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[EPODOC: SS 12] ..fi epodoc

Database: EPODOC

[EPODOC: SS 12] formwork and beam

Results in EPODOC **2.607**

[SS 13] * and PD<2013-07-29

Results in EPODOC **1.229**

[SS 14] * and hook

Results in EPODOC **28**

[SS 15] ..li

1/28 © EPODOC / EPO

PN - CN202718388U U 20130206

PR - CN20122230347U 20120522

AP - CN20122230347U 20120522

DT - I

PA - JIANGSU XINGSHA CONSTRUCTION INSTALLATION CO LTD

TI - **Formwork** reinforcement fixture

AB - The utility model discloses a **formwork** reinforcement fixture which comprises a sliding rod (1), a clamping **hook** (2) and a movable fastening rod (3). The clamping **hook** (2) vertical to the sliding rod (1) is arranged at one end of the sliding rod (1); the clamping **hook** (2) is fixedly connected with the sliding rod (1); the movable fastening rod (3) is arranged on the sliding rod (1); and the movable fastening rod (3) is movably connected with the sliding rod (1). Due to the adoption of the **formwork** reinforcement fixture disclosed by the utility model, reinforcement is rapid and convenient to carry out in the process of constructing **beam** and column formworks, the **formwork** reinforcement fixture is feasible and is easy to operate, has the advantages of short

construction period and high efficacy, is economic and avoids the defects of swelled formworks and sand corners, which are easy to generate in the constructing process of a **beam** and a column.

2/28 © EPODOC / EPO

PN - **CN202531191U** U 20121114

PR - CN2012294298U 20120314

AP - CN2012294298U 20120314

DT - I

PA - CHINA RAILWAY 22ND CONSTRUCTION BUREAU 1ST ENGINEERING CO LTD; CHINA RAILWAY 22ND CONSTR BUREAU CO LTD

TI - Tunnel inverted arch integral move support system

AB - The utility model discloses a tunnel inverted arch integral move support system, which is characterized in that the inverted arch support is composed of a rigid framework and an arc **formwork**; the arc **formwork** is fixed on the rigid framework; and further, the rigid framework includes a main **beam**, a transversal trimming **beam** and a lifting **hook**, wherein the transversal trimming **beam** is fixed on the upper surface of the main **beam**, and the lifting **hook** is fixed on the lower surface of the main **beam**. The arc **formwork** and the rigid framework are fixed through lead screws fixed on the transversal trimming **beam**. The arc **formwork** and the lead screws are fixed through dowels. A counter-pressure **beam** is arranged above the arc **formwork**, and counter-pressure blocks are placed at the two ends of the counter-pressure **beam**. Channel steel is arranged on the arc **formwork** to serve as reinforcing ribs. The rigid framework is provided with reinforcing beams. According to the tunnel inverted arch integral move support system, the construction quality can be controlled easily, the labor intensity is low, and the construction progress is rapid; moreover, the construction is simple and convenient, the technological process is simple and easy to understand, the management and the operation are facilitated, and the appearance quality, the elegance and the roundness of the concrete are ensured.

3/28 © EPODOC / EPO

PN - **CN202467169U** U 20121003

PR - CN2012277523U 20120305

AP - CN2012277523U 20120305

DT - I

PA - JIANGXI FADA CONSTRUCTION GROUP CO LTD

TI - **Formwork** structure for reinforced masonry

AB - The utility model discloses a **formwork** structure for a reinforced masonry. The **formwork** structure comprises a template which is designed according to the section of a constructional column or a ring **beam** and a steel pipe or a wood support, a bolt, a steel gasket and an iron **hook** hoop, wherein the bolt penetrates through the construction body and is matched with the steel gasket, and the steel pipe or the wood support is fastened by the nut; and after the iron **hook** hoop penetrates through the construction body, a corresponding steel pipe or wood support is hooped under impact of external force. The utility model has the advantages that according to frame eye-free construction of the masonry, because the masonry is built at a time, the phenomenon

that the masonry mortar at the frame eye is not full is reduced, and the construction quality of the masonry and the appearance are guaranteed; the phenomenon that the reserved frame eye is not tightly filled so as to cause hollowing of the plaster wall surface and leakage of the outer wall is avoided; the engineering cost can be reduced, and the manual investment is reduced; the screw is used for pulling, so that the working efficiency is improved; and the structural strength is improved, and the shock resistance is improved.

4/28 © EPODOC / EPO

PN - CN102605902 A 20120725

PR - CN20111104555 20110415

AP - CN20111104555 20110415

DT - I

CT - || STSE (A)
CN101457571 A 20090617 [A] (ARCHITECTURAL DESIGN & RES INS [CN])
[A]
CN2621197Y Y 20040623 [A] (YANG AIHUA [CN])
[A]
CN201661010U U 20101201 [YX] (DONGWEI LUO)
[Y]
[X]
CN101457572 A 20090617 [A] (ARCHITECTURAL DESIGN & RES INS [CN])
[A]
CN1338551 A 20020306 [A] (UNIV DALIAN SCIENCE & ENG [CN])
[A]
CN201347582Y Y 20091118 [Y] (QINGSHENG ZENG [CN])
[Y]
JPH0734533 A 19950203 [A] (SASANO SHUNICHI, et al)
[A]
CN2474614Y Y 20020130 [Y] (LIANG JUN [CN])
[Y]
CN2534269Y Y 20030205 [YX] (ZHAO RUIYU [CN])
[Y]
[X]

PA - QINGSHENG ZENG

TI - Penetrating rib and clamping **hook** combined steel mesh template and application method

AB - The invention relates to a cast-in-place dismantling-free frame penetrating rib and clamping **hook** combined steel mesh template and an application method. The defects of the prior art of easily generated bubble effect, inconvenience in assembling and disassembling and labor-consuming and time-consuming effect caused by using a wood template or steel template as a containment are overcome. The steel mesh template comprises two single-side formworks, a thickness-limited connector for connecting the two single-side formworks, and steel meshes fixed outside the two single-side formworks, wherein each of the single-side formworks comprises a plurality of compressing keels in vertical arrangement at intervals and a plurality of connecting ribs in horizontal connection with the compressing keels; the compressing keels are

provided with clamping hooks; the clamping hooks are fixedly connected with the steel meshes; ribs penetrate through the compressing keels so as to form one single-side **formwork**; the two single-side formworks are parallel to each other and are connected by a thickness-limited connector so as to form an integrated frame structure; the steel mesh template is stable and reliable; the connection is convenient; no containment is used during pouring process; no air bubble is generated in the interior; **beam** columns are combined for simultaneously pouring, thereby being time-saving and labor-saving; and due to the hoop restraining of an integrally constructed steel ladle mixed steel mesh, the poured concrete is provided with a fireproof function.

5/28 © EPODOC / EPO

PN - CN102561677 A 20120711

PR - CN2012117313 20120119

AP - CN2012117313 20120119

DT - I

CT - || STSE (A)
CN2737878Y Y 20051102 [Y] (BEIJING ZHONGJIAN BOLI ENGINEE [CN])
[Y] 1-4
CN2367688Y Y 20000308 [Y] (SHI LEI [CN])
[Y] 1-4
CN202450770U U 20120926 [R] (ZHENGXING GUO)
[R] 1-3
权利要求1-3
CN2095906U U 19920212 [A] (GUANGDONG BUILDING ENGINEERING [CN])
[A] 1-5
CN2091323U U 19911225 [A] (RUIDA SHUTTERING SERIES CO QIN [CN])
[A] 1-5
CN2056928U U 19900509 [A] (CHINA BUILDING TECHNOLOGY DEVE [CN])
[A] 1-5
CN2084959U U 19910918 [A] (ZHAO GUOHE [CN])
[A] 1-5
CN2818657Y Y 20060920 [A] (LIU GUOEN [CN])
[A] 1-5
CN1869378 A 20061129 [A] (UNIV DONGNAN [CN])
[A] 1-5

PA - ZHENGXING GUO

TI - Light empty steel frame plywood **formwork** and assembling method

AB - The invention relates to a light empty steel frame plywood **formwork** being suitable for manual assembling and disassembling in construction engineering. An empty steel side rib adopts a step section, a first step is convenient for inserting, laying and fixing a glued board with 9 mm or 12 mm, and a second step is conveniently connected with a **hook**-on clamping apparatus of moldboard blocks to clamp; and a 'Z' shape or 'single ' shape section is adopted for a true stomach steel rib, an end part and the empty steel side rib are welded to form a bearing strength steel frame, a rivet or a countersunk rivet is fixedly connected with inner and outer steel ribs through a plywood panel, and the moldboard blocks are connected by the **hook**-on clamping apparatus to form a large area moulding board. The light empty steel frame plywood **formwork** provided by the

invention is accompanied with the advantages of portability and flexible assembly of the traditional combined steel moulding plate with cross-sectional height of 55 mm, and can be mixed with a general glued board and a wood **beam formwork** manner; and the weight of each square meter moulding board is less than 25 kilos, the rigidity of a steel frame is improved, and the reduplicate turnover utilized times of the moulding board are increased.

6/28 © EPODOC / EPO

PN - **CN202164030U** U 20120314

PR - CN20112168973U 20110525

AP - CN20112168973U 20110525

DT - I

PA - FOURTH ENGINEERING CO LTD OF CHINA RAILWAY 7TH GROUP

TI - Integrated box girder cradle

AB - The utility model provides an integrated box girder cradle, which is few in construction procedures, simple in operation, safe, convenient and capable of hoisting reinforcing steel bars and an inner **formwork** of a preformed box girder into a **formwork** integrally. The integrated box girder cradle comprises a hoisting **beam**, a hanging **hook** and a steel wire, the hoisting **beam** is in a truss structure comprising more than five crossbeams, the crossbeams are arranged at the bottom of the hoisting **beam** and perpendicular to the hoisting **beam**, the upper end of the steel wire is connected with the crossbeams, and the lower end of the steel wire is connected with the hanging **hook**. The integrated box girder cradle is simple in operation, safe, convenient and capable of hoisting the reinforcing steel bars and the inner **formwork** of a preformed box girder into the **formwork** integrally, so that multi-directional procedures can be carried out parallelly, construction speed is accelerated, construction time is shortened, and cost is saved.

7/28 © EPODOC / EPO

PN - **CN102367702** A 20120307

PR - CN20111267675 20110911

AP - CN20111267675 20110911

DT - I

PA - FENG CHEN

TI - Telescopic environment-friendly large-scale **formwork** fast tensioner

AB - The invention discloses a telescopic environment-friendly large-scale **formwork** fast tensioner. In the scheme adopted by the invention, a reinforcing rope chain is arranged at the back end of an antiperthitic screw rod, a dilation circular ring is arranged at the back end of the reinforcing rope chain, an adjusting **hook** and a hanging **hook** are arranged in the dilation circular ring, and the telescopic environment-friendly large-scale **formwork** fast tensioner is characterized in that, in case of an ultra-wide crooked **beam formwork**, the adjusting **hook** can be hooked and hung in the reinforcing rope chain according to the size of an ultra-wide crooked **beam** at any time, and the telescopic environment-friendly large-scale **formwork** fast tensioner can be telescopic and adjustable.

8/28 © EPODOC / EPO

PN - MX2011006225 A 20110628

PR - US20080122283P 20081212; WO2009NZ00282 20091211

AP - MX20110006225 20091211

DT - I

CCI - A47C31/02 ; A47C1/03 ; A47C1/03255 ; A47C1/03277 ; A47C1/03288 ; A47C7/004 ; A47C7/14 ; A47C7/40

CQI - A47C1/027 ; A47C1/03261 ; A47C3/20 ; A47C7/282

CCA - Y10T29/49826

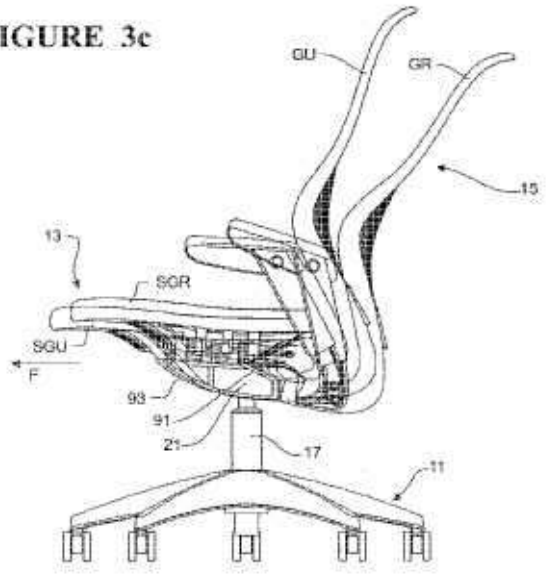
CQA - A47C7/16

PA - FORMWAY FURNITURE LTD [NZ]

TI - A CHAIR, A SUPPORT, AND COMPONENTS.

AB - A chair has a seat support (101), a seat portion (13), a back portion (15), and a supporting frame. The supporting frame is formed by a castored base (11), a height adjustment mechanism (17), and a main transom (21). The seat portion (13) is selectively moveable relative to the supporting frame, with the seat portion having a locked configuration and a released configuration. The back portion has a back frame (25) and a compliant cover (61). The back frame has **hook** features for receiving a portion of the compliant cover (61). The back portion (15) is reclinable relative to the supporting frame between an upright position and a reclined position. A recline mechanism has deformable members operatively connecting the seat portion and the supporting frame. A recline resistance mechanism is

FIGURE 3c



selectively engageable to resist movement of the back portion toward the reclined position. A chair has a seat support (101), a seat portion (13), a back portion (15), and a supporting frame. The supporting frame is formed by a castored base (11), a height adjustment mechanism (17), and a main transom (21). The seat portion (13) is selectively moveable relative to the supporting frame, with the seat portion having a locked configuration and a released configuration. The back portion has a back frame (25) and a compliant cover (61). The back frame has **hook** features for receiving a portion of the compliant cover (61). The back portion (15) is reclinable relative to the supporting frame between an upright position and a reclined position. A recline mechanism has deformable members operatively connecting the seat portion and the supporting frame. A recline resistance mechanism is selectively engageable to resist movement of the back portion toward the reclined position. The present invention provides a **formwork** system (40) of forming concrete wall for a building comprising, site clearing and leveling, forming a foundation (10) which includes a **beam** (12) and ground slab (14), thereafter forming concrete wall (30) by setting up form works on top of the foundation (10) characterized in that the **formwork** system (40).

PR - CN20102617976U 20101122

AP - CN20102617976U 20101122

DT - I

PA - CHINA MCC17 GROUP CO LTD

TI - Template reinforcing fixture for column **beam** concrete member **formwork**

AB - The utility model provides a template reinforcing fixture for a column **beam** concrete member **formwork**, which belongs to the fixture field. The utility model is characterized in that the template reinforcing fixture for a column **beam** concrete member **formwork** is mainly composed of a clamping rod and a clamping head. The clamping rod is a long rod with a rectangular cross section and a left end provided with an underneath type **hook** head. The **hook** head on the left end of the clamping rod is of a reaping **hook** shape. A cambered surface of the **hook** head is bent leftwards. The lower end section of the **hook** head is a longitudinally planar section. The clamping rod body is slidingly provided with the clamping head. The upper section and the lower section of the clamping head are both longitudinally planar sections while the middle section is a cambered section with a cambered surface bent rightwards. A wide plane on the upper section of the clamping head is provided with a lateral rectangular through hole. The clamping rod body is inserted into the rectangular through hole on the clamping head which is in sliding cooperation with the clamping rod and can perform lateral movements. By hitting the clamping head towards the **hook** head direction through a small hammer until the clamping head is clamped, the templates on the two sides are then fixed. The template reinforcing fixture for a column **beam** concrete member **formwork** has the advantages of convenient use, reliability, maintaining easiness, capability of repeated use and **formwork** cost decrease.

10/28 © EPODOC / EPO

PN - **CN201778488U** U 20110330

PR - CN20092266182U 20091028

AP - CN20092266182U 20091028

DT - I

PA - XIAOBO QIU

TI - Dual-purpose reinforced fastener

AB - The utility model provides a dual-purpose reinforced fastener for fastening a **beam**/column **formwork**, which has different usages and can reduce wood consumption and save work time. The dual-purpose reinforced fastener is characterized in that a **hook** elbow is arranged at one end in the horizontal direction of a clamping rod; and a perpendicular sickle elbow is arranged in the longitudinal direction of the clamping rod at the same time. By applying a force on a movable fastening head on the clamping rod, four clamping rods respectively pass through the **hook** elbow at one end of the adjacent clamping rod and then are twisted into a whole, so that the reinforcements of the clamping rods enclose and fasten the wood **formwork** frame, or alternatively, the perpendicular sickle elbows of the clamping rods **hook** a square wood material and then the square wood material encloses and fastens the wood **formwork** frame, thereby ensuring the cement and reinforced concrete to be smoothly poured into the **beam**/column **formwork** frame.

11/28 © EPODOC / EPO

PN - CN201747055U U 20110216

PR - CN20102507481U 20100819

AP - CN20102507481U 20100819

DT - I

PA - KUI ZHU

TI - Support frame for casting and compacting of concrete ledger **beam**

AB - The utility model discloses a support frame for casting and compacting of a concrete ledger **beam**, which is characterized by comprising a bearing rod, a wood **formwork**, triangular wood, a steel inclined strut, a steel **formwork** and a reinforced bar **hook**. The wood **formwork** is arranged on the bearing rod, the steel **formwork** is supported on the wood **formwork** and is inclined for 60-80 degrees, the triangular wood is arranged at an intersection of the steel **formwork** and the wood **formwork**, the middle part of the steel **formwork** is provided with the steel inclined strut, the top part of the steel **formwork** is drawn by the reinforced bar **hook**, and the diameter of the reinforced bar **hook** is 4-6mm. The utility model has the advantages of simple structure and high practicality.

12/28 © EPODOC / EPO

PN - CN101748892 A 20100623

PR - CN20091256111 20091229

AP - CN20091256111 20091229

DT - I

PA - QINGJIAN GROUP CO LTD

TI - Connection method for joint between assembled wall formworks

AB - The invention discloses a connection method for the joint between assembled wall formworks. At the joint, two wood beams are respectively fixed on the bottoms of the two connected wall formworks, the edge of the wood **beam** on the bottom of one of the wall formworks exceeds the connected edge of the wall **formwork** to become a mother rabbet, and a child rabbet is formed between the other wall **formwork** and the other wood **beam**; the child rabbet is fitted in the mother rabbet, and after the child rabbet and the mother rabbet are firmly jointed, the two wood beams are firmly connected together by **hook** bolts and steel washers. The connection method is specially designed for assembled wall formworks; compared with the conventional technique, the connection method not only can ensure tightness to prevent leakage, but also can ensure the appearance effect of concrete, thus improving construction quality, and the connection method at least solves the following problems: in the prior connection method, slurry can easily leak out, the joint can be exposed, the evenness exceeds the standard, and the appearance quality of concrete is affected.

13/28 © EPODOC / EPO

PN - CN201169915Y Y 20081224

PR - CN2007227294U 20080418

AP - CN2007227294U 20080418

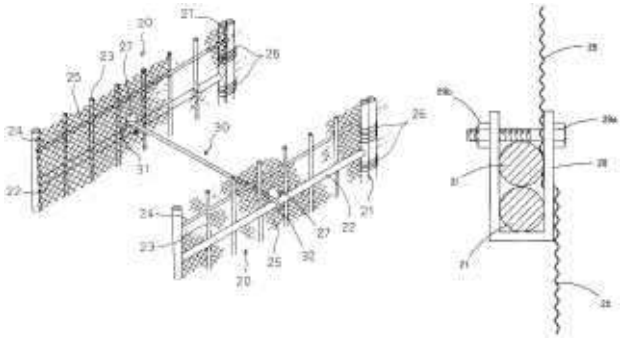
DT - I

PA - BUQIANG FENG [CN]

TI - Concrete **beam** and column clamp support

AB - The utility model relates to a concrete slab/column **formwork** bracket, having four support **formwork** girders, at least eight connecting ribs each with one end having a **hook** and the other end having a screw cap, as well as a plurality of blocking **formwork** sleeves, wherein a plurality of blocking **formwork** tubes perpendicular to the girders are welded on two outer sides of each support **formwork** girder. The **formwork** bracket consists of at least two support beams, four 90-degree support tubes, as well as two support transverse tubes which can be fixed on the inner side of a wall body through wall holes and the connecting ribs. The concrete **formwork** bracket is simple and reasonable in structure and low in manufacturing cost; when the **formwork** bracket is used for concrete slab/column construction, the **formwork** bracket is convenient to use, simple, firm, high in speed, time saving and labor saving; for the construction of slabs/columns with different sizes, the **formwork** bracket is convenient to adjust, and is accurate in size and favorable for carrying out subsequent working procedures.

14/28 © EPODOC / EPO



PN - US6231024 B1 20010515

PR - JP19980297084 19981019

AP - US19990419119 19991015

DT - *; Rep

CT - || STSE (B1)
US5092093 A 19920303 [ ] (LU SHIN-YUANG [TW]);
FR1164300 A 19581007 [ ]

CCI - B25B27/146 ; E04G9/06 ; E04G17/06 ; E04B2/8658 ; E04G21/122 ; E04C5/04 ; E04C5/163 ; E04C5/167 ; E04G9/065

CCA - F16B7/0433

PA - KABUSHIKIKAISHA KUGIN [US]

TI - **Formwork** forming unit

AB - A **formwork** forming unit for use in forming a concrete mold serving as a foundation of a building includes a frame-shaped form panel disposed to define a placing space for concrete and a bar-shaped separator. The form panel includes a plurality of first reinforcing beams and a plurality of second reinforcing beams each of which has a

smaller diameter than each first **beam** and formed into a shape of a frame. The form panel further includes a meshed member fixed thereto so as to cover its inside. The separator is attached to the oppositely disposed form panels so as to bridge the form panels when a plurality of the form panels are disposed to define the placing space for the concrete. The separator has both ends folded so as to be formed into **hook** portions respectively. The **hook** portions are engaged with the first beams of the oppositely disposed form panels and crimped such that the separator is fixed to the form panels.

15/28 © EPODOC / EPO

PN - JPH10110529 A 19980428

PR - JP19960266220 19961007

AP - JP19960266220 19961007

DT - I

FI - E04G15/06&A; F16B9/02&E

FT - 2E150/AA12; 2E150/AA36; 2E150/BA12; 2E150/BA19; 2E150/BA38; 2E150/HF09; 2E150/HF12; 2E150/HF17; 2E150/HF23; 2E150/HF25; 2E150/LA07; 2E150/MA02X; 2E150/MA11Z; 2E150/MA14X; 2E150/MA51X; 2E150/MA51Z; 2E150/MA54Z; 3J023/AA01; 3J023/BA02; 3J023/CA01

PA - AKUSETSUTO KK

TI - FIXTURE OF SLEEVE FOR **BEAM**

AB - PROBLEM TO BE SOLVED: To improve workability by sticking a seat to structural angles of a **formwork**, and supporting a sleeve spanning between a pair of structural angles by a locking part projected on the seat material. SOLUTION: A fixture 10 comprises a seat material 6 where a semicircumference-like locking part 1 for locking a sleeve port of a sleeve 20 is projected on the surface thereof, and a band material 5 for strapping the sleeve port 21 on the locking part 1. The seat 6 is formed by a resin-made circular seat material a size larger than the sleeve port 21, and the back 6b is a pressure sensitive adhesive surface. In the case of using the fixture 10, a pair of fixture 10 are stuck opposite to an opposing shape 31 for a **beam**. Next, the sleeve 20 is installed on the locking part 1, and the band material 5 is laid to engage both end **hook** parts 5a with engagement holes 1a of the locking part 1, thereby fixing the sleeve 20. Thus, arrangement of bars is performed in the **formwork**, construction can be accomplished easily even in a narrow space, and even if the sleeve is short, it is supplemented by the locking part to prevent concrete from flowing into the sleeve, and facilitate locating.

16/28 © EPODOC / EPO

PN - JPH01105865 A 19890424

PR - JP19870261464 19871016

AP - JP19870261464 19871016

DT - I

CT - JP59157047B B [ ]; JPS619946U U [ ]

FI - E04G11/40

FT - 2E150/AA31; 2E150/BA32; 2E150/BA33; 2E150/BA67; 2E150/BA72; 2E150/GA05; 2E150/GA14; 2E150/GA23; 2E150/GB12; 2E150/GB16; 2E150/HB01; 2E150/HB06; 2E150/HB21; 2E150/JA02; 2E150/JA03; 2E169/DA05; 2E169/DB01; 2E169/DB03; 2E169/DC05; 2E177/GA05; 2E177/GB01; 2E177/GB03; 2E177/GC05

PA - HORII & CO LTD

TI - **BEAM FORMWORK** DEVICE

AB - PURPOSE: To facilitate assembly and disassembly by constituting a bottom frame body by a pair of front and rear unit small frames, a pair of front and rear unit large frames, a plurality of barlike unit auxiliary members, and a floor plate and combining and connecting them selectively in accordance with a width of a **beam**. CONSTITUTION: This device is constituted by a pair of right and left side frame bodies 1, 2 locking in **beam** receive members, a bottom frame body 3, and a plurality of connection members 4 connecting the frame bodies 1, 2 to the frame body 3. Moreover, the frame body 3 is constituted by a pair of front and rear rectangular unit small frames 16, a pair of front and rear unit large frames 17 which are larger than the frame 16, a plurality of barlike unit auxiliary members 18, and a floor plate 19, and connection holes are drilled in the frames 16, 17 and the member 18. The frames 16, 17 and the member 18 are mutually combined in accordance with a width of a **beam** to be constructed and connected and fixed by the member 4. The unit members 16, 17, 18 are lifted to **hook** a hooking plate 13 on the **beam** receive member, the floor plate 19 is laid, and then concrete is placed.

17/28 © EPODOC / EPO

PN - JPH0485458 A 19920318

PR - JP19900202214 19900730

AP - JP19900202214 19900730

DT - I

FI - E04G17/16

FT - 2E150/AA01; 2E150/AA19; 2E150/AA30; 2E150/BA61; 2E150/BA62; 2E150/BA71; 2E150/BA72; 2E150/HB01; 2E150/HB05; 2E150/HB32; 2E150/HB36; 2E150/MA01Z; 2E150/MA46Z; 2E150/MA47X

PA - AOKI KAZUO

TI - TEMPORARY **BEAM**

AB - PURPOSE:To obtain a light-weight and strong temporary **beam** having good workability by a method in which the lower part of a groove formed on the central part of the rail of main **beam** is strongly reinforced by U-shaped bars, and a bottom plate is fixed to the bottom of the U-shaped bar. CONSTITUTION:On the upper end of a main **beam** 1, the

upside is made up of a rail 3, and a groove 4 opened downwards from the tip side is formed on the central part of the rail 3. U-shaped bars 5 are set at a given interval along the groove 4 on the bottom of the rail 3, and a U-shaped bottom plate 6 is also set along the longitudinal direction on the inside of the lower end. An adequate length of side **beam** 2 is inserted into the groove 4 of the **beam** 1, a wedge 8 is struck into the wedge hole 7, and the top piece 13b of a receiver metal 13 is contacted with the upper end of sheathing boards to make up a **beam formwork** in order to form a temporary **beam** between the boards 15 by **hook** pieces 13a. The side **beam** 2 is slidably adjusted in relation to the main **beam** 1 for final positioning and fixed by exactly striking the wedge 8.

18/28 © EPODOC / EPO

PN - JPH05256022 A 19931005

PR - JP19920108116 19920313

AP - JP19920108116 19920313

DT - I

FI - E04G17/06&101A; E04G17/065&A; E04G17/065&D

FT - 2E150/BA12; 2E150/EB05; 2E150/FA04; 2E150/FA21; 2E150/FA22; 2E150/LA35; 2E171/CC01; 2E171/CC08; 2E171/CD03; 2E177/KC01; 2E177/KC08; 2E177/KD03

AB - PURPOSE:To raise the efficiency of construction by a method in which a **formwork**-holding separator consisting of a **hook** bolt and a bar bolt is coupled with a pair of cap nuts having left and right screws, fixed to the **formwork**, and the separator is turned in a turnbuckle way to adjust the interval between the formworks. CONSTITUTION:A separator to keep the interval between formworks 1 for **beam** is made up of a **hook** bolt 6 having left screw 8 and a bar bolt 7 whose one end is bent into **hook** form. A cap nut 10 with left screw and a cap nut 9 with right screw are fixed to the inside of the **formwork** 1 in a mutually facing manner. A reinforcing bar cage 4 is set in the **formwork** 1, and the bolts 7

extruded from the aperture of the cage 4 are connected with the bolts 6 and both ends are connected to the nuts 9 and 10. The bolts 6 are turned in a turnbuckle way to adjust the interval between the formworks 1. The separator can thus be absorbed even when the axes of the nuts 9 and 10 on both sides are out of the center. The construction time can thus be shortened.

19/28 © EPODOC / EPO

PN - JPH06294210 A 19941021

PNFP - JPH0757988B B2 19950621

PR - JP19930106174 19930408

AP - JP19930106174 19930408

DT - I

FI - E04G11/48; E04G11/50; E04G25/00&A

FT - 2E150/HB31; 2E150/HB39; 2E150/JA01; 2E150/JC01; 2E150/JD01; 2E150/MA46Z; 2E169/DA01; 2E169/DB03; 2E169/DC05; 2E177/AA02; 2E177/CB04; 2E177/GA01; 2E177/GB03; 2E177/GC05

PA - (A)
SUGAWARA TADAYOSHI

TI - (A)
CONNECTING DEVICE OF BEAMS FOR CONCRETE **FORMWORK**

AB - (A)
PURPOSE:To improve workability by fitting the upper end parts and the lower end parts of a pair of beams to the narrow width grooves or the wide width grooves of a pair of connecting tools, upper and lower, connecting the beams to each other, and connecting supports to the connecting tools.
CONSTITUTION:The lower end parts of a pair of beams 2 are

respectively fitted to the narrow width groove 15 of a connecting tool (a), and the upper end part of one **beam** 2 is fitted to a connecting tool (a) up and down reversed. Next the beams 2 are confronted with each other, the **hook** piece 3 of a connecting bolt 6 is pressed in the through hole 1 of the other **beam** 2, and the bolt 6 is fixed to the **beam** 2 by screwing a nut 7. Next the upper and lower connecting tools (a) are fitted extendingly over the beams 2, nails 25 are passed through the nail holes 23 of the connecting tools (a), the square timbers 22 of the beams 2 is driven in, and the beams 2 are connectingly fixed with the connecting tools (a). The connecting shafts 19 of the connecting tools (a) are respectively fitted to the holes 18 of supports 17, and the beams 2 are supported with the supports 17. Further joists are assembled on the beams 2, and a floor sheathing board is laid on the joists, and hence a **formwork** is constituted.

PN - **GB1091433** A 19671115

PR - ZA19640003381 19640717

AP - GB19650030062 19650715

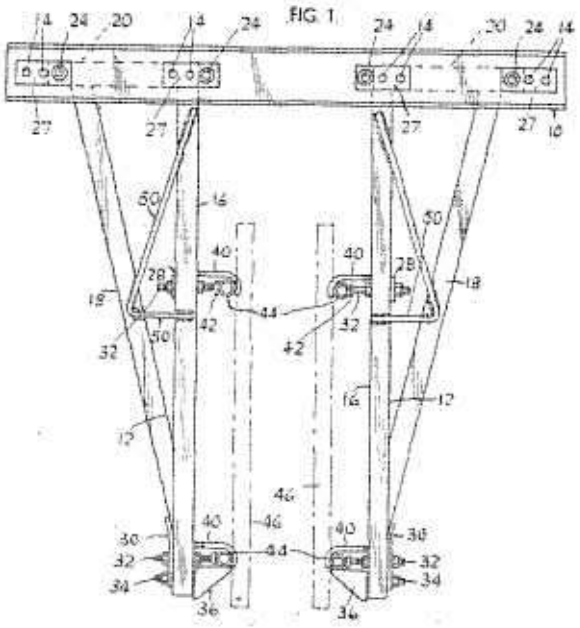
DT - *; Rep

CCI - **E04G11/22**

PA - MILLS SCAFFOLD CO LTD

TI - Improved adjustable yoke for use in sliding **formwork**

AB - 1,091,433. Shuttering for casting concrete. MILLS SCAFFOLD CO. Ltd. July 15, 1965 [July 17, 1964], No. 30062/65. Heading E1S. A yoke for supporting spaced shuttering panels 46 particularly for vertically sliding shuttering, comprises side members 12 adjustably mounted to vary the distance between them on a **beam** 10 by holes 14 and carrying brackets 36 for supporting wales 44 carrying the shuttering panels 46 and screw adjustable seats 42 for the wales 44 which are retained thereon by **hook** bolts 40. The **beam** is two channel members between which the side members which are triangular frames are carried. In a modification each side member is a single channel, the brackets 36 are adjustable and the **hook** bolts are replaced by screw clamps on the seats 42.



21/28 © EPODOC / EPO

PN - **GB818700** A 19590819

PR - DEX818700 19560908

AP - GB19570028114 19570905

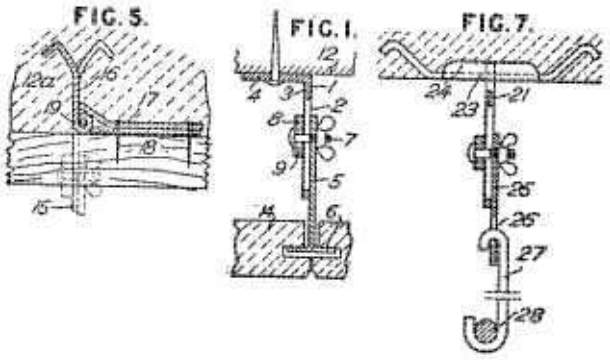
DT - *

CCI - **F16B5/0233** ; **E04B9/20**

PA - INGEBORG SCHWACHULA

TI - Improvements in or relating to suspension devices for building elements

AB - 818,700. Pipe &c. supports.



SCHWACHULA, [nee HERING] J. Sept. 5, 1957 [Sept. 8, 1956], No. 28114/57. Class 99(2). [Also in Group X] A suspension device comprises a part 1 adapted to be fastened to a ceiling or wall and to extend therefrom, that part having opposite sides respectively smooth and provided with teeth 3 which extend transversely to at least one guide slot 2, and slide 8 having teeth 9 adapted to coact with the teeth 3 and to be adjustable lengthwise of the part 1, and a supporting part 5 for an element to be carried by the device and having a smooth side adapted to abut the smooth side of part 1. A fastening screw 7 connects the slide and part 5 through the slot 2 and permits the smooth sides of the parts 1, 5 to be slid over one another and to be locked together. As shown in Fig. 1, one arm of an angle member 1 is secured by the arm 4 thereof to a ceiling 12, the other arm being provided with two, parallel, guide slots 2. In modifications, (a) a wall-anchor 16, Fig. 5, secured in a concrete ceiling 12a, or to a **beam**, is connected by a hinge 19 to a part 15 provided with serrations, and has an integral tongue 17 to which **formwork** 18 is secured by nails ; after removal of the **formwork** the part 15 is swung downwards, (b) the member 21, Fig. 7, is hooked over the anchor bar 23 of a concretedin shell 24 and the part 25 is formed with a hole 26 receiving a **hook**-shaped part 27 carrying rods or pipes 28, and (c) the part 21 is suspended on a separate **hook**.

22/28 © EPODOC / EPO

PN - GB2460662 A 20091209

PR - GB20080010160 20080604

AP - GB20080010160 20080604

DT - *; Rep

CT - || STSE (A)
GB337111 A 19301030 [ ] (HENRY WILLIAM ROOS);
GB1457135 A 19761201 [ ] (MILLS SCAFFOLD CO LTD);
GB1551100 A 19790822 [ ] (EVANS & SONS LTD C);
US1541971 A 19250616 [ ] (LAMPERT HENRY H)

CCI - E04G25/066 ; E04G11/48 ; E04G25/06

CNOI - E04G11/486 ; E04G25/04

PA - ROSS KELLY LOUISE [GB]

TI - A collapsible support mechanism for the use in the formation of a concrete slab, raft or **beam**.

AB - A support mechanism comprises collapsible support structures (1) each of which is extended and locked in position by a tapered wedge (10), allowing the construction of **formwork** (5) over the supports (1) for forming form a concrete slab, raft or **beam**. When the concrete has cured, the support structures (1) are collapsed by removing the tapered wedges (10), allowing the support mechanism (11) to be removed from the void between the underside of the **formwork** (5) and the ground. A wedge can be removed by pulling on a wire 13 or bar with a **hook** engaging in a hole (12).

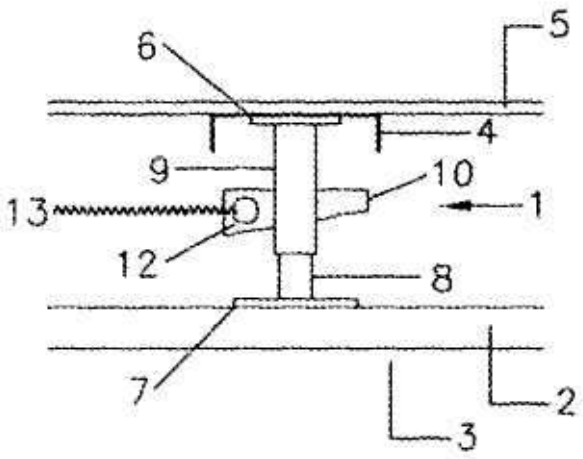


Figure 2

23/28 © EPODOC / EPO

PN - DE2419708 A1 19751030

PR - DE19742419708 19740424

AP - DE19742419708 19740424

DT - *; Rep

CCI - B66C1/66 ; B66C1/666

PA - WUPPER HUGO

TI - Oblong item crane lifting tackle - has power-operated adjustable along spreader **beam** engaging with lifting eyes

AB - The tackle is for handling items with a number of lifting eyes, particularly in excavation and high-rise building work, transporting girders, wall panels, large **formwork** sections etc. It comprises a rigid spreader **beam** with sling etc. for suspension from the crane **hook** also two or more tongs engaging in the lifting eyes. These tongs are firmly secured to the spreader, and are adjustable to and from each other and lockable in position on it. A mechanism is included, controlled from the crane driver's cab, opening and closing the tongs. Typically this can comprise electric motors driving screw mechanisms so as to produce a thrusting movement. The motors can be supplied via connecting plugs etc. fixed to the spreader.

24/28 © EPODOC / EPO

PN - CN1945187 A 20070411

PNFP - CN100494852C C 20090603

PR - CN20061102088 20061024

AP - CN20061102088 20061024

DT - I

PA - (A C)
TAIGANG STAINLESS STEEL CO LTD [CN]

TI - (A)
Step heating furnace **beam** and pole and its construction method
- (C)
Stepwise heating furnace **beam** and pole and its construction method

AB - (A)
The present invention is **beam** and column for walking heating furnace and their construction process. The column includes core pipe, water pipe, anchor **hook**, fiber blanket and cast layer; and the **beam** includes water pipe, anchor **hook**, heat resisting spacer block, fiber blanket and cast layer. The **beam** and the column feature the fiber blanket capable of resisting high temperature up to 1250 deg.C, the Y-type anchor **hook** of stainless steel capable of resisting high temperature up to 1050-1150deg.C and coated with asphalt paint, and the cast layer of material with cured strength not lower than 90 MPa at 1400 deg.C. The construction process of the **beam** and the column includes the steps of welding anchor **hook**, coating fiber blanket, assembling **formwork**, casting, demolding and stoving. The **beam** and the column have high strength, high heat resistance, good antioxidant performance and long service life.

25/28 © EPODOC / EPO

PN - CN2328692Y Y 19990714

PR - CN1997226436U 19970905

AP - CN1997226436U 19970905

DT - I

PA - ROAD ENGINEERING QUALITY MONIT [CN]

TI - Mounting frame for **formwork** of bridge rail

AB - The utility model relates to a hanger frame for specially mounting a form panel of a rail in building construction of a bridge. The utility model is characterized in that a straight **beam** main pipe of a mounting frame is supported on a bridge floor by a fixed frame and a movable frame, a drag **hook** with a wire tightener is arranged on the outside of the movable frame and the end of a straight pipe main **beam** and is connected with the bridge, the other end of the straight pipe main **beam** is provided with a rail form panel lifter and a hanger basket frame for placing a pedal, and the inner side surface of the hanger basket frame is provided with a **hook** angle for hooking the bridge upward. The utility model has the advantages of simple mounting structure, easy installation, construction progress increase, time saving, labour saving and construction cost saving.

26/28 © EPODOC / EPO

PN - **CN1123861** A 19960605

PR - CN1995112430 19950828

AP - CN1995112430 19950828

DT - I

PA - BRIDGE CONSTRUCTION BUREAU MIN [CN]

TI - Construction of prestressed concrete stayed cable bridge

AB - The construction technology for main girder of prestressed concrete cable stayed bridge features that short platform combined traction-cable busket with triangular frame having rigid **beam** is used and the front boom of each triangular frame provides a vertical rigid support to the front end of **formwork** platform and is stressed cooperatively with traction cable, so that the busket is supported in simple bearing mode, resulting in shorter platform, low counterforce of **hook** and dead weight of busket, as well as integrally demoulding the main girder and shortening the construction period.

27/28 © EPODOC / EPO

PN - **CN2559715Y** Y 20030709

PR - CN2002268768U 20020804

AP - CN2002268768U 20020804

DT - I

PA - XIAN SHOUSONG [CN]

TI - Constructional form fixing apparatus

AB - The utility model discloses a building **formwork** fixing device. The building **formwork** fixing device is provided with a long fixed **beam**; one end of the fixed **beam** is bent into a fixed **hook**; the fixed **beam** is sleeved with a sliding **hook**. By adopting the structure, when the **formwork** is fixed, the fixed **hook** and the sliding **hook** are adopted to clamp the **formwork**, thus saving time and effort.

28/28 © EPODOC / EPO

PN - **CN2517817Y** Y 20021023

PR - CN2001271832U 20011123

AP - CN2001271832U 20011123

DT - I

PA - JIA CHUNSEN [CN]

TI - Simple mould supporting drawbar clamp appts.

AB - The utility model discloses a simple **formwork** rod pulling clamp apparatus, which consists of a clamp apparatus rod, a clamp iron and a bolt. An L-shaped curve is forged at one end of the clamp apparatus rod as a clamp apparatus head, a bolt hole provided with a screw thread is arranged at the tail end of the other end of the clamp apparatus rod, the clamp iron is a rectangular solid provided with **hook**, a flat rectangular through hole is arranged in the middle of the clamp iron, the length of the flat rectangular through hole is slightly longer than that of the clamp apparatus rod, the width of the flat rectangular through hole is glidingly matched with that of the clamp apparatus rod, the flat rectangular through hole is sleeved with the clamp apparatus rod, thereby leading the **hook** side to face the clamp apparatus head, then the matched bolt is screwed in the bolt hole, to form an onset simple mold supporting rod pulling clamp apparatus. The utility model has the advantages that the structure is simple, the cost is low, the produce is easy, the use is convenient and the simple **formwork** rod pulling clamp apparatus can be used repeatedly and can be locked; as long as the upper end of the clamp iron is hit with **hook** by hammer, and the **hook** comes into the wood **beam** which is positioned on the back of the **formwork**, the loosening and the delayed buckling do not exist, the working time is saved, the 8# iron wire is saved, the market is wide, and the application is suitable to be popularized.

[SS 15] ..v

[EPODOC: SS 15] ..v

[EPODOC: SS 15]