March 6, 1934. MacGREGOR S. ANDERSON 1,950,018

FORM TIE

Filed June 11, 1932

Fig. 1.

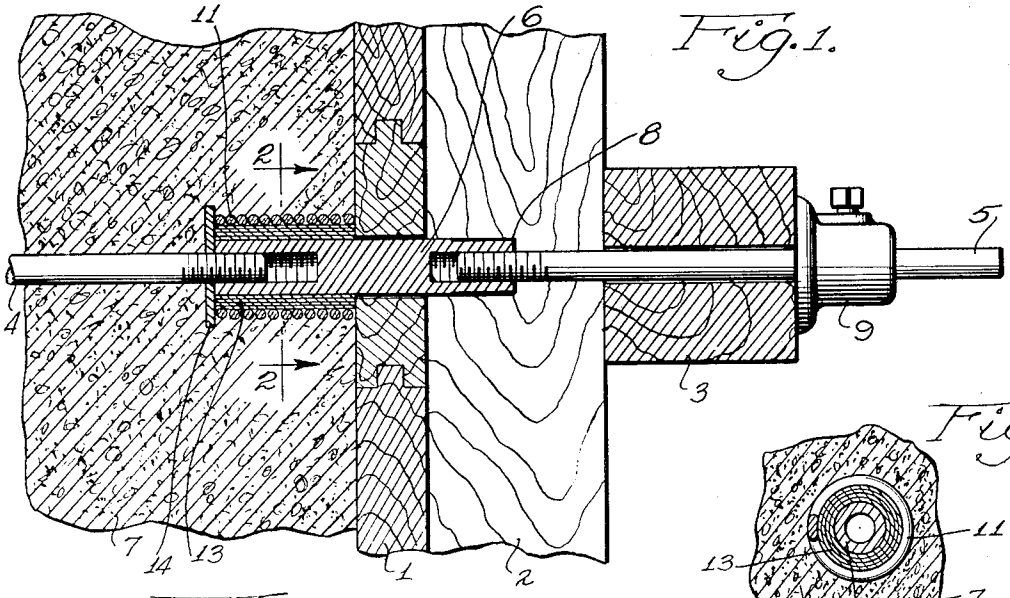


Fig. 2.

Fig. 3.

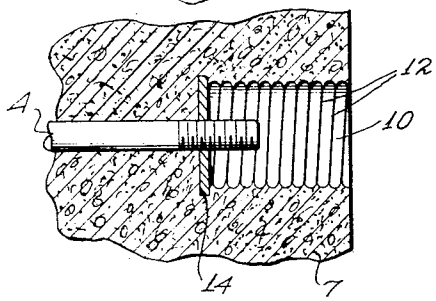


Fig. 4.

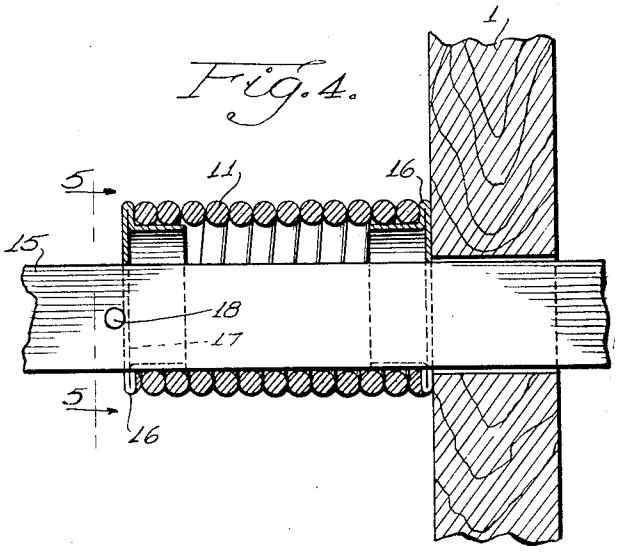
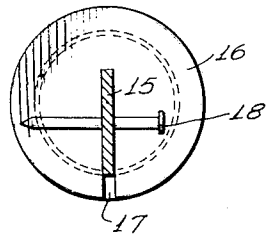


Fig. 5.



Witnesses
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Patented Mar. 6, 1934

1,950,018

UNITED STATES PATENT OFFICE

1,950,018

FORM TIE

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Application June 11, 1932, Serial No. 616,633

2 Claims. (Cl. 25—131)

This invention relates to form clamps for use in connection with the forms employed in the construction of concrete walls.

Concrete walls are usually constructed in wooden forms which are held in place by form ties. One type of form tie consists of a single piece of flat metal band which extends through the form and which is provided with suitable clamps on its ends for engaging the outer faces of the form. With this type of tie, after the concrete has set and the form sides are dismantled, the projecting ends of the tie bands are cut off and the central portions remain embedded in the concrete.

Another type of form tie in common use comprises an intermediate tie rod and a pair of end bolts alined axially and connected together by couplings of various kinds. With this type of tie, the intermediate rod is left embedded in the concrete and the end bolts are removed when the form is dismantled.

With both types of form tie, no part of the embedded metal should be exposed when the wall is finished because, if any of the metal is exposed, it will rust and may stain the outer faces of the wall. For this reason, form ties are usually provided with removable core members adapted to form sockets in the outer faces of the wall, which may be plugged with concrete for concealing the embedded metal parts after the cores are removed.

In order to permit withdrawal of the cores after the concrete hardened, the cores heretofore in use were of conical shape, as illustrated in Lampert Patent No. 1,850,402, issued March 22, 1932.

The conical core is not entirely satisfactory because it molds a conical socket and such a socket has no mechanical bond which will prevent loosening of the plug.

The main objects of this invention are to provide an improved form of core which will mold a socket having a mechanical bond for positively securing the concrete plug against removal; to provide improved means for securing the core and tie against relative axial movement; and to provide a core which can be readily removed from the concrete.

Illustrative embodiments of the invention are shown in the accompanying drawing wherein:

Figure 1 is a fragmentary transverse vertical section of a wall form, showing an improved core applied to a form tie of the rod type.

Fig. 2 is a section, taken on the line 2—2 of Fig. 1.

Fig. 3 is a fragmentary section of the finished wall, showing the socket as it appears after removal of the core and before insertion of the plug.

Fig. 4 is a fragmentary section showing the core applied to a tie of the band type.

Fig. 5 is a transverse section taken on the line 5—5 of Fig. 4.

In the construction shown, the tie is applied to a wall form comprising the usual form sides 1, studs 2, and battens 3. Only one side of the form has been shown, but it is to be understood that both sides of a wall form are usually substantially alike.

Both ends of the form ties are also usually identical, but only one end of each tie has been shown in the drawing.

In the form shown in Figs. 1, 2 and 3, the tie comprises an intermediate tie rod 4 and a pair of axially alined end bolts 5 detachably secured together by suitable couplings 6. The intermediate rod 4 is of less width than the form and is intended to remain embedded in the concrete wall 7 after the form is dismantled. The couplings 6 have polygonal heads 8 for the application of a wrench to effect removal of the couplings in dismantling the forms.

The ends of the tie may be provided with any suitable clamp for engaging the outer faces of the battens 3. The clamp 9 illustrated in Fig. 1 is similar to that shown in Lampert Patent No. 1,171,525, issued February 15, 1916.

Embracing the inner end of each coupling, is an improved form of hollow removable core which is adapted to mold a socket 10 in the concrete at each end of the intermediate tie rod 4, as shown in Fig. 3. After the form is dismantled, these sockets are plugged with concrete for concealing the embedded rods.

In the forms shown in Figs. 1, 2, 3 and 4, the improved core comprises a closely wound wire helix 11, which is adapted to mold ridges 12 in the sockets 10. These ridges form mechanical bonds which positively secure the concrete plugs against removal.

With any type of wire helix, when the helix is extended longitudinally, it collapses or decreases in thickness. This permits the improved cores to be readily removed after the concrete has hardened.

In the form shown in Figs. 1 and 2, the core is provided with a bushing 13 of paper or other suitable material. The core is secured against inward movement by a washer 14 which is threaded on the intermediate rod 4.

In Figs. 4 and 5, the improved core is applied

to a tie 15 of the band type. In this construction, the wire core is mounted on a pair of collars 16 having slots 17 for receiving the tie band. One of these collars bears against one of the form sides, and the other collar engages a nail 18 which is driven through the tie band for securing the core against inward movement. The collars 16 are usually applied to the band and cores after the cores have been placed on the band.

In operation, after the concrete wall has hardened, the form is dismantled. With the tie shown in Fig. 1, the end bolts and couplings are removed at the time the form is dismantled.

After the form is dismantled, the bushings 13 are removed. With the type shown in Fig. 4, the outer collars 16 are removed. The core may then be removed by grasping its outer end with a pair of pliers or other suitable tool. When the wire core is drawn outwardly, it becomes extended and, through its extension, it collapses so as to clear the ridges 12. After removal of the cores, if band ties are used as in Fig. 4, the ends of the bands are cut off within the sockets 10.

The sockets 10 are finally plugged with concrete so as to completely conceal all of the embedded metal parts.

It will be understood that details of the constructions shown may be altered or omitted without departing from the spirit of the invention as defined by the following claims:

I claim:

1. A device of the class described for molding concrete comprising a collapsible hollow core, a hollow removable bushing within said core, a tie rod extending through said bushing, and means on said tie rod for limiting the inward movement of said bushing axially of said tie rod.

2. A device of the class described for use in molding concrete comprising a hollow core adapted to be attenuated by the longitudinal extension thereof, a form tie extending axially therethrough, a removable bushing embracing said tie for spacing said core from said tie, and a shoulder on said tie rod to limit the inward axial movement of said core and bushing relative to said rod.

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