

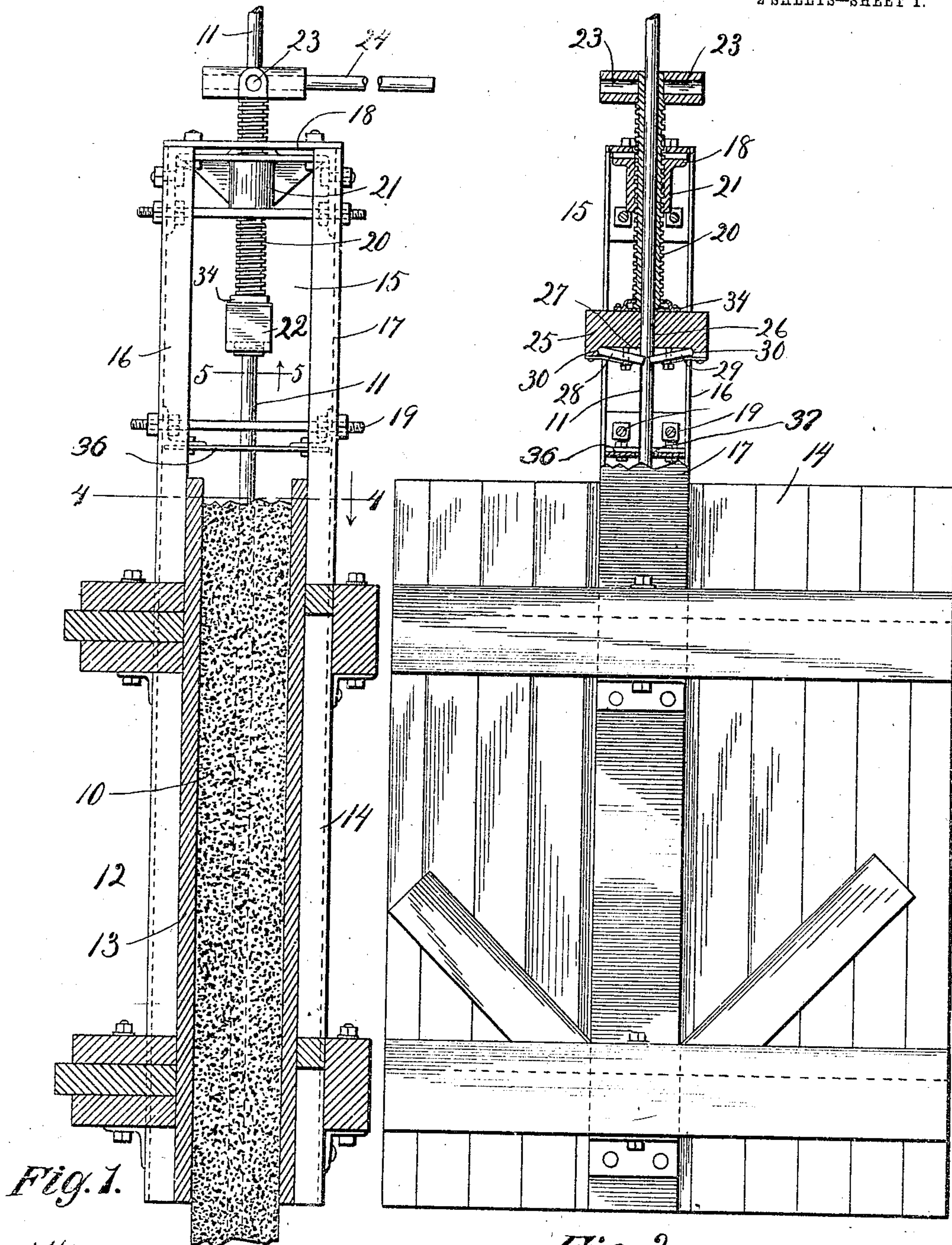
No. 855,452.

PATENTED JUNE 4, 1907.

R. H. FOLWELL & W. R. SINKS.
APPARATUS FOR RAISING CONCRETE FORMS.

APPLICATION FILED FEB. 4, 1907.

2 SHEETS—SHEET 1.



Witnesses:
W. H. Cotton
Charles B. Gilson

Fig. 2. Inventors
Russell H. Folwell.
William R. Sinks.
By Louis K. Gilson Atty.

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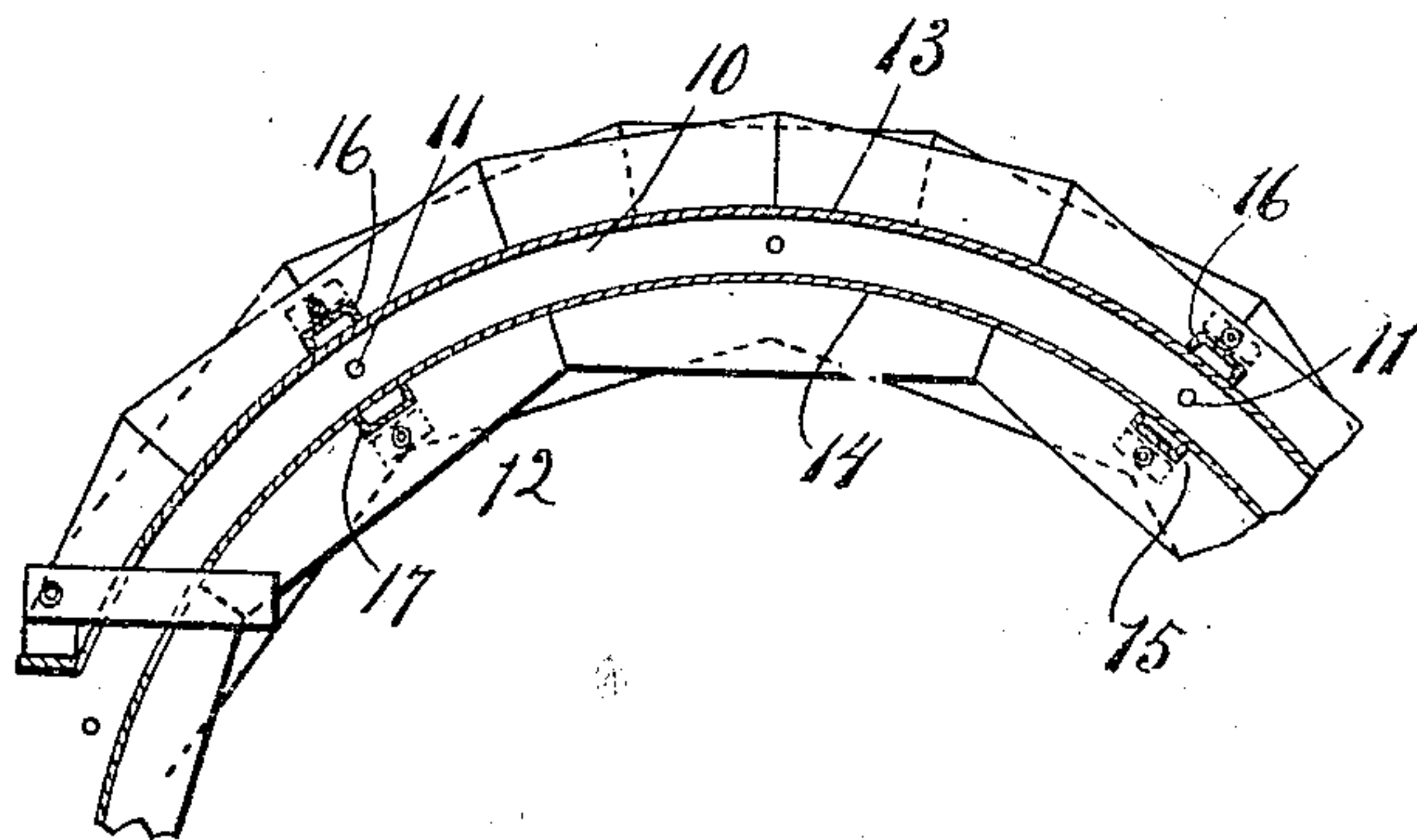


Fig. 4.

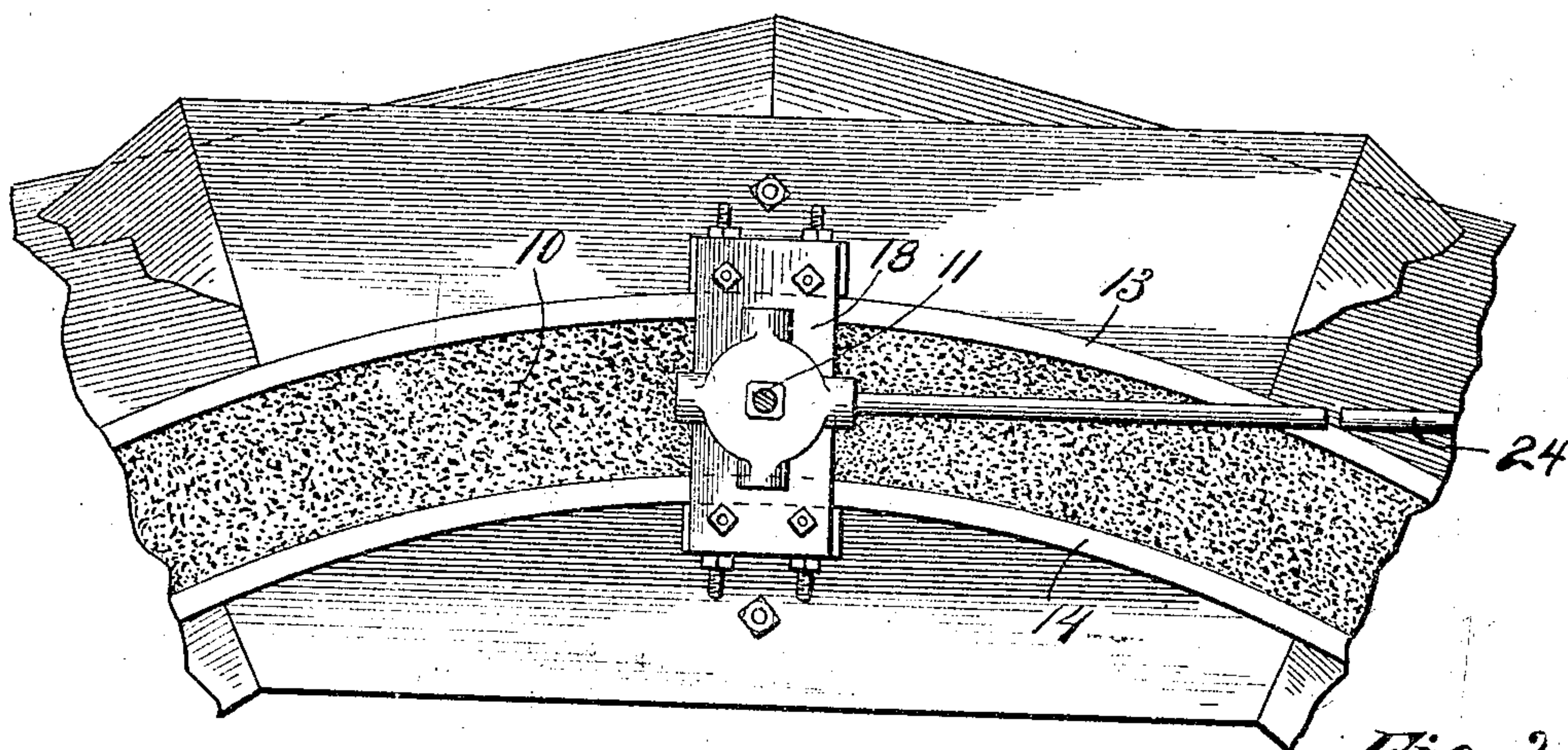


Fig. 3.

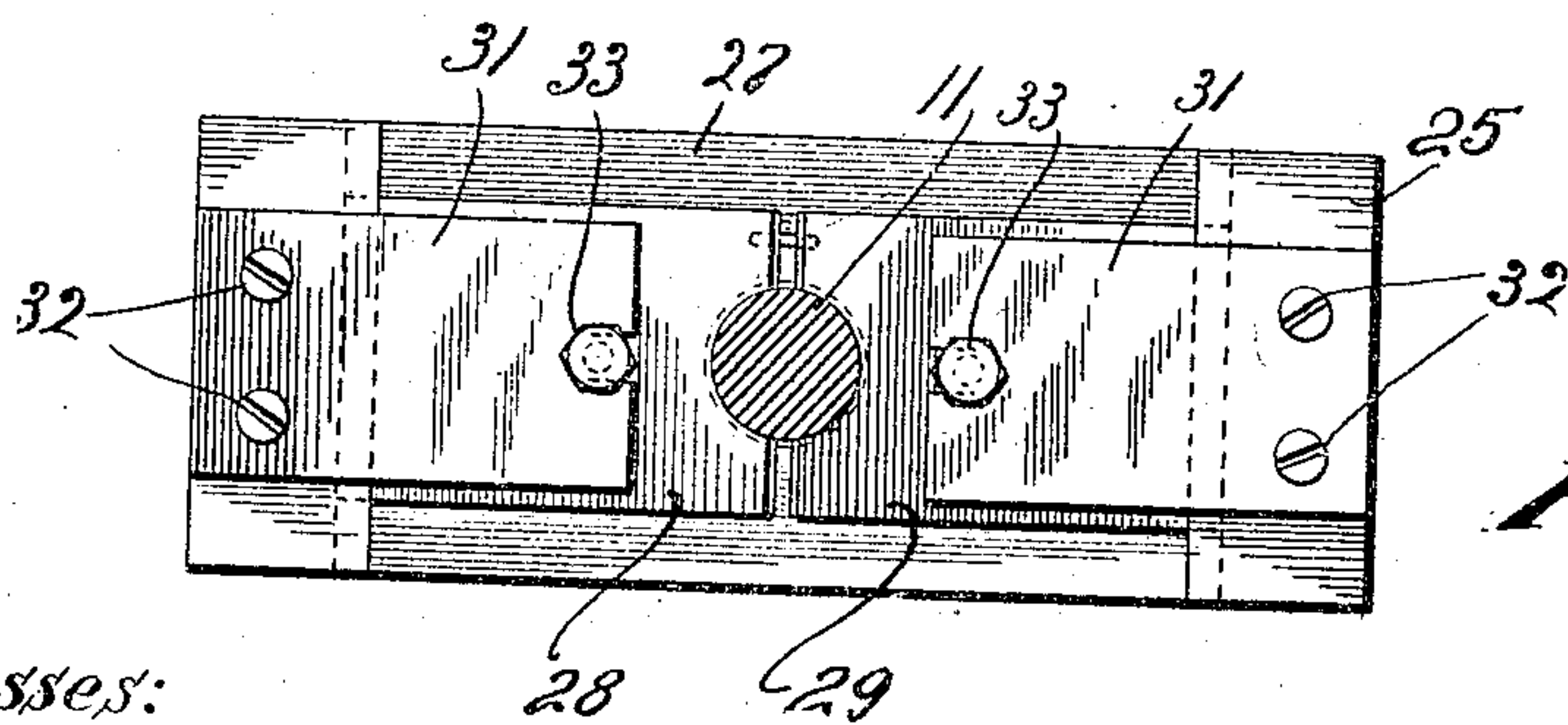


Fig. 5.

Witnesses:
W. H. Cotton

Charles B. Gilson.

By

Inventors
Russell H. Folwell,
William R. Sinks.
Louis A. Gilson Atty.

UNITED STATES PATENT OFFICE.

RUSSELL H. FOLWELL AND WILLIAM R. SINKS, OF CHICAGO, ILLINOIS.

APPARATUS FOR RAISING CONCRETE FORMS.

No. 855,452.

Specification of Letters Patent.

Patented June 4, 1907.

Application filed February 4, 1907. Serial No. 355,715.

To all whom it may concern:

Be it known that we, RUSSELL H. FOLWELL and WILLIAM R. SINKS, citizens of the United States, and residents of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Apparatus for Raising Concrete Forms, of which the following is a specification, and which are illustrated in the accompanying drawings, forming a part thereof.

The invention relates to means for erecting concrete structures, and more particularly to apparatus for supporting and raising the forms or molds and the staging employed in building vertical concrete walls.

The object of the invention is to facilitate the erection of concrete structures, and the invention is exemplified in the apparatus to be hereinafter described and illustrated in the accompanying drawings, in which

Figure 1 shows in vertical cross-section a detail of a concrete wall in course of erection, and apparatus constructed in accordance with the invention applied thereto; Fig. 2 is a side elevation, partly in section, of the same; Fig. 3 is a top plan view of the same; and Figs. 4 and 5 are sectional views taken on the lines 4—4 and 5—5, respectively, of Fig. 1.

A detail of the vertical wall of a concrete structure is shown in the drawings at 10. It is provided with the usual vertical stays 11, about which the concrete mixture is formed in building, the concrete then being confined, until set, in a form 12 comprising mold boards 13, 14, applied to either side of the wall, and carried by a frame 15, which straddles the top of the completed portion of the wall. As shown the frame 15 is composed of channel irons 16, 17, united by a head block 18, and tied together below the head block by threaded bolts 19 designed to prevent the spreading of the mold at its base.

Preferably a plurality of frames 15 are provided, these being located at intervals along the wall 10, and the mold boards 13, 14, may be continued between the frames, as most clearly shown in Fig. 4, to provide an integral form for the entire wall of the structure to be erected. In use this form is raised from time to time as the building of the wall proceeds, and by means of the invention this raising is effected by lifting jacks which react upon the stays 11 of the wall 10. The building up of scaffolds or blocking, or the use of other supports which must be discarded

when the wall is completed, is thereby avoided.

As shown each of the frames 15 is so disposed as to embrace one of the stay rods 11 of the wall, and an externally threaded sleeve 20 incloses the rod 11 and turns in a nut 21 carried by the head 18 of the frame 15. At the foot of the sleeve 20 there is mounted, in such a way as to permit independent rotation of the sleeve, a clutch 22 for gripping the rod 11. At the upper end of the sleeve 20 are laterally-directed sockets 23, into any one of which a bar 24 may be inserted for turning the sleeve.

Preferably the clutch 22 takes the form of a stout block 25 having a central aperture 26 for receiving the rod 11, and having its lower face recessed, as indicated at 27, to accommodate a pair of clamping jaws 28, 29. The jaws 28, 29, each have a rounded base 30, which engages the correspondingly-shaped wall of the recess 27 to permit the swinging of the jaws over the opening 26 after the manner of a toggle, and each of the jaws is normally raised by a spring 31 which, as shown, takes the form of a plate, secured to the block member of the clutch by screws 32. The downward movement of the jaws is limited by headed screw-bolts 33, which extend through apertures in the jaws into the block 25. The foot of the sleeve 20 bears upon the top of the block 25, and is rotatably connected to the block by means of intercalating flanges 34, 35, formed on the block and on the sleeve, respectively.

In building a wall the form 12 is fitted over the foundation (not shown), the sleeve 20 at each of the frames 15 being applied to one of the stay rods 11, and being secured at any desired height thereon by means of the clutch 22, for supporting the form. The space between the mold boards 13, 14, is then filled with concrete in the usual manner, the frames 15, with the mold boards 13, 14, being raised a short distance from time to time as the filling proceeds by turning the threaded sleeve 20 provided at each frame. In this way the wall may be made of any desired height by the use of a single form, and its surface will be smoothed by the movement of the mold boards 13, 14, thereon, as with a trowel.

When the sleeve 20 has been turned for as great a distance within the nut 21 as its length will permit, it may be turned in the opposite direction, thereby raising the clutch 22 for a new hold upon the rod 11, the form

12 being supported in the meantime in part by the adhesion of the mold boards 13, 14, to the surfaces of the newly made wall, and in part by the lifting apparatus at adjacent stays. As the rods 11 do not offer great resistance to bending, the sleeve 20 will preferably be turned backwardly in the nut 21 to raise the clutch 22 a short distance before each raising operation, in order that the position of the clutch on the rod will not at any time be unnecessarily removed from the top of the completed portion of the wall.

If desired staging (not shown) may be carried by the frames 15 to provide a footing for workmen, and a single attendant or gang of attendants may then travel from one of the frames 15 to another, raising the forms and staging a few inches at each of these points successively, without interrupting the work of those engaged in building the wall. In order to prevent the mold boards 13, 14, rigidly adhering to any portion of the wall and to improve the external appearance of the wall, the raising operation preferably comprises a large number of short steps, a slight movement being given the threaded sleeve 20 at each stay rod at frequent intervals during the progress of the work.

Bending of the exposed portion of the stay rod 11 below the clutch 22 may be avoided by the use of a guide plate 36 carried by the frame members 16, 17, and having a central aperture 37 for receiving the rod.

While we have illustrated our invention as applied to the building of the curved wall of a round structure, it may be adapted to the formation of the walls of structures having any form of outline, and as the raising of the molds is effected from a point directly over the center of the wall there is no tendency for the molds to run to one side and thus impart a lean to the wall.

We claim as our invention—

1. In combination, an externally-threaded sleeve; a clutch carried by the sleeve for engaging a rod inserted therethrough, a nut running on the sleeve, a mold, and connection between the nut and mold.

2. In combination, a supporting rod, a rotatable externally-threaded sleeve slidable on the rod, a nut running on the sleeve, a

mold, connection between the nut and mold, and a clutch carried by the sleeve for engaging the rod.

3. In a form for a concrete structure having a stay rod, in combination, a clutch for engaging the rod, an externally-threaded sleeve inclosing the rod and bearing on the clutch, a nut running on the sleeve, a mold carried by the nut, and means for turning the sleeve.

4. In a form for a concrete structure having a continuous stay rod, in combination, a clutch for engaging the rod, a mold, and a lifting jack reacting between the mold and the clutch.

5. In a form for a concrete structure having a continuous stay rod, in combination, a clutch for shiftably engaging the rod, and a mold carried by the clutch.

6. In a form for a concrete structure having a continuous stay rod, in combination, a clutch for engaging the rod, a threaded shaft bearing on the clutch, a nut running on the shaft, and a mold carried by the nut.

7. In combination, an externally-threaded sleeve, a clutch carried by the sleeve for engaging a rod inserted therethrough, and comprising a block rotatably mounted at the foot of the sleeve and having an opening in register with the opening of the sleeve, and jaws carried by the block to swing over the opening in the form of a toggle, a nut running on the sleeve, and a mold carried by the nut.

8. In a device of the kind described, in combination, an externally-threaded sleeve, a clutch carried by the sleeve for engaging a rod inserted therethrough, and a load-carrying nut running on the sleeve.

9. In a form for a concrete wall having a stay rod, in combination, a mold frame for straddling the wall, a clutch for engaging the rod, a lifting jack reacting between the clutch and the frame, and a guide for the rod carried by the legs of the frame below the clutch.

RUSSELL H. FOLWELL.
WILLIAM R. SINKS.

Witnesses:

J. W. THOMPSON,
F. A. NELSON.