

March 31, 1970

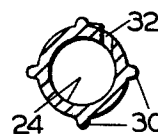
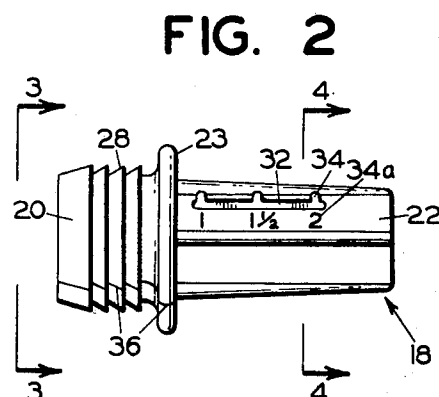
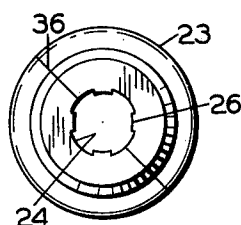
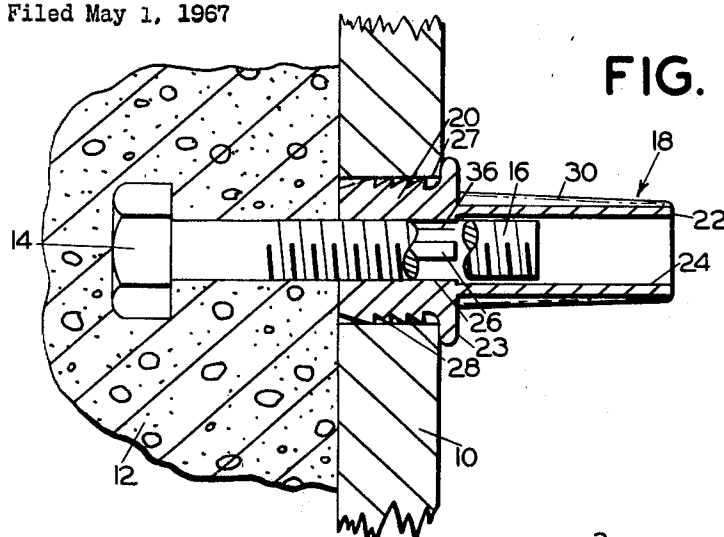
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3,503,584

ANCHOR STUD HOLDING ASSEMBLY FOR CONCRETE FORMS

Filed May 1, 1967

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

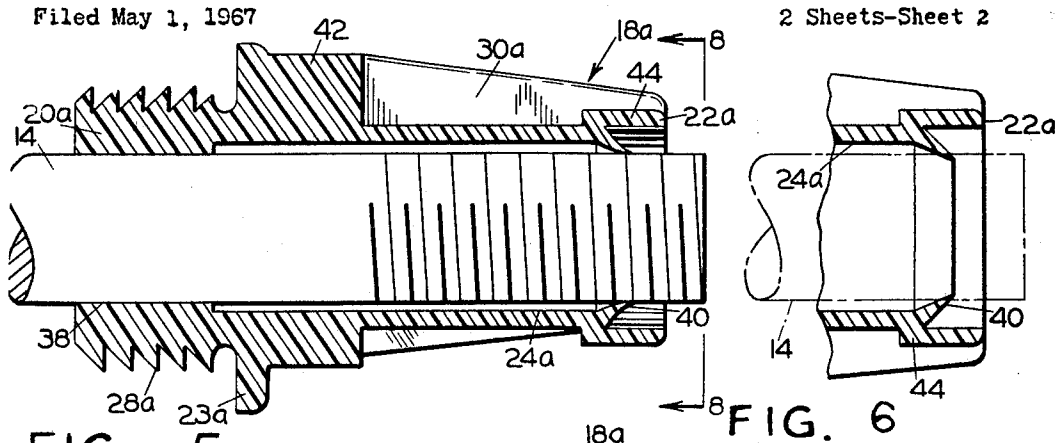


FIG. 5

FIG. 6

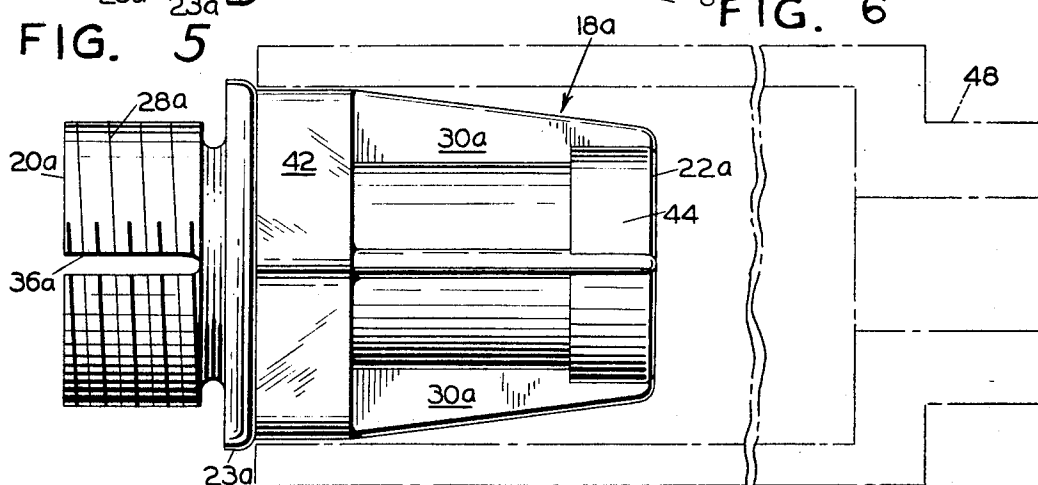


FIG. 7

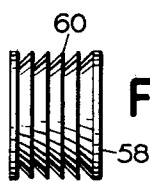


FIG. 11

FIG. 8

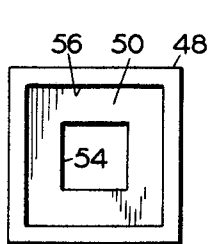
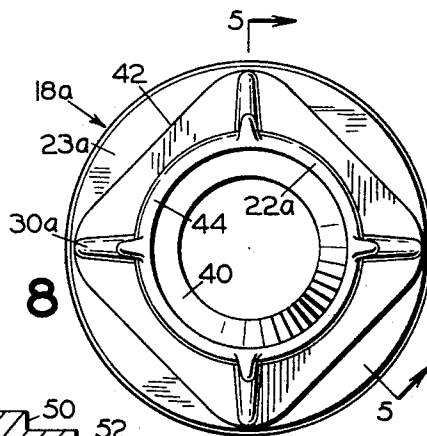


FIG. 10

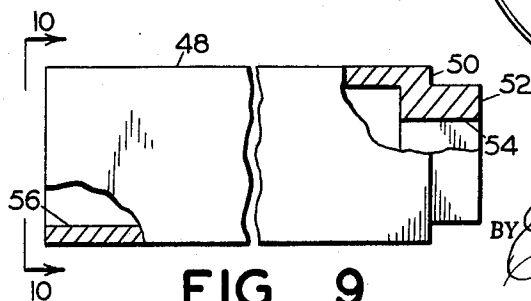


FIG. 9

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ANCHOR STUD HOLDING ASSEMBLY FOR CONCRETE FORMS

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Continuation-in-part of application Ser. No. 445,099, Apr. 2, 1965. This application May 1, 1967, Ser. No. 648,178

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U.S. Cl. 249—205 9 Claims

ABSTRACT OF THE DISCLOSURE

The invention includes an anchor stud holding assembly designed to be attached to concrete forms for holding an anchor stud in place while the concrete wall is being formed. The assembly has a holder arranged to be frictionally but removably engaged in an aperture in the concrete form and having a central bore frictionally holding an anchor stud therein. The portion of the anchor stud to be embedded in the concrete projects from the holder. The assembly also includes a plug for filling the hole in the form after the holder has been removed, and further includes a wrench for installing and removing the holder.

This application comprises a continuation-in-part of application Ser. No. 445,099 filed Apr. 2, 1965 for Concrete Form Stud Holding Device.

This invention relates to new and novel anchor stud holding assemblies for concrete forms.

It is the practice when pouring foundations or walls to embed anchor studs therein, such as stud bolts, and allow a portion of the anchor stud to project out of the concrete for anchoring frame pieces to the foundation or wall. Forms now in use are mostly constructed of lumber or wood sheets such as plywood, and no satisfactory holding devices for the anchor studs, as far as ease and simplicity of use and economy of manufacture are concerned, have heretofore been devices. In some cases, anchor studs are attached to concrete walls by drilling holes in the wall after the concrete has set up, but such manner of installation often leads to fracture of the concrete and obviously cannot achieve the fixed positioning accomplished by embedding the anchor stud in the concrete at the time the latter is poured.

Accordingly, objectives of the present invention are to provide an anchor stud holding assembly which is simple in construction, economical to manufacture, and easy to use; which is removably attachable to a wooden form and arranged to frictionally hold an anchor stud in a position such that a portion of the stud is capable of being embedded in the concrete; which has novel means for engaging the forms for rapid attachment and detachment; which includes a plug for filling a hole in the forms originally made for removably receiving the holder; and which includes a novel wrench structure associated with the holder for inserting and removing said holder from the forms.

FIGURE 1 is a longitudinal, sectional view taken centrally through a first form of anchor stud holder of the present invention and showing such holder in an installed position in a concrete form;

FIGURE 2 is a side elevational view of the holder of FIGURE 1;

FIGURE 3 is an end view taken on the line 3—3 of FIGURE 2;

FIGURE 4 is a cross sectional view taken on the line 4—4 of FIGURE 2;

FIGURE 5 is a longitudinal, sectional view of a sec-

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ond form of anchor stud holder, taken on the line 5—5 of FIGURE 8;

FIGURE 6 is a fragmentary, longitudinal sectional view of one end portion of the holder of FIGURE 5 and showing anchor stud holding means at such end portion;

FIGURE 7 is a side elevational view of the holder of FIGURE 5;

FIGURE 8 is an end elevational view of the holder of FIGURE 5; taken on the line 8—8 of said latter figure;

FIGURE 9 is a foreshortened, elevational view, partly broken away, of a wrench for installing and removing the holder of FIGURE 5;

FIGURE 10 is an end elevational view of the wrench, taken on the line 10—10 of FIGURE 9; and

FIGURE 11 is a side elevational view of a plug member used to seal a hole in the forms formerly used by the holder to set an anchor stud.

Referring first to FIGURE 1, there is shown in fragmentary section a sheet-type form 10 which is in common use to confine concrete in the formation of walls 12 or the like. In the formation of such concrete structures, anchor studs 14, such as stud bolts, are embedded in the concrete with a shank portion 16, usually threaded, projecting from the surface of the wall 12 for anchoring structural members thereto.

According to the present invention there is provided an assembly which includes a holder as one part thereof adapted to hold an anchor stud in place on the form while the concrete wall is being formed. A first embodiment of the holder is shown in FIGURES 1—4, and comprises generally a body member 18 having opposite end portions 20 and 22 and an annular flange 23 intermediate these end portions. The body member 18 has a central, longitudinal bore or opening 24 to receive the shank portion 16 of the anchor stud 14. It is desired that the shank portion have a substantially tight frictional grip in a portion of the bore 24, and for this purpose the bore at the end portion 20 of the body member has longitudinally extending ribs or projections 26 for accomplishing the said frictional grip on the stud. Any number of ribs 26 may be provided, such as four as illustrated in FIGURE 3. The ribs of course may extend the full length of the bore 24 but such may not be necessary since it is only required that a sufficient grip be obtained on the stud 14 in the end portion 20 to hold it securely in place while the concrete is being poured and worked.

The end portion 20 of the body member 18 is adapted to be removably fitted in an aperture 27 provided in the form 10, and when installed, the inner end thereof acts as a substantially continuous molding surface with the molding surface of the forms. The aperture 27 has a selected diameter so as to tightly receive this end portion of the body member in a frictional engagement and insure a positive, set position of the body member in the form. Preferably, the outer surface of the end portion 20 has annular serrations or teeth 28 to provide the grip desired on the inner surface of the aperture 27. These serrations are angled away from the concrete area to provide a locking grip in the one direction.

The end portion 22 of the mounting device has external, longitudinally extending reinforcing ribs 30. This end portion also has a longitudinal slot 32, and marked on the outer surface of this end portion adjacent the slot are reference means 34 such as recesses, projections, or the like. These reference means are identified by indicia 34a which indicates the distance between the end edge of portion 20 and the reference means 34, whereby to designate the distance that the stud will project from the concrete. As an example, if the stud is inserted a distance in the body member such that its inner end edge is located at the projection designated as 1 it is

then known that the stud will project one inch from the face of the poured concrete wall when the forms are removed.

In a preferred construction the end portion 20 of body member 18 is cut longitudinally along a diametral line 36, best seen in FIGURE 3, such cut extending from the end of the body portion 20 to the far side of the annular flange 23. By means of this split construction it is apparent that the end portion 20 can open up or expand slightly to freely receive the shank end of the anchor stud prior to installation in the form. This end portion of the body member will contract when forced into the hole 27 to tightly grip the stud.

In the use of the present holder, apertures 27 are first provided in the form 10 at those places where anchor studs are to be located. These apertures have a diameter slightly less than the overall diameter of the serrated portion 28 so that the serrated portions of the holders will have a substantially tight fit in the apertures 27. Before inserting the body portion 20 into an aperture 27, a stud 14 is inserted in the bore 24 to the selected depth and then the body member is forced into the apertures 27 to a point where the flange 23 abuts against the front surface of the form. It is necessary that the holder have a good frictional grip in the aperture 27, such being accomplished by the dimensional relationships of the apertures 27 and the end portions 20. It is desired that the heads of studs 14 be smaller than the apertures 27 so that the studs can be installed in the holders prior to installation of the latter in the forms.

After the wall has been poured, the forms 10 are removed, and as these forms are removed the holders 18 move therewith and disengage themselves from the projecting ends of the studs, the studs remaining set in the concrete. If it is necessary to remove the stud mounting devices 18 from the forms, such can be accomplished by manipulating them back and forth laterally while at the same time pulling them outwardly from the face of the form.

The device is preferably constructed of a semi-resilient material, such as polyethylene plastic to obtain a good frictional grip on the forms as well as on the anchor studs. The holder is sufficiently rigid, however, to adequately support the anchor stud while the concrete is being poured.

FIGURES 5 through 8 show a second form of the holder. This embodiment includes a body member 18a having opposite end portions 20a and 22a. It has an annular flange 23a and a central longitudinal bore 24a. Such bore is reduced in diameter in the end portion 20a, designated by the numeral 38, and furthermore has an annular sharpened projection 40 adjacent the other end of the holder which is adapted to grip an end of the anchor stud, provided of course that the stud is of sufficient length to project that far into the holder. The projection 40 is angled toward the outer end of the holder to provide a lock-type grip on the anchor stud in the one direction. The diameter of the portion 38 is substantially the same as the anchor stud or slightly smaller, and the projection 40 has an internal diameter slightly smaller than the portion 38, so that it is expanded somewhat by the anchor stud. Thus, the anchor stud is frictionally gripped by the bore portion 38 and if long enough by the sharpened projection 40. FIGURE 5 illustrates an anchor stud mounted in the holder and FIGURE 6 illustrates the normal condition of the projection 40, with the anchor stud being shown in phantom lines. The end portion 20a is provided with at least two diametrically aligned slots or cuts 36a which allow expansion of such end portion and consequently easy insertion of the anchor studs into the holder. When the holder is installed in the form, however, the end portion contracts to firmly grip the anchor stud.

The outer peripheral surface of end portion 20a is provided with screw threads 28a which provide a good grip

between the holder and the form and which also serve the improved function that the holder can be inserted in or removed from the aperture 27 by rotation.

The end portion 22a adjacent the flange 23a has a head 42 for receiving a wrench to turn the holder. For purposes of illustration, the head 42 is shown as having a square shape, FIGURE 8. Leading rearwardly from the head 42 at its corners are external, longitudinally extending reinforcing ribs 30a. The holder is further reinforced at its outer end by a thickened ring or band 44.

Also associated with the present assembly, FIGURES 9 and 10, is a wrench 48 intended for use with the holder of FIGURE 5 to install and remove such holder. This wrench comprises a hollow socket-like structure having a wall 50 at one end provided with an outer projection or boss 52. This boss has a non-round aperture or socket 54 for receiving the drive spindle of a turning handle. The opposite end of the wrench from the wall 50 has an opening 56 the shape and dimension of which corresponds to the shape and dimension of the head 42. The wrench is adapted to be fitted over the end portion 22a of the holder 18a, as seen in phantom in FIGURE 7, for engagement of the opening 56 with the head 42. For installing the holder in an aperture 27, it can either be forced directly into the aperture by first fitting the wrench 48 thereon and then applying hammer blows to the boss 52 or it can be rotated into the aperture also by using such wrench. The holder is removed from the forms by retracting rotation.

Also forming a part of the present invention, FIGURE 11, is a plug 58 dimensioned to be received in an aperture 27 in the form for the purpose of plugging the holes originally made for the holders in order that the form can be reused. This plug has annular serrations 60 to provide a locking grip in the apertures 27.

The forms of the invention herein shown and described are to be taken as preferred examples of the invention and it is to be understood that the invention may take still other forms. Although the invention is illustrated and described in connection with the formation of concrete walls, it may be used in any case where an anchor stud is to be held in a fixed position for embedding a portion thereof in a wall to be poured.

What is claimed is:

1. In an anchor stud holder for removably holding an anchor stud in a position extending through an aperture in a concrete form, a tubular body having a tubular, plug-like end portion, teeth-like exterior projections on said end portion adapted to removably hold the end portion in the aperture, said body having a second end portion provided with a driving portion, said body also having an interior gripping portion, and an exterior, radial projection on said body adapted to serve as a stop.

2. The anchor stud holder of claim 1 wherein the tubular plug-like end portion is longitudinally split so as to be radially expandable and contractable.

3. The anchor stud holder of claim 1 wherein the driving portion is not-like in exterior configuration, the radial projection comprising a radial flange positioned between the tubular, plug-like end portion and the driving portion, the radial projection extending radially outwardly beyond the driving portion and being adapted to serve as a longitudinal stop portion.

4. The anchor stud holder of claim 1 wherein said body is constructed of a semi-resilient material whereby to have a compressed resilient and frictional surface grip in the aperture in the form member.

5. The anchor stud holder of claim 1 wherein said teeth-like exterior projections comprise annular serrations.

6. The anchor stud holder of claim 1 wherein said teeth-like exterior projections comprise screw threads.

7. The anchor stud holder of claim 1 wherein said teeth-like exterior projections comprise screw threads, and a wrench engaging head on said body for rotating the

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latter to move it axially by means of the threaded engagement with the defining inner surface of the aperture.

8. The anchor stud holder of claim 1 wherein said body is constructed of a semi-resilient material whereby to have a compressed resilient and frictional grip in the aperture in the form member, and including a sharpened inwardly projection portion in said bore arranged to frictionally and removably engage the stud.

9. The anchor stud holder of claim 1 including means defining a longitudinal slot in said body, said indicia means adjacent said slot to indicate a projection extent of a stud into said body.

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