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[EPODOC: SS 9] formwork and (circular and cylindrical) and concrete

Results in EPODOC **33**

[SS 10] ..li

1/33 © EPODOC / EPO

PN - WO2017060552 A1 20170413

PR - ES20150031439 20151007

AP - WO2016ES70706 20161005

DT - *; Rep

CT - |ES| ISR (A1)
XP055375263 A[ ];
JP2005030066 A 20050203 [ ] (OHBAYASHI CORP, et al);
FR1295463 A 19620608
[X] (PAUL FERBECK & VINCENT ETS)
[X] 1-7
* , the whole document. *;
US2009031639 A1 20090205
[X] (CORTINA CORDERO ALEJANDRO [MX])
[X] 1, 2
* , paragraphs[0048 - 0058, 0065]; figures 10, 11. *;
US2010071301 A1 20100325
[A] (HERRIUS DE ROEST ANTON [NL])
[A] 1-6
* , paragraphs[0001, 0009, 0033 - 0040, 0043 - 0045]; figures 4, 5, 7. *;
ES2404781 A1 20130528
[A] (INGECID INVESTIGACION Y

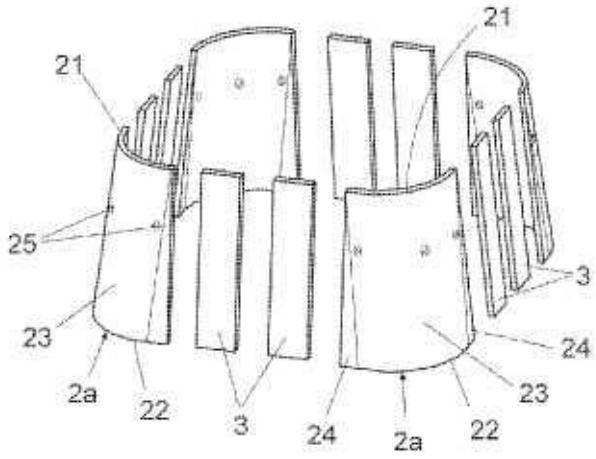


Fig. 3

DESARROLLO DE PROYECTOS S L [ES])
[A] 3-5
* , page 5, line 27 - page 6, line 7; figures 1 - 7. *;
US4060358 A 19771129
[A] (FOUGEA BERNARD)
[A] 3, 7
* , column 1, lines 5 - 17; column 7, lines 14 - 17; column 7, lines 55 - 58; figures 4 - 6. *;
FR2318289 A1 19770211
[A] (BUFFIN CLOVIS [FR])
[A] 3, 7
* , page 1, lines 1 - 5; page 4, lines 27 - 29; page 6, lines 6 - 10; figures 1 - 3. *

CTNP - |ES| ISR (A1)
[] - 1, Database accession no. 2005-107927, XP055375263

CUI - E04G11/22 ; E04H12/12 ; F03D13/20

CCA - Y02E10/72

PA - INGECID INVESTIGACIÓN Y DESARROLLO DE PROYECTOS S L [ES]

TI - **CONCRETE** TOWER AND CLIMBING OR SELF-CLIMBING **FORMWORK** DEVICE FOR THE CONSTRUCTION THEREOF IN SITU

AB - The tower, which can be used in the installation of wind generators, comprises a lower end (11) having a general polygonal configuration formed by flat faces (12) and **cylindrical** portions (13) disposed between consecutive flat faces (12), which flat faces (12) have a width that decreases in the ascending direction along the tower (1), and the **cylindrical** portions (13) having an unchanging shape along the entire tower (1), and which tower (1) has a **circular** contour at the upper end (11) thereof, formed

by the **cylindrical** portions (13) that maintain an unchanging shape along the tower (1). The invention also includes a climbing **formwork** device for the construction of the tower.

2/33 © EPODOC / EPO

PN - JP2015212663 A 20151126

PR - JP20140095433 20140502

AP - JP20140095433 20140502

DT - I

FI - G01N3/00&M; G01N3/08

FT - 2G061/AA02; 2G061/AB01; 2G061/BA01; 2G061/CA08; 2G061/CB02; 2G061/CC20

PA - UBE INDUSTRIES

TI - APPARATUS AND METHOD FOR MANUFACTURING **CIRCULAR CYLINDRICAL** TEST PIECE, AND METHOD FOR MEASURING COMPRESSION STRENGTH

AB - PROBLEM TO BE SOLVED: To provide an apparatus and a method for manufacturing **circular cylindrical** test pieces, and a method for measuring compression strength capable of accurately measuring compression strength of a structure comprising ultra-high strength fiber reinforced **concrete** by a simple configuration and a simple method.SOLUTION: An apparatus 1 for manufacturing **circular cylindrical** test pieces 3B sampled from a simulated flat plate 3A formed by simulating a structure comprising an ultra-high strength fiber reinforced **concrete** 3, includes: a first **formwork** 10 for forming a simulated flat plate 3A using the ultra-high strength fiber reinforced **concrete** 3; at least one second **circular cylindrical formwork** 20 that is disposed in the first **formwork** 10 and forms the **circular cylindrical** test piece 3B using the ultra-high strength fiber reinforced **concrete** 3; and at least one wedge 30 disposed adjacent to the second **formwork** 20 in the first **formwork** 10.

3/33 © EPODOC / EPO

PN - CN204174928U U 20150225

PR - CN20142630880U 20141028

AP - CN20142630880U 20141028

DT - I

PA - CHINA RAILWAY CONSTR GROUP CO

TI - Cushion block type **cylindrical formwork** clamp

AB - The utility model discloses a cushion block type **cylindrical formwork** clamp which comprises a clamp component. The clamp component comprises a long-strip-shaped fixing belt which can be bent to be **circular**. The two ends of the fixing belt are each provided with a rectangular end socket with a rectangular through opening, a rectangular cushion block is arranged in each end socket, the end socket and the cushion block at each end of the fixing belt are correspondingly provided with through connecting holes used for allowing a connecting bolt to be arranged in a penetrating mode, and the connecting bolt which is arranged in the through connecting holes in the

two ends of the fixing belt which is bent to be **circular** in the penetrating mode is fastened by a nut. The cushion block type **cylindrical formwork** clamp can be turned over and used repeatedly, and is easy to machine and manufacture, convenient to cut and modify and capable of improving the forming quality of **cylindrical concrete**.

4/33 © EPODOC / EPO

PN - CN204139593U U 20150204

PR - CN20142590228U 20141013

AP - CN20142590228U 20141013

DT - I

PA - TIANJIN BRANCH OF ZHONGTIAN CONSTRUCTION GROUP CO LTD; TIANJIN XINYU CONSTRUCTION DEV CO LTD

TI - Combined **cylindrical** steel **formwork**

AB - The utility model relates to a combined **cylindrical** steel **formwork**. The combined **cylindrical** steel **formwork** comprises multiple **formwork** combined parts and a holding part. The **formwork** combined parts are vertically and coaxially connected together to form a cylinder, and the holding part is coaxially installed on the outer edge of the lower end of the lowermost **formwork** combined part. The **formwork** combined parts comprise **formwork** bodies and connecting parts, multiple vertical ribs are vertically, evenly and fixedly installed on the outer edges of the **formwork** bodies at intervals, and two steel strips arranged in parallel at an interval are fixedly and horizontally installed on the outer edge of each vertical rib. The corresponding connecting parts are installed at the two ends of each steel strip, every two **formwork** bodies are firmly connected together through the corresponding connecting parts, and multiple connecting holes are evenly manufactured in the manufactured outer turned edges of the upper and lower ends of each **formwork** body. The holding part is formed by connecting two half-**circular**-arc-shaped hoops, and the ends of the two hoops are firmly connected through bolts. The combined **cylindrical** steel **formwork** is simple in structure and scientific and reasonable in design and effectively guarantees construction quality, the joints between formworks are tight, and the surface of formed **concrete** is smooth.

5/33 © EPODOC / EPO

PN - CN203961285U U 20141126

PR - CN20142393622U 20140716

AP - CN20142393622U 20140716

DT - I

PA - SCEGC NO 11 CONSTRUCTION ENGINEERING GROUP COMPANY LTD

TI - Forming **formwork** for shaping **concrete** cylinder

AB - The utility model discloses a forming **formwork** for shaping a **concrete** cylinder. The forming **formwork** comprises a **cylindrical formwork** body formed by splicing multiple arc-shaped plates from bottom to top and multiple hoops for reinforcing the **cylindrical formwork** body. The hoops are arranged on the outside of the **cylindrical formwork** body from top to bottom in a sleeved mode, the **cylindrical formwork** body is vertically arranged, the hoops are arranged in the horizontal direction, the cross section of each arc-shaped plate is semi-**circular**, the arc-shaped plates are wood plates, every two

adjacent arc-shaped plates are connected through rabbets, the inner side wall of each arc-shaped plate is provided with a waterproof moisturizing layer, each hoop comprises two semi- **circular** hoop bodies arranged on the same plane, the inner ends of the two semi-**circular** hoop bodies of each hoop are connected into a whole through a connection part, the outer ends of the two semi-**circular** hoop bodies of each hoop are connected through fasteners, and the semi-**circular** hoop bodies are formed by bending metal strips. The forming **formwork** is simple in structure, reasonable in design, low in weight, easy and convenient to assemble and disassemble, convenient to reinforce and good in use effect, and the forming effect of the **concrete** cylinder formed through the forming **formwork** is good.

6/33 © EPODOC / EPO

PN - CN203867176U U 20141008

PR - CN20142259829U 20140521

AP - CN20142259829U 20140521

DT - I

PA - ZHEJIANG CONSTRUCTION ENG GROUP CO LTD

TI - **Circular** reinforced **concrete cylindrical** silo wall template

AB - The utility model discloses a **circular** reinforced **concrete cylindrical** silo wall template. The template comprises a sizing combined steel **formwork**, and is characterized in that the forming combined steel **formwork** is formed by unit templates which are processed in a segmented manner and jointed by bolts; each of the unit template comprises a panel; a template framework is welded on one side of each of the panels; each of the template frameworks comprise a #-shaped main body formed by vertical keels and transverse keels, and peripheral connecting angle steel; bolt holes are arranged in the connecting angle steel; and a shape steel decoration strip is welded, corresponding to the connecting angle steel, on the other side of each of the panels. According to the utility model, the template is a sizing tool type template and sizing of a **circular** template is achieved via segmented assembly; and the template is characterized by simple construction procedure, easy operation, safety, reliability, improvement of construction efficiency and high promotion and application value.

7/33 © EPODOC / EPO

PN - CN203808503U U 20140903

PR - CN2014227494U 20140116

AP - CN2014227494U 20140116

DT - I

PA - BEIJING TIANRUN CONSTRUCTION CO LTD

TI - **Concrete cylindrical formwork**

AB - The utility model relates to the technical field of construction equipment, and discloses a **concrete cylindrical formwork**. The **concrete cylindrical formwork** comprises multiple main keels arranged horizontally in sequence from top to bottom, wherein a **circular**-arc-shaped groove is formed in each of the main keels; multiple secondary keels are tightly pressed in each of the **circular**-arc-shaped grooves; the multiple secondary keels are arranged along the vertical direction; a fixing plate matched with each of the **circular**-arc-shaped grooves in shape is pressed against the inner side of each of the multiple

secondary keels. The **concrete cylindrical formwork** has the beneficial effects of simple structure, convenience in operation, precision in processing dimension and capability of controlling **formwork** expansion quite well to guarantee the flatness of a **concrete** surface layer; for a higher **circular** column, when in use, the **concrete cylindrical formwork** is arranged up and down in a staggering way without through connection stubbles in the vertical direction; based on measurement and calculation, the **concrete cylindrical formwork** is more economical and more material-saving in comparison with a steel **formwork** manufactured in a definite shape; the batch processing and manufacturing is available, so that construction demands can be met; the project construction progress is sped up; the role of the definite-shape steel **formwork** in manufacturing **cylindrical concrete** is replaced.

8/33 © EPODOC / EPO

PN - **CN203716498U** U 20140716

PR - CN2014241488U 20140123

AP - CN2014241488U 20140123

DT - I

PA - ZHEJIANG BAOYE CONSTRUCTION GROUP CO LTD

TI - Special support device for overcoming split bolt hole defects of fair-faced **concrete** walls, columns and beams

AB - The utility model discloses a special support device for overcoming split bolt hole defects of fair-faced **concrete** walls, columns and beams. The special support device comprises fair-faced **concrete** wall, column and beam bodies and formworks. The formworks are respectively positioned on two sides of the fair-faced **concrete** wall and beam bodies and four sides of the fair-faced **concrete** column body, pvc (polyvinyl chloride) sleeves are arranged in the bodies, inner steel support pipes are inserted in the pvc sleeves, connecting plugs respectively sleeve two ends of each inner steel support pipe, each connecting plug comprises a head in the shape of a **circular** truncated cone and a **cylindrical** tail, the head of each connecting plug is inserted in the corresponding body and is butted to an end surface of the corresponding pvc sleeve, the tail of each connecting plug is inserted in the corresponding **formwork**, rubber gaskets are inserted in the tails of the connecting plugs, and two side surfaces of each plastic gasket are respectively butted onto the corresponding **formwork** and the corresponding connecting plug in a pressing manner. The special support device has the advantages that gaps among the connecting plugs and the formworks can be effectively prevented when the fair-faced **concrete** walls, columns and beams are poured, and accordingly the split bolt hole defects such as sand exposure of pitted surfaces of hole edges of split bolt holes and dehydration blackening of the hole edges of the split bolt holes can be overcome.

9/33 © EPODOC / EPO

PN - **CN103184794** A 20130703

PNFP - CN103184794B B 20151028

PR - CN2013177890 20130312

AP - CN2013177890 20130312

DT - I

CT - || STSE (A)
US4887789 A 19891219 [A] (HARRIS FRANK R [US], et al)
[A] 1-8
全文
CN202577963U U 20121205 [A] (CHINA BUILDING CIVIL CONSTR CO)
[A] 1-8
全文
CN201232354Y Y 20090506 [A] (MCC JINGTANG CONSTR CO LTD [CN])
[A] 1-8
全文
AU1834692 A 19930715 [A]
[A] 1-8
全文
CN202380727U U 20120815 [Y] (DELIANG DONG)
[Y]

CTNP - || STSE (A)
[ ] 戎建波,
"某会议中心项目圆柱模板施工技术", <<浙江建筑>>, (20111231), vol. 28, no. 12
[ ] 刘忠群,陈彦荣,
"当前木胶合板模板施工若干问题的探讨", <<福建建设科技>>, (20011231), no. 4
[ ] 马志海,
"木胶合板圆柱模板施工技术", <<山西建筑>>, (20120229), vol. 38, no. 5

PA - (A)
HANGZHOU ERJIAN CONSTRUCT CO LTD

TI - (A)
Quick **formwork** construction method for **cylindrical** strap type butt splicing wooden template

AB - (A)
The invention relates to a quick **formwork** construction method for a **cylindrical** strap type butt splicing wooden template and belongs to the technical field of a building construction method. The method comprises the following steps: positioning an elastic column; placing a slurry blocking base plate; leveling the range of a **cylindrical** mold; placing a reinforcing steel bar cushion block; checking and accepting concealed engineering; mounting a **cylindrical** template; segmentally adjusting the verticality of the template; segmentally fixing hoops; supporting and strengthening the **cylindrical** template; blocking slurry at the root part; pre-checking; pouring **concrete**; cleaning the root; and detaching the mould. By the technology, concavo-convex rabbets are formed on the sides of two semi-**circular** wooden plates of the **cylindrical** strap type butt splicing wooden template; special construction machinery and equipment are not needed in the construction process; when the templates are spliced, a fixed hoop and a locking bolt are directly used for reinforcing; assembling and disassembling are convenient; the surface does not have bolt holes; the appearance quality of **concrete** is greatly improved; the obtained cylinder has smooth surface; the comprehensive effects of good impression, low manufacturing cost, high precision, simple and convenient construction and the like are achieved; and the method is suitable for construction of reinforced **concrete** independent cylinders of industrial and civil buildings and municipal bridge engineering.

10/33 © EPODOC / EPO

PN - **CN201628643U** U 20101110

PR - CN20092289271U 20091215

AP - CN20092289271U 20091215

DT - I

PA - CHINA FIRST MET CONSTR CO LTD

TI - Combined **concrete** specimen

AB - The utility model relates to the field of construction equipment, in particular to a combined **concrete** specimen, which comprises a base, a **cylindrical formwork**, a locking flange and vertical rods. The base is provided with a groove, a tongue matching with the groove of the base is arranged on the lower end surface of the **cylindrical formwork**, the **cylindrical formwork** is assembled on the base and is a cylinder spliced by two semi-**circular**-arced formworks, the two semi-**circular**-arced formworks are connected via the locking flange transversely, the outer wall of the **cylindrical formwork** is connected with lug rings, and the vertical rods are connected to the base and match with the lug rings after penetrating through inner rings of the lug rings. The **cylindrical formwork** is used for molding standard specimens, and a link of coring via a **concrete** coring machine in the prior art is removed, thereby guaranteeing consistence of diameters of specimens along height directions, saving expenses and increasing molding quality. The **cylindrical formwork** can be formed by combining a standard-layered cylinder with a top-layered **cylindrical formwork**, can be used for manufacturing standard specimens in different specifications according to needs, and has flexible and convenient combination methods.

11/33 © EPODOC / EPO

PN - US2005247852 A1 20051110

PR - ES20020001340 20020611; WO2003ES00275 20030606

AP - US20050516466 20050706

DT - **

CT - || R141 (A1)
US2783173 A [ ];
US4255071 A [ ];
US3956437 A [ ];
US4347090 A [ ]

CCI - E04G13/021

TI - Disposable **formwork** for columns having a **circular** section

AB - A perfectly **cylindrical** column is structured from a rigid plastic flat sheet, high impact polyethylene or the like, having a length which coincides with the envisaged height of the column and a width which coincides with the size of the section of the column. The flat sheet is wound on a mounting core with the purpose of adopting a tubular and **cylindrical** configuration by connecting its longitudinal edges, the connection being temporarily stabilized with the aid of an adhesive tape extending throughout the entire connecting line. The assembly is then provided with an outer rigidizing envelope in the form of a strip that is helicoidally wound on the tubular body, the strip consisting of a fiberglass mesh or mesh of fiberglass fibers longitudinally embedded in a paper support or the like. The envelope will bear the radial strains generated by the casting of the **concrete** into the tubular body.

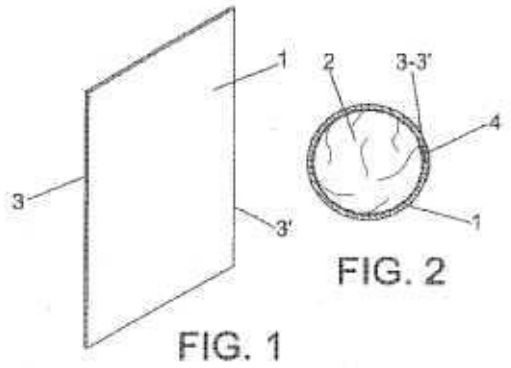


FIG. 1

FIG. 2

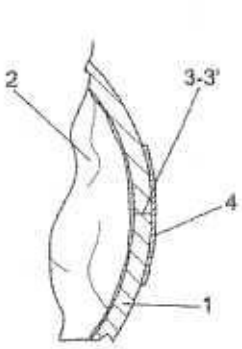


FIG. 3

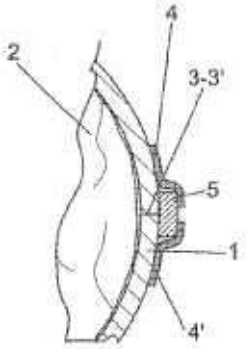


FIG. 4

12/33 © EPODOC / EPO

PN - MXPA04011490 A 20050815

PR - ES20020001340 20020611; WO2003ES00275 20030606

AP - MX2004PA11490 20030606

DT - I

CCI - **E04G13/021**

PA - VALERO SALINAS JOSE MANUEL [ES]

TI - DISPOSABLE **FORMWORK** FOR COLUMNS HAVING A **CIRCULAR** SECTION.

AB - The invention relates to a perfectly **cylindrical** column that is structured by means of a rigid plastic flat sheet, e.g. high impact polyethylene or the like, the length of which coincides with the envisaged height of the column and the width of which coincides with the size of the section of said column. Said flat sheet is wound on a mounting core with the purpose of adopting a tubular and **cylindrical** configuration by connecting its longitudinal edges, said connection being temporarily stabilized with the aid of an adhesive tape extending throughout the entire connecting line. Said assembly is then provided with an outer rigidizing envelope in the form of a strip that is helicoidally wound on the tubular body, said strip consisting of a fiberglass mesh or mesh of fiberglass fibers longitudinally embedded in a paper support or the like. Said envelope will bear the radial strains generated by the casting of the **concrete** into the tubular body.

13/33 © EPODOC / EPO

PN - **JP2006328780** A 20061207

PNFP - JP4316534B B2 20090819

PR - JP20050153327 20050526

AP - JP20050153327 20050526

DT - I

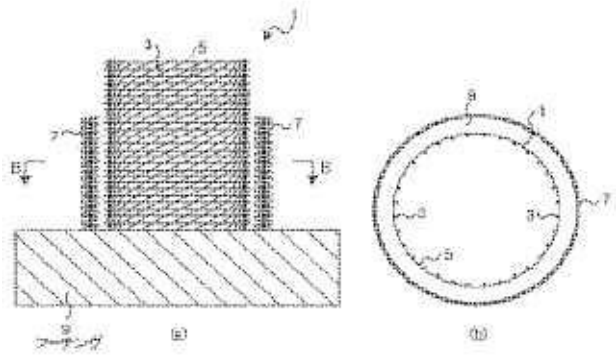
FI - E04C5/01; E04C5/02

FT - 2E164/AA00; 2E164/AA02; 2E164/AA05; 2E164/BA01; 2E164/BA43; 2E164/CA17; 2E164/CB25

PA - (A)
KAJIMA CORP

TI - (A)
CONSTRUCTION METHOD OF MEMBER AND THE MEMBER

AB - (A)
PROBLEM TO BE SOLVED: To provide a construction method of a member capable of carrying out a bar arrangement and **formwork** in a narrow or at a low altitude below the head in addition to a general construction condition within a short period of time without



requiring any complicated construction machine and the member.

- SOLUTION: A cage body 1 having a **circular** tie hoop 5 and a strand 3 rotatably connected to the tie hoop 5 and placed to the inside of the tie hoop 5 is placed on a footing 9 in a state to reduce the length of the strand 3 by bending it in a spiral-shape. A **cylindrical** form bag 7 in a state to fold in a cornice-shape in the axial direction of the cage body 1 is placed around the cage body 1. After the strand 3 is linearly extended to expand the length of the cage body 1, and the lower end 2 of the cage body 1 and the lower end 6 of the form bag 7 are fixed to the footing 9. Then, the form bag 7 is expanded to the axial direction of the cage body 1 to surround the cage body 1 by the form bag 7, and **concrete** is placed in the form bag 7.
-

14/33 © EPODOC / EPO

PN - JPH11270130 A 19991005

PR - JP19980011664 19980123; JP19980374609 19981228

AP - JP19980374609 19981228

DT - I

FI - E02D27/32&A; E04G9/00&B; E04G9/00&C

FT - 2D046/DA03; 2E150/AA03; 2E150/AA12; 2E150/AA19; 2E150/AA31; 2E150/AA33; 2E150/BA17; 2E150/BA27; 2E150/BA38; 2E150/BA46; 2E150/BA48; 2E150/BA54; 2E150/KD01; 2E150/KE01; 2E150/MA01X; 2E150/MA03Y; 2E150/MA11X; 2E150/MA11Y; 2E150/MA32X

PA - SHIBATA IND CO LTD; SHIRAISHI CORP; AIYOU SANGYO KK

TI - **CONCRETE** MOLDING **FORMWORK**

AB - PROBLEM TO BE SOLVED: To provide a **circular concrete** molding **formwork** of excellent preserving quality and transportability by inserting shape holding bodies of trapezoidal sections into bag bodies of semicircular sections continuously formed on one face of a sheet body. SOLUTION: Bag bodies 5 of almost semicircular or **circular** sectional shapes are continupusly formed on the one face of a sheet body 4 to constitute a molding material 3. This sheet body 4 and the bag bodies 5 are formed out of a sheet made of molding of synthetic resin, natural fiber, or the like. Next, long shape

holding bodies 6 of nearly trapezoidal sections are inserted into the respective bag bodies 5 of the molding material 3 to be mounted. Under the condition of setting the sheet body 4 outside, they are rounded into a **cylindrical** shape to form a **circular formwork**. In this way, because the flexible molding material 3 and the shape holding bodies 6 are formed into separate bodies, preserving quality and transportability can be made favorable.

15/33 © EPODOC / EPO

PN - JPH09165911 A 19970624

PR - JP19950346933 19951214

AP - JP19950346933 19951214

DT - I

FI - E04G15/06&A

FT - 2E150/AA19; 2E150/AA33; 2E150/BA13; 2E150/BA18; 2E150/BA19; 2E150/DA43; 2E150/HF11; 2E150/HF12; 2E150/HF14; 2E150/MA11X

PA - SHIMIZU CONSTRUCTION CO LTD; DAIWA KK

TI - CYLINDER ASSEMBLY-TYPE DRIVEN **FORMWORK** CONSTRUCTION

AB - PROBLEM TO BE SOLVED: To obtain a cylinder assembly-type driven **formwork** whose material and transport costs are low, which can be assembled and fitted easily, by using a **cylindrical formwork** material made by combining multiple multilayered plastic boards which are **circular**-arc in cross section into a **circular** form. SOLUTION: A **cylindrical formwork** 1 is formed by combining multiple multilayered plastic boards 11, 12 which is **circular**-arc in cross section, in a **circular** form so that a prescribed inner diameter R1 may be obtained. When building a body such as a foundation underground beam and a basement floor water tank, to form a through hole in a boundary to be divided, the **cylindrical formwork** 1 is placed in a prescribed position, both ends of which are fixed to lagging formworks, and **concrete** is placed. It is desirable that the multilayered plastic boards 11, 12 are formed in a double-wall structure which contains an air or gas layer, the inner wall is made a bottom, and dents opened in the outer wall are provided in a row at a constant interval. It is desirable that a reinforced timbering material made of an external ring material and an internal ring material is provided in a detachable manner so that it may inscribe coaxially.

16/33 © EPODOC / EPO

PN - JPH01158198 A 19890621

PNFP - JPH0543039B B2 19930630

PR - JP19870315301 19871215

AP - JP19870315301 19871215

DT - I

CT - || STSE (A)
JPS5572600 A 19800531 [ ] (GIFU KOGYO KK);
JPS5726077 A 19820212 [ ] (HITACHI SHIPBUILDING ENG CO)

FI - E04G11/34&B; E04G9/00&101; E04G9/06; E04G9/08; E21D11/10&B

FT - 2D055/AA04; 2D055/BA01; 2D055/BB01; 2D055/CA03; 2D055/DA01; 2D155/AA04; 2D155/BA01; 2D155/BB01; 2D155/CA03; 2D155/DA01; 2E150/AA03; 2E150/AA09;

2E150/AA12; 2E150/AA16; 2E150/AA30; 2E150/BA03; 2E150/BA13; 2E150/BA19; 2E150/BA22; 2E150/BA41; 2E150/CA01; 2E150/DA14; 2E150/KA02; 2E150/KA07; 2E150/KB15; 2E150/KC13; 2E150/KD01; 2E150/KD06; 2E150/KD17; 2E150/MA02X; 2E150/MA02Y; 2E150/MA02Z; 2E150/MA42X; 2E169/CA10; 2E169/CB06; 2E177/FA10; 2E177/FB06

PA - (A B2)
TOKYO SUPERIA KK

TI - (A)
SECONDARY LINING **FORMWORK** IN METHOD OF SHIELD CONSTRUCTION FOR SEWERAGE, ETC.

AB - (A)
PURPOSE: To dispense with a pressure-resistance reinforcing jack, save manufacturing cost, and improve operability by extending the lining inside a skin plate and welding it to a flange, and by charging reinforcement **concrete** between the skin plate and the lining. CONSTITUTION: A **formwork** 3 is **cylindrical** and comprises a **circular** arc section divided by a triangle hinge 5 and an angle hinge 6 or a dividing hinge 7. The lining of the **formwork** 3 is extended inside a skin plate 8 spaced from it and is welded to a flange 9, reinforcement **concrete** is charged between the skin plate 8 and the lining and solidified to cause pressure resistance strength to increase.

17/33 © EPODOC / EPO

PN - **JPH01318693** A 19891225

PNFP - JP2577439B B2 19970129

PR - JP19880151383 19880620

AP - JP19880151383 19880620

DT - I

FI - E21D11/08

FT - 2D055/AA01; 2D055/BA01; 2D055/BB06; 2D055/EB03; 2D055/KA00; 2D155/AA01; 2D155/BA01; 2D155/BB06; 2D155/EB03; 2D155/KA00

PA - (A)
ISHIKAWAJIMA KENZAI KOGYO KK

TI - (A)
CONSTRUCTION OF BRANCHED SUPPORTER IN **CYLINDRICAL** WALL FOR COVERING EXCAVATED PIT

AB - (A)
PURPOSE:To reduce the cost of construction as well as raise the efficiency of operation by a method in which a **formwork** dividable in the lengthwise and widthwise directions for forming a supporter is set between branched segments of upper and lower ends and both the branched segments are supported by the **formwork**. CONSTITUTION:An upper end branched segment 4 is fixed to a **circular** arc- shaped segment and a **formwork** 10 for forming column is set between the segment 4 and a lower end branched segment 5. The **formwork** 10 forming an intermediate column is divided into two sections at the center, the central part in the lengthwise direction is vertically divided into two parts, and the parting line is slightly inclined toward the crossed face with the axis of the **formwork** 10. The lower **formwork** is fixed to the lower end segment 5 and an upper **formwork** is matched with the inclined upside of the lower **formwork**,

horizontally moved, and connected. **Concrete** is placed into the **formwork** 10 and hardened, and the **formwork** 10 is disassembled to obtain an intermediate column.

18/33 © EPODOC / EPO

PN - JPS61283430 A 19861213

PR - JP19860126282 19860531

AP - JP19860126282 19860531

DT - I

FI - B21D53/20

PA - KUNIMOTO SHOKAI

TI - MANUFACTURE OF FASTENING WASHER FOR **CONCRETE FORMWORK**

AB - PURPOSE:To form highly safe fastening washers having an excellent strength for **concrete** formworks by forming a lozenge iron plate into a boat-shaped body, bending the V-shaped side edge part being from both longitudinal ends to the central crestlike projection into a **circular** arc shape, and setting a through hole at the center. CONSTITUTION:A band iron plate 2 is cut to a lozenge iron plate 1 and a through hole 4 is made at the center of the plate 1. The plate 1 is pressed into a boat-shaped body by bending the longitudinal axis line 5 into a projected shape and the lateral axis line 6 into a U-shaped section. An annular surface 8 being vertical to the axial direction of the through hole 4 and reinforcing annular projection 9 having a short **cylindrical** part 7 projecting from the inner periphery of the surface 8 are pressed integrally around the hole 4 to form a fastening washer for **concrete** formwarks. The washer is set so that the **circular** arc side edge part 13 abuts on two parallel round pipes butterfly member 14. A fastening bolt connected with a separator between both members 14 is inserted into the hole 4 and a thread-mounted nut on the bolt is pressed on the surface 8 and is tightened to fasten both the members 14 to a **formwork** plate strongly with safety.

19/33 © EPODOC / EPO

PN - JPS57151730 A 19820918

PR - JP19810037074 19810313

AP - JP19810037074 19810313

DT - I

CCI - E02D17/20

FI - E02D17/20&104C

FT - 2D044/DC06; 2D044/DC13

PA - KYORITSU KOGYO

TI - STABILIZATION WORK OF CUT SLOPE USING **CIRCULAR** FORM

AB - PURPOSE:To perform covering work for slope as well as shorten the period of construction work by a method in which iron-bar lattices are set on a cut slope, **cylindrical** formworks are provided inside the lattices, and then cement **concrete** or mortar is sprayed onto the peripheral areas of the **cylindrical** formworks. CONSTITUTION:On a cut slope S, iron bars are built up into a lattice form, anchor bolts 2 are set in place, a short-**cylindrical** **formwork** 3 of paper is provided in the center of each lattice, the formworks are connected with one another by spacers 4 for the formworks, and then cement **concrete** or mortar is sprayed onto the peripheral areas 5

of the **cylindrical** formworks 3. After the **concrete** is hardened, the connected portions are separated and put aside inwardly, and the formworks 3 are removed.

20/33 © EPODOC / EPO

PN - GB922416 A 19630403

PR - GB19590029292 19590827

AP - GB19590029292 19590827

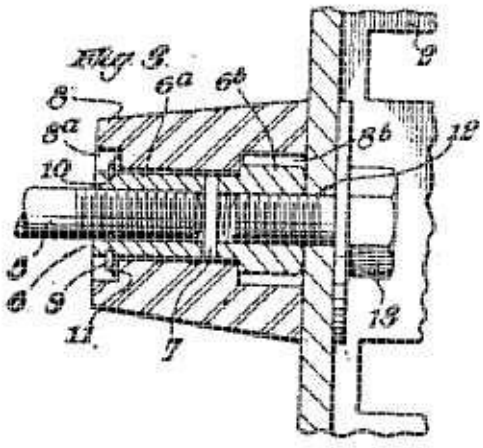
DT - *

CCI - E04G17/0658

PA - RAPID METAL DEVELOPMENTS LTD

TI - Nut assemblies for use with tie-rods or bolts

AB - 922,416. Shuttering for casting **concrete**. RAPID METAL DEVELOPMENTS Ltd. Nov. 28, 1960 [Aug. 27, 1959], No. 29292/59. Class 20 (2). [Also in Group XXV] A nut 6, for use with a tie-rod 5 for holding, at a required distance apart, metal sheets or posts 2 of **formwork** in which a **concrete** structure is to be cast, has a **cylindrical** stem 6a and a non-**circular**, e.g. hexagonal, head 6b and is secured by a washer 11 and a circlip 9 in a nut groove 10, against axial movement but not rotation, in a sleeve 8, e.g. of metal, synthetic resin or wood. A stop-peg 7 or an unthreaded portion of the nut limits the travel of the nut 6 on the tie-rod 5. The sleeve 8 need not be coned, or **circular** in cross-section. To give the correct spacing of two parallel posts 2, a nut 6 is screwed on to each end of the tie-rod 5 to a distance determined by the length of the tapped nut bore or by the peg 7. Posts 2 or sheets, placed one against each nut head 6b, are held in place by bolts 13 and, after casting, the bolts 13 and nuts 6 and sleeves 8 are removed for re-use, a tool being



insertable in an enlargement 8b of the sleeve-bore to engage the nut head 6b. Specifications 682,870, 682,916 and 733,784 are referred to.

21/33 © EPODOC / EPO

PN - **FR2616469** A1 19881216

PNFP - FR2616469 B1 19920814

PR - FR19870008326 19870612

AP - FR19870008326 19870612

DT - *

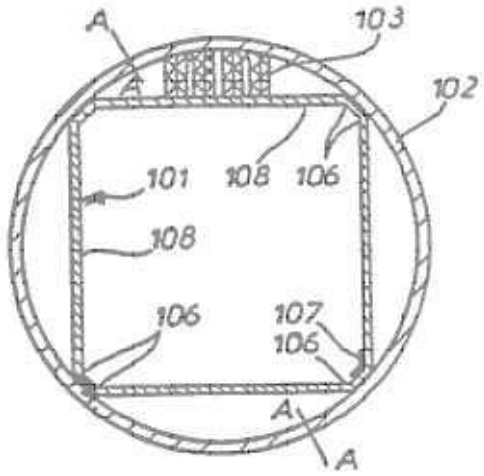
CT - (A1)
US3301926 A [X]; **FR1513315** A [X]

CCI - **E04G13/02**

PA - (A1 B1)
SOFRATUBE RCT SA [FR]

TI - (A1)
Tubular mould for a rectilinear element of non-**circular** crosssection, particularly for casting **concrete** using **formwork**

AB - (A1)
The invention aims to allow the use of tubular elements made of cardboard in order to form prismatic moulds in an easy and inexpensive manner. An internal tubular element 101 with plane walls 108 is formed by folding 106 a sheet of cellular or corrugated cardboard. The corners of this internal element are retained by a **cylindrical** external tube 102 made of cardboard, and its plane faces 108 bear against the external tube by virtue of blocks 103 which are preferably also made of cardboard. Such a mould can be used for casting **concrete** using **formwork** or for casting any other material which hardens within its bulk. <IMAGE>



22/33 © EPODOC / EPO

PN - FR2606813 A1 19880520

PR - FR19860015975 19861114

AP - FR19860015975 19861114

DT - *

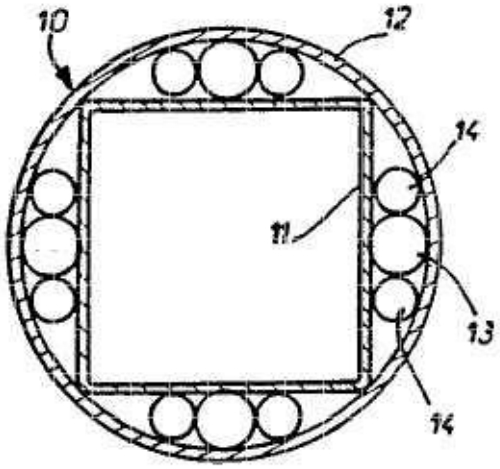
CT - FR1513315 A [A]; US3350049 A [A]; GB814349 A [A]; DE3149786 A1 [A]

CCI - E04G13/02

PA - SOFRATUBE RCT SA [FR]

TI - Tubular mould for a rectilinear pocket or element of non-**circular** cross-section, particularly for casting **concrete** using **formwork**

AB - The invention aims to allow the use of cardboard tubular elements in order to form moulds having a constant non-**circular** cross-section. The walls of the cardboard tubular moulding element 11 are supported by **cylindrical** cardboard tubes 13, 14 arranged longitudinally, in order to prevent the walls from deforming under the thrust from the material to be cast. These tubes can be supported by various means, particularly by an external cardboard tube 12. Similar support means are provided inside a cardboard tube of polygonal cross-section in order to cast a pocket or to form a hollow cardboard body. The invention can be used for casting **concrete** using **formwork** or for casting any other material which hardens within its mass. <IMAGE>



23/33 © EPODOC / EPO

PN - WO03104586 A1 20031218

PR - ES20020001340 20020611

AP - WO2003ES00275 20030606

DT - **

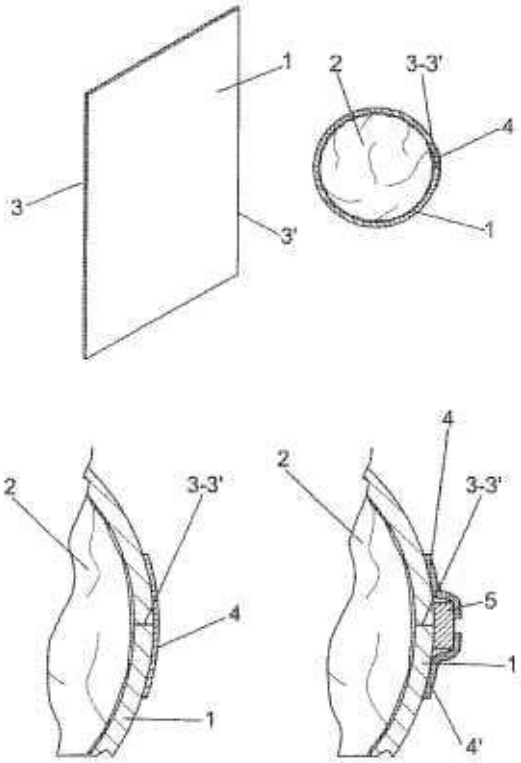
CT - |ES| ISR (A1)
US4595168 A 19860617
[X] (GOODWIN PAUL [CA]);
DE4239454 A1 19930617
[Y] (CONSTRUMAT AG [CH]);
FR2775924 A1 19990917
[Y] (INTEISS [FR]);
US3942753 A 19760309
[A] (SACHS CARROL C);
ES285757U U 19851101 [Y];
US3357457 A 19671212
[Y] (MYER JON H)

CCI - E04G13/021

PA - VALERO SALINAS JOSE MANUEL [ES]

TI - DISPOSABLE **FORMWORK** FOR COLUMNS HAVING A **CIRCULAR** SECTION

AB - The invention relates to a perfectly **cylindrical** column that is structured by means of a rigid plastic flat sheet, e.g. high impact polyethylene or the like, the length of which coincides with the envisaged height of the column and the width of which coincides with the size of the section of said column. Said flat sheet is wound on a mounting core with the purpose of adopting a tubular and **cylindrical** configuration by connecting its longitudinal edges, said connection being temporarily stabilized with the aid of an adhesive tape extending throughout the entire connecting line. Said assembly is then provided with an outer rigidizing envelope in the form of a strip that is helicoidally wound on the tubular body, said strip consisting of a fiberglass mesh or mesh of fiberglass



fibers longitudinally embedded in a paper support or the like. Said envelope will bear the radial strains generated by the casting of the **concrete** into the tubular body.

24/33 © EPODOC / EPO

PN - **EP1553245** A1 20050713

PR - ES20020001340 20020611; WO2003ES00275 20030606

AP - EP20030757079 20030606

DT - *

CCI - **E04G13/021**

PA - VALERO SALINAS JOSE MANUEL [ES]

TI - DISPOSABLE **FORMWORK** FOR COLUMNS HAVING A **CIRCULAR** SECTION

AB - The invention relates to a perfectly **cylindrical** column that is structured by means of a rigid plastic flat sheet, e.g. high impact polyethylene or the like, the length of which coincides with the envisaged height of the column and the width of which coincides with the size of the section of said column. Said flat sheet is wound on a mounting core with the purpose of adopting a tubular and **cylindrical** configuration by connecting its longitudinal edges, said connection being temporarily stabilized with the aid of an adhesive tape extending throughout the entire connecting line. Said assembly is then provided with an outer rigidizing envelope in the form of a strip that is helicoidally wound on the tubular body, said strip consisting of a fiberglass mesh or mesh of fiberglass fibers longitudinally embedded in a paper support or the like.

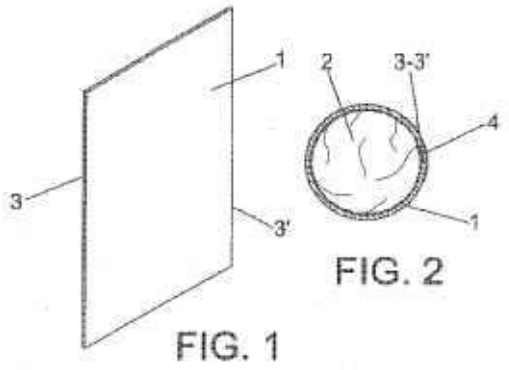


FIG. 1

FIG. 2

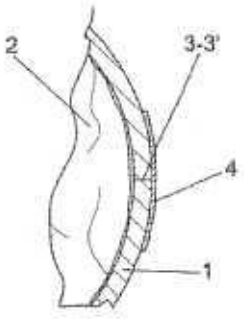


FIG. 3

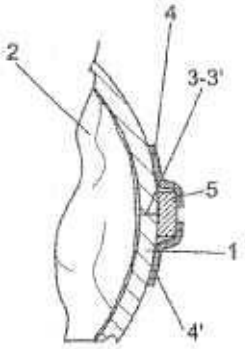


FIG. 4

Said envelope will bear the radial strains generated by the casting of the **concrete** into the tubular body. <IMAGE>

25/33 © EPODOC / EPO

PN - WO8400189 A1 19840119

PR - AT19830000299 19830131; AT19830000300 19830131; AT19830000301 19830131; AT19820002562 19820702

AP - WO1983EP00163 19830629

DT - *; Rep

CT - |EP| ISR (A1)
DE728492 C 19421127 [X] (FERDINAND SCHMIDT DEUTSCHE FUT);
FR1059045 A 19540322 [A];
FR2149974 A5 19730330 [A] (SIEMENS BAUUNION GMBH);
FR2445433 A1 19800725 [Y] (HANSCH PAUL [DE]);
US3994471 A 19761130 [Y] (TUROLLA ANTHONY);
FR990644 A 19510924 [Y];
US3822858 A 19740709 [A] (FRANKLIN J);
CH492854 A 19700630 [A] (BOURGE EDMOND [FR]);
FR2271368 A1 19751212 [A] (GENDROT FERNAND [FR]);
DE2926735 A1 19810122 [A] (SCHLIEPHACKE HEINRICH);
US3679168 A 19720725 [A] (WEAVER RICHARD L, et al);
DE1559041 B1 19701001 [A] (MEYER KELLER NOE SCHALTTECH)

CCI - E04G11/065 ; E04G11/087 ; E04G17/00 ; E04G17/002 ; E04G17/045

PA - PATENVER AG [CH]

TI - METHOD FOR WALL CONCRETING AND **FORMWORK** TO IMPLEMENT SUCH METHOD

AB - **Formwork** method, inner and outer **formwork** and linking parts used for the erection of **circular** constructions, for example **cylindrical** or spherical constructions. According to the method, a **formwork** surface (2) having the height of the wall to be cast is erected. Thereafter the casings are set in place and the second surface (2) of the **formwork** is pulled upwardly by runs of 50 cm, while introducing the **concrete** each time the **formwork** is lifted. The formworks (2) are comprised of flexible ring metal sheets. The rings are tensioned to obtain a stable form. The metal sheets are held together by key assemblies comprising retractable wedges between the supports and the clamps of the metal sheets.

26/33 © EPODOC / EPO

PN - DE3932759 A1 19910411

PR - DE19893932759 19890930

AP - DE19893932759 19890930

DT - *

CT - DE3541659 A1 [ ]

CCI - B28B21/566

PA - PRINZING GEORG GMBH CO KG [DE]

TI - Mould work and **formwork** for **circular concrete** sections - incorporates projecting in-built iron components and uses clamps and sectional components at insert positions

AB - The **formwork** and mould appliances are for prodn. of **circular** precast **concrete** components e.g. manhole rings, shaft rings, tapered shaft rings. The rings have projecting elements. These elements include step irons, access ladders and brackets to be cast monolithically with the **concrete** component. The **formwork** apparatus comprises mould core (10) with projecting step irons (11). The mould core (10) has **cylindrical** mould core walls (13) and upper cover plate (12). A removable mould segment (14) comprises wall section (15) and cover section (16) both of which are shaped similarly to the mould core walls (13). A window shaped opening (18) receives each step iron (11) which locate onto seating (19) each seating (19) is connected to a clamp (20). The outer wall member (21) overlap the wall section (15) to which is welded the clamp assembly (20) with metal rib (24) and the flexible seal (26) vertical alignment, rigidity and cement grout prevention is achieved by tightening clamp (17) whilst horizontal dimensional integrity is accomplished by use of tensioning mechanism (23). After **concrete** has been placed the clamps are slackened and the complete assembly is ready for reuse. USE/ADVANTAGE - Mfr. of precast **concrete** annular sections ensures that grout loss is minimised and higher quality finish is achieved.

27/33 © EPODOC / EPO

PN - **DE2727697** A1 19781221

PR - DE19772727697 19770620

AP - DE19772727697 19770620

DT - *; Rep

CCI - **E04G11/28**

PA - WAYSS & FREYTAG AG

TI - Large **circular** tapering **concrete** structure climbing **formwork** - has prestressing rings as ties for pressure resistant external skin

AB - The climbing or standing **formwork** (1) is esp. suitable for **concrete** or reinforced-**concrete** structures, of **circular** or annular plan shape, and pref. of large diameter, and of **cylindrical** or conical shape in elevation. It is in the form of closed or multi-part **formwork** without form anchors necessarily passing through the structure, and with peripheral horizontal **circular** bonding units. The outside form membrane (2) is pressure; or pressure and tension, resistant. The ties, producing annular tension effect, are in the form of prestressing rings (6), with at least one stressing device for each ring. Form-locking effect between form membrane and prestressing ring is generated by direct and almost constant contact, or contact with space-retaining lining pieces set at a very slight interval. Deformation of **formwork** is prevented by separate stiffening measures for the outside and inside form membrane (11).

28/33 © EPODOC / EPO

PN - **DE2708559** A1 19780831

PR - DE19772708559 19770228

AP - DE19772708559 19770228

DT - *; Rep

CCI - **E02D27/44**

PA - KLOECKNER WERKE AG

TI - **Circular** chamber for turntable foundation - has sheet steel wall and steel rim ring, keyed into **concrete** surround

AB - The **circular** chamber of the turntable foundation is formed by a **cylindrical** sheet steel wall (12) outside which the **concrete** is poured. The rim of the chamber has a steel ring (13) of L-shaped cross-section. The steel ring has a slightly smaller internal diameter than the sheet steel wall (12) and has its upper surface flush with the ground. The turntable is so arranged that its surface is about 1 cm. above floor level, permitting use of turning objects larger than the turntable. Cracking and deformation of the foundation edges and the attendant dangers are prevented by use of the permanent steel **formwork**.

29/33 © EPODOC / EPO

PN - **DE2506361** A1 19750821

PNFP - DE2506361 C2 19840419

PR - AT19740001341 19740219

AP - DE19752506361 19750214

DT - *; Rep

CTNP - (A1)
[ ] In Betracht gezogenes älteres Patent DE-PS 23 50 129
[ ] Fachzeitschrift "Detail",H.1, 1972, S.69-72

CCI - **E04G11/20**

PA - (A1)
HEINZLE OTTO

TI - (A1)
Circular concrete structure **formwork** scaffolding - has carrier assembly between frame and sockets connecting two **cylindrical** sheathing elements

AB - (A1)
The assembly is used in the erection of peripheral enclosed structures, such as silos or swimming-pools, of **concrete**, or other cast material, with two pref. **cylindrical** sheathing elements at an interval corresponding to wall thickness, suspended on a walkable platform framework, with horizontal gorders fixed radially to an annular frame. This can be raised and lowered on three vertical guide posts inside the sheathing elements, with tubular pieces or sockets on them connected to the annular frame. The element-connecting carrier assembly is set between the frame and the sockets. The number of hinge or support points between carrier assembly and frame is in proportion to the guide posts, and their mutual distances from the frame periphery are equal, or nearly equal. The spans to be supported can be effectively shortened.

30/33 © EPODOC / EPO

PN - **DE2035410** A1 19720120

PNFP - DE2035410 B2 19780503
- DE2035410 C3 19781214

PR - DE19702035410 19700716

AP - DE19702035410 19700716

DT - *; Rep

CCI - **E04C3/34**

TI - (B2)
Reinforced **concrete** column with in situ cast core - has grooves for shear transmission between tube and core

AB - (B2)
The precast reinforced **concrete** tube (1) of rectangular or **circular** cross-section has a **cylindrical** cavity (2). The cavity is formed with recesses (4, 5) which may be annular, helical or a series of square indentations arranged in rows. An in situ **concrete** core is poured into the tube, and takes up the shape of the recesses. The keyed contact between the tube and the core is effective in transmitting axial shear stresses, ensuring good stress distribution in the column. Flexible tinplate **formwork** is used to cast the tube.

31/33 © EPODOC / EPO

PN - **DE1922581** A1 19691113

PNFP - DE1922581 B2 19760610
- DE1922581 C3 19800117

PR - CH19680006493 19680502; CH19680006494 19680502

AP - DE19691922581 19690502

DT - *; Rep

CCI - **E04F17/02**

PA - (A1)
SCHIEDEL KAMIN BETONWERK

TI - (B2)
Component-assembled **concrete**-sheathed fireplace chimney insulation - comprising **cylindrical** shell segments inserted into annular gap between layers

AB - (B2)
The chimney unit, assembled from prefabricated components, consists of an internal length of flue tube, an external sheath made of **concrete**, and intervening heat insulation. This insulation is made up from a number of segments of **cylindrical** shell, building up a complete shell when assembled, loosely inserted, so as to allow for radial play, into the **circular** gap between the inner tube and the outer sheath. The heat insulation may form a part element in conjunction with the outer sheath. The heat insulation may form a part element in conjunction with the outer sheath with the inner tubing mounted loosely inside. Part or the whole of the insulation, which may be of corrugated asbestos board, may serve as lost internal **formwork** for the **concrete** in the sheath.

32/33 © EPODOC / EPO

PN - **CN2537780Y** Y 20030226

PR - CN2002224712U 20020404

AP - CN2002224712U 20020404

DT - I

PA - QUAN XIANMIN [CN]

TI - Adjustable building garden **formwork**

AB - The utility model relates to a novel adjustable type **circular** architectural template. At present, the fixing and the customization of the corresponding template according to the sizes of **circular** or conoid **concrete** columns in the engineering of the bridge building are difficult, costs large number materials and are easy to be wasted. The utility model is formed with a curved panel, connecting plates are arranged on the upper and lower sides of the panel, side plates are arranged on the left and right sides, flat steel is welded on the back side, a plurality of groups of triangle walking frames are welded on the surface of the flat steel, positive and negative screw rods and screw nuts are arranged between the triangle walking frames, when being used, a plurality of templates can be connected to from a **cylindrical** (cone) die according to the diameter and the height of the **concrete** columns, the templates are longitudinally connected, thereby the height of the **concrete** columns can be adjusted and the curvature radius of the of the panel can be controlled by adjusting the screw rods and the screw nuts, and simultaneously the rigidity of the templates can also be increased by the triangle walking frames. The utility model has the advantages that the utility model is easy to be processed, transported, and operated, has freely adjustable size, saves cost, and is favorable for popularization.

33/33 © EPODOC / EPO

PN - CA2486149 A1 20031218

PR - ES20020001340 20020611; WO2003ES00275 20030606

AP - CA20032486149 20030606

DT - I

CCI - E04G13/021

PA - VALERO SALINAS JOSE MANUEL [ES]

TI - DISPOSABLE **FORMWORK** FOR COLUMNS HAVING A **CIRCULAR** SECTION

AB - The invention relates to a perfectly **cylindrical** column that is structured b y means of a rigid plastic flat sheet, e.g. high impact polyethylene or the like, the length of which coincides with the envisaged height of the column and the width of which coincides with the size of the section of said column . Said flat sheet is wound on a mounting core with the purpose of adopting a tubular and **cylindrical** configuration by connecting its longitudinal edges, said connection being

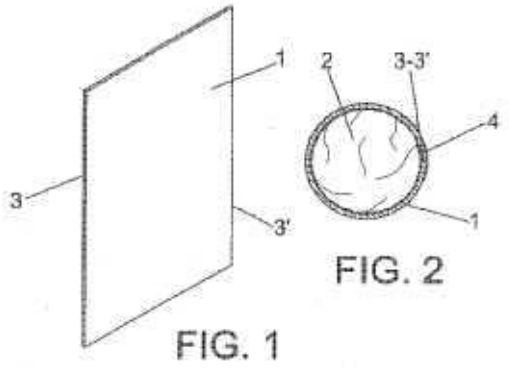


FIG. 2

FIG. 1

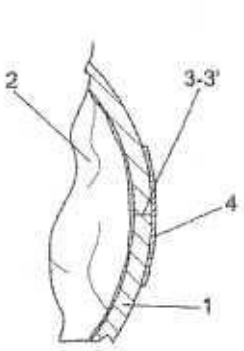


FIG. 3

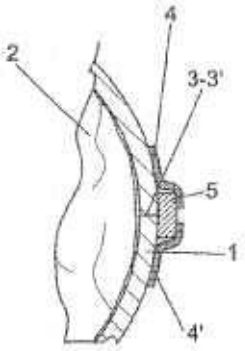


FIG. 4

temporarily stabilized with the aid of an adhesive tap e extending throughout the entire connecting line. Said assembly is then provided with an outer rigidizing envelope in the form of a strip that is helicoidally wound on the tubular body, said strip consisting of a fiberglas s mesh or mesh of fiberglass fibers longitudinally embedded in a paper support or the like. Said envelope will bear the radial strains generated by the casting of the **concrete** into the tubular body.

[SS 10] ..v

[EPODOC: SS 10]