July 25, 1933. J. M. WILLARD 1,919,645

FORM TIE

Filed April 3, 1931

Fig. 1.

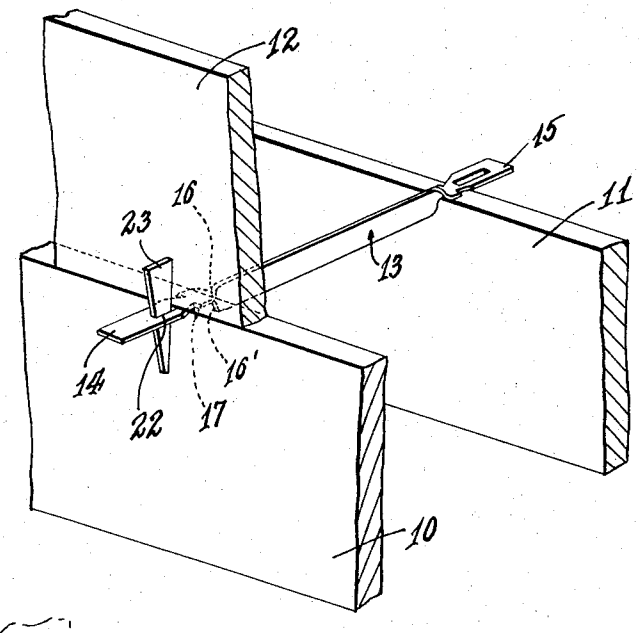


Fig. 2.

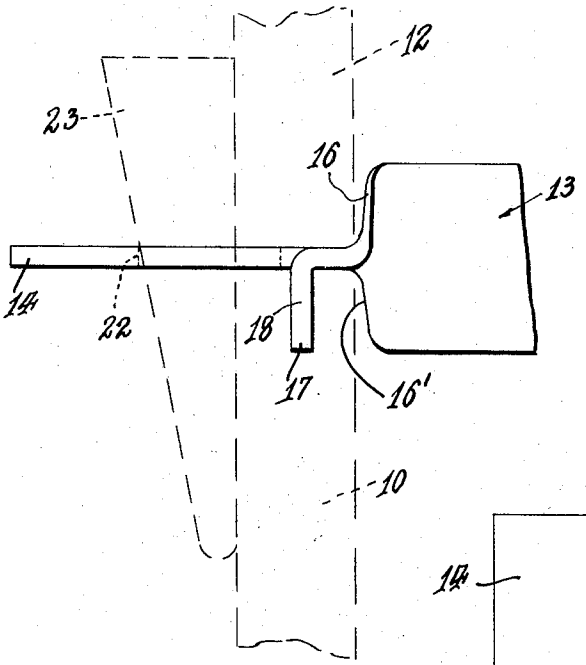


Fig. 3.

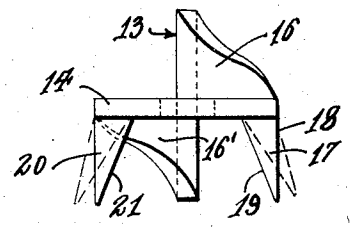
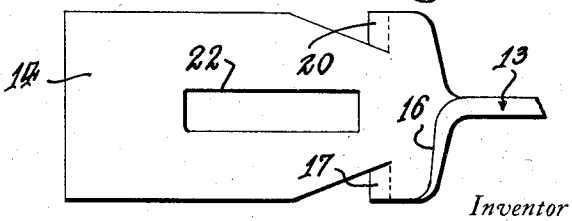


Fig. 4.



Inventor

John M. Willard

By Lyon & Lyon

Attorneys

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UNITED STATES PATENT OFFICE

JOHN M. WILLARD, OF LOS ANGELES, CALIFORNIA, ASSIGNOR, BY MESNE ASSIGNMENTS, TO CRELLIN MACHINE COMPANY

FORM TIE

Application filed April 3, 1931. Serial No. 527,389.

This invention relates to an extremely simple, substantially unitary form of device adapted to be employed as a tie for maintaining forms or molds, into which concrete or other cementitious material is to be poured, in positive spaced relation.

It is an object of this invention to disclose and provide a form tie which is inexpensive and effective. Another object of this invention is to disclose and provide a form tie capable of maintaining forms in positive spaced relation, that is, a form tie which is adapted to prevent forms from moving free from each other or away from each other.

A still further object is to disclose and provide a form tie which may be securely attached to a form by means which are integral with the tie.

These and other objects, uses, advantages and characteristics of this invention will become apparent to those skilled in the art from a consideration of the subsequent detailed description of a preferred form of the invention illustrated in the appended drawing.

In the drawing:

Fig. 1 is a perspective view of wall forms adapted to receive and retain a cementitious material said wall forms being held together in positive spaced relation by means of the tie rod or form tying device of this invention.

Fig. 2 is an enlarged side elevation of one end of the device shown in Fig. 1.

Fig. 3 is an enlarged end view of the device shown in Fig. 2.

Fig. 4 is an enlarged plan view shown in Fig. 2.

It is to be understood that the device shown in the attached drawing is merely illustrative of the general construction and mode of operation of the device and that the invention is not limited to the specific form there shown but instead embraces all such changes and modifications as come within the skill of the art.

As shown in Fig. 1, the wall forms may consist of boards or sheathing 10 and 11 between which the concrete or other cementitious material is to be poured. It is desired to maintain the forms or sheathing 10 and 11 in positive spaced relation so as to produce a wall of a desired thickness. This result is attained by means of the device of this invention which is made from a single piece of strap metal consisting of a body portion 13 and end portions 14 and 15. The end portions 14 and 15 are preferably integral with the body portion 13 and the end portions 14 and 15 lie in a plane substantially at right angles to the plane of the middle body portion 13. This construction is obtained by twisting the metal strap at two points, such points being separated a distance equivalent to the spacing which it is desired to maintain between the forms 10 and 11.

As shown in Fig. 2, for example, the end portion 14 is substantially horizontal whereas the central body portion 13 is substantially vertical. A shoulder or shoulders 16 and 16′ are thus formed by the twist made in the metal of which the device is composed, such shoulder 16 forming a stop against which the forms or sheathing 10 and 11 may abut.

In order to maintain the form ties in position during the erection of the form work and to facilitate the operation of the device, prongs are provided which may be embedded in the form work. Such prongs, such as for example the prong 17, are preferably punched out of and made integral with the end portions of the device. For example, the prong 17 may be of triangular form and be punched out of the end member 14 near the edge thereof so as to cause the prong 17 to lie in a plane substantially at right angles to the longitudinal axis of the strap. The prong 17 is preferably provided with one side 18 in alignment with the longitudinal edge of the end portion 14 and with an inclined edge 19. Furthermore, preferably two of such prongs are carried by each end portion. For example, prongs 17 and 20 may be carried by the end portion 14, the prongs 17 and 20 being provided with inclined edges 19 and 21 extending from the points of such prongs towards each

other. When the prongs 18 and 20 are driven into the sheathing, such as for example, the sheathing 10, the inclined faces or edges 19 and 21 cause the prongs 17 and 18 to be pushed apart, thereby assuming the position indicated by dotted lines in Fig. 3. When in such expanded position, the entire device is firmly held in the form.

After the device has been attached to the lower sheathing, such as the sheathing 10, an upper sheathing such as the sheathing member 12 may be placed thereabove. Horizontal movement of the sheathing member 12 may be prevented by the following means:

Each end portion 14 and 15 may be provided with a longitudinal slot or aperture 22, such longitudinal slot being adapted to receive a wedge member 23. After the upper sheathing member 12 is placed on the device, the wedge 23 may be inserted into the slot 22 and hammered into place, causing the sheathing members to move against the shoulders 16 and 16′, thus firmly connecting and holding the sheathing in place.

The simplicity of the form tie described hereinabove is apparent. It may be manufactured from any suitable metal capable of being manipulated in a punch press to form the end portions 14 and 15 in a plane substantially at right angles to the plane of the central or body portion 13 and produce the shoulders 16 described hereinabove at points where the strap is twisted. The anchoring prongs 17 are also punched out of the end portions.

Although in Figs. 1 and 2 the wedge 23 is shown in direct contact with the sheathing, it is to be understood that a suitable bearing plate may be slipped over the end portion 14 before the wedge 23 is inserted so that when the wedge 23 is hammered in, it will exert and distribute its pressure through such bearing plate over a greater area on the sheathing. This and numerous other changes may be made, all such changes and modifications as come within the scope of the appended claims being embraced thereby.

I claim:

1. A form tie made of a single piece of strap metal having end portions twisted along the longitudinal axis of the metal strap to position said end portions in a plane substantially at right angles to the plane of the middle body portion at a predetermined distance apart so as to form spreader stops at the points of twisting, and opposed triangular prong members bent out of the opposite edge portions of each of said end members to lie in a plane transverse to the longitudinal axis of said strap adjacent to said point of twisting, said prong members being adapted to enter form boards and hold them in contact with said twisted portion spreader stops.

2. A form tie made of a single piece of strap metal having end portions twisted along the longitudinal axis of the metal strap to position said end portions in a plane substantially at right angles to the plane of the middle body portion so as to form spreader stops at the points of twisting, and opposed triangular prong members bent out of the opposite edge portions of each of said end members to lie in a plane transverse to the longitudinal axis of said strap adjacent to said point of twisting, said prong members being provided with opposed edge portions inclined from the points thereof toward each other.

3. In a unitary form tie, the combination of a piece of strap metal having end portions twisted along the longitudinal axis of the metal strap to position said end portions in a plane substantially at right angles to the plane of the middle body portion so as to form spreader stops at the points of twisting, a longitudinally directed slot in each of said end portions, said slot being adapted to receive a wedge, and opposed triangular prong members carried by each of said end portions, said prong members lying in a plane transverse to the longitudinal axis of said strap adjacent to said point of twisting, said prong members being provided with opposed edge portions inclined from the points thereof towards each other.

JOHN M. WILLARD.