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APPARATUS FOR CASTING CONCRETE WALLS.

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Fig. 1.

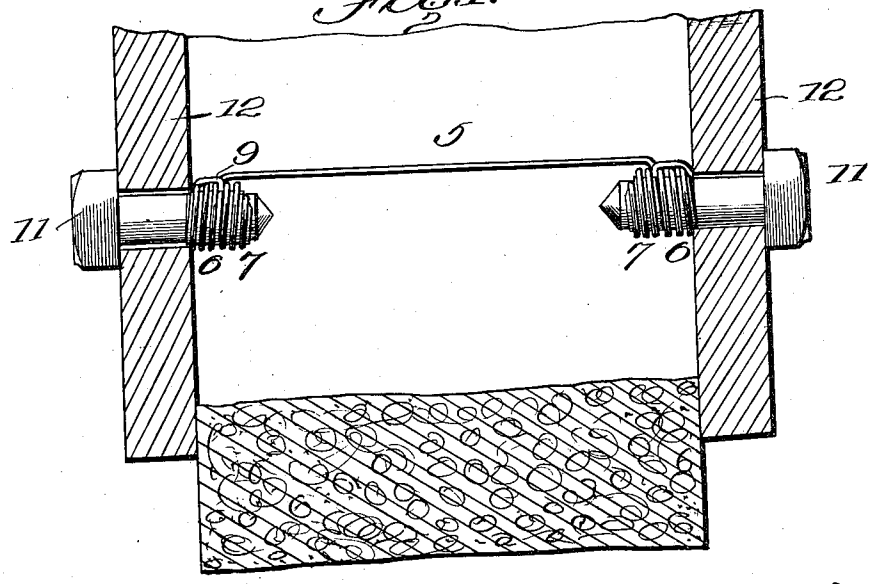
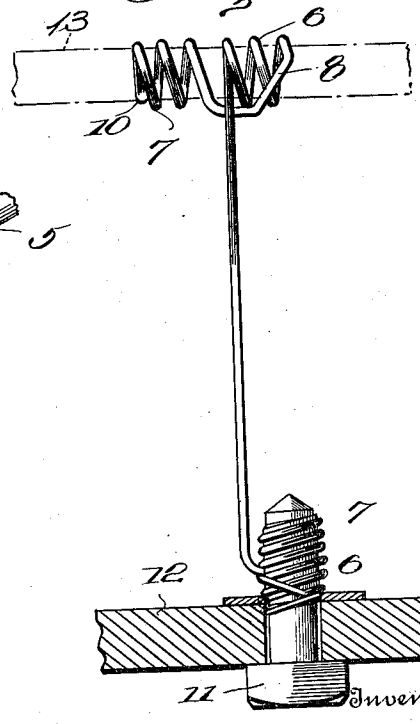


Fig. 3.



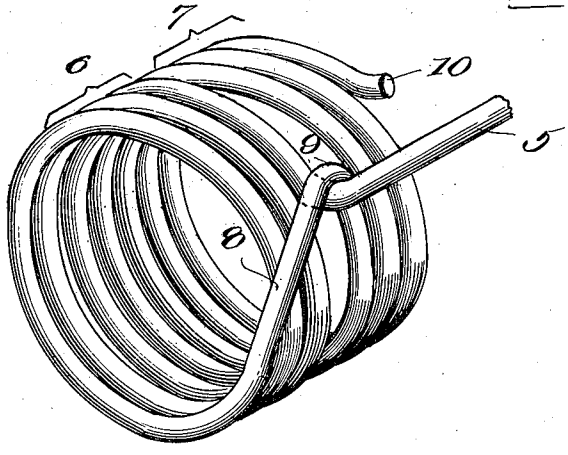


Fig. 2.

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APPARATUS FOR CASTING CONCRETE WALLS.

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To all whom it may concern:

Be it known that I, GURDON S. MUMFORD, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Apparatus for Casting Concrete Walls, of which the following is a specification.

This invention relates to apparatus for constructing concrete walls, and in its more intense aspect to tie members or the like adapted to hold a plain molding surface against which a concrete wall or member is adapted to be cast in relative position with respect to another surface member.

In casting concrete walls, as well as floors, it is customary to employ a relatively flat mold member, or a pair of mold members, between which the wall or surface is adapted to be cast. In order to hold these surfaces, assuming there are to be two of them, in proper relative position, tie members are frequently employed, which may or may not subsequently form an integral part of the finished wall.

Some tie members, now in general use, are of such size, shape and construction as to prevent their being economically used, while others, which are adapted to be removed on completion of the wall leave a perforation or recess in the wall which must be subsequently plastered over or concealed. This is sometimes not efficiently performed which leaves a leak in the wall, especially in the foundation.

With this brief statement in mind, one of the principal objects of the present invention is to provide a simple and practical tie member of small cross section and large tensile strength, adapted to eliminate the above objections, and at the same time provide a tie member which will be economic in use and construction.

A further object is to provide a reliable and efficient tie member which will act to hold the mold members against movement in either direction when properly positioned.

A further object is to provide a tie member which will act as a reinforcement for the finished wall or surface and permit a more rapid operation of the casting of the wall and in the assembling and disassembling of the parts of the molding apparatus.

A further object is to provide a tie member which will form a socket for the reception of a supporting member and prevent a pulverization of the concrete about the socket, as might occur by the vibration of the machinery held by said supporting member.

Other parts will be in part obvious from the annexed drawings and in part indicated in connection therewith by the following analysis of this invention.

This invention accordingly consists in the features of construction, combination of parts, and in the unique relations of the members, and in the relative proportioning and disposition thereof, all as more completely outlined herein.

To enable others skilled in the art fully to comprehend the underlying features thereof that they may embody the same by the numerous modifications in structure and relation contemplated by this invention, drawings depicting a preferred form have been annexed as a part of this disclosure, and in such drawings, like characters of reference denote corresponding parts throughout all the views, of which,

Figure 1 is a semi-diagrammatic end elevation, showing two mold members and a tie member in operative position therebetween; Fig. 2 is an enlarged perspective view of one end of a tie or supporting member; Fig. 3 is a view similar to Fig. 1, showing the parts in position for casting a ceiling and floor.

Referring now to the drawings in detail, and more particularly to Fig. 1, there is denoted at 5 the body of the tie member, which consists of a single piece of relatively straight wire of a length of approximately equal to the thickness of the wall to be cast. In this particular tie the body member terminates at both ends in a helical coil, which is connected therewith at substantially the center or middle of the coil. As shown in Fig. 2, this end is really made in two parts or sections, 6 and 7, each having a plurality of turns out of the same integral piece of wire. The first section of these turns is coiled in a counter-clockwise direction, the final turn being bent back sharply upon itself at the point 8, and thence up over the connecting portion 9 between the section 6 and the body portion, whereupon it again is bent back upon itself and turned in a clockwise direction to form the section 7 of two or more turns terminating in a free end 10. These sections 6 and 7 are preferably close together, and being wound upon the same mandrel will accommodate a single right-

hand threaded bolt, such as 11, passing through mold member 12. The connecting portion 8 acts upon the first section of coils in such a manner as to prevent any material relative contraction or expansion as the threaded bolt is rotated therein. In other words, it binds upon the outer coil and acts as a lock thereon. There is thus obtained a helical coil of such shape that should severe pressure be put on outside end at any time, as in case of a bolt being loosened before concrete was set, and required re-screwing into place, such outer coil would offer a maximum resistance to changing its shape and thus develop the full strength of the straight wire section above.

A peculiar feature of this construction when made of pliable wire resides in a tendency of the coil sections to wind or turn about the bolt spindle. The section 6, as above stated, is wound in a counter-clockwise direction, while the section 7 turns in the opposite direction. These sections may act under some conditions upon a threaded bolt being turned therein in a manner similar to that of a flexible chain wrench. That is, they bind upon the bolt to a slight degree when turned in one direction and tend to loosen up when the bolt is turned in the opposite direction. Now, as the bolt 11 is threaded through the mold 12 and engages the first coils of the section 6, it tends to loosen the coils and may accordingly be operated more readily. However, as the end passes into the section 7 a slight tightening takes place and quickly draws the mold and head into proper relative position. After casting the wall the reverse takes place, and the inner section 7, which has the greater freedom of movement, due to the free end 10 and the lack of the binding or locking action of the portion 8, will loosen and permit an easy removal of the bolt, while the outer section 6 will have practically no effect whatever on the bolt. In this way a tendency to turn the tie in the partially hardened cement during loosening of the bolt is eliminated.

In Fig. 3, the same device is shown as applied to casting floors. The mold member 12 is provided with an opening through which the bolt 11 is adapted to pass and engage the helical end 6 of the tie member. The opposite end instead of being provided with a helical coil having its axis extending in the same general direction as the body portion 5, has that portion bent at substantially right angles, as clearly shown, and through which an anchoring device of any sort whatsoever may pass, such for example, any one of the reinforcing rods 13 of the floor. The floor is then cast upon the upper surface of the mold 12, and on completion the bolt 11 is removed, after which the mold 12 can be taken down. An advantage of this device is that it leaves a threaded socket, into which a supporting member, a shaft hanger for example may be screwed, and possesses an added advantage that the opposite end of the socket or the body of the tie is securely anchored in the floor where it will remain indefinitely. Many devices comprising a socket for the reception of a supporting member, now on the market, are open to the objection that the constant vibration of machinery tends to pulverize the cement immediately about the socket, whereby in the course of time, the socket drops out and allows the machinery or shaft to fall. Such a holder as herein shown absolutely eliminates this serious objection.

Between the mold member 12 and the threaded end of the tie may be interposed, if desired, a washer through which the bolt freely passes. As the bolt is tightened it draws the inner face of the mold into close contact with the washer, which in turn engages the end of the tie. On completion of the wall the mold is removed and if the exposed end of the tie is to be covered instead of being left open to receive a supporting member, the washer is removed, which leaves a small shallow pocket into which soft cement may be crowded, thus completely covering the end of the tie without marking the wall. Furthermore, the wall will not in the course of time be streaked by rust stains, as might occur if the end of the tie was exposed to atmospheric conditions.

As the method of use and operation of the device is thought to be clear from the above description, a detail discussion thereof is believed to be unnecessary. It is, therefore, believed that the present invention provides a simple and practical device adapted to accomplish, among others, all the advantages and objects above set forth.

Without further analysis, the foregoing will so fully reveal the gist of this invention that others can by applying current knowledge readily adapt it for various applications without omitting certain features that, from the standpoint of the prior art, fairly constitute essential characteristics of the generic or specific aspects of this invention, and therefore such adaptations should and are intended to be comprehended within the meaning and range of equivalency of the following claims.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:

1. A tie member for use in concrete walls comprising an extended body portion having a helical end extending in the same general direction and connected near the middle of its outer surface to said body portion.

2. A tie member for use in concrete walls comprising an extended body portion having a helical end extending in the same general direction and connected near the middle

of its outer surface to said body portion, and an enlarged anchor device at the opposite end of said body member.

3. A tie member for use in concrete walls comprising an extended body portion having a helical end extending in the same general direction and connected near the middle of its outer surface to said body portion, and a helical coil at the opposite end of said body member adapted to act as an anchor and receive a solid member within its coils.

4. A tie member for use in concrete walls comprising an extended body portion having a helical end extending in the same general direction, said helical end being formed in two parts oppositely wound.

5. A tie member for use in concrete walls comprising an extended body portion having a helical end extending in the same general direction, said helical end being formed from a continuation of said body portion and comprising two oppositely wound sections adapted to receive a threaded member.

6. A tie member for use in concrete walls comprising an extended body portion having a helical end extending in the same general direction adapted to receive a threaded member, and means connecting the body portion with the outer end of the helical coil adapted to prevent an expansion of the helical coil when engaged by the threaded member.

7. A tie member for use in concrete walls comprising an extended body portion having a helical end formed from a continuous piece of wire, said helical end being made in two parts oppositely wound but forming a continuous thread adapted to receive a threaded bolt.

8. A tie member for use in concrete walls comprising an extended body portion having a helical end formed from a continuous piece of wire, said helical end being made in two parts and so connected with said body portion as to prevent an expansion of the end coils when engaged by a threaded member.

9. A tie member for use in concrete walls comprising an extended body portion having a helical end formed from a continuous piece of wire, said helical end being made in two parts and so connected with said body portion as to prevent an expansion of the helical end when engaged by a threaded member, and an enlarged anchor device at the opposite end of said body member.

10. A time member for use in concrete walls comprising an extended body portion having a helical end extending in the same general direction, said helical end being formed from a continuation of said body portion and comprising two oppositely wound sections adapted to receive a threaded member, and an enlarged anchor device at the opposite end of said body member.

11. A tie member for use in concrete walls comprising an extended body portion having a helical end extending in the same general direction, said helical end being formed from a continuation of said body portion and comprising two oppositely wound sections adapted to receive a threaded member, and an enlarged anchor helix at the opposite end of said body member, the axis of said second helix being at right angles to the axis of the first helix.

12. A tie member for use in concrete walls comprising an extended body portion having helical coils at each end, the axes of said coils being at right angles to each other and said coils being connected near the middle of their outer surfaces with said body portion.

13. A time member for use in concrete construction comprising an extended body portion having a helical end adapted to engage a threaded member, said helical end being formed from a continuation of said extended body portion and comprising two coils wound in opposite directions in such a manner that both coils act to prevent the stripping off from the threaded member of that portion of the coils whose continuation makes said extended body portion when said body portion is subjected to a tensile strain.

14. A tie member for use in concrete or general construction, comprising an extended body portion having a helical end adapted to engage a threaded member, said helical end being formed from a continuation of said extended body portion and being comprised of a coil, one end portion of which is returned on the outside of the coil so as to engage in a binding manner with the opposite extremity of said coil where its continuation merges into said extended body portion and thereby restrains this end of the coil from disengaging the threads of the threaded member when said extended body portion is subjected to a tensile strain.

In testimony whereof I affix my signature in presence of two witnesses.

GURDON SALTONSTALL MUMFORD.

Witnesses:

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M. PFEIFFER.