June 13, 1939. T. C. SCHENK 2,162,592

FORM TIE

Filed Dec. 18, 1937

Fig. 1.

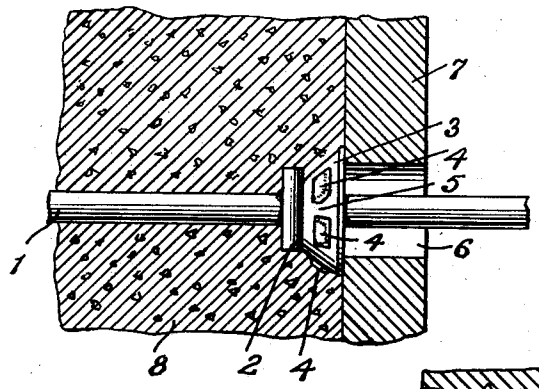


Fig. 2.

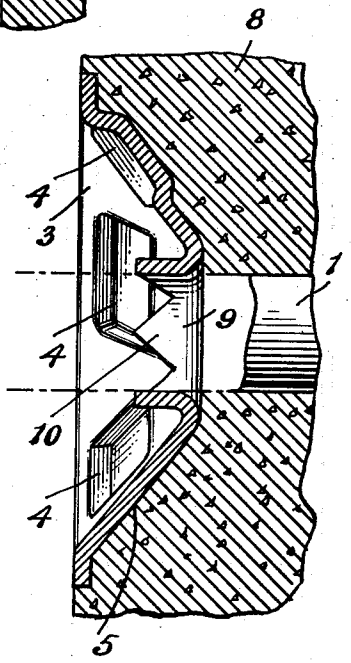
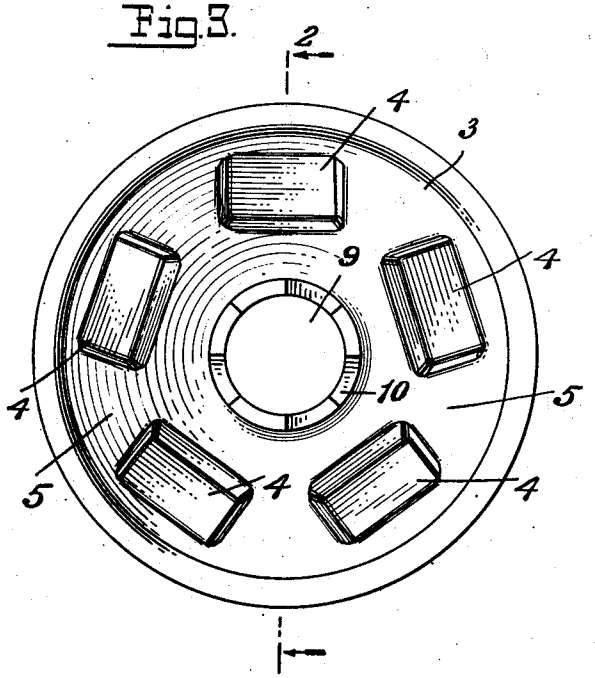


Fig. 3.



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FORM TIE

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1 Claim. (Cl. 25—131)

This invention relates to form ties for concrete construction, and has for its object to provide a simple form tie, cheap to construct, easy to use and entirely satisfactory in service.

More particularly, the invention comprises a form tie of the kind which is made from a metal rod and adapted to be broken off at weakened points located within the concrete structure after the wall has been poured and partly hardened. Such form ties usually employ spaced washers, disks or cones to maintain the form boards in properly spaced relationship. When the wall has partly hardened and the projecting ends of the tie rods have been broken off, these spacing washers or disks, which are located at the wall surface, are removed and they leave a recess in the face of the wall, which recesses have to be filled or "pointed" with concrete. In order to facilitate the removal of these washers or disks from the ends of the rod and out of the concrete structure, the washers or disks are usually made in conical form, with the end portion of the conical washers of greatest diameter located at the surface of the concrete structure. The conical surfaces of these washers as conventionally made, are smooth and undeformed and thus, when a washer is removed from the concrete structure, it leaves a conical recess provided with a very smooth interior surface. It therefore very often occurs that after these recesses have been filled or "pointed" with concrete, the smoothness of the walls of the recesses prevents the concrete thrust into the recesses from making a satisfactory bond and it therefore falls out. Thus, in order that the pointing concrete material may properly remain in and close the recess, the interiors of these recesses often have to be manually roughened before concrete placed in the recess will bond with the walls thereof and close the recess.

The object therefore, of this invention is to provide a tie rod having an improved form of disk or conical washer, found satisfactory because of its easy removal from the concrete structure, and provided with a concrete-contacting surface of an irregular, deformed formation whereby the walls of the recess formed in the concrete when such a disk or washer is removed will conform to such irregular or deformed surface of the disk and will permit the very satisfactory adherence or bonding of the pointing concrete with that of the poured structure.

In the accompanying drawing, forming a part hereof, Fig. 1 is a sectional view showing a portion of a form tie on which a spacing disk, made in accordance with the invention, is located; Fig. 2 is a sectional view through the disk, the view being taken on the line 2—2 of Fig. 3, looking in the direction of the arrows; and Fig. 3 is a rear view of one of the disks.

In the drawing 1 indicates a tie rod, which in concrete form construction, extends between the spaced-apart form boards, the boards at one side of the wall to be formed being held in proper spaced relationship from those at the opposite side, by two spacing members or disks 3 on the rod, the two disks on each rod being maintained the proper distance apart by stops comprising the cross members 2, which are short sections of rod secured to the tie rod 1 by being welded thereto or by any equivalent means. These stops also prevent rotation of the tie rod 1 in the poured wall structure 8.

The form boards at one side of the wall structure are indicated at 7, the same being apertured as at 6 to permit the passage of the rod 1. The disk 3 has its end of largest diameter bearing against the inner face of the form boards 7 which are held against said disk by suitable wedge members or other equivalent means not shown and forming no part of the present invention.

When the concrete is poured between the form boards, it surrounds the part of the rod 1 which connects the form boards, that portion of the rod also carrying the stop members 2 and the disks 3. When the poured concrete has hardened sufficiently, the form boards are removed and the portions of the rod 1 which project outwardly from the opposite faces of the wall are broken off within the wall structure at the points where the stops 2 are secured to the rod. The disks 3 at the opposite faces of the wall are now easily removable, leaving a shallow, conical recess in the wall where each disk is removed. These recesses are now filled or "pointed" manually with concrete.

The novel type of spacing disk employed for the purpose described, is more clearly shown at 3 in Figs. 2 and 3. It consists of a dished, circular disk of conical formation, preferably, although not necessarily, stamped from heavy sheet metal and formed with a central aperture 9 through which the rod 1 extends. In forming the central aperture 9 the metal forced from said aperture is projected rearwardly to form the boss-like flange 10 and thus increase the effective depth of the opening 10 and not only strengthen the same, but prevent inclination of the disk while it is on the rod 1.

The convex face of the disk is formed with a

plurality of spaced, outwardly extended projections 4, the effect of these projections being to form the depressed areas 5 between them. Thus, by the formation of these projections, the convex face of the disk is made irregular or deformed and accordingly, this irregular or deformed face of the disk will form the concrete poured around it, with a complementary recess, the surface of which will be irregular in conformity with the convex face of the disk. Such irregular face of the recess left in the wall structure when one of these disks is removed, will provide a good bonding surface for the patching concrete inserted in said recess to close the same.

The conical formation of the disk 3 is such as to permit the easy removal of the disk from the surface of the concrete wall structure, and the formation of the projections 4 is such that these parts do not cause the disks to lock in the recess formed by the disk, but permit easy removal of the same.

While a certain definite form of disk and projections thereon is shown in the drawing, it will be understood that the invention is not to be limited thereto, but is broad enough to cover all structures coming within the scope of the annexed claim.

What I claim is:

A form tie comprising a rod upon which a form board spacing disk is located, said disk being of shallow concavo-convex formation and being composed of sheet metal having a conical concrete-contacting face provided with a plurality of spaced projections pressed out of the body of the disk, and formed at its larger end with a radially projecting flat marginal flange, the opposite or smaller end of the conical disk having a central aperture through which the rod extends, said aperture being surrounded by metal forced from the aperture and directed toward the concave side of the disk to form a boss-like flange fitting around the rod, the projections on the disk being wholly located between the marginal flange on the disk and the aperture and having closed ends spaced from the said flange and aperture respectively, whereby a plurality of spaced recesses or pockets free from communication with either the inner or outer ends of the depression formed in the wall will be produced in said depression for the reception of pointing concrete.

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