G. S. MUMFORD.

TIE AND SPACER.

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1,238,696. Patented Aug. 28, 1917.

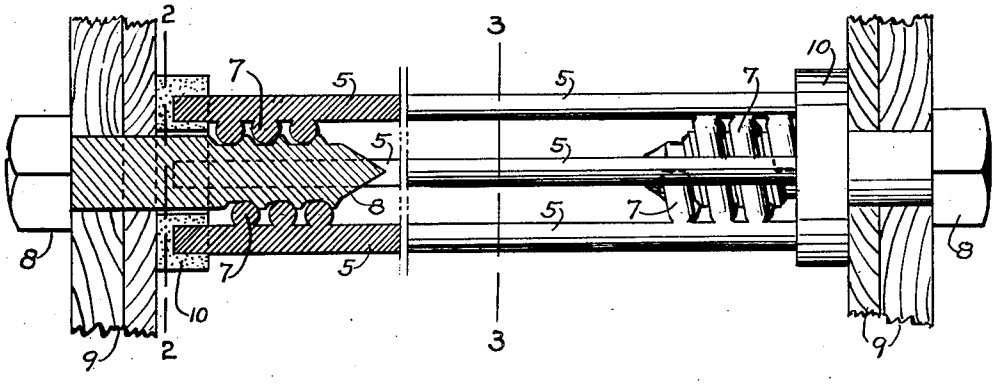


Fig. 1

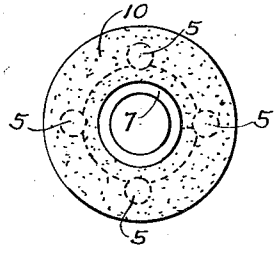


Fig. 2

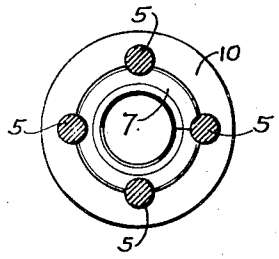


Fig. 3

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TIE AND SPACER.

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To all whom it may concern:

Be it known that I, GURDON SALTONSTALL MUMFORD, 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 Ties and Spacers, of which the following is a specification.

This invention relates to ties and spacers for molding apparatus and is especially adapted for use in concrete construction work.

One of the well known difficulties connected with concrete form work is to space and tie the forms efficiently and cheaply. It is not desirable to leave uncovered metal at the wall surfaces because of unsightliness and rust, and it is very necessary to obtain the maximum of stiffness with the minimum of material as in most cases it is difficult and expensive to remove the spacing apparatus and this material must be lost.

With this brief statement in mind, one of the objects of the present invention is to provide a simple, cheap, and practical spacer and tie particularly adapted for use in or with forms for erecting concrete buildings, walls, or the like. A further object is to provide a spacer with no metal abutting directly in the plane of the wall surface. A further object is to provide a spacer of maximum stiffness for the material used. A further object is to provide a tie member capable of considerable variation in tensile strength at a low manufacturing cost.

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

The 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 so 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, in which,

Figure 1 is a transverse view partly in section of the apparatus together with the side mold frames.

Fig. 2 is a sectional view taken along line 2, 2 in Fig. 1.

Fig. 3 is a sectional elevational view taken along line 3, 3 in Fig. 1.

Referring now to the drawings in detail and more particularly to Fig. 1 5, 5, 5, 5 denotes the body portion of the device and consists of four relatively straight pieces of metal, preferably steel wire of a circular cross section. These body members 5, 5, 5, 5 are welded to socket members 7, 7, which are placed at any desired distance from the ends of the body members 5, 5, 5, 5. The members 7, 7 each consist of a single piece of wire formed in helical coils adapted to act as a receiving thread for coacting threaded members, 8, 8, said threaded members or bolts being inserted through holes in the mold members 9, 9, engaged in socket members 7, 7 and screwed up. At the ends of the body members 5, 5, 5, 5 a ring of cement mortar 10 is cast in such a manner as to completely cover the ends of the body members 5, 5, 5, 5. When the bolt members 8, 8, are screwed up tight, the mold boards 9, 9 are brought to a firm tight bearing against the cement ring 10, and thus a rigid spacer is obtained in which no part of the metal abuts on the wall surface. Also a large bearing is obtained and there is no danger of the spacer cutting inside the forms and remaining as a projection on the wall surface. The mold members 9, 9 are thus spaced apart by a very rigid framework of steel rods. By varying the number of the body members 5, any required amount of strength may be had with a relatively small increase in manufacturing cost. As wire is by far the cheapest form of steel for an equivalent strength, this invention provides an extremely cheap and strong tie. In such cases where it is not desirable to use this invention as a spacer, the cement mortar members 10, 10 may be dispensed with and the socket members 7, 7 may be placed so that their outer coil is adjacent to the ends of the body members 5, 5, 5, 5.

It is also evident because of the number and arrangement of the body members and the relatively large amount of contact of the device with the concrete, that this invention will admirably serve the purpose of an anchorage in the wall for the purpose of supporting permanent or other fixtures by

means of the coacting bolt member, after the forms are withdrawn and the concrete construction completed.

Fig. 2 and Fig. 3 are cross sections shown and for clearness the bolt members 8, 8 are omitted.

While only a few of the numerous applications of the present invention have herein been illustrated and described, it is believed that numerous others will occur to those familiar with the art and the invention is not limited to the specific applications herein shown. It is also clear that this invention is adapted to various applications as a tie member pure and simple with slight modification.

From the above it will be seen that the invention is simple and practical in construction, cheap to manufacture and install, in short, is adapted to accomplish, among others, all of the objects and advantages herein 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:

I claim:

1. A unit for concrete work comprising a body portion consisting of a plurality of relatively straight members joined integrally at or near their ends by helical members, said straight members abutting on the outside circumference of the helical members, said helical members being adapted to receive coacting threaded members.

2. A unit for concrete work comprising a body portion consisting of a plurality of relatively straight members joined integrally near their ends by helical members adapted to receive coacting threaded members, in connection with cement members so placed at the ends of the body members as to completely incase said ends of the body members and to form a bearing for spacing purposes.

3. A spacer and tie for concrete work comprising a plurality of elongated body members joined integrally a distance back from their ends to socket members, said socket members each consisting of a single piece of metal formed in the shape of a helix adapted to receive a threaded member, said body members abutting on and being joined to the outside circumference of said helical socket members at each and every adjacent coil, in connection with coacting threaded members.

4. A spacer and tie for concrete work comprising a plurality of elongated body members joined integrally a distance back from their ends to socket members, said socket members each consisting of a single piece of metal formed in the shape of a helix, said body members abutting on and being joined to the outside circumference of said helical socket members.

5. A tie comprising a plurality of elongated body members joined integrally at their ends to socket members, each socket member consisting of a single piece of metal formed in the shape of a helix adapted to receive coacting threaded members, in connection with coacting threaded members.

Signed at New York in the county of New York and State of New York this twenty-seventh day of June A. D. 1917.

GURDON SALTONSTALL MUMFORD.

Witnesses:
LILLIAN GULBRANSEN,
HOWARD J. MANDELL.