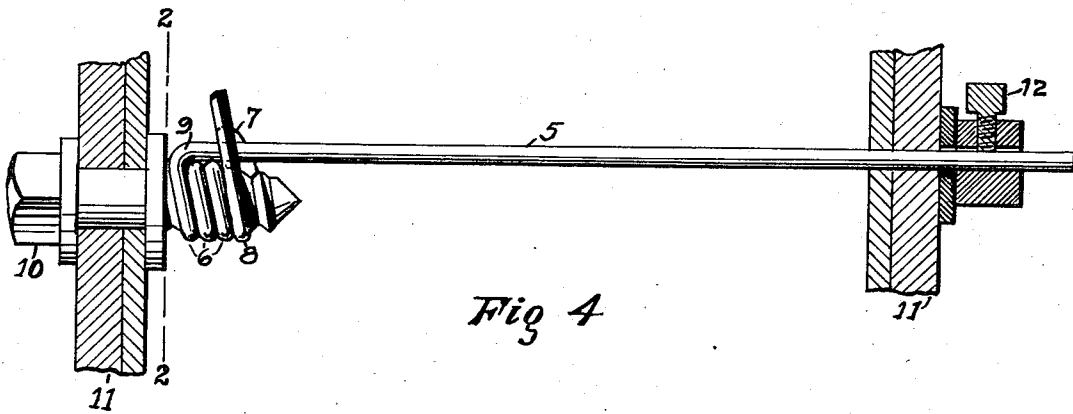
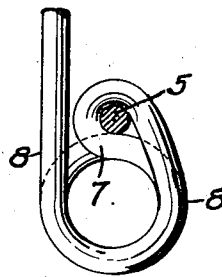
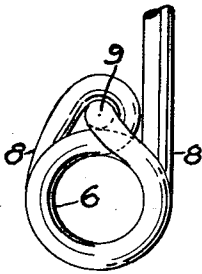
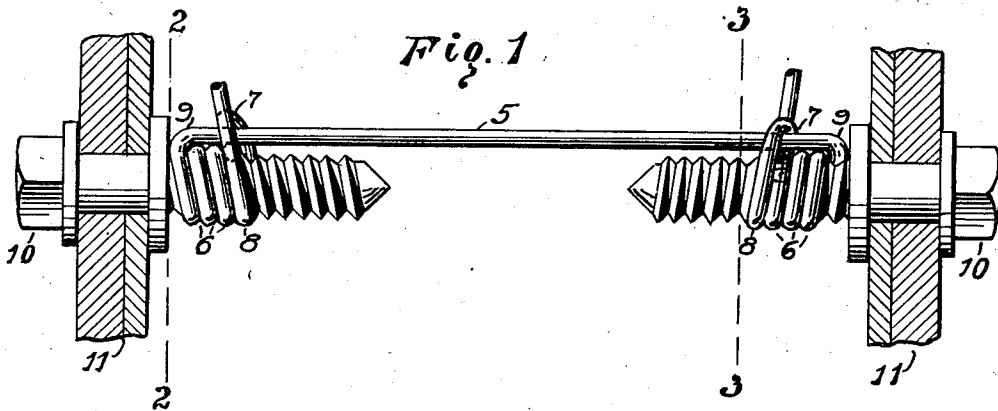


G. S. MUMFORD.
 APPARATUS FOR CONSTRUCTING CONCRETE WALLS.
 APPLICATION FILED OCT. 3, 1916.

1,218,445.

Patented Mar. 6, 1917.



WITNESSES:

George E. Leonard
[Signature]

Clarence S. Mumford
 INVENTOR

UNITED STATES PATENT OFFICE.

GURDON SALTONSTALL MUMFORD, OF GARDEN CITY, NEW YORK.

APPARATUS FOR CONSTRUCTING CONCRETE WALLS.

1,218,445.

Specification of Letters Patent.

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Application filed October 3, 1916. Serial No. 123,509.

To all whom it may concern:

Be it known that I, GURDON SALTONSTALL MUMFORD, a citizen of the United States, and resident of Garden City, in the county of Nassau and State of New York, have invented certain new and useful Improvements in Apparatus for Constructing 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 molding surfaces against which a concrete wall or other member is adapted to be cast. While the invention will be hereinafter described with relation to its application to a device for use in constructing concrete walls and the like, it is, of course, to be understood that it is capable of various other uses such, for example, as one end of a tie, binder, tension member, or the like.

In casting concrete walls, as well as floors or other integral parts of construction or design, it is customary to employ mold members between which the wall, surface, or other object is adapted to be cast. In order to hold surface or surfaces in proper relative position, tie members are frequently employed. All such tie members may be divided into two classes; those which are withdrawn on completion of constructive operations and those which are not withdrawn and remain an integral part of the concrete structure or object.

This invention falls in the latter class. It is plainly essential if the tie member is to remain in the concrete after completion, that it be as inexpensive as possible as it represents waste, structurally. It is desirable that the extremities of the tie member do not abut against the finished surface of the concrete thus causing defacement from subsequent rust, if the tie member be of metal subject to oxidization.

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 socket design, of maximum strength and free from any tendency to elongate, slip, or deform in the socket portion of its structure when under strain.

A further object is to provide a tie member of socket design at each end, fabricated from a single continuous piece of metal in such a manner that the strength and ri-

gidity of the sockets as a unit is equal to that of the connecting portion between the sockets. A further object is to provide a tie member fabricated from one continuous integral piece of metal without the use of a heat or stamping process which would impair the original strength of the metal and cause a break or deformation at the point or points of application of these processes, before the limit of strength was reached in other portions of the tie member. A further object is to provide a tie member of one continuous piece of metal and formed into helices at its extremities in such a manner as to engage and coact with threaded members, without damage to the threads of the threaded members or loss of shape or deformation in the helices when the tie member is put under excessive strain. Other objects will be in part obvious from the annexed drawings and in part indicated in connection therewith in 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 to fully 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 which are held together by a tie member positioned therebetween.

Fig. 2 is an end view of the tie member, as it would be seen if taken along the section 2—2, but for the sake of clearness the cross section of the bolt member is omitted.

Fig. 3 is a sectional view of the tie member taken along the section line 3—3, but for the sake of clearness the cross section of the bolt member is omitted.

Fig. 4 is a view similar to Fig. 1, showing a slight modification and is partly in section.

Referring now to the drawings in detail and more particularly to Fig. 1, there is

denoted at 5 the body of the tie member, consisting of a single piece of metal, preferably wire, terminating at its extremities in helical coils 6. These coils 6 are made from a plurality of turns of the body portion 5 and are bent back on said body portion, the inside termination of this winding 6 being bent in a reverse curve 7 and carried up over the body portion 5 and down in a reverse winding 8 to that of the coils 6, terminating in a tangent which abuts against the coils 6; thus effectually locking that end of the helix 6 to the body portion 5 and thereby preventing any spreading or deformation at 9 where the body portion 5 is bent over the coils 6 of the helix. These helical coils 6, when viewed from the same end and considering both extremities of the tie member as a whole will be seen to turn in opposite directions, whereby they may both receive the right hand threaded bolts 10, which screw into and through helices 6 and thereby hold the mold members 11 together in a fixed relation.

It is readily seen that when strain is applied through the body portion 5 to the socket fabrication 6, 7, 8, 9, that the only possible effect would be to tighten up on the coils 6 of the helices until the point was reached at 7 where such tightening was resisted by the locking coil 7 and reverse winding 8. It is also obvious that the locking coil 7 and reverse winding 8 prevents any stripping or movement of the body portion 5 where it bends over and merges into the helices at 9. The number of coils 6 of the helices depends upon the strength of the threads of the threaded members 10 and the strain to be transmitted. It is clear, however, that with too many coils 6, stripping or movement of the body portion might take place at 9. On the other hand, with only one or two coils at 6, stripping of the body portion 5 would be impossible, but the threaded portions of the bolt member 10 might be injured. The requisite number of coils 6 of the helices, necessary, can readily be ascertained, and thus a socket device is obtained, able to resist deformation, rupture, or change of shape under strains sufficient to develop the full strength of the body portion 5.

In Fig. 4 is shown a modification of this device, wherein the socket fabrication is shown at one end only, the opposite end being merely a continuation of the body portion 5, passing through the mold members 11 and being held on the outside by a set-nut and collar member 12. Such a modification would be applicable for foundation walls of concrete, where the projecting body member 5 would be covered with earth on completion, and the wall surface would not be visible. In this case the set-nut member 12 acts practically as an an-

chorage, the insertion of the bolt member 10 in the socket helix 6, 8, and subsequent screwing up furnishes power to force the mold members 11 into their required positioning.

As the method of use and operation of the device is thought to be clear from the above description, further detailed discussion thereof is thought 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 as fall 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 comprising an extended body portion having a helical coil at one end, said body portion extending along the outer side of said coil and connected therewith at the inner and outer ends thereof.
2. A tie member for use in concrete comprising an extended body portion having a helix at each end thereof, said helices each being connected at its inner and outer ends with the body portion.
3. A tie member for use in concrete comprising an extended body portion having anchorage means at one end and a helical coil at the other, said body member extending along the side of said coil and being connected therewith at the inner and outer ends of said coil.
4. A tie member for use in concrete comprising an extended body portion having a helical coil at one end, said body portion extending along the outer side of said coil and connected therewith at the inner and outer ends thereof, in connection with a threaded member which said coil is adapted to receive.
5. A tie member for use in concrete comprising an extended body portion having a helix at each end thereof, said helices each being connected at its inner and outer ends with the body portion, in connection with threaded members which said helices are adapted to receive.
6. A tie member for use in concrete comprising an extended body portion having anchorage means at one end and a helical

coil at the other, said body portion extending along the side of said coil and being connected therewith at the inner and outer ends of said coil, in connection with a threaded member which said coil is adapted to receive.

7. A tie member of the character described comprising a body portion having a helical coil at one end thereof, said body portion extending along the outer side of said coil and connected therewith at the inner and outer ends thereof, said coil having portions wound in opposite directions.

8. A tie member of the character described comprising a body portion having anchoring means at one end and a helical coil at the other formed from a single piece of wire, said body portion extending along the side of said helical coil and being connected therewith at the inner and outer ends thereof.

9. A tie member of the character described comprising a relatively long body portion having a helical coil at each end thereof, said helical coils each being connected at its inner and outer ends with the

body portion and each formed of a plurality of windings, the inner turn being in a reverse direction to the outer turn, and said device being formed from a single piece of wire.

10. A tie member of the character described comprising a relatively long body portion having a helical coil at each end thereof, said helical coils each being connected at its inner and outer ends with the body portion and each formed of a plurality of windings, the inner turn being in a reverse direction to the outer turn, and said device being formed from a single piece of wire, and threaded bolt members adapted to be screwed into said reversely turned windings.

Signed at the city of New York in the county of New York and State of New York this second day of October, A. D. 1916.

GURDON SALTONSTALL MUMFORD.

Witnesses:

WALTER B. WALKER,
GEORGE E. LEONARD.