March 12, 1935. P. BEGHETTI 1,994,166

CONCRETE FORM APPARATUS

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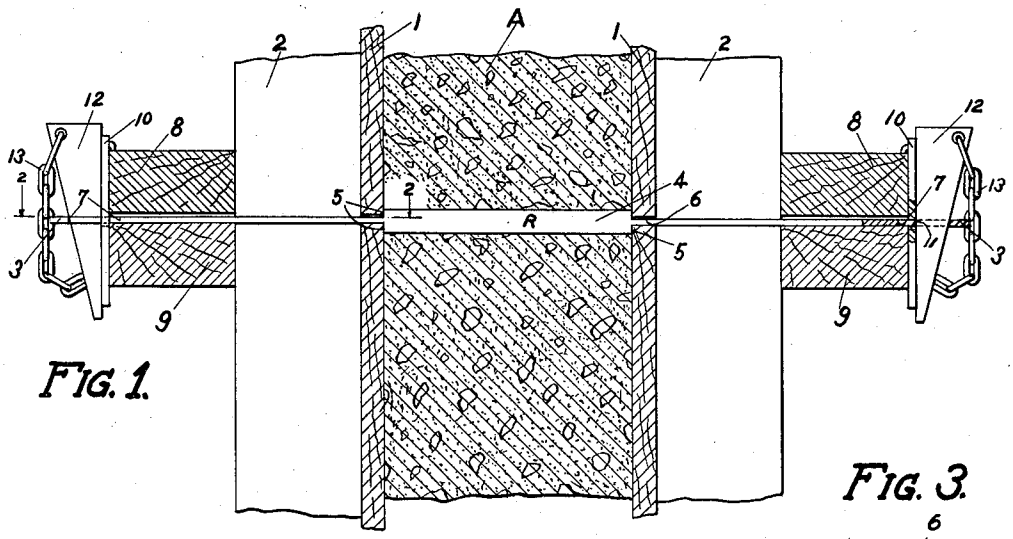


FIG. 1.

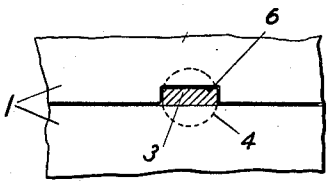


FIG. 3.

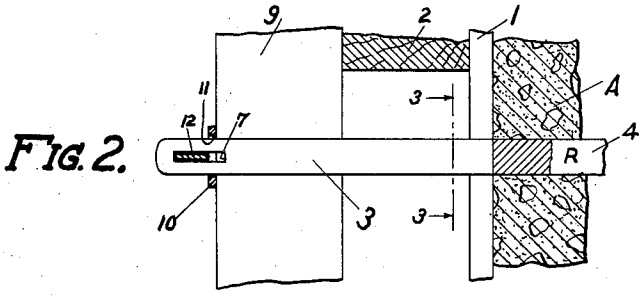


FIG. 2.

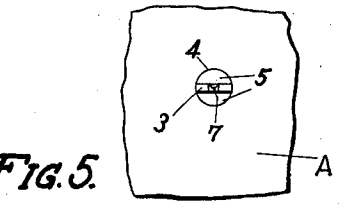


FIG. 5.

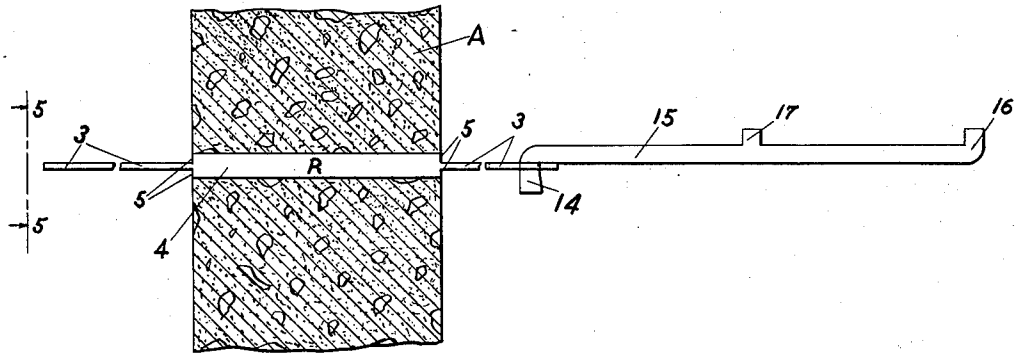


FIG. 4.

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CONCRETE FORM APPARATUS

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Application February 16, 1932, Serial No. 593,238

4 Claims. (Cl. 25—131)

This invention relates to mold changes as used for holding together the sides of molds or forms for concrete walls in buildings or columns, etc.

The objects of the invention are to provide a simple clamp for spacing and retaining in position the sides of the forms or molds as set up for receiving wet mixed concrete or cement in the building of concrete walls, columns, etc., which mold clamp is easily used in ordinary form construction and quickly removed when desired.

Other objects will appear in the following description.

In the drawing accompanying this application

Fig. 1 is a section of a concrete wall and the wall forms held in place with my invention.

Fig. 2 is a sectional view of a portion of Fig. 1 as seen from the line 2—2 of Fig. 1.

Fig. 3 is an enlarged sectional view of a portion of Fig. 2 as seen from the line 3—3 of Fig. 2.

Fig. 4 is a section of a concrete wall with the forms and showing means for receiving a portion of my device from the concrete wall in which it is partially embedded.

Fig. 5 is an end view of the portion of my device shown in Fig. 4 as seen from the line 5—5 of Fig. 4.

One of the principal objections heretofore in concrete building construction where the wall forms are spaced and held together by straps and metal rods, is that the metal rods or straps must be left in the concrete walls, after the forms are removed and the concrete has set. Where wires are used, the same objection is made. Where rods and wires are used, the ends of the rods or wires are broken off adjacent the outer surfaces of the walls, leaving the ends exposed. Efforts to overcome this objection have been made by making special tapered rods which may be pulled out of the concrete walls, and the holes in the wall then filled with cement. However, where these devices have been used, objections have been raised to the size of the holes left in the wall, and the contractors object because the devices can be pulled out from one side only.

My invention eliminates the objections noted and provides improved means for setting up the molds or forms, insures the proper spacing of the form sides, and is quickly removed after the concrete walls are set.

In the drawings the mold or form for the concrete wall A comprises opposed walls 1 of boards or other sheet material. The boards of the walls are supported on rows of studding 2. The proper spacing of the form walls 1 is accomplished by means of tie rods R running transversely across the form and extending through the walls to a distance beyond the studding on either side thereof.

The tie rods R preferably comprise solid rods as shown in the drawing, or they may be made of pipe. Opposite end portions 3 of the rod are flattened on opposite sides as indicated in the drawing, leaving a central section 4 enlarged. The end portions 3 may be flattened by stamping or opposite sides of the rod may be ground down. In either case it is important that a relatively square shoulder 5 be formed at the juncture of the flattened end portion and the enlarged central portion.

In setting up the form walls, the rods extend horizontally transversely of the walls with their flattened end portions disposed in a horizontal plane between the adjacent edges of the superposed boards forming the walls. In some instances the edge of the board resting on the flattened portion is formed with a notch 6 to receive the flattened portion so the edges of the boards will come together or nearly so, although many times a satisfactory wall may be built without the notch.

The outer ends of the rod R, or the outer ends of the flattened portions 3 respectively, are provided with a slot 7 extending longitudinally thereof.

The shoulders 5 on the rod form stops to limit the inward movement of the form walls along the rod toward each other, and in order to draw the walls together, I provide transversely extending beams 8 and 9 above and below the ends of the rod outwardly of the studding 2 positioned with an edge of the beams each against the outer edge of the studding. These beams substantially rest against the upper and lower sides of the flattened end portions 3 of the rod R respectively and are forced against the studding, thereby drawing the wall 1 on either side against the shoulder on the rod, thus spacing the walls apart the distance of the enlarged central portion 4 of the rod.

In order to force the walls inwardly toward each other along and against the stops, a flat bearing plate 10 provided with an opening 11 shaped to pass the flattened end of the rod R is slipped over the outer end of the rod and against the outer edges of the transverse beams 8 and 9 and a wedge plate 12 is inserted at its reduced end in the slot 7 outward of the plate 10.

The inner edge of the wedge thus engages against the outer face of the bearing plate, and the outer edge of the wedge engages the rod at the outer end of the slot, so when the wedge is forced into the slot the walls 1 are forced inwardly along the rod until they abut the shoulders on the rod and are frictionally held in this position by the wedge and beams and studding between the wedge and the wall. A chain 13 or a wire connects the wedge and the bearing plate 10, so they will always be together, ready for use.

After the concrete wall has been poured and set, generally the following day after pouring, the wedge 12 and bearing plate 10 are removed and the beams 8, 9, studding 2 and walls 1 are taken down. It will then be seen, as shown in Fig. 4, that the rods R may be drawn out of the wall from either side without removing any auxiliary keepers on the rod, or breaking the concrete, merely by inserting the hooked end 14 of a rod 15 in the slot 7 in either end of the rod R and driving with a hammer against an upturned end 16 formed on the outer end of rod 15. I also provide another projection 17 intermediate the ends of the rod 15 for driving against, since the workmen on scaffolds generally have insufficient footing to enable them to completely remove the rod by driving only on the portion 15 of the driving rod. The rod R is first partially driven out by driving on the projection 16 and the finish of the driving is on projection 17.

It will be seen from the foregoing description that this device is extremely simple and economical to make, and in its application it makes the setting up of wall forms a very simple operation, since there are no special pins or clips required as stops on the rod to become set into the concrete wall and requiring removal thereof in order to pull the rod out, and no special tapering of the spacing rod or threads and nuts for drawing the forms together. Only a small hole is left in the wall after removal of the rod, which is easily and quickly filled up with a cement gun, and the rod may be pulled out from either side of the wall.

Having described my invention, I claim:

1. In concrete form apparatus, a spacer rod adapted to pass transversely through the form, said rod having an imperforate body portion of uniform thickness throughout its length and end portions of reduced thickness, the sides of the form being provided with openings adapted to pass the reduced ends only of the spacer rod to the outer sides thereof respectively whereby the inner sides of the form will be limited against movement toward each other by the enlarged body portion, removable means on the ends of the spacer rod outwardly of the walls of the form for holding the walls in spaced relation against the ends of the enlarged body portion, and means for drawing the spacer rod out of the concrete wall after removal of said means and the wall form, said latter means comprising a driving rod provided with a hooked end, means on the outer end of the spacer rod adapted for engagement with the hooked end of the driving rod and a projection extending laterally from the driving rod to drive against, said driving rod extending longitudinally of the spacer rod when in engagement therewith.

2. In combination with a tie rod of the character described for concrete forms in which the rod is provided with a transversely extending opening in an end thereof, means for withdrawing said tie rod from the concrete wall after removal of the form walls comprising a driving rod provided with a hook at one end adapted for engagement in the opening the end of the tie rod and a member on the driving rod spaced therealong from said means for driving against.

3. A concrete form tie rod comprising a solid one-piece solid rod having flattened end portions adapted to pass between the boards of the opposed walls of a wall form, the portion of the rod between said end portions being cylindrical in cross section and of a uniform diameter throughout its length substantially equal to the maximum width of said end portions whereby the rod may be rotated for loosening and withdrawing from either side of the finished wall of concrete, means limiting movement of the wall forms inwardly along said rod comprising square shoulders formed on the rod transversely thereof at the junction of the end portions and the portion of the rod between the ends, said shoulders having axially facing flat surfaces adapted to directly engage the opposed sides of the walls of the form respectively, said flattened end portions being provided with an opening extending therethrough and wedge means arranged and adapted to extend through said openings and to engage the outer side of the wall for retaining the walls of the form against said shoulders.

4. In concrete wall form apparatus, a tie rod comprising a solid rod having end portions adapted to pass through the opposed walls of a form, said rod being of a substantially uniform maximum diameter throughout its length, means formed on said rod arranged and adapted to support the walls of the form spaced apart, removable means secured to the end portions of the rod for retaining the walls of the form on the rod in spaced relation, said end portions being provided with openings therethrough and means formed to engage in said openings for withdrawing the rod from the concrete wall after removal of the wall form and the means for retaining the walls in spaced relation.

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