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G. W. HOFFER

2,074,394

FORM TIE

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Fig. 1.

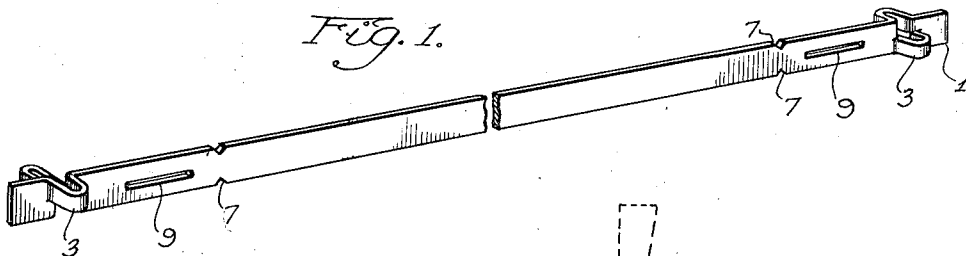


Fig. 2.

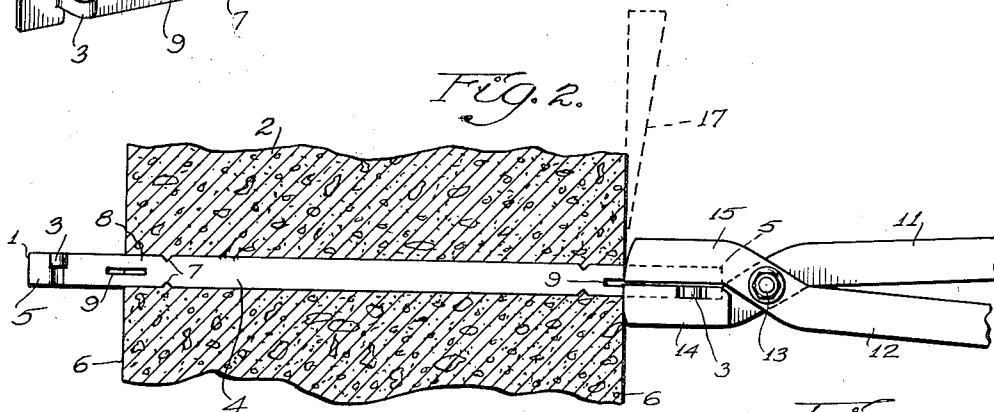


Fig. 3.

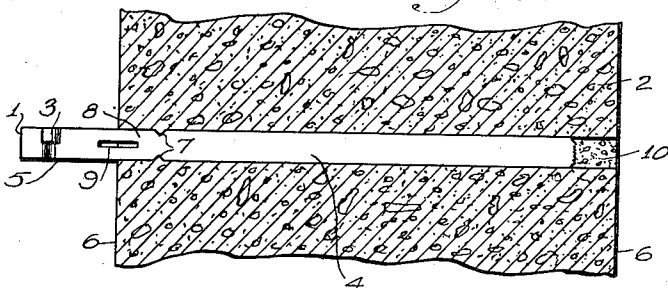


Fig. 4.



Fig. 5.

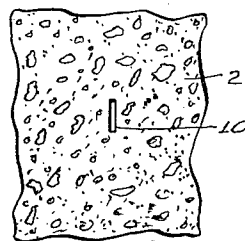


Fig. 6.

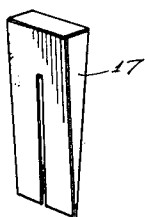
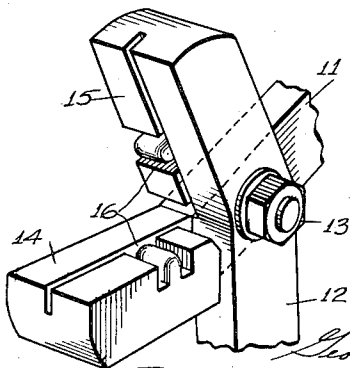


Fig. 7.



Witnesses

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UNITED STATES PATENT OFFICE

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FORM TIE

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3 Claims. (Cl. 25—131)

This invention relates to form ties for use in concrete construction work.

Concrete walls and the like are usually constructed in forms which are temporarily held in place by form ties extending through the body of concrete so that, after the concrete has set and the forms are dismantled, the ties remain embedded in the concrete with their ends projecting beyond the outer faces of the wall or other structure. These unsightly projections are usually cut off and, in order to present a smooth finished appearance, these projecting ends are severed from the tie at a point within the concrete body. This is known as "cutting back" the tie. In order to do this with ties heretofore in use, it was necessary to chip a hole in the concrete surrounding the end of the tie which hole was subsequently filled with grout. Such chipping of the concrete, cutting back of the ties, and subsequent grouting was costly, both in the time consumed and in the grout used.

The main objects of this invention are to provide a form tie of the band type having an improved construction which will permit the ends thereof to be severed therefrom at a point within the concrete body and which will leave a hole to be grouted of substantially no greater cross section than the tie.

An illustrative embodiment of this invention is shown in the accompanying drawing wherein, Figure 1 is a perspective view partly broken away of a form tie to which this invention is applied.

Figure 2 is a fragmentary section of a body of concrete showing one of the improved ties embedded therein after the form has been dismantled; one of the projecting ends of the tie being gripped by the tool for flexing the end to sever the band at the notched section; the wedge which is dropped into place between the face of the concrete and the tool being shown in dotted outline.

Figure 3 is a view similar to Figure 2 but showing the tie after one of the projecting ends has been broken off.

Figure 4 is a side elevation of one of the ends of the tie after it has been severed, showing how the slotted portion has been contracted edgewise to permit flexing of the band within the set concrete.

Figure 5 is a fragmentary front elevation of the concrete showing the small hole which is grouted after the end of the tie is removed.

Figure 6 is a perspective view of the wedge

which is inserted between the face of the concrete and the tool.

Figure 7 is an enlarged perspective of the jaws of the bending tool.

In the construction herein shown, the improved ties 1 are used in the construction of a vertical concrete wall 2.

The improved tie is preferably made of band iron and its ends may be provided with any of the usual fastening means for attachment to the temporary forms. In the construction illustrated, portions of the tie are struck out to provide projecting dowels 3 adjacent each end thereof for attachment to form panels of the type shown in Patent No. 1,970,547, issued August 21, 1934.

As shown in Figures 2 and 3, after the concrete has set and the forms are dismantled, the body portion 4 of the tie is embedded in the concrete and the ends 5 thereof project beyond the side faces 6 of the wall.

Formed in the edges of the band iron, are two pairs of oppositely disposed notches 7 which are positioned so as to be located a short distance inwardly from the faces 6. This distance may vary, but very satisfactory results have been obtained with a spacing of one inch. The notches 7 weaken the band at these points so that, when the projecting ends 5 are flexed in a vertical plane, the band breaks at the notched sections, as shown in Figs. 3 and 4.

In order to flex the notched section sufficiently to break the band, it is essential that the section 8 of the band between the notches and the face 6 be permitted to move in the concrete. In order to permit this flexing without chipping away some of the surrounding concrete, a longitudinally extending slot 9 is formed in the section 8 and this slot extends from a point beyond the notches 7 into the end 5.

By tightly grasping the projecting end 5 and moving it up and down in the plane of the band, the stretching of the band and also the pressure of the concrete against the upper and lower edges of the sections 8 contracts the band by forcing the metal into the slot 9 as shown in Fig. 4. This permits the section 8 to freely move up and down within the hole 10 until the band is broken at the notches. The projecting end is then withdrawn and the small hole 10 is grouted.

A suitable tool for use with this type of tie is illustrated in Figs. 2 and 7. It comprises a pair of arms 11 and 12 pivoted together at 13 and having jaws 14 and 15, respectively, which are recessed, as shown at 16, to accommodate the pro-

jecting end of the tie. A wedge 17 may straddle the tie between the tool and the face 6 of the concrete to serve as a bearing plate.

Although but one specific embodiment of this invention has been herein shown and described, it will be understood that details of the construction shown may be altered without departing from the spirit of the invention as defined by the following claims:

10 I claim:

1. A concrete form tie comprising a metal band having a body portion adapted to be embedded in the concrete and an end portion adapted to project beyond the surface of the concrete for attachment to the form, said body portion having a weakened section located inwardly of said concrete surface to facilitate breakage by flexing at said weakened section, and said band having a longitudinal slot extending from a point beyond said weakened section across said surface and into said end portion.

2. A concrete form tie comprising a metal band having a body portion adapted to be embedded in

the concrete and an end portion adapted to project beyond the surface of the concrete for attachment to the form, said body portion having a notch in one edge thereof located inwardly of said concrete surface to facilitate breakage by flexing in the transverse plane of said notch, and said band having a central longitudinal slot extending from a point beyond said notch across said surface and into said end portion.

3. A concrete form tie comprising a metal band having a body portion adapted to be embedded in the concrete and an end portion adapted to project beyond the surface of the concrete for attachment to the form, said body portion having a pair of oppositely disposed notches in the respective longitudinal edges thereof located inwardly of said concrete surface to facilitate breakage by flexing in the transverse plane of said notches, and said band having a central longitudinal slot extending from a point beyond said notches across said surface and into said end portion.

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