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F. E. VANSANT.

METHOD OF HOLDING AND RAISING FORMS FOR BUILDING CONCRETE TANKS AND BUILDINGS.

APPLICATION FILED APR. 2, 1906.

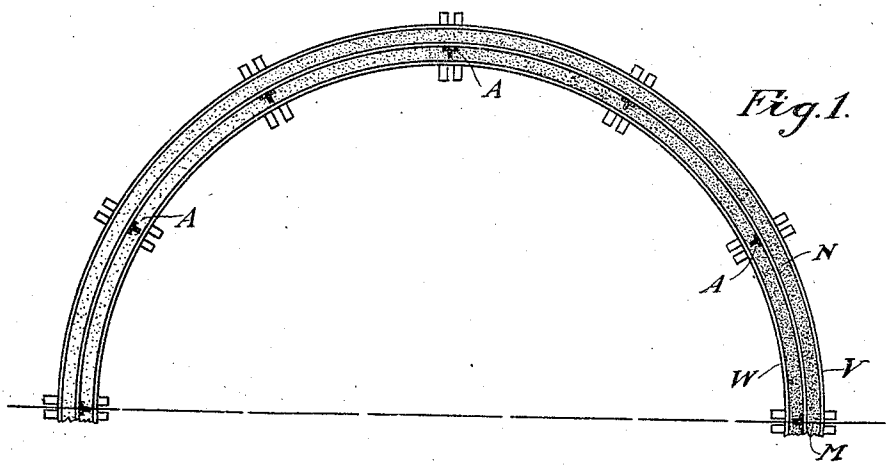


Fig. 1.

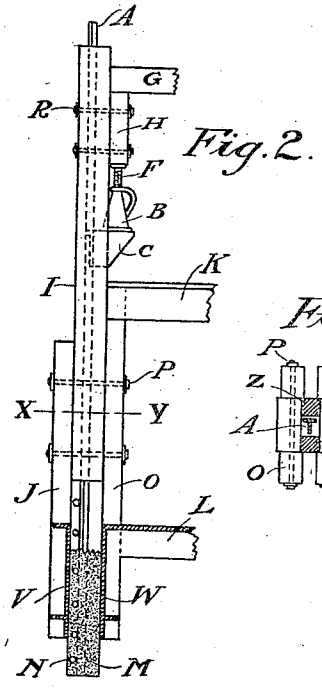


Fig. 2.

Fig. 5.

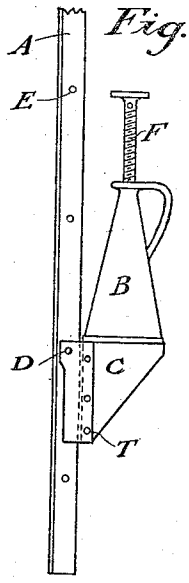


Fig. 3.

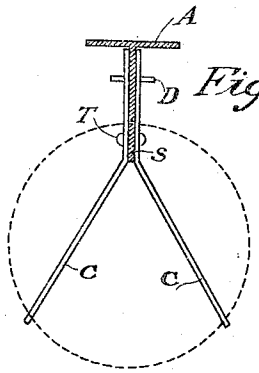


Fig. 4.

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UNITED STATES PATENT OFFICE.

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METHOD OF HOLDING AND RAISING FORMS FOR BUILDING CONCRETE TANKS AND BUILDINGS.

No. 828,076. Specification of Letters Patent. Patented Aug. 7, 1906.

Application filed April 2, 1906. Serial No. 309,701.

To all whom it may concern:

Be it known that I, FRANCIS E. VANSANT, a citizen of the United States, residing at Topeka, in the county of Shawnee and State of Kansas, have invented new and useful Improvements in Methods of Holding and Raising Forms for Building Concrete Tanks and Buildings, of which the following is a specification.

My invention relates to the method of holding and raising the form in which the wall of the tank or building is molded or set, the form itself being adapted to be raised higher and higher always at the top of the wall, so that the concrete can be filled in on top of the last section of wall, and thus the wall continued to the desired height.

It has been the practice heretofore to hold this form in place by means of timbers built from the ground up and to raise it from time to time by means of jack-screws placed on the timbering and under the form; but this method involves the use of a vast amount of timbering, a great deal of danger, and the men at work are usually down in the hole out of sight of the foreman, besides it being practically impossible to keep the form plumb and level at all times on account of the men at the jack-screws not being in the open view.

Objects of my invention are to provide for raising the form and keeping it level at all times, to provide for keeping the men who raise the form out of the way of the other workmen and out of danger, to make the work more expedient and cheaper, and to avoid the use of the timbering. I attain these objects by the devices and arrangements hereinafter described and claimed; and the invention consists of the parts, improvements, and combinations herein set forth and claimed.

In the drawings accompanying and forming part of this specification and in the description thereof I have shown the invention in its preferred form and have shown the best mode of applying the principles thereof; but it is to be understood that the invention itself is not to be confined to these drawings and the description of the drawings, that it may be applied to other uses, that parts and combinations as separately claimed may be used either with or without the other devices of similar general nature to those herein described, and that I contemplate changes in form, proportion, materials, arrangement, the transposition of parts, and the substitution of equivalent members without departing from the spirit of the invention.

Figure 1 is a half plan view of a tank in process of construction, showing the form applied thereto and the location of the vertically-disposed reinforcing-rods to which the jack-screw-supporting brackets are to be adjustably attached. Fig. 2 is a vertical sectional view of the form in place on the wall, showing the bracket and jack in position and also the positions of the floors. Fig. 3 shows the T-iron extended above the wall and the method of attaching the bracket thereto for supporting the jack. Fig. 4 shows a section of the T-iron and a plan of the top of the bracket with the pin by which the bracket is secured to the T-iron. Fig. 5 is a section through X Y of Fig. 2, showing especially the parts of the form which form a guide for the T-irons.

Similar letters of reference indicate like or corresponding parts throughout the several views.

In the drawings I have illustrated the invention in use in the building of a circular reinforced concrete wall, as in the building of reinforced concrete elevator-tanks, grain-storage tanks, and the like.

M is the circular concrete wall under construction, and N N represent a number of reinforcing-rods extending horizontally around and embedded in the wall in the usual manner.

J J and O O represent a number of studs, preferably arranged in pairs, to which are secured the outer and inner sheetings V and W, respectively, between which the concrete is molded and set. This form, it is to be understood, extends entirely around the structure.

At L is located the working floor—that is, the floor on which the men work who fill in the concrete—while at a suitable place above this floor are located a number of ties, as G, for properly holding the form rigid. Now it has been customary heretofore when the concrete has been filled in and set to a proper level to then raise the entire form by means of timbering underneath and using the jacks on the timber under the form to raise it.

My invention consists of the novel method now to be described.

As an additional reinforcement for the concrete wall I provide a series of vertically-disposed rods, which may be of any suitable size,

material, or shape, but which I prefer to be the T-irons A A shown in the drawings. These are embedded in the wall during the process of construction, are just inside the horizontal reinforcing-irons N N, and are also during process of construction extended up above the wall, so as to form supports for the brackets on which rest the jack-screws which are used to raise and to hold the form, the bracket and jack-screw being, however, above the working floor and where they are in plain view. Extending up from the studs J J and O O are the studs and guides I I and Z Z, (shown clearly in Figs. 2 and 5,) and between these guides is located the T-iron A. Each T-iron has a series of holes E E, preferably spaced regularly apart and on a level in all the T-irons. I construct a bracket for each T-iron, preferably in the form shown in the drawings, especially in the enlarged details Figs. 3 and 4, consisting of the two wings C C, riveted solidly to the fillet S by bolts or rivets T T and extended so as to fit snugly on the opposite sides of the web of the T-iron, to which it may be adjustably and removably secured by means of a pin D passing through corresponding holes in said wing extensions and said web. This bracket C supports a jack B, and the jack in turn supports the whole frame or form by the block H, which is firmly secured to the guides or studs I I by means of bolts R R under the tie G. K is the floor on which the men stand who work the jacks. Obviously the floors L and K or their joists and the ties G extend from one side to the other. There are any suitable number of vertical form-supporting rods, as the T-irons, extending up from the wall, with brackets, jacks, &c., to correspond.

In use when the wall is completed to the level of the floor L the form may be raised by raising the brackets C C to the next hole E and then working the jacks. By using the jacks alternately this operation may be continued as fast as the work on the wall proper is progressed. As the men working the jacks are in plain view and up above the other workmen, they can work in perfect harmony and without danger, with the result of always keeping the form plumb and level. Obviously this method may be continued to any height and with greater economy, safety, expediency, and at the same time with more satisfactory results in the way of workmanship than with the cumbersome method of timbering now in use.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination of a concrete wall, vertical rods embedded therein and extending up therefrom, a form, brackets adjustably secured to the rods, and jacks supported on the brackets and supporting the form.

2. The combination of a concrete wall, vertical reinforcing-rods extending up therefrom during the process of construction, a form, brackets adjustably secured to the rods, and jacks supported on the brackets for supporting and raising the form.

3. The combination of a concrete wall, vertical reinforcing-rods extending up therefrom during the process of construction, a form, a working platform therein, brackets detachably secured to the vertical reinforcing-rods, jacks supported on said brackets for supporting and raising the form, said brackets and jacks being located above the working platform.

4. The combination of a concrete wall, rods extending up therefrom during the process of construction, a form, a working platform therein, brackets attached to the vertical rods, guides for said rods, and jacks supported on the brackets and supporting and raising the form, said brackets and jacks being above the working platform.

5. The combination of a concrete wall in process of construction, reinforcing vertically-disposed T-irons extended above the wall, a form, a working platform therein, guides in the form embracing said vertical T-irons, brackets detachably and adjustably secured to said T-irons, jacks supported on said brackets for supporting and raising the form, a platform for the men working the jacks, blocks and ties above said platform, said guides, brackets, jacks, and jack-working platform all being above the concrete-working platform.

6. The combination of a concrete wall in process of construction, vertically-disposed reinforcing T-irons extending above the wall, a form, a concrete-working platform therein, guides in the form embracing said T-irons respectively, brackets detachably and adjustably secured to said T-irons, jacks supported on said brackets and supporting and for raising the form, said brackets and jacks being above the concrete-working platform.

7. The combination of a concrete wall in process of construction, vertically-disposed rods secured to the wall and extended above the same, a form, a concrete-handling platform therein, guides therein for said rods, brackets detachably and adjustably secured to the rods, and jacks supported on the brackets for supporting and raising the form, said brackets and jacks being above the concrete-handling platform.

In testimony whereof I have hereunto signed my name in the presence of subscribing witnesses.

FRANCIS E. VANSANT.

Witnesses:
Z. T. FISHER,
C. J. ROSEN.