Nov. 1, 1949. T. SASS 2,486,683

CONCRETE FORM TIE ROD

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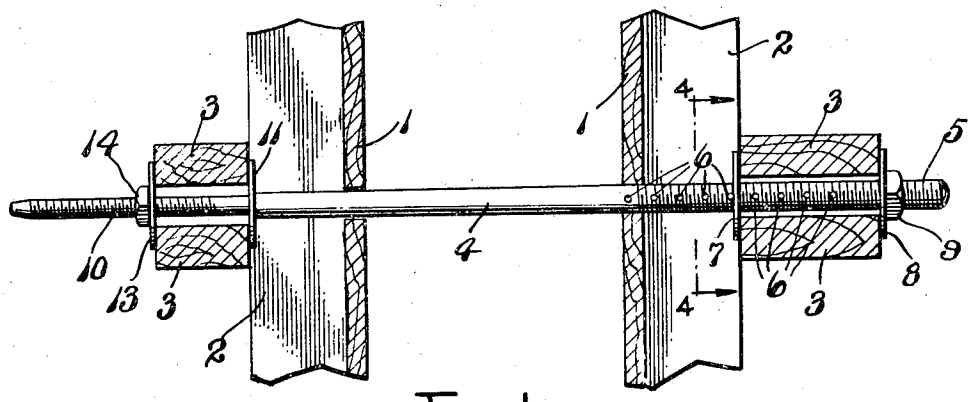


FIG. 1.

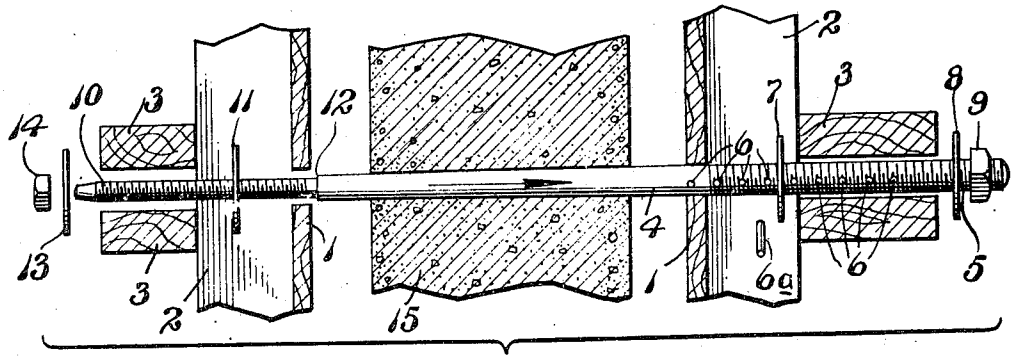


FIG. 2.

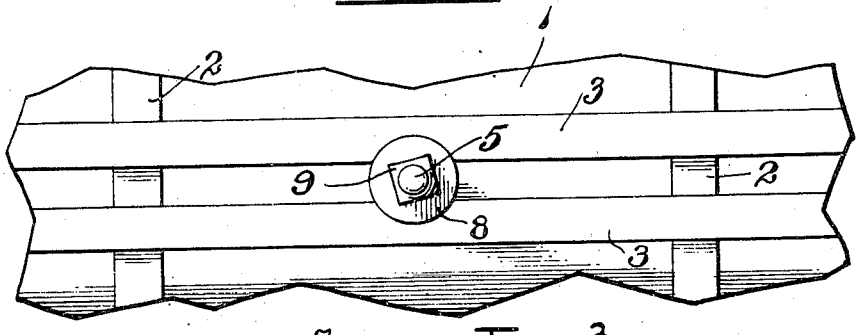


FIG. 3.

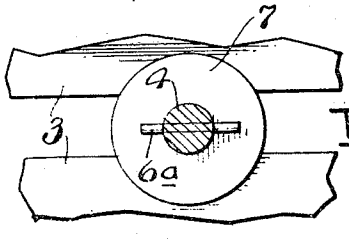


FIG. 4.

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CONCRETE FORM TIE ROD

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4 Claims. (Cl. 25—131)

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This invention relates to concrete form tie rods, which rods may be used in expeditiously setting up and locating a form to receive concrete, and as quickly knocked down and the form removed, the tie rods also being removed, after the concrete has set.

With my invention the tie rods serve to hold the sides of the form against outward spreading movement under the pressure or the more or less plastic concrete which is poured or otherwise deposited in the form, holding the concrete to a desired form and shape until it has hardened. After hardening the form sides are removed and with my invention the rods are struck upon at one end to break any bond that there may be between them and the hardened concrete, the rods thereupon being longitudinally withdrawn. This provides a concrete wall without the metal of the tie rods remaining in the wall, which metal under weather conditions is liable to become oxidized and rust, with a consequent staining of the concrete.

The tie rod which I have produced is of a simple and economical construction and with the use thereof, sides of forms may be securely held at a predetermined spaced apart distance from each other for a desired thickness of wall to be produced. And with the rods such thickness may be adjusted or varied in accordance with different thicknesses of walls wanted in a simple and practical manner. The tie rods also are secured in place without any necessity of driving nails and are removed without the necessity of withdrawing such nails. The binding of the forms in place so that the sides are predetermined, spaced distances apart from each other is entirely taken care of by the mere tightening of nuts, the removal of which releases the forms for disassembly.

An understanding of the invention may be had from the following description, taken in connection with the accompanying drawing, in which

Fig. 1 is a fragmentary vertical section through a concrete receiving form with a tie rod as used secured in place.

Fig. 2 is a similar section showing a disassembly of the form and rod from a finished concrete structure.

Fig. 3 is a fragmentary elevation of the form structure shown in Fig. 1, and

Fig. 4 is a fragmentary vertical section substantially on the plane of line 4—4 of Fig. 1, looking in the direction indicated.

Like reference characters refer to like parts in the different figures of the drawing.

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In the disclosure made, two vertical sides of the concrete receiving form are shown, including inner sheeting 1 which is nailed or otherwise permanently secured to vertical studding 2. The sections of the form, consist of sheeting at the inner side and studding connected thereto, may be of any desired height and length within the limitations of materials which are available. In setting up the form two of such sides are located approximately in parallel vertical planes and spaced approximately the desired distance apart, the sheeting 1 of each form having openings of any required number through which the tie rods pass.

At the outer sides of the form horizontal bars or wales 3 in pairs are located, the wales of each pair being spaced one a short distance, vertically from the other. The tie rod 4 of metal passes between the upper and lower wales 3 at one side of the form, through the openings in the sheeting 1 of the form sides, and then between the upper and lower wales of the pair of wales at the opposite side of the form. One end of the rod is exteriorly threaded for a distance as indicated at 5, and through the rod at said threaded end portion a successive series of fairly closely spaced openings 6 are diametrically made as shown in Figs. 1 and 2. Two heavy washers 7 and 8 of metal are located over the threaded section 5 of the rod one at the inner edges of the wales 3 and the other at the outer edges thereof, the positioning of the inner washer 7 being regulated by the passage of a pin 6a through a selected opening 6, against which pin the inner side of the washer 7 is adapted to bear. A nut 9 at the outer end portion of the threaded section 5, upon tightening, grips the wales 3 between the washers 7 and 8 and makes a secure but releasable connection of the wales with the tie rod or any number of them which may be used with any pair of the wales.

The opposite end portion of the rod 4, and said rod preferably is progressively decreased slightly in diameter for the length of its middle section, consists of an exteriorly threaded section 10 having a reduced diameter and over which an additional washer 11 is placed which is adapted to come against an annular shoulder 12 at the juncture of the section 10 with the intermediate tapered portion of the rod 4. A second washer 13 is placed over the end of the section 10 and a nut 14 threaded thereagainst, it being understood that the reduced diameter portion 10 of the rod has been passed between the wales 3 at the opposite side of the form. On tightening the nut 14

to the position in Fig. 1, such wales 3 at the opposite side of the form are gripped between the washers 11 and 13 and the wales may bear against the outer edges of the studding 2 of the adjacent side of the concrete form. With the vertical studding 2 at the opposite or first side of the form against their associated wales 3, the sheetings 1 of the two sides of the form are in vertical substantially parallel planes. The distance apart of the sheetings 1 may be adjusted and varied in accordance with which holes 6 are selected to receive the pin 6a. If, in Fig. 1, the pin 6a was moved to the left to one of the holes 6 inward of the washer 7, the distance between the sheetings 1 of the two forms would be lessened. And correspondingly by moving the pin to outer holes the distance between such sheetings increased.

When the form is set up as in Fig. 1, it is adapted to receive cementitious mixture, such as concrete, poured thereinto which may be and is shaped to form and will be held until the mixture has set and hardened. On disassembly, the nut 14 of each tie rod used is removed, thereby releasing the rod which upon being tapered or struck sharply against at the outer end of the section 10, can be jarred loose from any bond which it has with the concrete at 15 through which it passes, generally the nut 9 having first been loosened a sufficient amount to permit the longitudinal movement of the rod sufficient to break any bond. The removal of the nuts 14 of all of the rods associated with a pair of wales 3 at the side of the form releases such wales which may be removed. The wales at the opposite side which have previously been held between the washers 7 and 8 are released and may be removed and the rod thereupon fully withdrawn from the concrete, after which the washers 11 and 13 and the nut 14 are replaced.

With the present invention, a very practical, sturdy and durable concrete form tie rod is used which may be made of a length to cover a large number of thicknesses of concrete walls between maximum and minimum limits of thickness and without using extensions either screw connected or otherwise connected to the rod 4 inasmuch as the length of the threaded section 10 is not limited but may be as long as wanted. Similarly the length of the threaded section 5 and the number of holes 6 therethrough are not subject to limitations. The setting up and taking down, requiring the use only of a wrench to manipulate the nuts 9 and 14, avoids any driving and withdrawing of nails, the withdrawing particularly being difficult many times, and such nails damaging the parts into which driven.

The invention is defined in the appended claims and is to be considered comprehensive of all forms of structure coming within their scope.

I claim:

1. A tie of the class described comprising, a metal rod having one end portion exteriorly threaded, a nut thereon, two plates located over the threaded portion said portion passing therethrough, said threaded portion having a transverse opening therethrough, a pin passing through said opening against which the inner of said plates is adapted to be engaged, said rod at its opposite end having a portion of reduced diameter with an annular shoulder at the inner end thereof at its juncture with the remainder of the rod, said second end portion being exteriorly threaded, a nut screwed thereon, and two plates each having an opening therethrough, through which such reduced end portion passes, the inner of said plates being adapted to be brought against and stopped by said shoulder.

2. A structure as described in claim 1, said rod having an intermediate portion between said shoulder and the first exteriorly threaded end portion of the rod, said intermediate portion being of progressively decreasing diameter from the said first threaded end portion to the shoulder.

3. A structure as described in claim 1, all of said plates being of flat metal and of a generally circular form, each having a substantially central opening therethrough.

4. A tie rod as described comprising, a cylindrical rod having an immediate plain section and two end sections each exteriorly threaded, one of said sections being of a smaller diameter than the intermediate section or the other end section with a shoulder at the inner end of said smaller diameter section, nuts screw connected with each of the said end sections of said rod, a pair of plates of flat metal each having an opening therethrough mounted upon each of the end sections of said rod, said end sections passing through said plates, the inner plate mounted upon the smaller diameter end section having an opening therethrough less in diameter than the exterior diameter of said shoulder, and means adjustably carried by the other of said end sections against which the inner plate of the pair of plates thereon is adapted to be brought to bear.

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No references cited.