April 7, 1959 M. W. BOLL ET AL 2,880,608

CONCRETE INSERTS

Filed Feb. 12, 1958

FIG. 1.

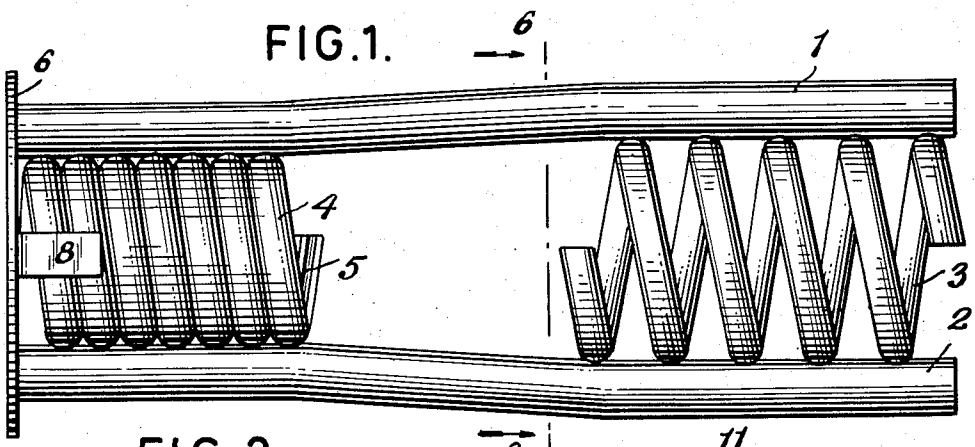


FIG. 2.

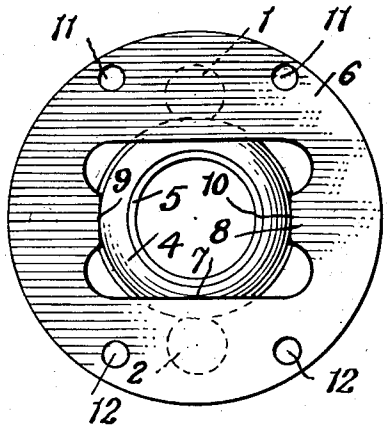


FIG. 3.

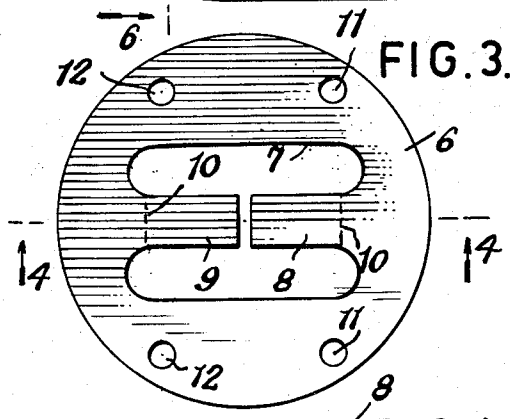


FIG. 4.

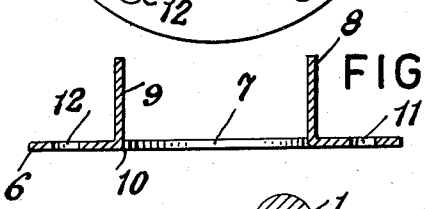


FIG. 5.

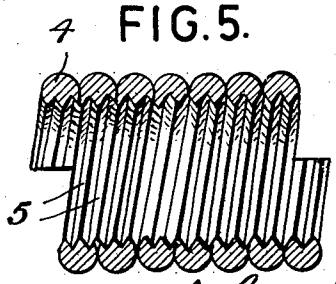


FIG. 6.

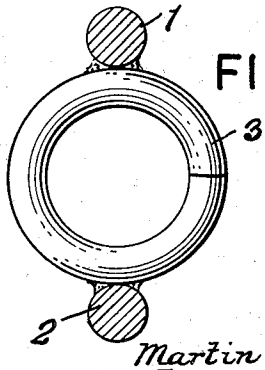
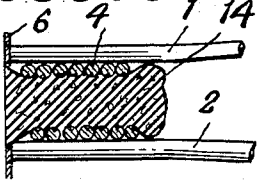


FIG. 7.



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CONCRETE INSERTS

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3 Claims. (Cl. 72—105)

The present invention relates to concrete inserts, and more particularly to the type in which a spiral helix secured between a plurality of rods is embedded in the concrete mass with an end of the helix positioned at or near the surface of the concrete in position to receive a threaded element, such as a lag screw or other threaded member.

It is an object of the invention to provide an insert or screw anchorage of this character which shall be of such construction that it will be firmly and securely anchored in place in the concrete mass; which shall be capable of threadably receiving and accommodating either coarse-threaded or fine-threaded screws or other threaded elements, and which shall be provided with means by which it can be readily secured to the concrete forms at the proper position preparatory to the pouring of the concrete.

More particularly, the invention comprises a pair of spaced round metallic rods having a pair of helices secured between them and maintaining the rods in their spaced relation, one of the helices being located at one end of the rods and having its convolutions in widely-spaced relationship to permit of the entry of concrete between them, the second helix being located between the rods at their opposite end and having its convolutions closely spaced or in contact, whereby the latter helix can serve to threadably receive within it a relatively coarse-threaded element such as a lag screw, and which latter helix has a relatively fine thread cut in the inner surfaces of its convolutions to enable it to accept a fine-threaded screw or other threaded member.

The invention also contemplates the provision of an annular disk secured at one end of the threaded helix, said disk being provided with apertures through which fastening elements may be inserted to thereby hold the insert in position in the forms preparatory to the pouring of the concrete.

With these and other objects to be hereinafter set forth in view, we have devised the arrangement of parts to be described and more particularly pointed out in the claims appended hereto.

In the accompanying drawing, wherein an illustrative embodiment of the invention is disclosed,

Fig. 1 is a side elevational view of a concrete insert or anchorage, constructed according to the invention;

Fig. 2 is a front elevational view of the same, looking from the left of Fig. 1;

Fig. 3 is a face view of the blank from which the insert-attaching disk is formed;

Fig. 4 is a sectional view, taken substantially on the line 4—4 of Fig. 3, looking in the direction of the arrows but with its lugs bent at right angles to the body of the disk;

Fig. 5 is a longitudinal sectional view of the internally threaded coil or helix;

Fig. 6 is a sectional view, taken substantially on the line 6—6 of Fig. 1, looking in the direction of the arrows, and Fig. 7 shows how a plug of resilient material, such as sponge rubber may be inserted into the threaded coil to

prevent the entry of concrete therein during the pouring operation.

In the embodiment of the invention shown in the drawing, the improved insert or anchorage includes a pair of similar, spaced-apart round metallic rods indicated at 1 and 2 respectively. The number of these rods may be increased or decreased if desired. The rods are maintained in their spaced-apart relationship by means of a pair of helices, indicated respectively at 3 and 4, also composed of round metallic rod and secured by welding or other suitable means to the rods 1 and 2.

In the form shown, the rods 1 and 2 are spaced slightly wider apart at one end than they are spaced at the other end, and the helix 3, located between the more widely spaced ends of the rods, if of greater diameter than the helix 4 to thereby maintain the rods at that end in their widely-spaced relationship. It will also be noted that the convolutions of the helix 3 are separated or widely spaced apart so that the concrete poured around the insert may enter between these convolutions thus tending to more firmly maintain the insert in the concrete mass.

The helix or coil shown at 4, located between the more closely-spaced ends of the rods 1 and 2, consists of a spirally-formed length of round metallic rod with its convolutions in close contact so that it constitutes a relatively coarse thread for the reception of the threaded portion of a lag screw or similarly coarse-threaded element.

When the insert is used as an insert or anchorage for securing various elements, such as lamps, railings or many other articles or structures, after the formation of the concrete wall or mass, such uses often require the employment of bolts or other threaded members having threads of finer formation than the threads found on lag screws, and which provide a greater latitude of adjustment. To accommodate such finer-threaded elements, the inner sides or surfaces of the convolutions of the helix or coil 4 provide sufficient areas to enable a thread to be cut therein, substantially as shown in Figs. 1 and 5, and such a thread 5 is usable for engagement by the thread of a finer-threaded element as found on a bolt, machine screw, eyelet, hook or the like having a threaded shank insertable within the helix 4 for threadable engagement by the fine threads 5.

The formation of the relatively fine threads 5 on the inner surfaces of the convolutions of the helix or coil 4, does not materially alter the shape of the convolutions and as a result, a lag screw or other coarse-threaded element is threadably accommodated in the helix by the engagement of its relatively coarse threads with the threads formed by the generally round cross-sectional shape of the rod which forms the helix. When, as a substitute for the lag screw, it is desired to utilize a bolt or other element having a finer thread, or a thread complementary to the cut thread 5 provided on the interior of the helix 4, that can be readily done, such bolt or similar element being accepted by the thread 5.

The insert or anchorage is embedded in place in a concrete mass with the forward end of the coil or helix 4 positioned at the face of the concrete. To hold the insert in proper position within the form while the concrete is being poured around it, the disk indicated at 6 is provided. The same is of annular formation, having the central opening 7 which clears the forward end of the helix or coil 4, so as to enable the threads on the interior of the coil 4 to be readily engaged by an inserted threaded element.

The disk 6 may be attached to the coil 4 in a number of ways, one of which is shown in the drawing and consists of the use of a pair of integral lugs 8 and 9 which are bent as indicated by the dotted lines 10, so that they extend along the outer side of the coil or helix 4 at substantially diametrically opposite positions. These lugs are

welded to the coil and thus serve to firmly attach the disk in place.

Provided in the disk **6** is a plurality of holes shown at **11** and **12**, and these holes may if desired, be increased in number. In placing the insert in place preparatory to the pouring of the concrete around it, the insert is secured in position in the form by attaching the disk **6** against the inner face of the form, such as by the use of nails extended through the holes **11** and **12** and driven into the wooden form. If the insert is to be attached to a metal form, an adhesive can be used and the holes **11, 12** will be entered by the adhesive to aid in the attachment of the insert to the form. The insert can also be held in position in the form by a screw penetrating the form from the outside and entering into threadable engagement with the helix **4**.

To prevent the entry of concrete within the helix **4**, a filler plug such as shown at **14** in Fig. 7 may be used. The same may be composed of sponge rubber or some similar compressible or elastic material enabling the plug to be easily inserted to retain itself in place yet easily subsequently removable. The insert or rubber plug **14** is preferably made of such length that the same extends rearwardly beyond the coil **4** for some distance to permit clearance of the bolt or other threaded element inserted in the coil or helix **4**.

Having described a single embodiment of the invention, it is obvious that the same is not to be restricted thereto, but is broad enough to cover all structures coming within the scope of the annexed claims.

What we claim is:

1. A concrete insert comprising, a plurality of spaced-apart rods, a spiral helix composed of metallic rod mounted between the rods at one end thereof and retaining the rods in their spaced relationship, the helix having its convolutions arranged for threadable engagement with the threads of a relatively coarse-threaded element inserted into the helix, the convolutions on the interior of the helix being provided with a finer thread to thereby accommodate a threaded member of finer thread than the coarse-threaded element, an annular flat disk having a diameter greater than the distance between the rods and secured at the end of the rods and abutting flatly against the ends of the same, said disk having lugs disposed at right angles to the body of the disk and secured to the sides of the helix and having a central opening axially aligned with the helix to permit the entry of either the coarse-threaded element or the finer threaded member into the helix.

2. A concrete insert, as provided for in claim 1, wherein the lugs on the annular disk are located at diametrically opposite points on the outside of the helix to which they are attached, the convolutions of the helix being in close contact with each other, and the finer thread being a cut thread provided in the inner surfaces of the convolutions.

3. In a concrete insert, a plurality of spaced-apart rods, a helix composed of metallic rod mounted between the rods at one end thereof and retaining the rods in their spaced relationship, an annular flat disk having a diameter greater than the distance between the rods secured at the ends of the rods and abutting against the same, said disk having lugs extending axially of the helix and secured thereto along opposite sides of the same at diametrically opposite points on the helix and between the rods, said disk having a central opening axially aligned with the helix to permit of the entry of a threaded element within the helix.

References Cited in the file of this patent

UNITED STATES PATENTS

841,338	Palmer	Jan. 15, 1907
1,143,429	Mumford	June 15, 1915
1,286,658	Lamet	Dec. 3, 1918
1,966,520	Rayner	July 17, 1934
2,788,652	Pilling	Apr. 16, 1957

OTHER REFERENCES

Journal of the American Concrete Institute, a publication October 1955, page 140 (Copy in Class. Div. V).