Jan. 28, 1936. MacGREGOR S. ANDERSON 2,029,147

CORE FOR MOLDING CONCRETE

Filed May 21, 1934

Fig. 1.

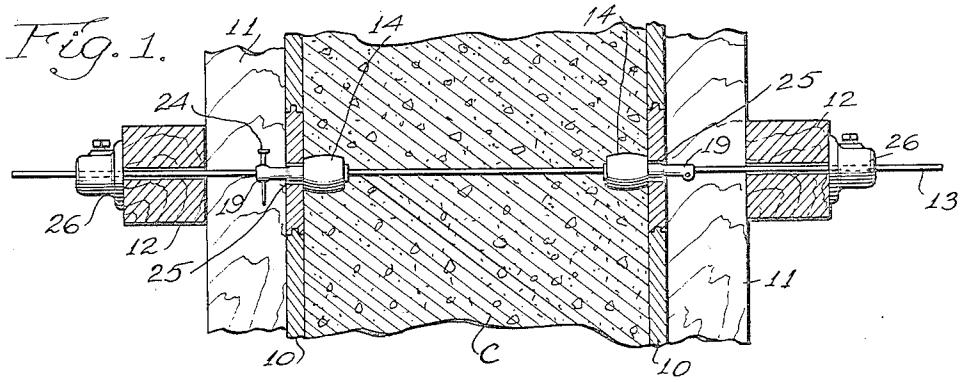


Fig. 2.

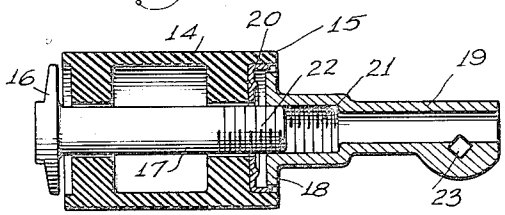


Fig. 5.

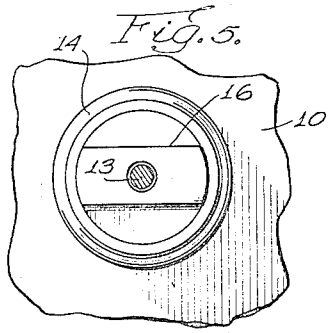


Fig. 3.

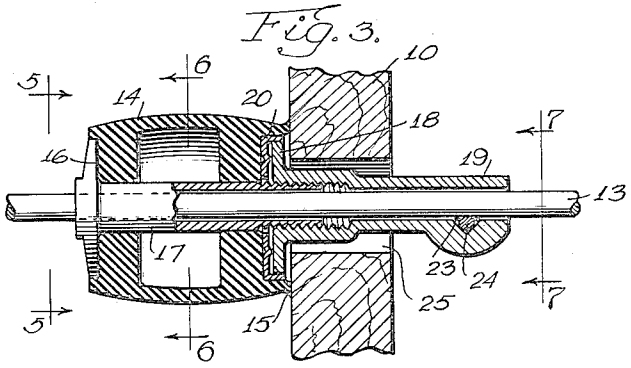


Fig. 6.

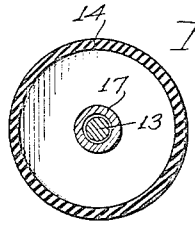


Fig. 7.

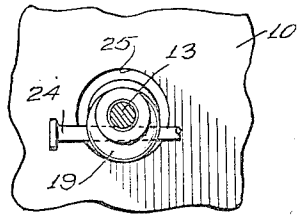
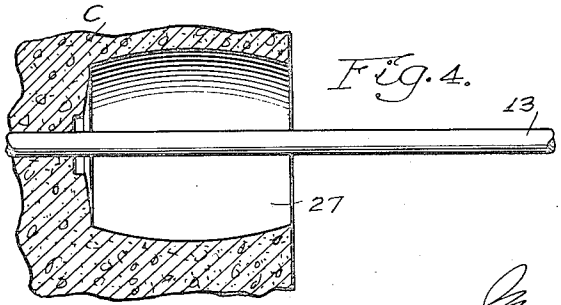


Fig. 4.



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Patented Jan. 28, 1936 2,029,147

UNITED STATES PATENT OFFICE

2,029,147

CORE FOR MOLDING CONCRETE

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Application May 21, 1934, Serial No. 726,639

4 Claims. (Cl. 25—131)

This invention relates to form ties for use in connection with the forms employed in the construction of concrete walls, and has reference more particularly to cores for molding sockets in the sides of the wall around the tie-rods, which sockets are later filled with concrete plugs.

Concrete walls are usually constructed in wooden forms which are held rigidly in place against spreading and inward displacement by form ties.

One type of form tie consists of a single piece of flat metal band or round rod which extends through the form and which is provided with clamps on its ends for engaging the outer faces of the form. With this type, after the concrete has set and the form sides are dismantled, the projecting ends of the tie bands are cut off and the central portion of each band remains embedded in the concrete.

Another type of form tie in common use comprises an intermediate tie rod and a pair of end bolts aligned 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 such type of tie, it is necessary to carry in stock a large number of the intermediate tie rods of different lengths because the walls vary greatly in thickness.

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 have been removed and the ends of the ties have been cut off or otherwise removed. One type of removable core is described in Letters Patent No. 1,950,018 issued March 6, 1934, to my assignee, Universal Form Clamp Co.

Many of the cores heretofore in use were of conical shape. Such cores are not entirely satisfactory because they mold conical sockets from which the plugs of concrete are easily removed.

To be successful, the core members should be shaped so that the concrete surrounding the socket formed by the core will have a mechanical bond with the plug to prevent loosening or falling out of the plug.

The main objects of this invention are to provide an improved form of core which will mold a socket with which the inserted plug may have a mechanical bond so as to positively secure the plug against withdrawal; to provide a core of this kind which can be easily removed from the concrete when the form is dismantled and which may be used many times over; to provide improved means for detachably securing the core on the tie rod, and to provide an improved form tie of this kind which can be readily assembled on the form even by unskilled labor.

An illustrative embodiment of this invention is shown in the accompanying drawing wherein:—

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

Fig. 2 is a longitudinal axial section of the core and core spreader.

Fig. 3 is a longitudinal axial section of the core and spreader, showing the same applied to a wall of the form and the core expanded or spread.

Fig. 4 is a fragmentary section of the socket in the concrete wall from which the core and spreader have been withdrawn.

Fig. 5 is an end elevation of the parts shown in Fig. 3, viewed on the line 5—5 of Fig. 3.

Fig. 6 is a section on the line 6—6 of Fig. 3.

Fig. 7 is an end elevation of the parts shown in Fig. 3, viewed on the line 7—7 of Fig. 3.

In the construction shown, the improved tie is applied to a wall form comprising the usual form sheathing 10, studs 11, and wales 12. Since both ends of the form ties are or may be substantially identical, a description of one will suffice for both.

The tie comprises a tie rod 13 which, it will be noted, is of a length sufficient to extend entirely across the form, with its ends projecting slightly beyond the outer sides of the wales 12. 14 designates the core member or insert, the purpose of which is to mold a recess or socket in the side of the concrete wall C, which recess or socket is later to be filled by a concrete plug to cover and conceal the portion of the tie rod that is allowed to remain in the concrete. In the form herein shown, this core member 14 consists of a hollow rubber cylinder that is axially bored for mounting on the tie rod 13. When such a cylinder is compressed endwise, its intermediate portion will spread or expand, converting the cylinder into a general barrel-shape, as shown in Fig. 3. Both ends of the core are preferably countersunk, as shown, thereby producing on one end of the cylinder an annular flange 15 which functions as a seal in association with a sheathing wall 10 of the form in the manner and for a purpose later described.

16 designates an inner clamp member that is formed with a tubular shank 17 slidable on the tie rod 13, the clamp head 16 fitting a correspondingly shaped countersink in the inner end of the core. 18 designates a cooperating clamp plate that is likewise formed with a hollow shank 19 slidably mounted on the tie rod 13, the clamp head 18 entering a shallow cup-shaped washer 20 that fits the countersink in the outer end of the core, its periphery constituting a support for the flange 15 to prevent inward collapse of the latter under compression. As shown in Figs. 2 and 3, the shank 19 is internally threaded at 21 to receive a correspondingly threaded end 22 of the shank 17, so that, under relative rotation of the two clamps, they may be drawn together thereby exerting endwise compression on the elastic core 14 causing the latter to spread or bulge radially in the manner clearly shown in Fig. 3.

In a thickened outer end portion of the shank 19 is formed a transverse hole 23 adapted to receive a cut nail 24 by which the shank 19 and its clamp plate 18 may be fastened to the tie rod 13.

In the practical use of the device, holes 25 slightly larger than the shank 19 are drilled through the sheathing 10, the tie rod 13 is started through the same, and the two previously compressed and expanded cores 14 are slipped on the rod inside the form. The shanks 19 are brought through the sheathing 10 and fastened to the tie rod by the cut nails 24. The rod clamps 26 (Fig. 1) are applied to the projecting ends of the tie rod, and, before the concrete is poured, the cores are pressed tightly against the sheathing to compress the flange 15 and thus form a seal to prevent grout seepage. This may be done either by giving the core one or two turns by hand, or by applying clamps outside the wales 12 and thus tightly drawing the side walls 10 of the form against the flanges 15 of the cores.

When the forms have been removed, the shank 19 is given a few backward turns, which releases the compression on the core cylinder, and the latter automatically returns to its original cylindrical shape (Fig. 2), so that it can be readily withdrawn from the cavity 27 (Fig. 4) formed thereby, ready for an almost unlimited number of re-uses. It may here be noted that there is practically no bond between concrete and rubber.

The rod 13 is then cut off by a suitable tool at or near the inner end of the cavity 27, and the latter is then filled with grout, the bulging or barrel-shaped recess mechanically retaining the plug.

It will be understood that structural details shown and described 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 form tie rod, a radially expansible and endwise compressible core of resilient material mounted on said tie rod, and means for compressing said core endwise comprising clamp plates engaging the ends of said core and provided with relatively rotatable shank portions having threaded engagement with each other, one of said shank portions extending through said core.

2. A device of the class described for molding concrete, comprising a form tie rod, a radially expansible and endwise compressible core of resilient material mounted on said tie rod, and means for compressing said core endwise comprising clamp plates engaging the ends of said core and provided with relatively rotatable hollow shank portions mounted on said tie rod and having threaded engagement with each other.

3. A device of the class described for molding concrete, comprising a form tie rod, a cylindrical resilient rubber core formed with an annular flange on one end thereof and mounted on said tie rod, clamp plates engaged with the ends of said core and provided with relatively rotatable hollow shank portions mounted on the tie rod and having threaded engagement with each other, and means associated with one of said shank portions for fastening the latter to said tie rod.

4. A device of the class described for molding concrete, comprising a form tie rod, a cylindrical resilient rubber core formed with an annular flange on one end thereof and mounted on said tie rod, clamp plates engaged with the ends of said core and provided with relatively rotatable hollow shank portions mounted on said tie rod and having threaded engagement with each other, and a nail extending across one of said shank portions in fastening engagement with said tie rod.

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