Feb. 14, 1967 F. H. JONES 3,304,079

ANCHOR BOLT HOLDER FOR CONCRETE FORMS

Filed Nov. 9, 1964

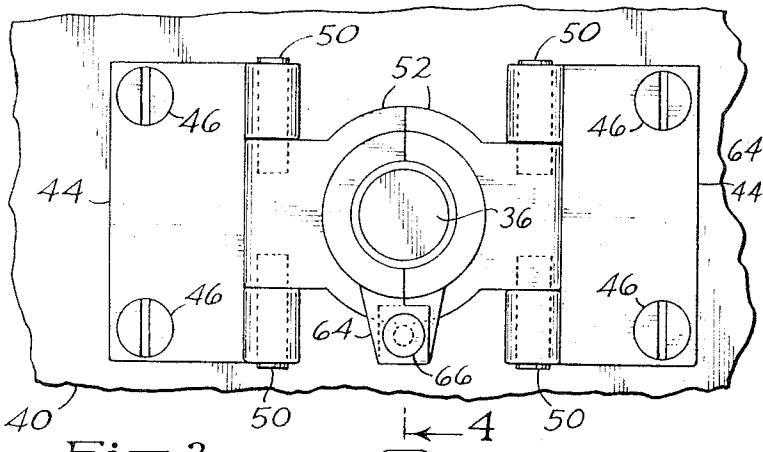


Fig. 3.

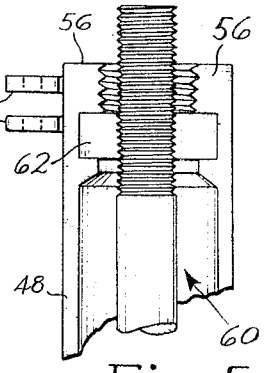


Fig. 5.

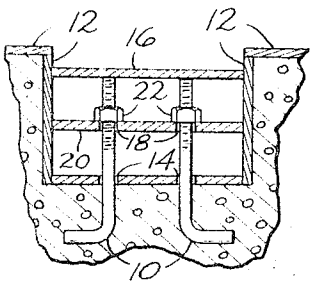
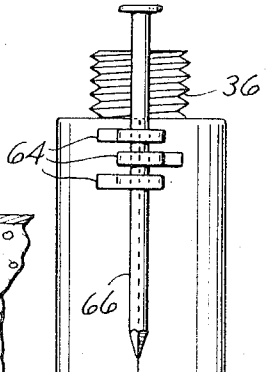


Fig. 1.



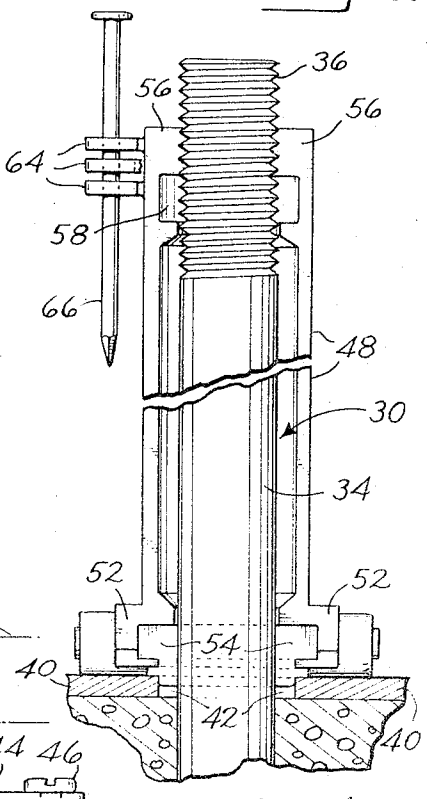


Fig. 4.

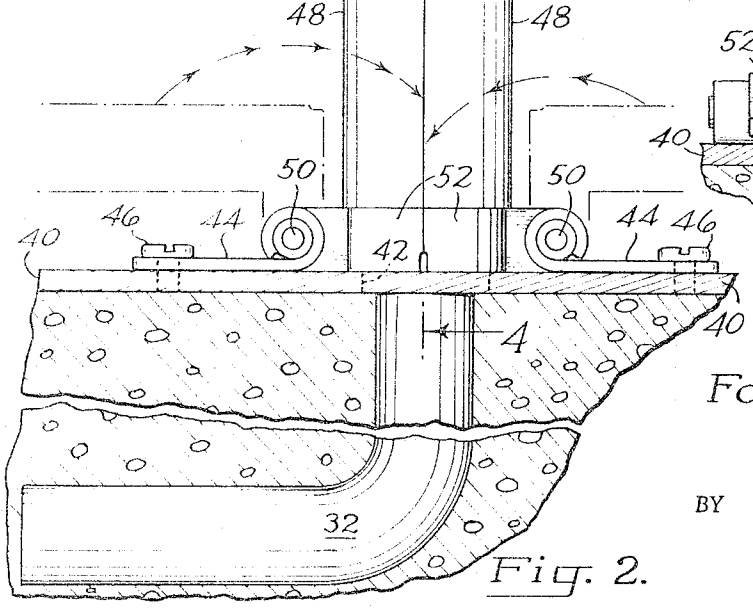


Fig. 2.

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ANCHOR BOLT HOLDER FOR CONCRETE FORMS

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This invention pertains to holders for locating anchor bolts in concrete forms preliminary to pouring a concrete structure in which the anchor bolts are to be embedded.

In the drawings:

FIG. 1 is a transverse sectional view through a case concrete structure, preliminary to stripping the form, and illustrating a prior art method of locating anchor bolts in the form;

FIG. 2 is a view in side elevation of the presently described anchor bolt holder, illustrating its mode of application to a concrete form;

FIG. 3 is a plan view of the anchor bolt holder of FIG. 2;

FIG. 4 is a transverse sectional view through the longitudinal center line of the anchor bolt holder of FIGS. 1 and 2, further illustrating its construction; and

FIG. 5 is a fragmentary view similar to FIG. 4, illustrating the anchor bolt holder of my invention in an alternate embodiment.

In the erection of dams and in other heavy construction work, the location of the anchor bolts in the forms has been time consuming and expensive. For example, in the situation illustrated in FIG. 1, it may be necessary when erecting a concrete dam to cast in the concrete a recess in which the seat for the dam gate is to be bolted by means of anchor J-bolts **10**. This is accomplished using a form **12** having dimensions appropriate to define the recess. Holes **14** are drilled through the form to locate the anchor bolts.

It then requires three men, two workmen and a transit man, to mount the anchor bolts properly prior to pouring the concrete. First, the transit man determines the level at which the bolts are to be set, for example to the level of the inner surface of locking strip **16** to be installed later. Next a workman located in the area behind the form inserts bolts **10** through openings **14** in the form and through registering openings **18** in a bolt support plate **20** tacked to the form.

Nuts **22** are threaded on the threaded outer ends of bolts **10** by a second workman located in front of the form. The nuts are adjusted until the elevation of the outer ends of the bolts is at the precise level demanded by the plans. Locking strip **16** then is nailed in place. Together with support plate **20**, it locates the bolts exactly while the concrete is poured.

The concrete is poured and allowed to harden, after which form **12** is stripped from the pour. This usually necessitates removing nuts **22** and destroying the form, already mutilated by the presence of bolt holes **14**, since it is otherwise impossible to remove the form from the exposed ends of the bolts.

Substantial economic loss thus is incurred, first because of the unnecessarily high labor costs involved in constructing the form and locating the bolts, and secondly because of the necessity of constructing new forms for each new installation.

It is the general object of this invention to provide an anchor bolt holder for concrete forms which overcomes the foregoing difficulties in that the anchor bolts may be installed and set to level by a single workman and in that after the concrete has hardened, the forms may be stripped without damaging the forms, which then may be reused.

It is a further important object of the present invention to provide an anchor bolt holder which effectively

seals off the area around the exposed shank portion of each bolt to prevent leakage of cement through the forms during pouring.

Still another object of the present invention is to provide an anchor bolt holder which may be supplied in one standard size and which, by making a simple change, may be adapted for use with anchor bolts of varying cross sectional dimension.

As shown in FIGS. 2–4, the anchor bolt holder of my invention may be employed for locating and supporting conventional J-bolts **30** having an inner end **32** to be embedded in a concrete pour; a central shank portion **34** to be partly embedded in the pour; and an outer threaded portion **36** to be located beyond the plane of the pour. The bolts are to be located by and supported in a concrete form **40** of steel or wood provided with openings **42** dimensioned to receive the bolts at predetermined locations.

Each bolt holder is mounted on a base having a central opening dimensioned to overlie a selected one of the openings **42** through the form. Although the base may comprise a single plate having a central opening cut through it, in the illustrated form of the invention it comprises two separate plate sections **44** mounted one on each side of opening **42** and secured to the form by suitable means, as by means of bolts **46**.

Extending outwardly from the base are a pair of cooperating standards **48** which preferably are formed as half-round tubular sections of suitable diameter to contain the bolt. The inner ends of the standards are hinged to the base by appropriate hinge means such as the knuckle type hinges **50**.

The standards are arranged with respect to each other and with respect to the base sections in such a manner that they may be moved angularly toward and away from each other between a closed, operative position in which they support bolt **30** and a separated, inoperative position in which they are removed from the bolt, as shown in FIG. 2.

At the base of standards **48** there preferably are present sealing means for preventing leakage of fluid concrete through opening **42** when the form is in use. The construction of the sealing means is illustrated particularly in FIG. 4.

A sealing collar is fixed to, or formed integrally with, the lower portion of each of standards **48**, in two complementary parts, each of which is indicated at **52**. The inside portion of each collar part forms a seat which is dimensioned to receive a sealing collar segment **54**. This is dimensioned to fit snugly in the seat and together with its companion segment, to press tightly around the shank of bolt **34** when the standards are in their operative position, thus sealing off opening **42**.

An internally threaded collar, also illustrated particularly in FIG. 4, is present on the outer ends of standards **48**. It serves the function of engaging the threaded section **36** of the anchor bolt, thus supporting the bolt and permitting its adjustment to the desired elevation.

Like the sealing collar, the threaded collar is formed in two matching parts **56**. These complement each other and form a continuous collar when the standards are in their erect, operative position.

It is a particular feature of the invention that threaded collar **56** may be employed to support anchor bolts of the conventional sizes, for example, anchor bolts having diameters of one-half inch, ⅝ inch and ¾ inch, without using separate holders for each size and without making a fundamental and difficult adjustment of a holder of a particular size.

To this end there is provided in conjunction with each of threaded sections **56** an annular seat segment **58**.

Where anchor bolts of maximum size are employed, the threads of which are dimensioned for reception in threaded section **56** of the holder, seat segments **58** may be left empty.

However, to accommodate the holder to anchor bolts **60** of smaller size, FIG. 5, there may be inserted in the seat segment **58** of each standard a collar segment **62**. This may be formed of rubber, plastic or other deformable structural material and is dimensioned to fit snugly in the seat with its inner bore pressed in self-threading relation against the threads of bolt **60**.

Releasable lock means are provided for releasably locking together standards **48** when they are in their upright, operative position. Although various means may be employed for this purpose, a preferred means comprises a plurality of perforated tabs **64** alternated on the respective sides of the respective standards as shown in FIG. 2, with the perforations through the tabs in registration with each other.

Pin means such as nail **66**, readily available on the construction site, then may be inserted through the registering perforations to maintain the standards in their operative positions in which gasket sections **54** are pressed tightly against the shank of bolt **30**, sealing off form openings **42**, and in which washers **62**, if employed, press snugly against the threaded section of bolt **60**.

In the use of the anchor bolt holders of my invention the holders are mounted on the outside faces of concrete forms **40**, there being one holder for each of openings **42** in the form, as required to locate the desired number of bolts in a predetermined pattern. With the holder in the dotted line position of FIG. 2, a single workman inserts the inner end of each bolt through the corresponding opening **42**.

With the bolt in its approximate final elevation, he then swings the two standards **48** together to the full line position of FIG. 2 and inserts locking pin **66** through tabs **64**. To adjust the bolt to the elevation set by survey, it then merely is necessary to grasp the exposed outer threaded end **36** of the bolt with a pair of pliers or other tool and turn the bolt until the desired elevation is reached.

Where the bolt holder is to be used with a bolt **60** of smaller diameter, the foregoing procedure is modified by inserting in seat segments **58** of the holder, deformable washer segments **62** having an internal bore such that when the standards are closed, the washer segments press against the threaded section of the bolt. The washer thus forms its own threads so that by grasping the exposed outer end of the bolt and rotating it, the bolt may be raised or lowered to the proper height, as above described.

After all of the bolts have been set, the concrete may be poured into the form and allowed to harden. When it is wished to strip the forms from the hardened concrete, pins **66** are removed and standards **48** separated by swinging them outwardly. With the standards in this position, it is possible to strip off the forms rapidly and without damage.

It thus will be apparent that by the present invention, I have provided an anchor bolt holder which may be used with concrete forms to great advantage in that a minimum of labor is required for installation and adjustment of the anchor bolts; the bolts may be adjusted rapidly with a high degree of accuracy; leakage of the poured concrete through the anchor bolt openings in the form is prevented; and a single holder may be used readily with anchor bolts of varying cross section.

Having thus described my invention, I claim:

1. An anchor bolt holder for a concrete form having therethrough at predetermined locations openings for the reception of anchor bolts including a shank portion and a threaded outer end, the holder comprising:

(a) a base having a central opening,

(b) means for mounting the base on the outside face of the form with the central opening of the base overlying a selected one of the openings through the form,

(c) a pair of spaced standards extending upwardly from the base,

(d) hinge means separately hinging the inner ends of the standards to the base on opposite sides of the opening and arranged to permit angular movement of the standards toward and away from each other,

(e) an internally threaded collar formed in two complementary parts, one of the parts being mounted on the outer end of each of the standards in collar-forming relation to the other part, the collar being dimensioned to receive the threaded end of the anchor bolt, and

(f) lock means for releasably locking together the two parts of the collar in their collar-forming relation.

2. The anchor bolt holder of claim **1** wherein the base is formed in two sections, one being mounted on each side of the form opening and thereby forming the central opening of the base.

3. The anchor bolt holder of claim **1** wherein the two standards comprise half round sections of a pipe.

4. The anchor bolt holder of claim **1** wherein the diameter of the internally threaded collar is larger than the diameter of the threaded outer end of the anchor bolt, and wherein the collar is provided with an inner, annular seat and a deformable washer seated therein, the opening through the washer being dimensioned to receive and engage the threaded end of the bolt in self-threading relation.

5. The anchor bolt holder of claim **4** wherein the washer comprises a rubber washer.

6. The anchor bolt holder of claim **1** including seal collar means formed in two complementary parts mounted one on the base of each standard adjacent the central opening therein in seal-collar-forming relation, the seal-collar being adapted to engage the shank portion of the anchor bolt mounted in the holder, sealing off the opening through the form.

7. The anchor bolt holder of claim **6** wherein the seal collar means comprises a pair of gasket seat members mounted one on each standard and a pair of complementary gasket members seated therein.

8. The anchor bolt holder of claim **1** wherein the lock means comprise overlapping perforated tabs on the respective standards and pin means removably insertable through the perforations in the tabs.

No references cited.

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