 20110504         |
| CA2802442 AA       | 20121212         | CA20112802442      | 20110610         |
| CA2802442 C        | 20190507         | CA20112802442      | 20110610         |
| CN102939427 A      | 20130220         | CN201180030351     | 20110610         |
| CN102939427 B      | 20150722         | CN201180030351     | 20110610         |
| CN102947524 A      | 20130227         | CN201180030352     | 20110504         |
| CN102947524 B      | 20161012         | CN201180030352     | 20110504         |
| DE102010039796 A1  | 20111215         | DE201010039796     | 20100826         |
| DE502011011199 D1  | 20161229         | DE201150011199T    | 20110610         |
| DE502011012660 D1  | 20170831         | DE201150012660T    | 20110504         |
| DK2580408 T3       | 20171030         | DK20110719508T     | 20110504         |
| DK2580409 T3       | 20170220         | DK20110728210T     | 20110610         |
| EP2580408 A2       | 20130417         | EP20110719508      | 20110504         |
| EP2580408 B1       | 20170719         | EP20110719508      | 20110504         |
| EP2580409 A1       | 20130417         | EP20110728210      | 20110610         |
| EP2580409 B1       | 20161123         | EP20110728210      | 20110610         |
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| PL2580408 T3    | 20171229 | PL20110719508T | 20110504 |
| PL2580409 T3    | 20170630 | PL20110728210T | 20110610 |
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| RU2564422 C2    | 20150927 | RU20130100333  | 20110610 |
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| TR201715314 T4  | 20171221 | TR20170015314T | 20110504 |
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| US2013269286 AA | 20131017 | US20110704265  | 20110610 |
| US9091095 BB    | 20150728 | US20110704265  | 20110610 |
| US9243418 BB    | 20160126 | US20110704263  | 20110504 |
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| WO11157476 A3   | 20120216 | WO2011EP57088  | 20110504 |
| WO11157659 A1   | 20111222 | WO2011EP59713  | 20110610 |

#### Priority:

DE201010030047 20100614 DE201210030047 20100614 DE201010039796 20100826  
AU20110267375 20110504 EP20110267375 20110504 EP20110719508 20110504  
WO2011EP57088 20110504 WO2011EP59713 20110610 EP20110728210 20110610

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**Inventor(s):** (std): BOEGL STEFAN ; BOGL STEFAN ; HIERL MARTIN ; KNITL JOSE ; KNITL JOSEF

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**Agent(s):** FB RICE ; FB RICE PTY LTD ; NORTON ROSE CANADA SENCRL SRL LLP ; NORTON ROSE FULBRIGHT CANADA LLP SENCRL SRL ; PATENTANWAELTE CANZLER AND BERGMEIER PARTNERSCHAFT MBB ; BERGMEIER WERNER ; DE ELZABURU ALBERTO ; SAEZ ANA ; HATICE OEZLEM SEZGIN ; J BENNETT MULLINAX LLC

**Designated states:** AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

#### 79) Family number: 48202825 (US2011016804A)

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**Title:** ULTRA-LIGHT, RE-USABLE, EXTENDED-HEIGHT METEOROLOGICAL TOWER APPARATUS AND METHOD

**Abstract:** A method and apparatus for erecting a lightweight, tall (60 to 80 meters or more) tower that may be temporary and re-usable as a mount for meteorological instruments is described including guys balancing lateral and transverse forces while maintaining the tower in tension. Forces on all guy lines maintain the tower stable from a substantially horizontal assembly position to a vertical operational position. A system of gin poles and pivots help maintain registration and alignment while pulling the assembled tower erect.

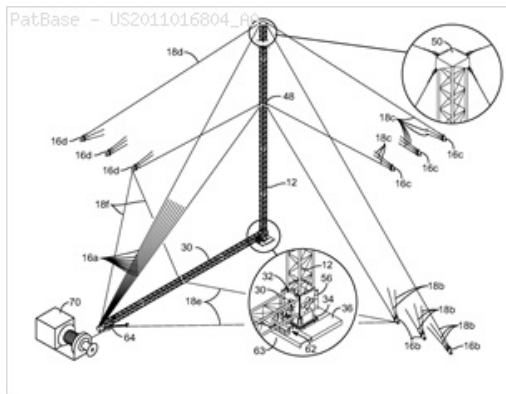
#### Classifications:

**International (IPC 8-9):** E04H12/00 E04H12/20 (Advanced/Invention)

**CPC:** E04H12/345 E04H12/20 E04H12/34

**European:** E04H12/20 E04H12/34

**US:** 52/146 52/146P 52/745.18 52/745.180S



#### Family:

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| US2011016804 AA    | 20110127         | US20100842019      | 20100722         |

#### Priority:

US20090271494P 20090722 US20100842019 20100722

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**Assignee(s):** (std): HOWARD LONNIE ; VAN SLYKE GLENN

**Inventor(s):** (std): HOWARD LONNIE ; VAN SLYKE GLENN

**Agent(s):** PATE PIERCE AND BAIRD

#### 80) Family number: 58775833 (US2016230745A)

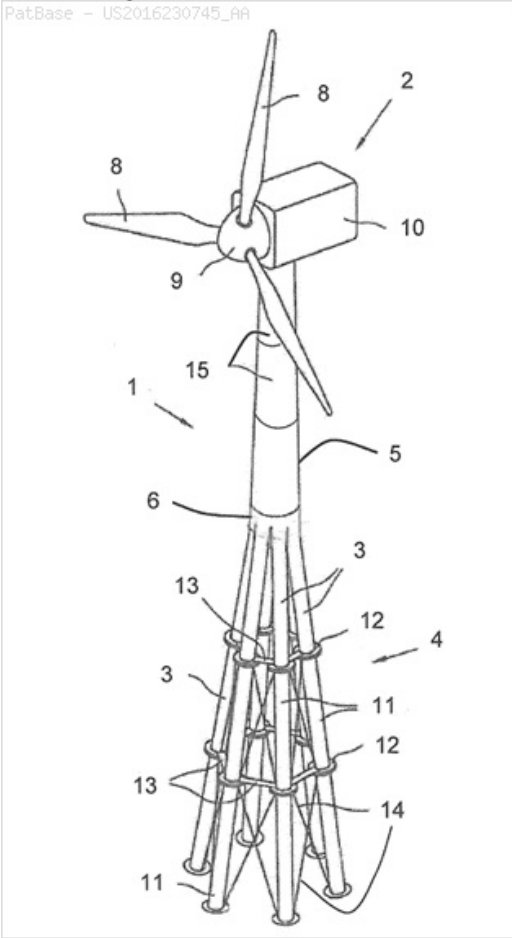
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**Title:** TRANSITION BODY BETWEEN TOWER SECTIONS OF A WIND TURBINE AND WIND TURBINE TOWER COMPRISING SAME

**Abstract:** A transition body may be disposed between upper and lower tower sections of a tower for a wind power station. Some example transition bodies may include a substantially annular upper connection flange for connection to the upper tower section, and at least three substantially annular lower connection flanges, each of which may connect to a corner leg of the lower tower section. The transition body may have several segments disposed about a central tower axis, with the number of segments corresponding to the number of corner legs. Upper peripheral sections of the segments may form an annular circumferential connection envelope that supports the upper connection flange. Lower sections of the segments may form annular circumferential segment envelopes that support the lower connection flanges. The segments may be disposed at acute angles and converge into one another at or near the upper connection flange.

**Classifications:**

**International (IPC 8-9):** E02B17/00 E04H12/00 E04H12/08 E04H12/10 E04H12/34 F03D1/06 F03D11/04 F03D13/10 F03D13/20 F03D15/00 F03D80/80 F03D9/00 F03D9/25 (Advanced/Invention)  
**CPC:** F03D13/10 F03D1/0666 F03D80/82 F03D15/00 E04H12/34 F03D13/22 E02B17/0004 E02B2017/0091 E04H12/085 E04H12/10 E04H2012/006 F03D9/25 F05B2230/232 F05B2240/9121 Y02E10/721 Y02E10/728 Y02P70/523 F03D80/70 Y02E10/725  
**US:** 52/651.09



**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| BR112016006196 A2  | 20170801         | BR20161106196      | 20140828         |
| CA2924257 AA       | 20160314         | CA20142924257      | 20140828         |
| CA2924257 C        | 20180313         | CA20142924257      | 20140828         |
| CN105579703 A      | 20160511         | CN201480052452     | 20140828         |
| CN105579703 B      | 20181221         | CN201480052452     | 20140828         |
| DE102013110495 A1  | 20150326         | DE201310110495     | 20130923         |
| DE502014005089 D1  | 20170928         | DE201450005089T    | 20140828         |
| EP3077670 A1       | 20161012         | EP20140758124      | 20140828         |
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| PT3077670 T        | 20171101         | PT20140758124T     | 20140828         |
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| US2016230745 AA    | 20160811         | US20140022412      | 20140828         |
| US10001111 BB      | 20180619         | US20140022412      | 20140828         |
| WO15039852 A1      | 20150326         | WO2014EP68307      | 20140828         |

**Priority:**

DE201310110495 20130923 EP20140758124 20140828 WO2014EP68307 20140828

**Probable Assignee:** THYSSENKRUPP STEEL EUROPE AG

**Assignee(s):** (std): THYSSENKRUPP STEEL EUROPE AG

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**Inventor(s):** (std): PATBERG LOTHAR ; SAVVAS KONSTANTINOS ; BOGATSCH MAIK ; HIRT MARK ; PATON ADRIAN ; DREWES STEPHAN ; LOTHAR PATBERG ; STEPHAN DREWES ; ADRIAN PATON ; KONSTANTINOS SAVVAS ; MARK HIRT ; MAIK BOGATSCH

**Agent(s):** KIRBY EADES GALE BAKER; THYSSENKRUPP INTELLECTUAL PROPERTY GMBH; CARPINTERO MARIO; TOLGA CAYLAK; THYSSENKRUPP NORTH AMERICA INC; COHAUSZ AND FLORACK

**Designated states:** AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

**Title:** Apparatus and method for joining two prestressed concrete elements

**Abstract:** In an apparatus for joining prestressed concrete elements, wherein two prestressed concrete elements to be joined comprise a first prestressed concrete element and a second prestressed concrete element, having a plurality of prestressed first strands within said first prestressed concrete element and a plurality of prestressed second strands within said second prestressed concrete element, a plurality of first strands, after emerging from said first prestressed concrete element, is introduced through openings into said second prestressed concrete element. These first strands introduced into said second prestressed concrete element are then fixed within said second prestressed concrete element under conditions of tensile stress. As a result, the two prestressed concrete elements arranged side by side and to be joined are securely joined together under conditions of predetermined compressive stress.

**Classifications:**

**International (IPC 8-9):** E01D2/00 E01D21/00

E04H12/16 (Advanced/Invention);

E01D2/00 E01D21/00 E04H12/00 (Core/Invention)

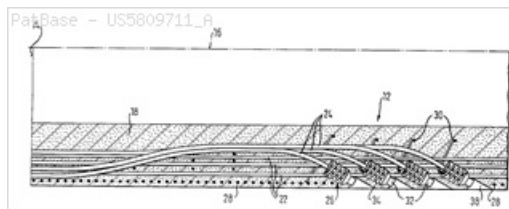
**International (IPC 1-7):** C04H5/00 E01D2/00 E01D21/00 E04B01/00

E04B1/06 E04C5/08 E04C5/12 E04H12/16

**CPC:** E01D2/00 E01D21/00 E01D2101/28 E04H12/16

**European:** E01D2/00 E01D21/00 E04H12/16 P01D101/28

**US:** 52/223.2 522/232



**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
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| DK0758034 T3       | 20001023         | DK19960109873T     | 19960619         |
| EP0758034 A1       | 19970212         | EP19960109873      | 19960619         |
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| MX9603111 A1       | 19970329         | MX19960003111      | 19960731         |
| US5809711 A        | 19980922         | US19960693911      | 19960805         |

**Priority:**

DE19951028999 19950807 DE19965005347 19960619

**Probable Assignee:** PFLEIDERER VERKEHRSTECHNIK GMBH AND CO KG

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**Assignee(s):** PFLEIDERER INFRASTRUKTURTECHNIK GMBH AND CO KG ; PFLEIDERER VERKEHRSTECHNIK GMBH ; PFLEIDERER VERKEHRSTECHNIK GMBH AND CO KG ; PFLEIDERER VERKEHRSTECHNIK GMBH AND CO KG 92318 NE ; PFLEIDERER VERKEHRSTECHNIK GMBH AND CO KG 92318 NEUMARKT DE

**Inventor(s):** (std): WERNER DR ; WERNER ROLF J ; WERNER ROLF J DR

**Inventor(s):** WERNER ROLF J DR 92318 NEUMARKT DE ; ROLF J WERNER

**Designated states:** DE DK ES GB NL SE

**Title:** ISO-TRUSS STRUCTURE

**Abstract:** An iso-truss structure (10) includes at least two helical components (30, 32) and at least one reverse helical component (34) attached thereto with opposing angular orientations. Each helical and reverse helical component preferably includes at least four elongate, straight segments (22) rigidly connected end to end in a helical configuration forming a single, substantially complete rotation about a common axis (14) forming a first square cross section. The structure may further include at least two rotated helical components (80, 92) and at least one rotated reverse helical component (98) which are rotated with respect to the helical and reverse helical components forming a second square cross section, rotated with respect to the first. The structure may be straight, curved, flexible, or form angles.

**Classifications:**

**International (IPC 8-9):** A45F3/04 B29C53/58 B29C53/82

B62K19/02 B62K19/16 B64G1/64 B64G9/00 B65H B65H1/00

E01D4/00 E01D6/00 E01F9/011 E04C3/02 E04C3/08 E04C3/28

E04C3/29 E04C3/36 E04C3/38 E04C5/16 E04H E04H12/00

E04H12/02 E04H12/10 F16S3/08 (Advanced/Invention);

E04C3/02 E04C3/04 (Advanced/Non-invention);

E04C3/02 (Core/Invention)

**International (IPC 1-7):** B62K19/16 B65H1/00 E01D6/00 E04B1/18

E04C3/02 E04C3/29 E04C5/16 E04H E04H0/00 E04H1/00 E04H12/00

F16S3/08

**CPC:** E01F9/696 B29C53/824 A45F3/04 B29C53/587 B62K19/02

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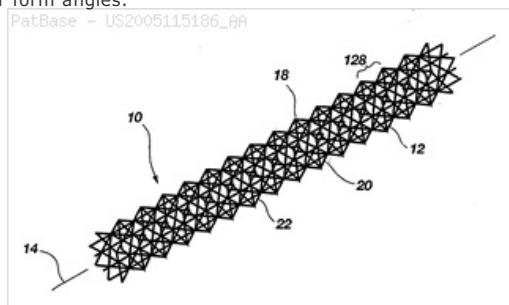
E04C3/38 E04C2003/0486 E04C2003/0495 E04H12/02 E04H12/10

E01F9/623

**European:** A45F3/04 B29C53/58C4 B29C53/82B3 B62K19/02 B62K19/16 B64G1/64 B64G9/00 E01F9/011 E01F9/011D

E04C3/08 E04C3/28 E04C3/36 E04C3/38 E04H12/02 E04H12/10 P04C3/04T P04C3/04T2

**US:** 52/633 52/633P



**Family:**

| Publication number | Publication date | Application number | Application date |
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| WO0210535 A2    | 20020207 | WO2001US23636  | 20010727 |
| WO0210535 A3    | 20030814 | WO2001US23636  | 20010727 |

#### Priority:

US20000221445P 20000728 EP20010961763 20010727 WO2001US23636 20010727  
US20010343133 20010727 WO2001US23636 20030124 US20040343133 20041220

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**Agent(s):** FB RICE PTY LTD; FB RICE; SMART AND BIGGAR; HAVERKAMP JENS PROF DIPL GEOL DRRERNAT; WALKER ROSS THOMSON; EITAN PEARL LATZER AND COHEN ZEDEK; MASUI CHUJI; SHAMOTO ICHIO; KOBAYASHI YASUSHI; TOMITA HIROYUKI; CHIBA AKIO; THORPE NORTH AND WESTERN LLP

**Designated states:** AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE ES FI FR GA GB GD GE GH GM GN GQ GR GW HR HU ID IE IL IN IS IT JP KE KG KP KR KZ LC LI LK LR LS LT LU LV MA MC MD MG MK ML MN MR MW MX MZ NE NL NO NZ PL PT RO RU SD SE SG SI SK SL SN SZ TD TG TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW

**83) Family number: 46842859** (US2010229473A)

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**Title:** PNEUMATIC TOWER DESIGN

**Abstract:** A telescopic support tower has a plurality of tubes nested or stacked with one another. A base is coupled with the outermost tube to stand the plurality of tubes transverse to the base. A mechanism is provided in the base to enable access to an interior space of the plurality of tubes. The mechanism is coupled with a source of compressed air. A plurality of seals, at least two, are positioned on each of the adjacent tubes to seal the tubes with respect to one another. The plurality of seals enables sealed sliding movements of the tubes with respect to one another. At least one first clamp is provided to prohibit movement of selected tubes of the plurality of tubes such that only one tube of the plurality of tubes is enabled to telescope at a time. At least one second clamp fixes the selected telescoping tube to an adjacent tube of the plurality of tubes.

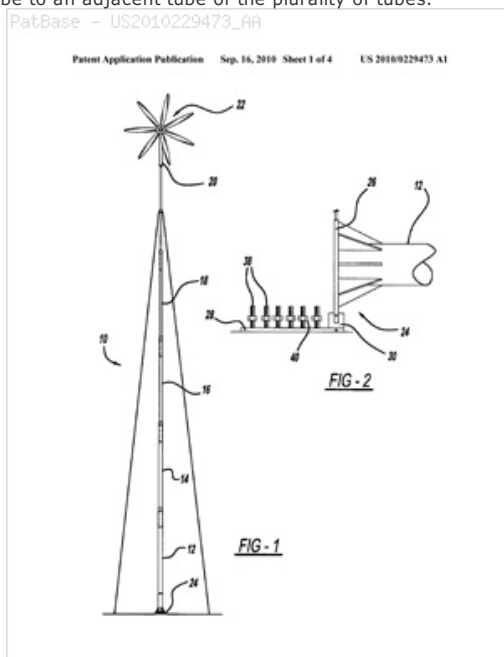
#### Classifications:

**International (IPC 8-9):** B23P11/00 E04H12/18 (Advanced/Invention); B23P11/00 E04H12/00 (Core/Invention)

**CPC:** E04H12/182 Y10T29/49826

**European:** E04H12/18B

**US:** 29/428 52/111



**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| US2010229473 AA    | 20100916         | US20090402064      | 20090311         |

**Priority:**

US20090402064 20090311

**Probable Assignee:**

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**Assignee(s):** (std):

THOMAS IND ROLLS INC

**Assignee(s):**

THOMAS INDUSTRIAL ROLLS INC

**Inventor(s):** (std):

CRAIN CHRISTOPHER ; SIMPSON DENNIS

**Agent(s):**

HARNES DICKY AND PIERCE PLC

**84) Family number: 21929860 (US2795303A)**

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**Title:** MASTS OR TOWERS

**Abstract:** (Claim 1) 1. A tower comprising: a plurality of elongate telescoping sections and a flexible member having an end secured to the innermost of said sections extending over sheaves mounted on the other sections and having an outer end disposed without said tower for progressively moving said sections to extended positions, the innermost section being moved outwardly first upon initial application of force on said outer end of said flexible member, separate catch means pivotally mounted at the upper end of each of said sections except the outermost and innermost sections, each catch means being actuatable by gravity to be engageable with an adjacent section to prevent upward movement of each section until the next inner section has been fully extended, and stop means on each of said sections except the outermost section, the stop means of each section engaging the catch means of the next adjacent section to open said catch means when said catch section has been fully extended and permit the next adjacent section to move toward extended position.

**Classifications:**

**International (IPC 8-9):** E04H12/18 (Advanced/Invention);  
E04H12/00 (Core/Invention)

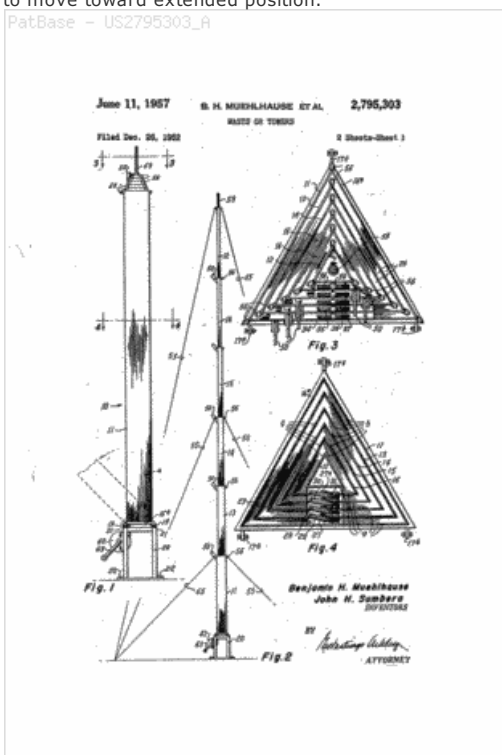
**International (IPC 1-7):** E04H12/18

**CPC:** E04H12/182

**European:** E04H12/18B

**US:** 52/121 52/148 52/292 52/646

PatBase - US2795303\_A



**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| US2795303 A        | 19570611         | US19520327992      | 19521226         |

**Priority:**

US19520327992 19521226

**Probable Assignee:**

MUEHLHAUSE BENJAMIN H

**Assignee(s):** (std):

MUEHLHAUSE BENJAMIN H ; SUMBERA JOHN H

**Inventor(s):** (std):

SUMBERA JOHN H ; MUEHLHAUSE BENJAMIN H

**85) Family number: 28223864 (US2002095878A)**

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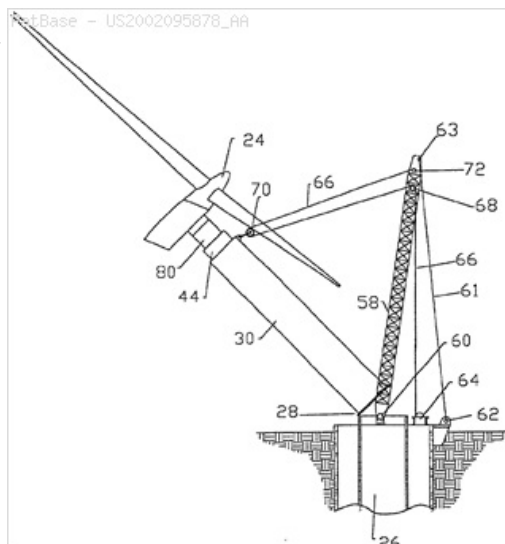
**Title:** TILT-UP AND TELESCOPIC SUPPORT TOWER FOR LARGE STRUCTURES

**Abstract:** A support tower for large structures such as wind turbines generators, microwave structures, high voltage transmission lines or the like, constructed of telescopic sections with the lowermost section having an edge portion pivotally connected to a foundation to enable the tower sections to be transported to the site of installation. The tower sections are assembled at the installation site in a nested relationship, each within the adjacent lower tower section. The large load is mounted on the upper end of the uppermost tower section and the nested tower sections are then tilted upwardly to a vertical position. After the tower is tilted to its vertical position and securely connected to the foundation, the telescopic tower sections are vertically extended to position the load in a vertically elevated position.

**Classifications:**

**International (IPC 8-9):** E04H12/00 E04H12/18 E04H12/34  
F03D11/04 (Advanced/Invention);

E04H12/00 F03D11/00 (Core/Invention)  
**International (IPC 1-7):** B66C23/00 E04B5/18 E04H12/18 E04H12/34  
**CPC:** E04H12/182 E04H12/34 F05B2240/9151 F05B2240/91521  
Y02E10/728 F03D13/40 F03D13/20 F03D13/10  
**European:** E04H12/18B E04H12/34 F03D1/00B F03D11/04  
R05B240/9151 R05B240/91521 Y02E10/72N  
**US:** 212/347 52/116 52/116P 52/118 52/118S 52/123.1 52/40  
52/40P 52/633 52/633P 52/745.17



## Family:

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
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| AU200236544 A1     | 20020618         | AU20020036544      | 20011204         |
| AU200236544 A5     | 20020618         | AU20020036544      | 20011204         |
| CA2436627 AA       | 20030604         | CA20012436627      | 20011204         |
| CA2436627 C        | 20100817         | CA20012436627      | 20011204         |
| US2002095878 AA    | 20020725         | US20000729250      | 20001205         |
| US2005005562 AA    | 20050113         | US20040851644      | 20040524         |
| US2009211174 AA    | 20090827         | US20090320999      | 20090210         |
| US6782667 BB       | 20040831         | US20000729250      | 20001205         |
| WO0246552 A1       | 20020613         | WO2001US45380      | 20011204         |
| WO0246552 C2       | 20040422         | WO2001US45380      | 20011204         |

## Priority:

US20000729250 20001205 WO2001US45380 20011204 US20040851644 20040524  
US20090320999 20090210

## Probable Assignee: Z TEK LLC

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**Assignee(s):** ALLAN P HENDERSON ; GERSHONY SVI ; GERSHONY ZVI

**Inventor(s):** (std): GERSHONY ZYI ; GODFREY ROBERT E ; HENDERSON ALLAN P ; JOHNSON VAUGHN ; GERSHONY ZYI ; GERSHONY SVI

**Inventor(s):** HENDERSON ALLAN ; GODFREY ROBERT ; ALLAN P HENDERSON

**Agent(s):** ROBIC ; JACOBSON HOLMAN PLLC

**Designated states:** AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE ES FI FR GA GB GD GE GH GM GN GQ GR GW HR HU ID IE IL IN IS IT JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MC MD MG MK ML MN MR MW MX MZ NE NL NO NZ PH PL PT RO RU SD SE SG SI SK SL SN SZ TD TG TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW

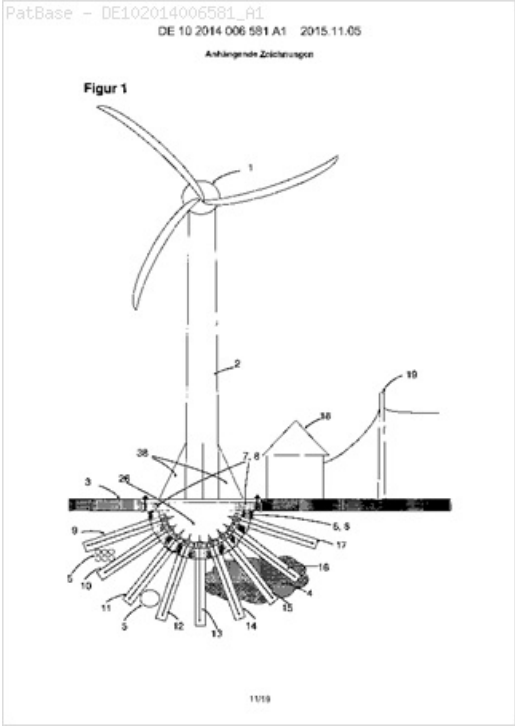
## 86) Family number: 60723866 (DE102014006581A1)

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**Title:** VORRICHTUNG, VERFAHREN UND SYSTEM ZUR ERSCHUETTERUNGS- UND SETZUNGSFREIEN GRUENDUNG UND BEFESTIGUNG VON BAUTEILEN IM BAUGRUND DEVICE, METHOD AND SYSTEM FOR vibration and RATIO FREE ESTABLISHING AND fixing of components in BUILDING (Machine translation)

**Abstract:** Source: DE102014006581A1 [DE] Tuerme, Masten, Pfosten oder Pfaehle werden meistens direkt durch Einrammen ins Erdreich oder ueber hierzu ins Erdreich eingebrachte Fundamente hergestellt. Deren Ausrichtung ist mit erheblichen Aufwendungen verbunden. Nach Abbinden des Betons ist dies nicht mehr moeglich. Bei Windkraftanlagen werden Gruendungen aus Stahlbeton oertlich meistens mit Verbauarbeiten, Bodenverbesserungsmassnahmen und massiven Erdbauten hergestellt. Eingriffe in die Natur, Umlegung von vorhandenen Anlagen und Abbruch von Bauwerksresten sind die Regel. Die Erfindung gibt die Moeglichkeit, eine kostenguenstige, verbesserte Verfahrensweise bei derartigen Gruendungen ohne Ruecksicht auf die genannten Hindernisse durchzufuehren, als Einzelgruendung oder im System. Erfindungsgemaess eine Vorrichtung (8), mit einem dreidimensionalen Grundtragkoerper (6), mit einem Hohlraum (26), mit einer oeffnungen (25) und einem Hohlkoerper mit Tragplatte (29), die mit dem oberen Ende (23) einer Verankerung (9-17) mit einer dauerhaften oder loesbar Verbindung (24) verbunden ist und mit dem unteren Ende (22) im Baugrund (3) verankert ist, mit einer ebenen Tragplatte (7) mit oeffnung (41) dauerhaft oder loesbar verbunden, als Aufnahme und zur Befestigung eines Bauteiles, mit einem fuellkoerper (28), der den Hohlraum (26) ausfuellt, um die dauerhaften oder loesbar Verbindung (24) ortsfest zu sichern. Das System kann durch eine Mehrzahl einzelner Vorrichtungen (8) einzeln oder verbunden gebildet werden. Erschuetterungs- und setzungsfreie Gruendung von Windkraftanlagen, Signalmasten, Laerschutzwaenden oder Industriehallen. **Machine translation:** Towers, masts, poles or piles are manufactured mostly by ramming directly into the soil or into the ground via appropriately introduced foundations. Their orientation is associated with considerable expense. After the concrete has set, this is no longer possible. In wind turbines Green Dungen made of reinforced concrete are mostly made with Verbauarbeiten Locally, soil improvement measures and massive earthworks. Intervention in nature, reallocation of existing facilities and demolition of building remains are the rule. The invention is the possibility of a cost-effective, improved procedure in such Gruen Dungen durchzufuehren without consideration for the above-mentioned obstacles, as single founding or in the system. Erfindungsgemaess a device (8), with a three-dimensional Grundtragkoerper (6) with a cavity (26), with a holes (25) and a Hohlkoerper with support plate (29) connected to the upper end (23) of an anchor (9- 17) with a permanent or releasable connection (24) and with the lower end (22) is anchored in the ground (3), with a flat base plate (7) connected permanently or removably connected to opening (41) when receiving and mounting a component, with a filling material bodies (28) which fills the cavity (26) to secure the permanent or detachable connection (24) stationary. The system can be connected individually formed by a plurality of individual devices (8) or. Vibration and settlement-free founding of wind turbines, signal masts, Laerschutzwaenden or industrial buildings.

**Classifications:**  
**International (IPC 8-9):** E02D27/42 E02D31/08 E02D5/80  
E04H12/22 (Advanced/Invention)  
**CPC:** F03D13/22 Y02E10/728



**Family:**

| Publication number | Publication date | Application number | Application date |
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| DE102014006581 A1  | 20151105         | DE201410006581     | 20140502         |

**Priority:**

DE201410006581 20140502

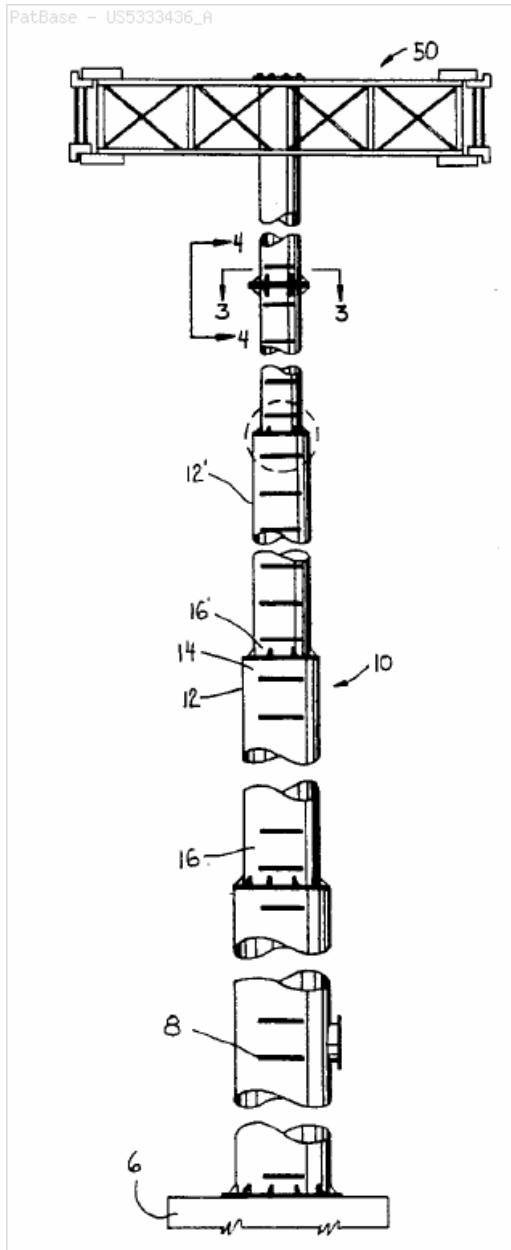
**Probable Assignee:** DIEHL BEATE  
**Assignee(s):** (std): DIEHL BEATE ; ZIMMER MICHAEL  
**Inventor(s):** (std): DIEHL BEATE ; ZIMMER MICHAEL

**87) Family number: 11051878** (US5333436A) © PatBase

**Title:** MODULAR ANTENNA POLE

**Abstract:** This invention relates to an improved modular antenna pole and to a unique and novel method of joining the pre-fabricated sections which, when assembled, constitute the pole. The pole is comprised of a series of cylindrical sections of decreasing diameters having flanges so designed that the bottom flange of a next succeeding higher section, secured to the outside of the cylindrical section, mates with the top flange of the adjacent lower section, which flange is secured to the inside thereof. Consequently, the pole may be "tapered" from bottom to top in progressively smaller incremental steps rather than by tapering each successive section.

**Classifications:**  
**International (IPC 8-9):** E04H12/08 H01Q1/12 (Advanced/Invention);  
E04H12/00 H01Q1/12 (Core/Invention)  
**International (IPC 1-7):** E04H12/00 H01Q1/12  
**CPC:** E04H12/085 H01Q1/12 H01Q1/1242 F16B2200/506  
**European:** E04H12/08F H01Q1/12 H01Q1/12D  
**US:** 343/890 343/892 403/337 52/114 52/40 52/726.1 52/726.3  
52/848 52/849 527/263

**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| US5333436 A        | 19940802         | US19920944258      | 19920914         |
| US5787673 A        | 19980804         | US19940255342      | 19940607         |

**Priority:**

US19920944258 19920914      US19940255342 19940607

**Probable Assignee:**

PI ROD INC

**Assignee(s): (std):**

PIROD INC

**Assignee(s):**

PI ROD INC

**Inventor(s): (std):**

NOBLE MYRON C

**88) Family number: 2354887** (US4339899A)

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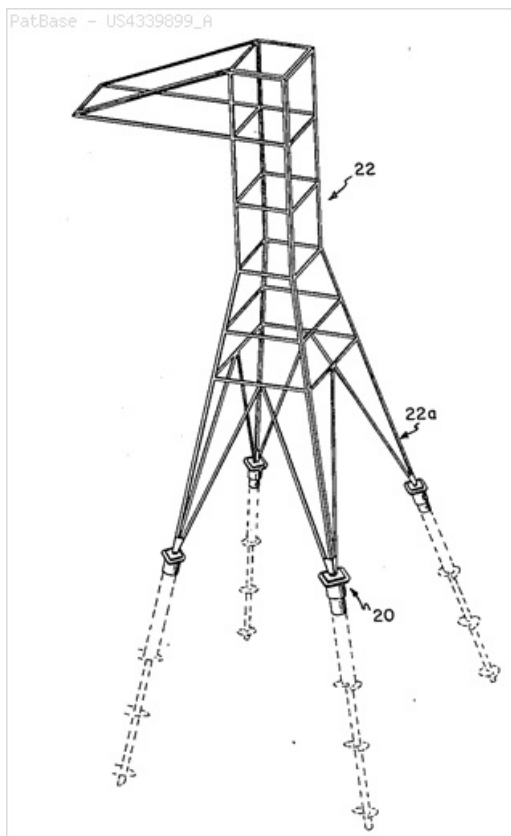
**Title:** ADJUSTABLE CONNECTOR FOR COUPLING TOWER LEG TO FOUNDATION SUPPORT ANCHOR

**Abstract:** A connector assembly and method are disclosed for supporting each of the legs of a free standing tower or the like using a screw anchor driven into the ground at the base of a respective tower leg. In order to compensate for irregularities in alignment between the upper end of each screw anchor and a corresponding tower leg, the connector units are initially mounted on the screw anchors in a manner permitting individual axial, angular and longitudinal adjustment as may be necessary to bring each connector unit into proper alignment with a tower leg thereabove. The connector units while being held in such aligned disposition may be precisely affixed to a corresponding screw anchor and the proximal tower leg using the connector unit itself as a guide for such interconnection. Temporary adjustable support for the connector units takes the form of a unique removable holding fixture between a screw anchor and the connector unit thereon constructed and arranged to allow vernier adjustment of the connector unit in axial and angular directions relative to the screw anchor to assure that each connector unit may be brought into precise alignment with a tower leg before the connector unit is rigidly coupled to the screw anchor below and the tower leg above. Requisite lateral adjustment is provided in the form of a slidable connection between the connector unit and a base plate adapted to be joined to the tower leg supported thereby.

**Classifications:**

**International (IPC 8-9):** E02D27/42 E04H12/10  
E04H12/22 (Advanced/Invention);

E04H12/24 (Advanced/Non-invention);  
E02D27/32 (Core/Invention);  
E04H12/00 (Core/Non-invention)  
**International (ipc 1-7):** E02D5/74 E04H12/10 E04H12/22  
**CPC:** Y10T403/125 E02D27/42 E04H12/24 E02D27/425  
F16B2200/506  
**European:** E02D27/42 P04H12/24  
**US:** 403/337 403/4 405/224 52/122.1 52/157 52/651.02



#### Family:

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| CA1167230 A1       | 19840515         | CA19810388077      | 19811016         |
| US4339899 A        | 19820720         | US19800201593      | 19801028         |

#### Priority:

US19800201593 19801028 CA19810388077 19811016

**Probable Assignee:** HUBBELL INC

**Assignee(s):** (std): CHANCE CO AB

**Assignee(s):** CHANGE CO AB ; HUBBELL INC ; CHANCE A B CO ; CHANCE A B COMPANY ; BOBBITT DONALD E ; KLENK WILLIAM A ; CHANCE AB CO ; A B CHANCE CO ; A B CHANCE COMPANY ; AB CHANGE CO A CORP OF DE ; ABCHANCE CO ; ATKINSON ALBERT B

**Inventor(s):** (std): ATKINSON ALBERT B ; BOBBITT DONALD E ; KLENK WILLIAM A

**Agent(s):** GOWLING LAFLEUR HENDERSON LLP

#### 89) Family number: 32712904 (US2006053726A)

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**Title:** CONNECTION NODE FOR A UNIVERSAL TRUSS JOINT AND DOUBLE LAYER GRID

**Abstract:** A connection node for a double layer grid or truss system has at least one diagonal flange receiving a pair of diagonal framing members having surfaces that lie in a single diagonal plane parallel to the flange(s). Use of co-planar diagonal members that can be at various diagonal angles or vertical, simplifies node connections and permits variations in bay spacing to produce interesting architectural effects and to provide greater member density where structural loads are greater.

#### Classifications:

**International (ipc 8-9):** E04B1/18 E04B1/19 E04B1/32 E04B1/38  
E04B1/58 E04B7/08 E04C3/02 E04C3/04 E04H12/00 F24J2/12  
F24J2/52 F24J2/54 H01Q1/12 H01Q15/18  
H01Q19/12 (Advanced/Invention);

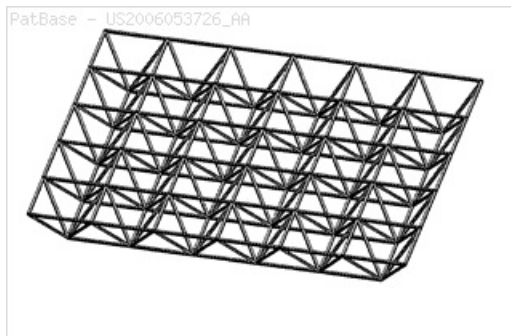
E04B1/18 E04B1/19 E04B1/32 E04B1/38 E04B7/08 E04C3/02  
E04H12/00 F24J2/00 H01Q1/12 H01Q19/10 (Core/Invention);  
E04B E04H (Subclass/Invention)

**International (ipc 1-7):** E04B7/08 E04H12/00

**CPC:** E04H12/00 E04B1/19 E04B1/1903 E04B2001/1933  
E04B2001/1936 E04B2001/1975 E04B2001/1984 E04B2001/199  
E04C2003/0495 H01Q15/18 Y02E10/47 F24S25/00 F24S25/13

**European:** E04B1/19 F24J2/52 H01Q15/18 P04B1/19 P04B1/19B  
P04B1/19C2 P04B1/19C3 P04B1/19E P04B1/19G2 P04B1/19H  
P04C3/04T2 R24J2/52A8C Y02E10/47

**US:** 343/880 343/880P 52/633 52/633P 52/638 52/643 52/643S  
52/648.1 52/653.2 52/653.200P 52/694 52/694P 52/747.1 52/81.3  
52/81.300S



#### Family:

| Publication number | Publication date | Application number | Application date |
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| AU2007300713 BB    | 20110616         | AU20070300713      | 20070308         |
| AU2011213839 AA    | 20110915         | AU20110213839      | 20110823         |

|                   |          |                 |          |
|-------------------|----------|-----------------|----------|
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| EP1903155 B1      | 20121205 | EP20070252968   | 20070727 |
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| EP2154301 A3      | 20100505 | EP20090175334   | 20070727 |
| EP2357290 A2      | 20110817 | EP20110161570   | 20070727 |
| EP2357290 A3      | 20120404 | EP20110161570   | 20070727 |
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| IL197541 A1       | 20120229 | IL20070197541   | 20070308 |
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| IL217230 A1       | 20130930 | IL20070217230   | 20070308 |
| IL217231 A0       | 20120131 | IL20110217231   | 20111227 |
| IL217231 A1       | 20130228 | IL20070217231   | 20070308 |
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| MA30785 B1        | 20091001 | MA20090031774   | 20090410 |
| MX2009003087 A1   | 20090528 | MX20090003087   | 20070308 |
| US2006053726 AA   | 20060316 | US20040932173   | 20040831 |
| US2007011983 AA   | 20070118 | US20060525721   | 20060922 |
| US2008072516 AA   | 20080327 | US20070978859   | 20071029 |
| US2008127595 AA   | 20080605 | US20070980217   | 20071029 |
| US2008204352 AA   | 20080828 | US20070980220   | 20071029 |
| US2013333320 AA   | 20131219 | US20130860965   | 20130411 |
| US7530201 BB      | 20090512 | US20040932173   | 20040831 |
| US7578109 BB      | 20090825 | US20060525721   | 20060922 |
| US757862 BB       | 20090915 | US20070980220   | 20071029 |
| WO08039233 A2     | 20080403 | WO2007US05761   | 20070308 |
| WO08039233 A3     | 20081211 | WO2007US05761   | 20070308 |
| ZA200901603 A     | 20100428 | ZA20090001603   | 20090309 |

#### Priority:

|                |          |               |          |               |          |
|----------------|----------|---------------|----------|---------------|----------|
| US20040932173  | 20040831 | US20060525721 | 20060922 | AU20070300713 | 20070308 |
| CN200780039151 | 20070308 | WO2007US05761 | 20070308 | EP20070252968 | 20070727 |
| EP20090175334  | 20070727 | US20070978859 | 20071029 | US20070980217 | 20071029 |
| US20070980220  | 20071029 | IN2009DN01617 | 20090312 | AU20110213839 | 20110823 |
| US20130860965  | 20130411 |               |          |               |          |

#### Probable Assignee: GOSSAMER SPACE FRAMES

**Assignee(s):** (std): GOSSAMER SPACE ; GOSSAMER SPACE FRAMES ; REYNOLDS GLENN A ; HACKBARTH DEAN R ; CURTIS GARY N ; GASSAMER SPACE FRAMES

**Assignee(s):** GOSAMER SPACE FRAMES ; GOSSAMER SPAE FRAMES ; GOSSAMER SPACE FRAMESBERTH D54PIER DLONG BEACHCA90802US ; GOSSAMER SPACE FRAMES LONG BEACH

**Inventor(s):** (std): REYNOLDS GLENN A ; HACKBARTH DEAN R ; CURTIS GARY N ; CURTIS GRAY N ; GARY N CURTIS ; GLENN A REYNOLDS ; DEAN R HACKBARTH ; REYNOLDS GLENN ; CURTIS GARY ; HACKBARTH DEAN

**Inventor(s):** HACKBARTH DEAN RUS ; CURTIS GARY NUS ; REYNOLDS GLENN AUS

**Agent(s):** FB RICE PTY LTD; FB RICE; UREN JOHN RUSSELL; BUSSE AND BUSSE PATENT U RECHTSANWAELTE PARTNERSCHAFT MBB; GREENWOOD JOHN DAVID; SUER STEVEN JOHANNES; GREENWOOD JOHN DAVID ET AL; CARPINTERO MARIO; SANFORD TCOLB AND CO; LEONARD TACHNER A PROFESSIONAL LAW CORP; CHRISTIE PARKER AND HALE LLP; HAYDEN A; ROBERT A; CARNEY HAYDEN A

**Designated states:** AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW

#### 90) Family number: 32712905 (US2006053727A)

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**Title:** TOWER/FRAME STRUCTURE AND COMPONENTS FOR SAME

**Abstract:** A tower/frame structure of interconnected columns and beams (which may be used in a cooling tower) and novel columns, beams, connection mechanisms and other components are provided. In one embodiment, a column and a beam are constructed of pultruded composite fiber-reinforced plastic (FRP) materials. The beam includes two sidewall extensions or flanges (each having one or more attachment apertures) at one end and which are integral with the beam for connection to the column (having one or more corresponding attachment apertures). The dimension/spacing between the inner walls of the two flanges substantially equals or is slightly larger than the outer dimension of the column. The attachment holes are aligned and a fastener is inserted through the extensions and column for attaching the column and beam. The C-shaped end of the beam substantially conforms to the cross-sectional shape and dimensions of the column. Additional plastic components, such

as a firewall and toe/trim member, for use in a cooling tower are also provided.

**Classifications:**

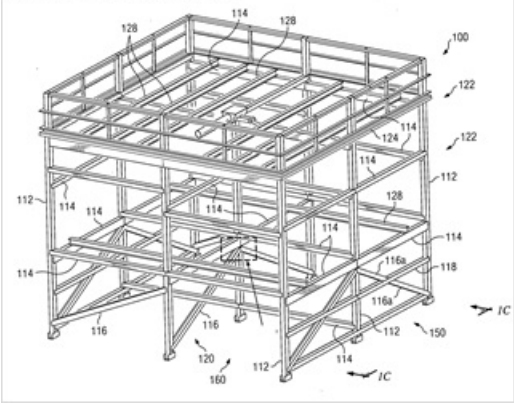
**International (IPC 8-9):** B01D B01D47/00 B01F B01F3/04 C10J C10J1/00 E04C3/36 E04H E04H12/00 E04H12/02 E04H12/28 E04H5/12 (Advanced/Invention); B01D47/00 B01F3/04 C10J1/00 E04C3/30 E04H12/00 E04H5/00 (Core/Invention)

**CPC:** Y10S261/11 E04C3/28 E04B2001/2418 E04B2001/2451 E04B2001/2454 E04C2003/043 E04C2003/0439 E04C2003/0452 E04C2003/0465 E04H5/12 F28F25/00 Y02P20/129

**European:** E04C3/28 E04H5/12 F28F25/00 P04B1/24B41 P04B1/24B42 P04B1/24B5 P04C3/04S2A P04C3/04S2C P04C3/04S3H P04C3/04S3S

**US:** 261/110 261/111 261/111P 261/161 261/161P 261/28 261/75 261/75S 261/97 261/DIG.011 261/DIG.11 261/DIG.11S 52/244 52/244S 52/648.1 52/648.100P 52/732.2 52/736.2 52/737.2 52/737.6 52/838 52/847

PatBase - US2006053727\_AA



**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| BRPI0515258 A      | 20080715         | BR2005PI15258      | 20050902         |
| CN101056696 A      | 20071017         | CN200580038104     | 20050902         |
| CN101056696 B      | 20120801         | CN200580038104     | 20050902         |
| EP1789168 A2       | 20070530         | EP20050794209      | 20050902         |
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| HK1105911 A1       | 20080229         | HK20070112928      | 20071127         |
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| MX2007003020 A1    | 20071018         | MX20070003020      | 20050902         |
| US2006053727 AA    | 20060316         | US20050216752      | 20050831         |
| US2008028714 AA    | 20080207         | US20070804711      | 20070518         |
| US2010109171 AA    | 20100506         | US20090563860      | 20090921         |
| US2012032360 AA    | 20120209         | US20110178296      | 20110707         |
| US7275734 BB       | 20071002         | US20050216752      | 20050831         |
| US7607646 BB       | 20091027         | US20070804711      | 20070518         |
| US7997562 BB       | 20110816         | US20090563860      | 20090921         |
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| WO06031489 A2      | 20060323         | WO2005US31600      | 20050902         |
| WO06031489 A3      | 20061123         | WO2005US31600      | 20050902         |

**Priority:**

US20040609300 20040913 US20040609300P 20040913 US20050216752 20050831  
WO2005US31600 20050902 US20070804711 20070518 US20090563860 20090921  
US20110178296 20110707

**Probable Assignee:** COMPOSITE COOLING SOLUTIONS LP

**Assignee(s):** (std): BARDO CHARLES J ; BLAND JAMES A ; COMPOSITE COOLING SOLUTIONS L ; COMPOSITE COOLING SOLUTIONS L P ; SEAWELL JESSE Q ; TROUTMAN DUSTIN L ; WEYANT SHANE E

**Assignee(s):** COMPOSITE COOLING SOLUTIONS LP

**Inventor(s):** (std): BLAND JAMES A ; SEAWELL JESSE Q ; TROUTMAN DUSTIN L ; WEYANT SHANE E ; BARDO CHARLES J ; BLAND JAMES A SEAWELL JESSE Q ; SEAWELL JESS Q

**Inventor(s):** JESSE Q SEAWELL ; SEAWELL JESSE ; BARDO CHARLES ; BLAND JAMES ; TROUTMAN DUSTIN ; WEYANT SHANE ; DUSTIN L TROUTMAN ; JAMES A BLAND ; SHANE E WEYANT ; CHARLES J BARDO ; JESS Q SEAWELL

**Agent(s):** ROBIN BRIDGE AND JOHN LIU; DOCKET CLERK; MUNCK BUTRUS PC; ROBERT D

**Designated states:** AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GW HR HU ID IE IL IN IS IT JP KE KG KM KP KR KZ LC LI LK LR LS LT LU LV MA MC MD MG MK ML MN MR MW MX MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RU SC SD SE SG SI SK SL SM SN SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW

**91) Family number: 52405915 (US2014182232A)**

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**Title:** COMPOSITE OPEN/SPACED MATRIX COMPOSITE SUPPORT STRUCTURES AND METHODS OF MAKING AND USING THEREOF

**Abstract:** A lattice support structure or tower comprising one or more open matrix composite strut members connecting a series of interlocking connectors to create a ridged support platform for telecommunications, surveillance, renewable energy, lighting and energy transmission applications. Embodiments of the invention are telescoping for ease of transport and erection. The erection and deployment can be achieved through means of automatic deployment or manual.

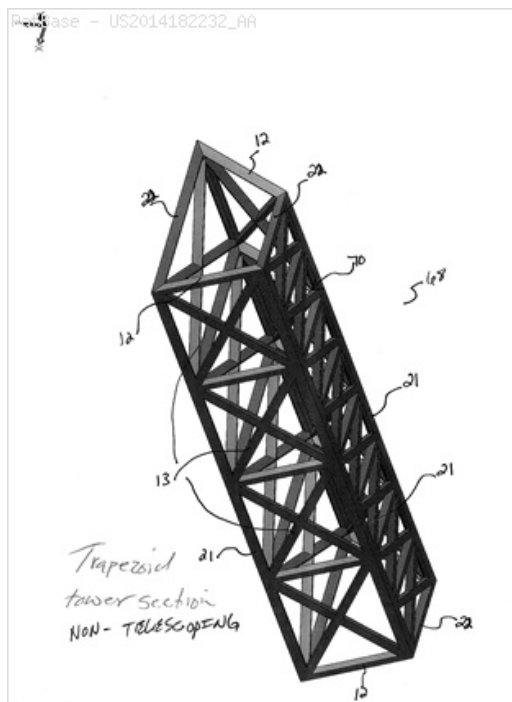
**Classifications:**

**International (IPC 8-9):** B29C70/00 B29C70/56 E04C3/00 E04C3/36 E04H12/02 E04H12/16 E04H12/18 E04H12/22 E04H12/34 F03D11/04 F03D13/20 F16B7/00 F16B7/10 F16B7/18 F16B7/20 F16S3/00 H01L31/042 H01L31/048 H01Q1/12 H02S20/00 H02S20/20 (Advanced/Invention)

**CPC:** F16B7/20 Y02E10/50 Y02E10/728 F16B7/042 F16B7/182 E04H12/02 E04H12/182 E04H12/2223 E04H12/34 E04H12/345 E04H12/347 F05B2240/9121 F05B2240/913 F05B2240/9151 F05B2280/6003 H01Q1/1242 E04C3/36 B29C70/56 E04H12/16 B29C70/24 H02S20/00 B29C53/824 Y02P70/26 H02S30/00 F03D13/20

**European:** E04H12/02 E04H12/16 E04H12/18B E04H12/22A1B E04H12/34 E04H12/34F E04H12/34G

**US:** 156/175 156/433 52/645 52/660



#### Family:

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| AU2012255028 AA    | 20121122         | AU20120255028      | 20120518         |
| CA2836787 AA       | 20131119         | CA20122836787      | 20120518         |
| CN104603379 A      | 20150506         | CN201280034730     | 20120518         |
| EP2710641 A2       | 20140326         | EP20120724491      | 20120518         |
| IN10774DN2013 A    | 20160520         | IN2013DN10774      | 20131213         |
| US2014182232 AA    | 20140703         | US20120118390      | 20120518         |
| WO12159046 A2      | 20121122         | WO2012US38614      | 20120518         |
| WO12159046 A3      | 20130829         | WO2012US38614      | 20120518         |
| WO12159046 A9      | 20130627         | WO2012US38614      | 20120518         |

#### Priority:

US20110488041P 20110519      US20120118390 20120518      WO2012US38614 20120518

**Probable Assignee:** C6 IND

**Assignee(s):** (std): C6 IND ; HOLT DREW ; HOLT DREW RYAN

**Assignee(s):** C6 INDUSTRIES

**Inventor(s):** (std): HOLT DREW ; HOLT DREW RYAN

**Agent(s):** FISHER ADAMS KELLY PTY LTD; FISHER ADAMS KELLY CALLINANS; SPRUSON AND FERGUSON; BORDEN LADNER GERVAIS LLP; HOWE STEVEN; HAUN PAUL J

**Designated states:** AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT QA RO RS RU RW SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

**92) Family number: 29188921** (US5851446A)

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**Title:** RIGID COOLING TOWER

**Abstract:** A cooling tower is disclosed that is resistant to lateral displacement while minimizing the number and type of parts, and while limiting the amount of horizontal bracing. The cooling tower has a fiber reinforced material skeletal frame. Moment-transferring connections are provided in the connections between the elements of the skeletal frame. The moment-transferring connections between the frame members are made by bonding the joined elements to a mounting plate. The mounting plate may be held in place by mechanical fasteners that bear construction loads until the bonding material cures. The mounting plate, columns, beam and mechanical fasteners define construction joints that are capable of bearing construction loads until the bonding material cures. The mounting plate, columns, beam and cured bonding material define post-construction joints that are capable of transferring moments from the beam to the columns and are capable of bearing post-construction loads on the joints. The post-construction joints may also include the mechanical fasteners. Deflections of beams with the post-construction joints are more like a model beam with moment-transferring joints than a model beam that is simply supported.

#### Classifications:

**International (IPC 8-9):** E04H12/30 E04H5/12 E04H7/04

F28C1/00 (Advanced/Invention);

E04H5/00 (Core/Invention);

E04H5/12 (Core/Non-invention)

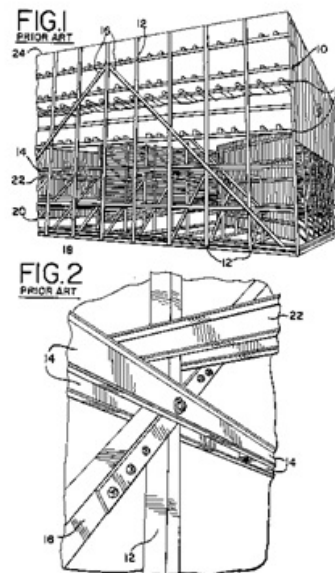
**International (IPC 1-7):** B01F3/04 E04C3/36 E04H E04H12/00

E04H12/30 E04H5/12 E04H7/04 F24F3/00 F28C1/00

**CPC:** Y10S261/11 E04H5/12 F28F25/00

**European:** E04H5/12 F28F25/00

**US:** 261/111 261/DIG.11 52/298 52/299 52/656.9 52/712

**Family:**

| Publication number | Publication date | Application number | Application date |
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| AU199736888 A1     | 19980312         | AU19970036888      | 19970908         |
| AU199852898 A1     | 19980827         | AU19980052898      | 19980203         |
| AU713329 B2        | 19991202         | AU19970036888      | 19970908         |
| BRPI9704678 A      | 19990202         | BR1997PI04678      | 19970909         |
| CA2210672 AA       | 19980309         | CA19972210672      | 19970723         |
| CA2225556 AA       | 19980804         | CA19982225556      | 19980202         |
| CN1177049 A        | 19980325         | CN19971018222      | 19970908         |
| EP0828043 A2       | 19980311         | EP19970306951      | 19970908         |
| EP0828043 A3       | 19980701         | EP19970306951      | 19970908         |
| EP0856622 A1       | 19980805         | EP19980300787      | 19980204         |
| ID18212 A          | 19980312         | ID19970003134      | 19970909         |
| JP10088840 A2      | 19980407         | JP19970243594      | 19970909         |
| JP3017139 B2       | 20000306         | JP19970243594      | 19970909         |
| KR100244806 B1     | 20000215         | KR19970046364      | 19970909         |
| KR19980024454 A    | 19980706         | KR19970046364      | 19970909         |
| NO973870 A         | 19980310         | NO19970003870      | 19970822         |
| NO973870 A0        | 19970822         | NO19970003870      | 19970822         |
| NO973870 L         | 19980310         | NO19970003870      | 19970822         |
| NZ328433 A         | 19990429         | NZ19970328433      | 19970725         |
| RU2144124 C1       | 20000110         | RU19980102121      | 19980203         |
| RU98102121 A       | 19991120         | RU19980102121      | 19980203         |
| TH36783 A          | 20000114         | TH19971003200      | 19970807         |
| TW368541 B         | 19990901         | TW19970111453      | 19970811         |
| TW386129 B         | 20000401         | TW19970111453      | 19980325         |
| US5851446 A        | 19981222         | US19970800649      | 19970204         |
| US5902522 A        | 19990511         | US19960711261      | 19960909         |

**Priority:**

US19960711261 19960909      US19970800649 19970204      CA19972210672 19970723  
CA19982225556 19980202

**Probable Assignee:** SPX DE CORP CORP

**Assignee(s):** (std): BALTIMOR EHRKOIL KOMPANI INK ; BALTIMORE AIR COIL CO INC ; BALTIMORE AIR COIL COMPANY INC ; BALTIMORE AIRCOIL CO INC ; BALTIMORE AIRCOIL COMPANY INC

**Assignee(s):** BALTIMORE AIRCOIL COMPANY INC US ; SPX (DE CORP) CORP ; SPX DE CORP CORP ; BARDO CHARLES J ; DALEY TOBY L ; MAILEN GREGORY S ; SEAWELL JESSE Q ; BLAND JAMES A ; Baltimore Aircoil Co Inc. ; UNITED DOMINION IND ; UNITED DOMINION IND INC (DE CORP) ; UNITED DOMINION IND INC DE CORP ; CERAMIC COOLING TOWER CORP ; CONGRESS FINANCIAL CORP ; SPX CORP ; BALTIMORE AIRCOIL CO

**Inventor(s):** (std): BARDO CHARLES J ; BLAND JAMES A ; CHARL Z DZHBARDO ; CHARLES J BARDO ; DZHEJMS ABLEHND ; DZHESS K JUSTIVELL ; GREGORI SMEJLEN ; MALEN GREGORY S ; SEAWELL JESSE Q ; TOBI LDEHLI ; TOBY L DALEY ; MAILEN GREGORY S ; JESSE Q SEAWELL ; JAMES A BLAND ; GREGORY S MAILEN ; GREGORI S MEJLEN ; DZHEJMS A BLEHND ; CHALS J BADO ; TOBI L DEHLI ; DZHESS K JU SIVELL ; CHARL Z DZH BARDO ; DALEY TOBY L

**Inventor(s):** Toby L. ; Seawell ; Mailen ; Jesse Q. ; Gregory S. ; Daley ; DZHESS K'JU.SIVELL ; CHARL'Z DZH.BARDO

**Agent(s):** SPRUSON AND FERGUSON; ASPEN PHARMA PTY LTD; GOWLING LAFLEUR HENDERSON LLP

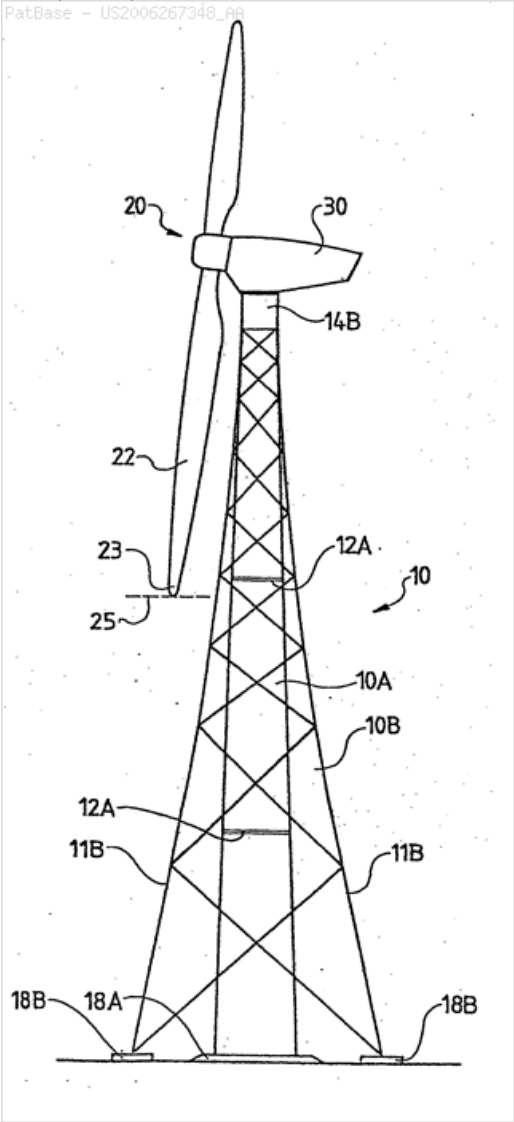
**Designated states:** AT BE CH DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE

Title: TOWER FOR A WIND POWER STATION

**Abstract:** Disclosed is a tower for a wind power station comprising a machine pod disposed on the tower and a rotor mounted on the machine pod so as to be rotatable about an essentially horizontal axis. Said rotor is provided with at least one blade. The tower is composed of a tubular upper section that is connected to a lower section which is embodied as a lattice tower in a transition zone. The lattice tower encompasses at least three corner posts. The upper tower section forms at least one sixth of the entire tower. The cross section of the lower tower section below the transition zone is greater than the cross section of the upper tower section while the transition zone is configured such that the cross section of the lower tower section is adjusted to the cross section of the upper tower section so as to optimize power flux.

**Classifications:**

**International (ipc 8-9):** E02B17/00 E02B17/02 E02D27/42 E04H12/00 E04H12/08 F03D11/00 F03D11/04 F03D13/20 F03D9/00 H02P9/04 (Advanced/Invention); E04H12/00 F03D11/00 F03D9/00 H02P9/04 (Core/Invention)  
**International (ipc 1-7):** E04H12/00 E04H12/08 F03D11/00 F03D11/04  
**CPC:** E02B17/027 E02B2017/006 E02B2017/0091 E02D27/42 E04H2012/006 F05B2240/40 F05B2240/912 F05B2240/9121 Y02E10/728 E02D27/425 F03D9/255 F03D80/85 F03D13/20  
**European:** E02D27/42 F03D11/04 P04H12/00H R05B240/40 R05B240/912 R05B240/9121 Y02E10/72N  
**US:** 290/44 290/55 290/55P 415/4.2



**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| CN100469997 C      | 20090318         | CN200480024318     | 20040825         |
| CN1842632 A        | 20061004         | CN200480024318     | 20040825         |
| DE10339438 A1      | 20050407         | DE20031039438      | 20030825         |
| DE10339438 B4      | 20050922         | DE20031039438      | 20030825         |
| DE10339438 C5      | 20110915         | DE20031039438      | 20030825         |
| DE502004015563 D1  | 20170824         | DE200450015563T    | 20040825         |
| DK1658408 T3       | 20161107         | DK20040764463T     | 20040825         |
| DK2574711 T3       | 20171023         | DK20120006627T     | 20040825         |
| EP1658408 A1       | 20060524         | EP20040764463      | 20040825         |
| EP1658408 B1       | 20160713         | EP20040764463      | 20040825         |
| EP2574711 A1       | 20130403         | EP20120006627      | 20040825         |
| EP2574711 B1       | 20170719         | EP20120006627      | 20040825         |
| EP3272970 A1       | 20180124         | EP20170181879      | 20040825         |
| ES2593781 T3       | 20161213         | ES20040764463T     | 20040825         |
| ES2643170 T3       | 20171121         | ES20120006627T     | 20040825         |
| IN00640KN2006 A    | 20070622         | IN2006KN00640      | 20060320         |
| IN253088 B         | 20120629         | IN2006KN00640      | 20060320         |
| JP2007503539 T2    | 20070222         | JP20060524323T     | 20040825         |
| JP4664296 B2       | 20110406         | JP20060524323T     | 20040825         |
| PL1658408 T3       | 20170131         | PL20040764463T     | 20040825         |
| US2006267348 AA    | 20061130         | US20060569164      | 20060222         |
| US7276808 BB       | 20071002         | US20060569164      | 20060222         |
| WO05021897 A1      | 20050310         | WO2004EP09486      | 20040825         |

**Priority:**DE20031038438 20030825  
WO2004EP09486 20040825DE20031039438 20030825  
EP20120006627 20040825EP20040764463 20040825  
EP20120006627 20120921**Probable Assignee:** SENVION SE**Assignee(s):** (std): HINZ UWE ; REPOWER SYSTEM AG ; REPOWER SYSTEMS AG ; REPOWER SYSTEMS SE ; SCHAEFER STEPHAN ; SENVION GMBH ; WEITKAMP ROLAND**Assignee(s):** SENVION SE**Inventor(s):** (std): HINZ UWE ; SCHAEFER STEPHAN ; STEPHAN WEITKAMP ROLAND HINZ U ; WEITKAMP ROLAND ; WEITKAMP ROLAND ; SCHAEFER STEPHAN ; UWE HINZ ; STEPHAN SCHAEFER ; ROLAND WEITKAMP**Inventor(s):** TEPHAN SCHAEFER ; WEITKAMP ROLAND HINZ UWE SCHAEFER STEPHAN ; UWE HINZ ; STEPHAN SCHAEFER**Agent(s):** GLAWE DELFS MOLL; HAUSFELD NORBERT; LEHMANN MARIA ISABEL; RANKIN HILL PORTER AND CLARK LLP**Designated states:** AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GW HR HU ID IE IL IN IS IT JP KE KG KP KR KZ LC LI LK LR LS LT LU LV MA MC MD MG MK ML MN MR MW MX MZ NA NE NI NL NO NZ OM PG PH PL PT RO RU SC SD SE SG SI SK SL SN SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW**94) Family number: 5417931 (EP0114377A1)**

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**Title:** Method of operating a telescopic mast, as well as a mast suitable for carrying out the method.

**Abstract:** 1. A process of operating a telescopic mast - in particular an aerial mast - extension of which is caused by means of incoming compressed air at a pre-adjustable end pressure in plenum chambers variable in capacity, and retraction of which into the initial position or into intermediate positions is permitted by the adjustable passage cross-section at an adjustable speed of the feed valve separate from the compressed air supply, characterized by the following features: a) that the compressed air via valves (I.1, I.2, I.3) is passed in parallel or in an independent and adjustable order of sequence into the plenum chambers (I, II, III...) respectively composed of at least two nested telescopic tubes (Ib/Ic, IIb/IIc, IIIb/IIIc), b) that piston (IIa/IIIa) respectively closing at the bottom of the follow-up chamber (Ib, IIb, IIb) and the closure lid of the end telescope tube (IIIc) respectively draws apart the individual telescopic structures of the plenum chambers (I, II, III...) respectively disposed therebelow, c) that the pressure the individual superposed plenum chambers (I, II, III...) is adjusted from bottom to top - dropping stepwise, d) that the minimum level of the individual pressure steps is respectively determined by the residual weight of the plenum chambers (I, II, III...) respectively formed by the telescopic structures associated to one another, piston rings and back stops with mast (1) in the extended position, and (e) that the retraction of mast (1) into the initial position or into intermediate positions is effected by opening or by opening and closing, respectively, of the valves (I.1, I.2, I.3) associated to the individual plenum chambers (I, II, III...).

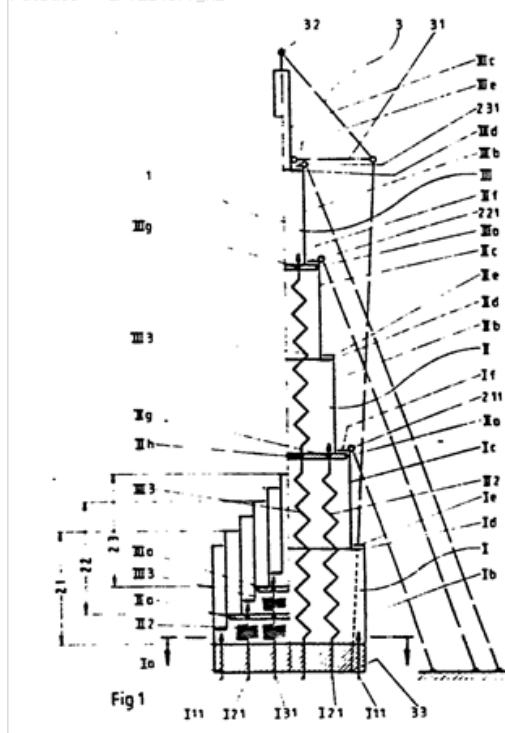
**Classifications:****International (IPC 8-9):** B66F3/28 E04H12/18 H01Q1/10

H01Q1/12 (Advanced/Invention);

B66F3/24 E04H12/00 H01Q1/08 H01Q1/12 (Core/Invention)

**International (IPC 1-7):** B66F3/28 E04H12/18 H01Q1/10 H01Q1/12**CPC:** E04H12/182 H01Q1/1235**European:** E04H12/18B H01Q1/12C

PatBase - EP0114377\_A1

**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| AT23027 E          | 19861115         | AT19830112964T     | 19831222         |
| DE3367080 D1       | 19861127         | DE19833367080      | 19831222         |
| EP0114377 A1       | 19840801         | EP19830112964      | 19831222         |
| EP0114377 B1       | 19861022         | EP19830112964      | 19831222         |

**Priority:**

DE19823248288 19821228

DE19833367080 19831222

EP19830112964 19831222

**Probable Assignee:** BIG LIFT MASCHBAU**Assignee(s):** (std): BIG LIFT MASCHBAU ; BIG LIFT MASCHINENBAU U VERT**Assignee(s):** BIG LIFT MASCHINENBAU U VERTRIEBS GMBH ; BIG LIFT MASCHINENBAU UND VERTRIEBS GMBH**Inventor(s):** (std): THIEME WOLFGANG ; MANGOLD FRANZ DIETER ING GRAD

Designated states: AT BE CH DE FR GB IT LI LU NL SE

95) Family number: 55898942 (US2014059957A)

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Title: TOWER FOUNDATION SYSTEM

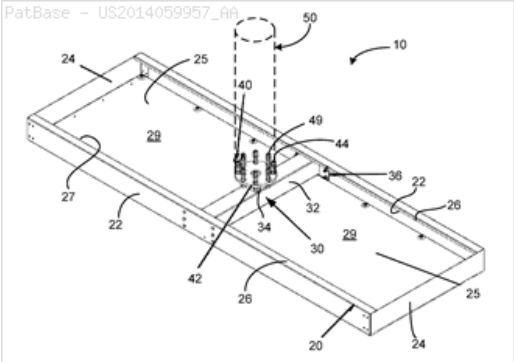
**Abstract:** A tower foundation system for supporting a tower includes a base that defines an open receptacle for receiving a ballast material. The system also includes a cross-member that extends within the open receptacle between opposing sides of the base. Additionally, the system includes a tower coupler that is coupled to the cross-member. The tower coupler is configured to couple a tower to the cross-member

**Classifications:**

**International (IPC 8-9):** E02D27/42 E04H12/00 (Advanced/Invention)

**CPC:** E02D27/42

**US:** 52/292



Family:

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| US2014059957 AA    | 20140306         | US20130012823      | 20130828         |
| WO14036166 A1      | 20140306         | WO2013US57127      | 20130828         |

**Priority:**

US20120695192P 20120830 US20130012823 20130828

**Probable Assignee:** STARK N DANIEL W

**Assignee(s):** (std): STARK N DANIEL W

**Inventor(s):** (std): STARK N DANIEL W

**Agent(s):** MASSEY BRYAN J ET AL

**Designated states:** AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

96) Family number: 21940958 (US3296757A)

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Title: EQUIPMENT MAST ARRANGEMENT

**Abstract:** (Claim 1) From the foregoing, it is apparent that this invention has provided for the objects and advantages herein mentioned.

**Classifications:**

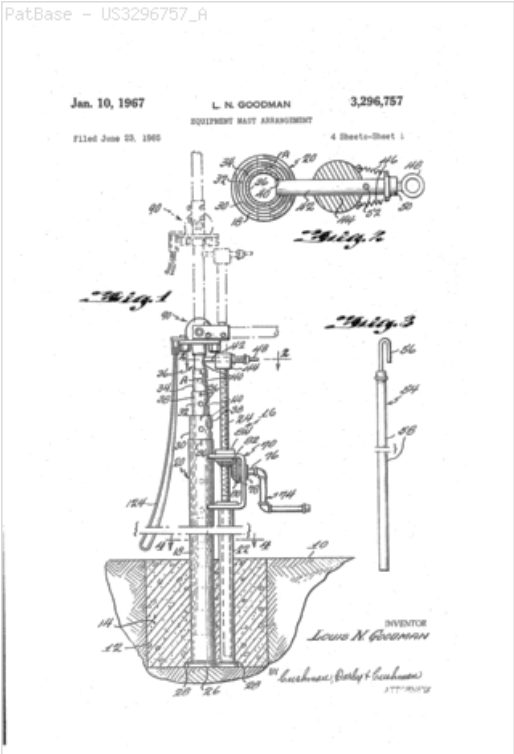
**International (IPC 8-9):** E04H12/18 H01Q1/12 (Advanced/Invention); E04H12/00 H01Q1/12 (Core/Invention)

**International (IPC 1-7):** E04H12/18

**CPC:** E04H12/182 H01Q1/1235

**European:** E04H12/18B H01Q1/12C

**US:** 52/111 52/116



**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| US3296757 A        | 19670110         | US19650469052      | 19650623         |

**Priority:**

US19650469052 19650623

**Probable Assignee:** GOODMAN LOUIS N**Assignee(s):** (std): GOODMAN LOUIS N**Inventor(s):** (std): GOODMAN LOUIS N**97) Family number: 30271980** (EP0960986A2)

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**Title:** PROCESS AND DEVICE FOR THE CONSTRUCTION OF TALL, HOLLOW, TOWERLIKE STRUCTURES OF TWO HUNDRED METERS HEIGHT AND MORE, SPECIALLY WIND GENERATOR TOWERS

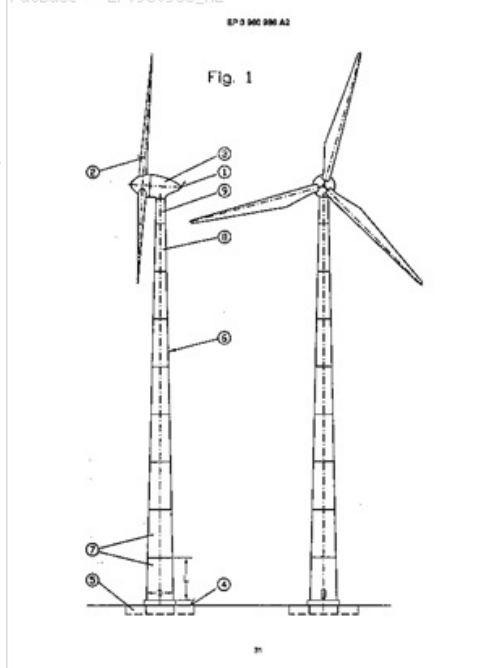
**Abstract:** Coaxial shells (10,11) act as the inner and outer walls of formers for the concrete ring parts and include reinforcements (55,56,57,58), spacers and connectors. Individual shell parts are assembled into an annular shell on site and the shells placed one inside the other. Coaxial shells (10,11) act as the inner and outer walls of formers for the concrete ring parts and include reinforcements (55,56,57,58), spacers and connectors. Individual shell parts are assembled into an annular shell on site and the shells placed one inside the other. Concrete is poured into the cavity (13) between the shells, a further double shell is constructed on top and connections made with the previous shell. Concrete casting and shell building are then repeated to build the tower. An Independent claim is made for the tower construction equipment including inner (11) and outer (10) shell sections each comprising a number of sectors (14,15). Preferred Features: Tension members are introduced between inner and outer shells around their circumference after a given concrete setting time and permanently tensioned against the ground. Inner and outer shell ring sections are positively connected to each other at specific points. Annular (57,58) and longitudinal reinforcements (55,56) of one shell section are connected to those of the next section by wires or clamps. Spacers maintain a constant distance between shells. Flanges enable individual shell sectors of both outer and inner shells to be coaxially aligned. Adjoining edges of shell ring sectors have inward facing projections, shoulders, supports or profiles enabling them to be positively connected by 3 meter long clasps. Each sector of the inner shell has parallel or spiral reinforcements on the outer side. Inner and outer shells may remain with the structure or be removed.

**Classifications:****International (IPC 8-9):** E04B1/34 E04H12/12 E04H12/28 F03D11/04 F03D13/20 (Advanced/Invention);

E04B1/34 E04H12/00 F03D11/00 (Core/Invention)

**International (IPC 1-7):** E04B1/34 E04B1/35 E04H12/12 E04H12/16 E04H12/34 F03D11/00**CPC:** E04B1/34 E04H12/12 E04H12/28 F05B2240/912 Y02B10/30 Y02E10/728 F03D13/22 E04H12/16 F03D13/20**European:** E04B1/34 E04H12/12 E04H12/28 F03D11/04 F03D11/04B R05B240/912 Y02B10/30 Y02E10/72N

PatBase - EP0960986\_A2

**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| DE19823650 A1      | 19991209         | DE19981023650      | 19980527         |
| DE19823650 C2      | 20010523         | DE19981023650      | 19980527         |
| EP0960986 A2       | 19991201         | EP19990110070      | 19990522         |
| EP0960986 A3       | 20001129         | EP19990110070      | 19990522         |

**Priority:**

DE19981023650 19980527

**Probable Assignee:** ARAND WILFRIED**Assignee(s):** (std): ARAND WILFRIED**Inventor(s):** (std): ARAND WILFRIED**Designated states:** AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE**98) Family number: 33805981** (US2006277843A)

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**Title:** STRUCTURAL TOWER

**Abstract:** A structural tower having a space frame construction for high elevation and heavy load applications is disclosed, with particular application directed to wind turbines. The structural tower includes damping or non-damping struts in the

longitudinal, diagonal or horizontal members of the space frame. One or more damping struts in the structural tower damp resonant vibrations or vibrations generated by non-periodic wind gusts or sustained high wind speeds. The various longitudinal and diagonal members of the structural tower may be secured by pins, bolts, flanges or welds at corresponding longitudinal or diagonal joints of the space frame.

**Classifications:**

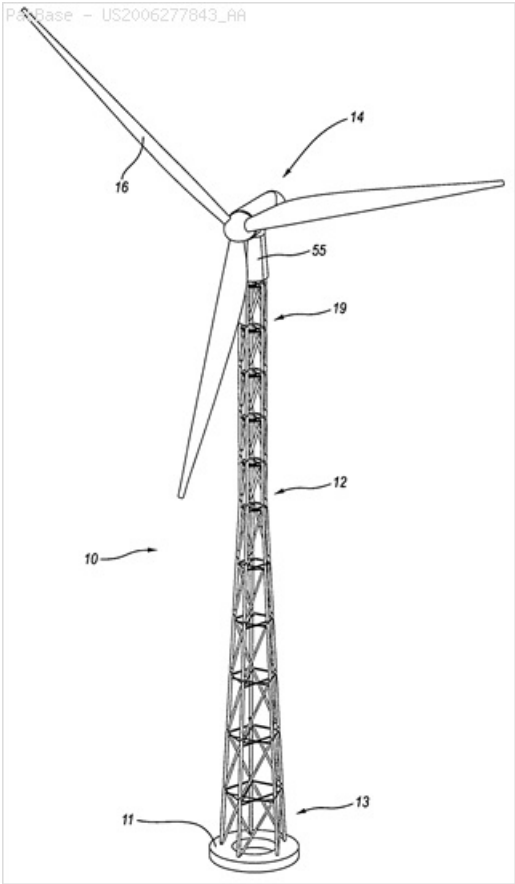
**International (IPC 8-9):** E04H12/00 E04H12/10 E04H9/14 F03D1/00 F03D11/04 H01Q1/08 (Advanced/Invention); E04H12/00 E04H9/14 F03D1/00 F03D11/00 H01Q1/08 (Core/Invention)

**International (IPC 1-7):** H01Q1/08

**CPC:** E04H12/10 F05B2230/232 F05B2240/9121 F05B2260/30 F05B2260/301 Y02E10/728 Y02P70/523 E02B17/0004 E02B17/027 E02B2017/006 E02B2017/0091 F03D13/10 F03D13/20

**European:** E04H12/10 F03D1/00B F03D11/04 R05B230/232 R05B240/9121 R05B260/30 R05B260/301 Y02E10/72 Y02E10/72N

**US:** 416/244.00RP 416/244R 52/110 52/110P 52/651.09 52/651.090S 52/745.17 52/745.170S



**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| BRPI0610803 A2     | 20100727         | BR2006PI10803      | 20060512         |
| CA2602205 AA       | 20061123         | CA20062602205      | 20060512         |
| CN101351606 A      | 20090121         | CN200680012358     | 20060512         |
| EP1880070 A2       | 20080123         | EP20060770260      | 20060512         |
| EP1880070 A4       | 20120502         | EP20060770260      | 20060512         |
| IN03476KN2007 A    | 20080725         | IN2007KN03476      | 20070917         |
| JP2008540918 T2    | 20081120         | JP20080511391T     | 20060512         |
| US2006277843 AA    | 20061214         | US20060433147      | 20060512         |
| US2010226785 AA    | 20100909         | US20100703106      | 20100209         |
| WO06124562 A2      | 20061123         | WO2006US18388      | 20060512         |
| WO06124562 A3      | 20071122         | WO2006US18388      | 20060512         |

**Priority:**

US20050681235P 20050513 US20060433147 20060512 WO2006US18388 20060512  
US20100703106 20100209

**Probable Assignee:** GE WIND ENERGY LLC

**Assignee(s):** (std): GE WIND ENERGY LLC ; LIVINGSTON TRACY ; TRACY LIVINGSTON ; ANDERSEN TODD ; WIND TOWER SYSTEMS LLC

**Assignee(s):** DFJ ELEMENT LP ; DFJ ELEMENT LP SECURED PARTY AND AGENT AS ; WASATCH WIND INC ; WASATCH WIND DEVELOPMENT LLC

**Inventor(s):** (std): ANDERSEN TODD ; LIVINGSTON TRACY ; TODD ANDERSEN ; TRACY LIVINGSTON

**Agent(s):** MACPHERSON LESLIE AND TYERMAN LLP; TOMKINSON ALEXANDRA; JAMES R FARMER; GRANT R CLAYTON CLAYTON HOWARTH AND CANNON PC

**Designated states:** AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GW HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LC LI LK LR LS LT LU LV LY MA MC MD MG MK ML MN MR MW MX MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RU SC SD SE SG SI SK SL SM SN SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW

**99) Family number: 34852988** (US2007157454A)

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**Title:** LOW MASS DRAW AND RETURN TUBE ASSEMBLY AND PROCESS OF MANUFACTURING THE SAME

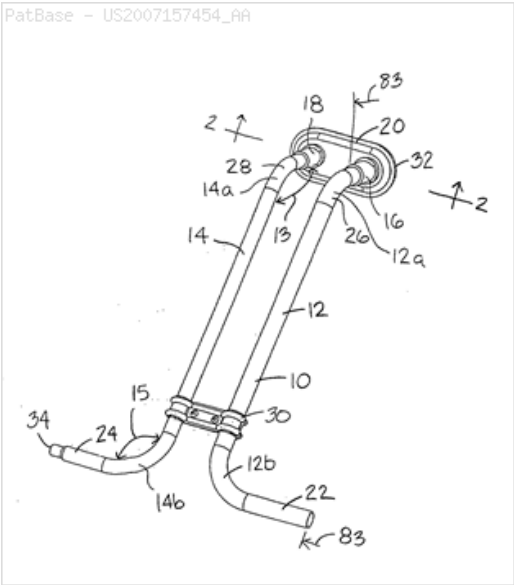
**Abstract:** A low mass draw and return tube assembly, for use in fuel tanks, is disclosed.

**Classifications:**

**International (IPC 8-9):** B23P11/00 B66C23/32 E04G21/04 E04H12/00 E04H12/18 F17C13/00 (Advanced/Invention); B23P11/00 B66C23/00 E04G21/04 E04H12/00 (Core/Invention)

**CPC:** Y10T29/49966 Y10T137/0441 Y10T137/6881 Y10T137/86372 E04G21/04 B66C23/286 B66C23/32 E04G21/0427 F16L13/0209

B60K15/01 B60K2015/03118  
**European:** B66C23/28B2 B66C23/32 E04G21/04 F16L13/02B  
L60K15/01 L60K15/03L  
**US:** 123/469 137/15.08 137/351 137/592 212/176 212/296  
29/525.13 29/525.130P 52/126.1 52/632 52/632S 52/633 52/633P  
52/651.1



**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| US2007157454 AA    | 20070712         | US20070652787      | 20070111         |
| US2007157539 AA    | 20070712         | US20070621733      | 20070110         |
| US7748193 BB       | 20100706         | US20070621733      | 20070110         |
| US8752568 BB       | 20140617         | US20070652787      | 20070111         |
| WO07082222 A1      | 20070719         | WO2007US60308      | 20070110         |

**Priority:**

US20060758472P 20060112      US20070621733 20070110      US20070652787 20070111

**Probable Assignee:** MFB INVESTMENTS LLC

**Assignee(s):** (std): CARBEAU C W ; CARBEAU C WILLIAM ; KEEFER NEAL L ; KNIGGE WALTER N ; WATSON KENNETH A ; PUTZMEISTER INC ; PUTZMEISTER AMERICA INC

**Assignee(s):** CARBEAU C ; MFB INVESTMENTS LLC

**Inventor(s):** (std): CARBEAU C W ; CARBEAU C WILLIAM ; KEEFER NEAL L ; KNIGGE WALTER N ; WATSON KENNETH A

**Inventor(s):** CARBEAU C ; WATSON KENNETH ; KNIGGE WALTER ; KEEFER NEAL

**Agent(s):** INGRID MCTAGGART; ANDRUS SCEALES STARKE AND SAWALL LLP; INGRID

**Designated states:** AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD MG MK ML MN MR MW MX MY MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

**100) Family number: 67743996 (US2017347533A)** © PatBase

**Title:** UNIQUE ROLLABLE FIVE-DEVICE-IN-ONE SYSTEM COMPRISING ROLLABLE CLAWED-FOOT FLOWER CONTAINER, ROLLABLE ADJUSTABLE-RECEIVER UMBRELLA STAND, ROLLABLE WATER RESERVOIR, ROLLABLE WATER-REGULATING IRRIGATION SYSTEM, AND ROLLABLE WATER-CIRCULATING SYSTEM

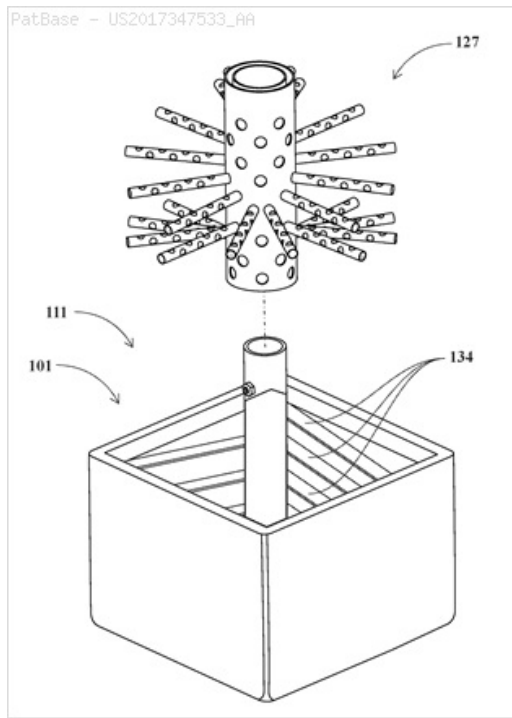
**Abstract:** A rollable five-device-in-one flower container and umbrella stand comprises: a container having multiple walls and a bottom, water-regulating channels formed in the bottom, two wheel wells formed in the bottom, anti-rolling claws formed in the bottom for digging into the ground on a slope to prevent the five-device-in-one flower container and umbrella stand from sliding down the slope, an umbrella-pole receiver screwed on the bottom, U-shaped and J-shaped spring clamps hooked on the umbrella-pole receiver for creating a clamping force therebetween, two wheels partially hidden in the two wheel wells, a tubular double-wall water reservoir having spiral water-distributing tubes and spiral water-regulating foams for spirally and timely discharging the water, and spiral water-circulating slides spirally welded or molded to the walls for spirally creating multiple spiral tractions, multiple spiral layers, multiple spiral travel distances for soil and water to create multiple spiral root growths and multiple spiral nutrition absorptions.

**Classifications:**

**International (IPC 8-9):** A01G27/00 A01G9/02

E04H12/22 (Advanced/Invention)

**CPC:** A01G9/02 E04H12/2269 A01G27/005 E04H12/2246

**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| US2017347533 AA    | 20171207         | US20170587349      | 20170504         |

**Priority:**

US20160344100P 20160601      US20170587349 20170504

**Probable Assignee:**

VOLIN DEE

**Assignee(s):** (std):

VOLIN DEE

**Inventor(s):** (std):

VOLIN DEE

**101) Family number: 20384998** (US1853086A)

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**Title:** TOWER FOR ELEVATING CONSTRUCTION MATERIALS

**Abstract:** 1. A construction' tower comprising four vertical tubes for corner posts each tube having a sleeve at one end projecting beyond the same to form a socket to receive the adjacent end of the next tube, the two tubes on one side of said tower being connected by a horizontal girt bolted through said sleeves to said tubes and the remaining two tubes on the opposite face being connected in like manner, the tubes defining a third face of said tower being connected by a horizontal girt bolted to the opposite ends of said tubes from which said first mentioned Qrts are bolted.

**Classifications:**

**International (IPC 8-9):** B66B17/26 B66B9/187 E04G21/02

E04H12/10 (Advanced/Invention);

B66B9/16 E04G21/02 E04H12/00 (Core/Invention)

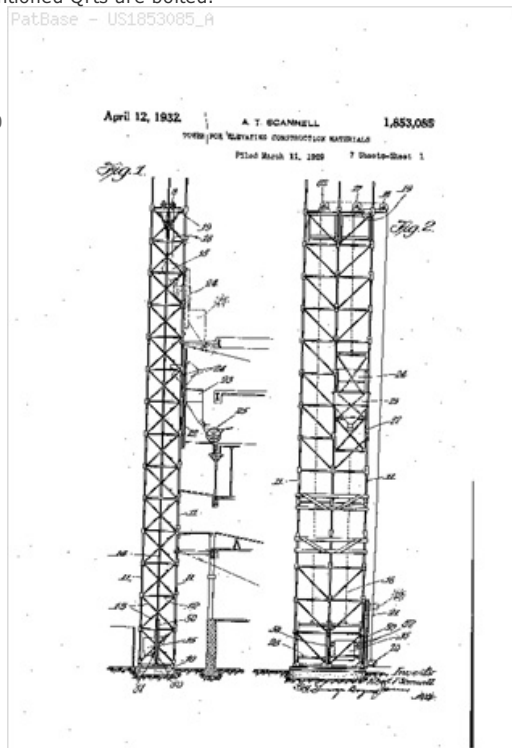
**International (IPC 1-7):** B66B9/20

**CPC:** B65G2812/0636 B66B17/26 Y10S187/90 B66B9/187 E04H12/10 E04G21/02

**European:** B66B17/26 B66B9/187 E04G21/02 E04H12/10 L65G812/06A2B2

**US:** 182/178.5 187/242 187/401 187/406 187/900 414/592 414/617 414/649 52/638

PatBase - US1853085\_H

**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| US1798501 A        | 19310331         | US19300462861      | 19300621         |
| US1853085 A        | 19320412         | US19290345963      | 19290311         |
| US1853086 A        | 19320412         | US19290417364      | 19291230         |

**Priority:**

US19290345963 19290311      US19290417364 19291230      US19300462861 19300621

**Probable Assignee:**

SCANNELL ALBERT T

**Assignee(s):** (std):

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**Inventor(s):** (std):

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