

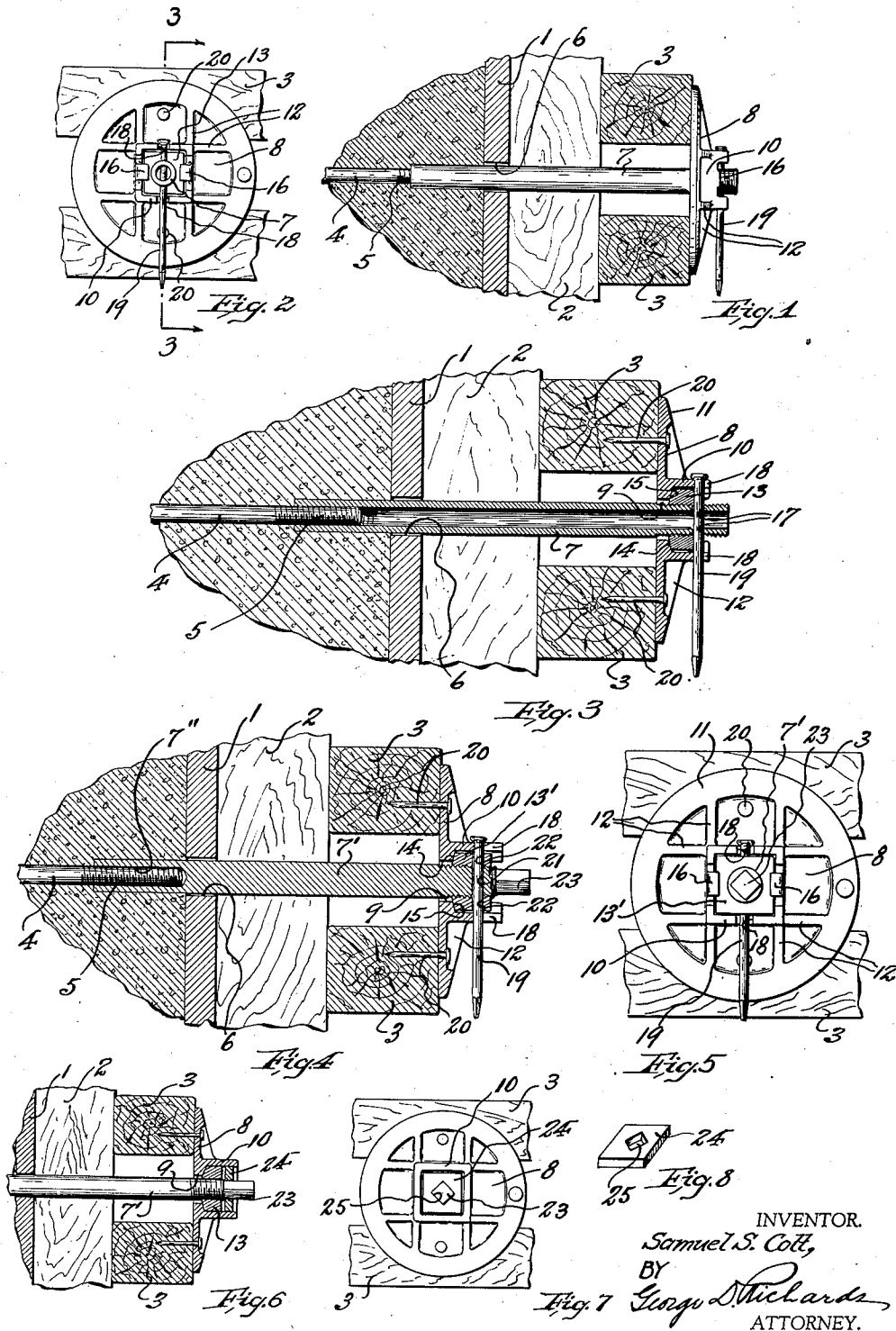
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FORM RETAINING MEANS

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FORM RETAINING MEANS

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This invention relates to improvements in concrete pouring forms, and more particularly to releasable means for holding form walls in erected positions subject to quick and easy dismounting of the latter for shifting and re-erection.

The invention has for its principal object to provide a very inexpensive and easily manipulatable releasable means for locking the form walls to supporting tie-rods; such means comprising an exterior bearing plate, a holding element to extend through said bearing plate and through the form wall, said holding element being internally threaded at its inner end to engage with an internal tie-rod and externally threaded at its outer end to receive a retaining nut, and said bearing plate having means to embrace said nut; means also being provided to interlock the bearing plate, holding element and nut in assembled relation subject to common rotatable manipulation.

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

Illustrative embodiments of this invention are shown in the accompanying drawing, in which:

Fig. 1 is a fragmentary vertical section through a form wall structure showing in side elevation the novel releasable means for holding a form wall in erected position; Fig. 2 is an external end elevation of the holding means; and Fig. 3 is a view similar to that shown in Fig. 1 but with the holding means in longitudinal section.

Fig. 4 is a view similar to that of Fig. 3, but showing a modified form of the holding means; and Fig. 5 shows an external end elevation of said modified form of holding means.

Fig. 6 is a fragmentary longitudinal sectional view of another modified form of the holding means; Fig. 7 is an external end elevation of the same; and Fig. 8 is a perspective view of a locking washer employed in connection with the same.

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

Referring to the drawing, reference character 1 indicates a wall of a concrete pouring form, having battens or uprights 2 applied to its outer face, and walers 3 extending transversely across said battens or uprights, said walers being arranged in pairs as shown. Ordinarily form wall structures thus constituted are arranged in transversely opposed spaced relation, with a tie-rod 4 arranged to extend intermediate the same. Ends of the tie-rod 4 adjacent the walls 1 are externally threaded, as at 5.

Cooperative with the tie-rod 4, so as to be releasable therefrom, is a holding means to ex-

tend from the exterior side of the form wall 1, through an opening 6 in the latter, to its engaged relation to tie-rod 4. In one form thereof, (as shown in Figs. 1 to 3 inclusive) said holding means comprises a tubular bar 7 of circular cross section, the same being internally screw threaded at its inner end portion to screw onto the tie-rod 4, and externally screw threaded at its outer end portion for purposes presently to be described.

Cooperative with the outer end portion of said holding means is a bearing plate 8 of any suitable peripheral shape, but preferably of the circular shape shown. Bearing plate 8 is provided with a central opening 9 through which said outer end portion of tubular bar 7 extends. Integrally formed with bearing plate 8 to project from its outer face and disposed symmetrically in surrounding relation to said central opening 9 is an outwardly open box or socket member 10 of polygonal cross-sectional shape. Bearing plate 8 is suitably reenforced by a thickened marginal rim 11, and by suitably disposed integral ribs or webs 12 extending between portions of said box or socket member and said rim 11. Engaged upon the externally screw-threaded end portion of tubular bar 7 is a nut 13 of polygonal shape corresponding to the polygonal internal shape of box or socket member 10 of bearing plate 8. Nut 13, as screwed onto tubular bar 7, is engaged or fitted into box or socket member 10 of bearing plate 8 so as to be surrounded and embraced thereby. Preferably the bottom 14 of nut 13 is of convex formation to seat itself on a conformably concave bottom 15 with which the bottom of said box or socket member 10 is provided. By this latter arrangement, bearing plate 8 is permitted to adjust itself to any irregularities of the walers 3 against which it is abutted without disturbing or straining the axially aligned relation of tubular bar 7 to tie-rod 4, when the latter parts are operatively connected together. In order to prevent outward displacement of nut 13 from its seated and embraced relation to box or socket member 10, certain walls of the latter are provided with clinching lugs 16 which are turned inwardly over the adjacent marginal portions of nut 13.

The outer extremity of tubular bar 7, which projects beyond the outer face of nut 13, when the latter is assembled in operative relation to said tubular bar 7 and to box or socket member 10 of bearing plate 8, is provided with a transverse or diametric opening 17. Certain of the opposed walls of said box or socket member 10 are provided in their outer margins with indented and aligned notches 18, to which said opening 17 of tubular bar 7 is in turn aligned. Arranged to extend through the mutually aligned notches 18 and bar opening 17 is a lock pin 19 or

similar device, which may, if desired, be constituted by a nail as shown. When said lock pin is in place, the same serves to interlock bearing plate 8, nut 13 and tubular rod 7 together in operative assembled relation, with said rod engaged or coupled to tie-rod 4 and bearing plate 8 abutting walers 3, so that form wall 1 is securely braced and held against outward displacement during the operation of casting concrete into the form. If desired, bearing plate 8 may be secured against rotation relative to the form structure by driving holding nails 20 through openings provided therein for the purpose, thus securing the plate to walers 3.

After the concrete is poured into the form, and has set sufficiently to warrant removal of the form wall 1, the wall holding means may be detached or released from operative engagement with tie-rod 4. Owing to the fact that the elements of the releasable holding means are interlocked together in the manner described, the holding means, under such circumstances may be manipulated as a unit. Preparatory to releasing manipulation, the plate fastening nails 20 are withdrawn, whereupon by applying a suitable wrench to the polygonal box or socket member 10, plate 8 may be turned. The turning movement of the plate is transmitted to bar 7 and nut 13 through the lock-pin 19, and consequently bar 7 may be turned to unscrew the same from tie-rod 4, and thereupon withdraw the inner end portion of bar 7 from the concrete. When form wall 1 is removed from the face of the concrete, the void or opening left by withdrawal of the inner end portions of bar 7, is filled and pointed up with cement. It will thus be seen that a very simple, inexpensive and easily manipulatable means is provided for union with an internal tie-rod to thereupon support and hold a form wall in place. If desired, the external surfaces of the inner end portion of bar 7 may be tapered toward its inner extremity, although this is not essential.

A modified form of the novel holding means is shown in Figs. 4 and 5, wherein the holding bar 7' is solid instead of tubular, and is provided at its inner end portion with an internally threaded end socket 7'' to receive the tie-rod 4. The outer end portion of holding bar 7' is externally threaded to receive the nut 13'. In this arrangement the nut 13' is engaged in the box or socket member 10 of the bearing plate 8, and both bar 7' and nut 13' are provided, respectively, with alignable transverse openings 21 and 22, through which lock pin 19, as embraced by the notches 18 of the box or socket member walls, may be passed. The extreme outer end portion of solid holding bar 7' is provided with a squared end portion 23, which may be utilized to receive turning application of a wrench if desired.

Another modified form of the holding means is shown in Figs. 6 and 7. In this form thereof the solid bar 7' is employed, but the transverse opening 21 is omitted. Likewise notches 18 in the box or socket member walls are also omitted, and instead of using a lock-pin 19 to interengage the elements together, a washer 24 having an external periphery to conform and fit into the interior of the bearing plate box or socket member 10, and having a central opening 25 which con-

forms to and receives the squared outer end portion 23 of bar 7'. When this washer 24 is mutually engaged to and between bearing plate box or socket member 10 and squared end 23 of 7' is used. When this washer 24 is mutually engaged to and between bearing plate box or socket member 10 and squared end of bar 17', it will be obvious that the bearing plate and bar will be interlocked together for unitary turning movement.

I am aware that some changes may be made in the above described constructions and that apparently different embodiments of this invention could be made without departing from the scope thereof; it is therefore intended that all matter contained in the above description and shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

I claim:—

1. Releasable form holding means for cooperation with a threaded interior tie-rod, comprising a holding bar to extend through a form wall and having an internally threaded inner end portion to engage said tie-rod, a perforate bearing plate to abut the exterior of the form wall structure and through which the exterior end portion of said holding bar extends, an outwardly open socket-member integral with said bearing plate, said socket-member being of polygonal cross-sectional shape symmetrically aligned relative to the holding bar as passed through said bearing plate, said holding bar being externally screw threaded, a nut screwed onto said holding bar, said nut being seated in and embraced by said socket member, and means transversely engaged through said socket member and holding bar to interlock the same against relative rotative movement.

2. Releasable form holding means for cooperation with a threaded interior tie-rod, comprising a holding bar to extend through a form wall and having an internally threaded inner end portion to engage said tie-rod, a perforate bearing plate to abut the exterior of the form wall structure and through which the exterior end portion of said holding bar extends, an outwardly open socket-member integral with said bearing plate, said socket-member being of polygonal cross-sectional shape symmetrically aligned relative to the holding bar as passed through said bearing plate, said holding bar being externally screw threaded, a nut screwed onto said holding bar, said nut being seated in and embraced by said socket member, opposite side walls of said socket member having inwardly indented notches, said holding bar having a transverse opening alignable with said notches, and a lock pin engaged through said notches and opening.

3. In form holding means as defined in claim 1, said nut having a convex inner face and said socket member having a concave bottom wall conformable to said nut face to permit selected angular disposition of said holding bar relative to said bearing plate.

4. In a form holding means as defined in claim 2, said nut having a convex inner face and said socket member having a concave bottom wall conformable to said nut face to permit selected angular disposition of said holding bar relative to said bearing plate.

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