Sept. 3, 1929. S. S. COLT 1,726,542

CLAMPING FORM CONCRETE APPARATUS

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Fig. 1

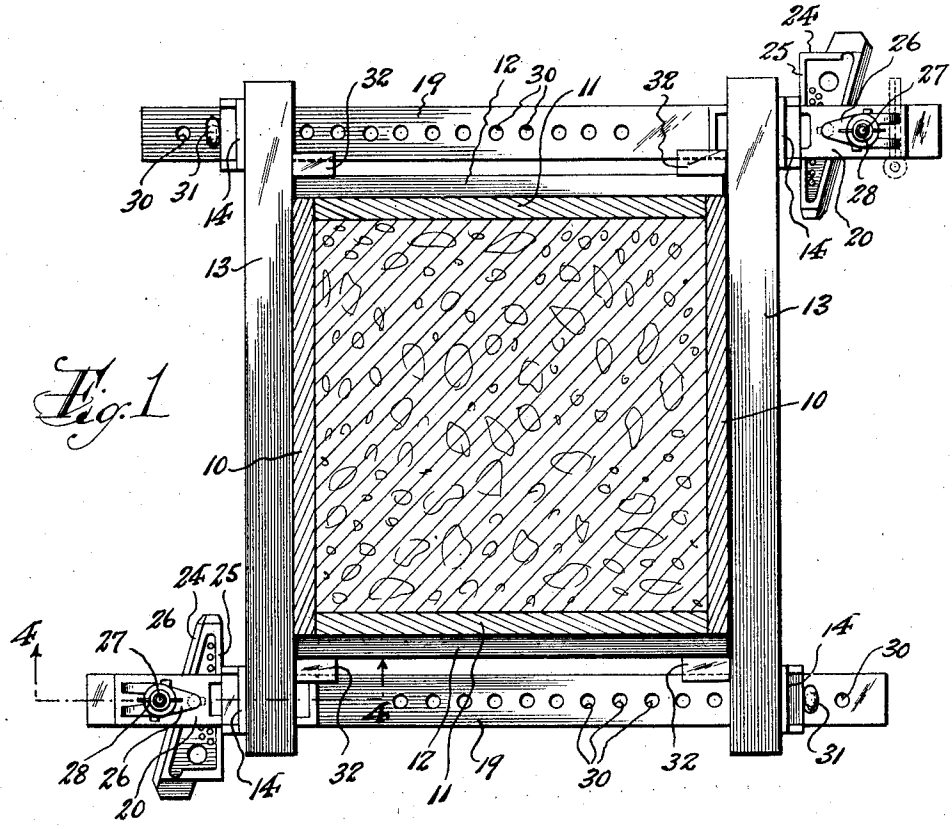
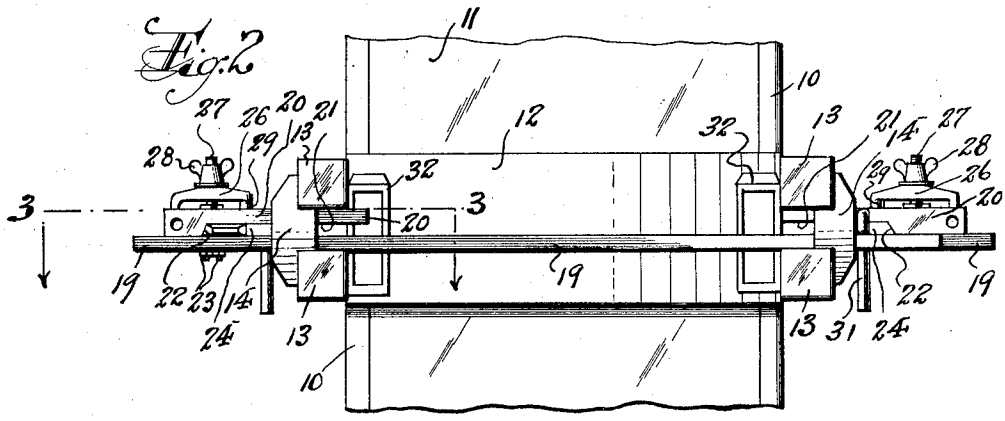


Fig. 2



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Fig. 3

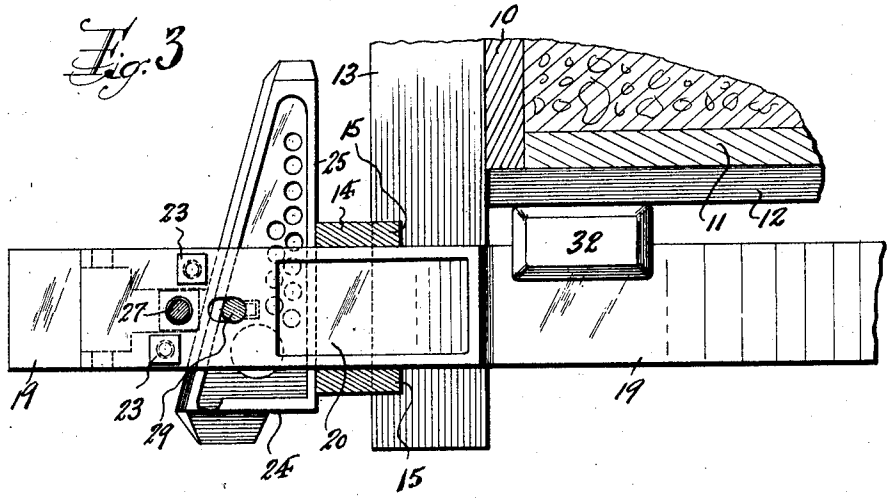


Fig. 4

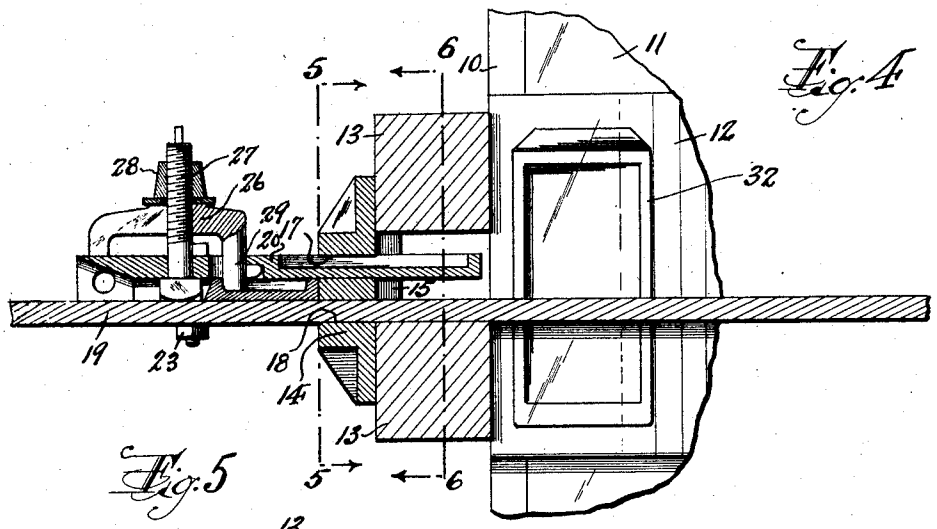


Fig. 5

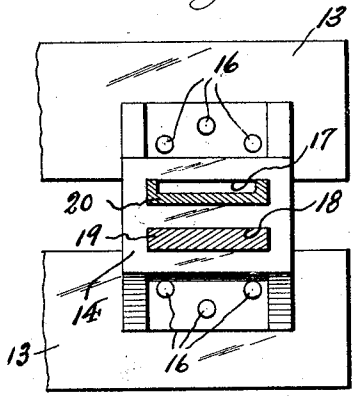
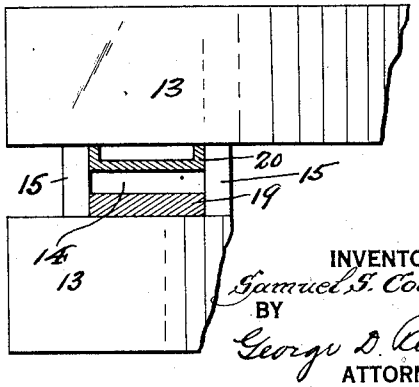


Fig. 6



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UNITED STATES PATENT OFFICE.

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CLAMPING-FORM CONCRETE APPARATUS.

Application filed July 11, 1928. Serial No. 291,854.

This invention relates to adjustable clamping devices for retaining the walls of concrete pouring forms in operative assembled relation.

The present invention has for its principal object to provide a novel construction and arrangement of concrete form clamping apparatus, the structure of which is so characterized that the stresses thereof are properly distributed and uniformly applied to the form walls. To this end the form clamping apparatus of this invention comprises a novel arrangement of clamping bars equipped with tightening wedge means, said clamping bars being used in combination with yoke frames having means to receive the clamping bars to hold the same in operative relation thereto.

The invention also has for an object to provide a simple arrangement in which but two clamping bars are required, since the same are so related to yoke members or frames as to efficiently distribute the holding strains uniformly along opposite sides of the form to which they are applied.

Other objects of the present invention, not at this time more particularly enumerated, will be clearly understood from the following detailed description of the same.

The present invention is illustrated in the accompanying drawings, in which:—

Figure 1 is a plan view showing the novel adjustable clamping apparatus of this invention operatively related to assembled form walls, the latter being shown in horizontal section; Figure 2 is a side elevation of the structure as arranged and shown in Figure 1; Figure 3 is a fragmentary horizontal section taken on line 3—3 in Figure 2, but drawn on an enlarged scale; Figure 4 is a fragmentary vertical section taken on line 4—4 in Figure 1; Figure 5 is a vertical transverse section taken on line 5—5 in Figure 4, and Figure 6 is also a vertical transverse section taken on line 6—6 in Figure 4.

Similar characters of reference are employed in the above described views to indicate corresponding parts.

Referring to the drawings, the reference character 10 indicates one set of form walls and 11 indicates the other set of form walls which are arranged at right angles to the walls 10 to extend intermediate the same, as shown more particularly in Figure 1; this arrangement of form walls is adapted to provide a mold or form of rectangular section, such as is employed in pouring concrete piers, columns and similar structures. The form walls 11 are preferably provided with transverse battens 12 at suitable intervals throughout their lengths.

The form clamping apparatus, according to the present invention, comprises yoke frames 13 consisting in parallel spaced bars or baulks of a length somewhat greater than the width of the form to which they are applied, whereby the same may be arranged to span or extend across the form walls 10 with their ends projecting beyond the corners of the form. Secured to the laterally adjacent ends of the yoke members 13 are clamping bar receiving and retaining plates 14. These receiving and retaining plates 14 span the spaced laterally adjacent ends of the yoke frame baulks, and are provided in connection with their inner faces with spacing lugs 15 which enter between said yoke frame baulks to retain the same in desired spaced apart relation. The ends of said plates 14, which overlap the outer faces of the yoke frame baulks, are perforated to receive fastening devices 16 for attaching the plates thereto. These fastening devices may be in the form of screws, nails, or any other suitable fastening device. Said receiving and retaining plates 14 are provided with a pair of transverse slots 17 and 18 through which portions of the clamping bar devices may be extended. Said slots conform in dimensions substantially to the thickness and width of the clamping bar parts.

When the yoke frames are disposed in place and in spanning relation to opposite sides of the form, clamping bar devices are assembled therewith so as to operatively engage the same. Each clamping bar device comprises a main body or stretcher bar 19, preferably made of metal, such as flat steel. Connected with one end portion of each stretcher bar 19, and in overlying parallel relation thereto, is a clip block 20 which is cut away at its under side to provide a transverse opening or passage 21 bounded at one or the outer end thereof by an abutment member 22, the latter having a footing on the face of the stretcher bar 19. Said clip block is rigidly secured to the stretcher bar 19 by bolts 23, or by any other suitable form of fastening means whereby the same is rigidly united to the stretcher bar.

Assembled with each stretcher bar, so as

to be transversely movable through the passage 21, in a position to impinge upon the abutment member 22, is a tightening wedge 24. In order to retain the wedge in non-separable and yet in operative movable relation to the stretcher bar with which it is associated, I provide in the upper face of the wedge body a countersunk cavity which forms keeper shoulders 25 extending around the periphery of the wedge.

Means associated with the clip block 20 and cooperative with the wedge 24 is provided for locking the wedge in any desired operative position to which it has been moved when utilized to lock up a form. This means comprises a gripper piece 26 adapted to be operated by a threaded bolt 27 and wing nut 28 carried by the clip block, so that its gripping stud 29 may be forced into holding engagement with the wedge at a point within the limits of the shoulders 25. Said gripper piece in construction and made of operation corresponds substantially to that disclosed by me in a previous application for U. S. Letters Patent filed on or about May 29, 1928, and bearing Serial No. 281,413.

The free end portion of each stretcher bar 19 is provided with a longitudinal row of spaced perforations 30.

When operatively assembling the clamping devices in connection with the yoke frames and disposed about a form, the latter are transversely disposed across opposite sides of the form, and thereupon a stretcher bar 19 is inserted through the slots of a receiving and retaining plate 14 of one yoke frame so that the tightening wedge abuts the outer face of said receiving and retaining plate, while the free end portion of the stretcher bar extends across the outer face of the adjacent form wall 11 to pass through a slot in the receiving and retaining plate of the laterally opposed yoke frame disposed on the opposite side of the form. A cotter pin 31, or other suitable holding device, is inserted through a perforation adjacent to the outer face of the last mentioned receiving and retaining plate, whereby the stretcher bar is held against withdrawal from its assembled relation to the yoke frames between which it is connected. In like manner a stretcher bar device is interengaged through the receiving and retaining plates at the longitudinally opposite ends of the yoke frames. When the parts have been thus assembled together the wedges 24 are driven home, thus tending to draw the yoke frames tightly against the sides of the form and in proper holding relation thereto, all in the manner clearly to be understood by an inspection of Figure 1 of the drawings.

If desired auxiliary wedge members 32 may be driven between the battens 12 of the form walls 11 and the adjacent stretcher bars, thus further aiding in tightening up and securely retaining the form walls against any possible displacement when concrete is poured into the form.

From the above description it will be apparent that the yoke-frames 13 will be uniformly drawn up tightly against opposite sides of the form under the longitudinal stresses exerted by the stretcher bars 19 and their tightening wedges. Furthermore, the provision of the slotted receiving and retaining plates 14 in connection with yoke frames 13 for the reception of the clamping bar devices not only assures the secure retention of the latter devices against accidental displacement from the yoke-frames, but also furnish a point of contact for the wedge members 24 whereby the pressure thereof may be efficiently received and transmitted to the yoke-frames.

It will be obvious that the novel form clamping apparatus according to this invention is comparatively simple, and of a kind adapted to permit of very rapid manipulation in the operations of both setting up or dismantling a form, while nevertheless being calculated to strongly and rigidly support the walls of a form, to which it is applied, against displacement, bulging or loosening during the operation of pouring concrete thereinto.

I am aware that many changes may be made in the general arrangements and combinations of the various devices and parts, as well as in the details of the construction of the same, without departing from the scope of this invention as described in the foregoing specification, and as defined in the appended claims. Hence, I do not limit my invention to the exact arrangements and combinations of the devices and parts as set forth in the foregoing specification, nor do I confine myself to the exact details of the construction of said parts as illustrated in the accompanying drawings.

I claim:—

1. In a form clamping apparatus, the combination with yoke frames to span opposite sides of a form, of clamping bar devices for interconnection between said yoke frames, slotted plates affixed to said yoke frames through which said clamping bar devices extend and by which the latter are retained against displacement, each clamping bar device having at one end thereof a transverse passage bounded by a wedge thrust abutment, a tightening wedge movable endwise through said passage and in impinging relation to said thrust abutment, said tightening wedge being free to thrust against the plate of an adjacent yoke frame, and the opposite end of each clamping bar device having detachable means to engage the plate of a laterally opposed yoke frame to transmit the tightening stresses of the connected clamping bar device thereto.

2. In a form clamping apparatus, the com-

bination with yoke frames to span opposite sides of a form of clamping bar devices for interconnection between said yoke frames, slotted plates affixed to said yoke frames through which said clamping bar devices extend and by which the latter are retained against displacement, each clamping bar device having at one end thereof a transverse passage bounded by a wedge thrust abutment, a tightening wedge movable endwise through said passage and in impinging relation to said thrust abutment, said tightening wedge being free to thrust against the plate of an adjacent yoke frame, and the opposite end of each clamping bar device having detachable means to engage the plate of a laterally opposed yoke-frame to transmit the tightening stresses of the connected clamping bar device thereto, said latter means comprising a removable pin, and said clamping bar device having in its free end portion a row of longitudinally spaced openings in which said pin may be selectively engaged.

3. A form clamping device as defined in claim 1, in which each clamping bar device is provided with manipulatable means to cooperate with its tightening wedge to lock the latter in operative tightened position.

4. A form clamping device as defined in claim 2, in which each clamping bar device is provided with manipulatable means to cooperate with its tightening wedge to lock the latter in operative tightened position.

5. In a form clamping apparatus as defined in claim 1, auxiliary wedge members for insertion between said clamping bar devices and the form walls laterally adjacent thereto.

In testimony, that I claim the invention set forth above I have hereunto set my hand this 7th day of July, 1928

SAMUEL S. COLT.