

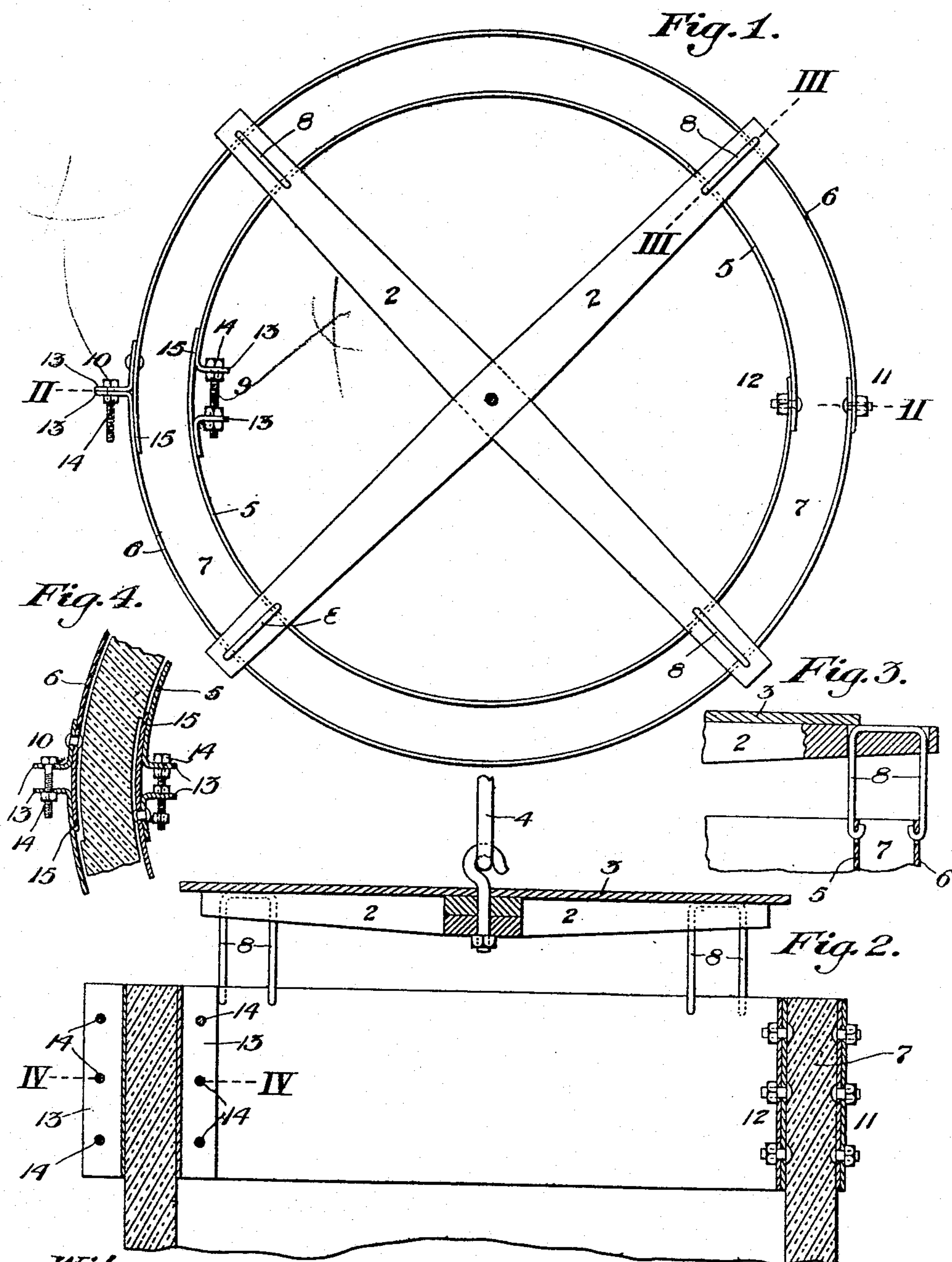
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J. H. McCOY.

APPARATUS FOR BUILDING HOLLOW CONCRETE STRUCTURES.

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Witnesses:

E. R. Rodd.

Chas. S. Lipeley.

Inventor:

J. H. McCoy
 by C. M. Clarke
 his attorney

UNITED STATES PATENT OFFICE.

JOHN HUGH McCOY, OF HARRISVILLE, PENNSYLVANIA.

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No. 837,101.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOHN HUGH McCOY, a citizen of the United States, residing at Harrisville, in the county of Butler and State of Pennsylvania, have invented certain new and useful Improvements in Apparatus for Building Hollow Concrete Structures, of which the following is a specification, reference being had therein to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a plan view of my improved apparatus for building hollow concrete structures, the platform having been removed from the supporting-frame. Fig. 2 is a vertical sectional view on the line II II of Fig. 1. Fig. 3 is a cross-sectional detail view on the line III III of Fig. 1. Fig. 4 is a horizontal sectional view of a portion of the structure at one side, indicated by the line IV IV of Fig. 2, and illustrating the operation of releasing the inner and outer walls of the molding apparatus from the molded wall.

My invention refers to apparatus for building hollow structures of concrete—such as silos, cisterns, wells, &c.—and is designed for the purpose of providing an adjustable mechanism by which the walls of such structure, preferably cylindrical, may be built up of any desired thickness or internal diameter as to the structure itself in an economical, rapid, and convenient manner.

In carrying out my invention I employ a vertically-adjustable frame provided with a platform adapted to support the workmen and raw material, from which frame depend the inner and outer laterally-adjustable molding walls or shells between which the wall of concrete is gradually formed upwardly by successive steps.

Referring to the drawings, 2 represents the main supporting members of a frame upon which is mounted a platform 3, preferably circular, the holding frame and platform being supported at the center or at any other convenient points from the downwardly-depending terminal 4 of a crane or other supporting or lifting mechanism.

The wall-molding elements of the invention comprise an inner ring or shell 5 and an outer ring or shell 6, of sheet metal, concentrically arranged with an intervening space 7. These shells are of sufficient depth to provide for a considerable section of concrete being deposited between them and are supported downwardly below the framework 3 by

means of suspending-links 8 or other suitable supporting attachments.

For the purpose of adjusting the walls 5 and 6 toward or from each other they are provided at one or more points with connecting-joints 9 10, by means of which the diameters of both plates or walls may be accurately adjusted. The plates 5 and 6 may be continuous, if desired, but are preferably made in two or more sections connected together in any suitable manner, as indicated at 11 12, the advantage of such supplemental joints being that the diameters of each shell may be very considerably increased or decreased by adding or subtracting one or more sections.

The joints 9 10 are formed by terminal flanges 13 of each end of the plates being connected by bolts 14 of sufficient length to provide considerable latitude of adjustment, and preferably provided with internal jam-nuts, their operation being clearly understood from reference to Fig. 4. For the purpose of preventing the escape of the contained concrete when the joints are partially opened one of the terminals 15 at one end of each plate overlaps the terminal at the other end, as clearly shown, and as the plates are comparatively thin such overlapping makes no material difference in the finished wall.

The operation of the invention is as follows: The framework having been lowered to the point where it is desired to commence the wall, the space 7 is entirely filled with concrete from the platform and then allowed to set for a sufficient time to harden. The joints 9 and 10 are then adjusted so as to decrease the diameter of the inner shell 5 and increase the diameter of the outer shell 6, whereby both of these shells are loosened from binding contact with the previously-built wall, whereupon the entire structure may be raised by the crane or other mechanism a sufficient distance to provide additional space above the already-built wall, the lower portions of the shells 5 and 6 still embracing the upper portion of said wall part way, whereupon the shells are again adjusted to their original positions, the concrete is again filled in and allowed to harden, and the operation just described is repeated. These steps are continued until the wall has been built to the desired height, when it may be finished off at the top or roofed over, as desired. In order to facilitate the operation, I

preferably employ a coating of oil or other lubricating material upon the inner faces of the shells, which may be applied by a brush from the platform just before filling in the concrete. By this means the tendency of the molded wall to adhere to the plates or shells is reduced to a minimum.

The advantage of the invention will be readily understood by all those accustomed to the building of concrete walls. It avoids the necessity of the usual plank mold-boxes, is capable of performing its functions in a highly satisfactory and efficient manner, is comparatively light, portable, simple in construction, and not liable to get out of order.

The invention may be changed or varied—as, for instance, for the building of oval or other form of structures; but all such changes or variations which may be made by the skilled mechanic are to be considered as within the scope of the following claims.

What I claim is—

1. In apparatus for building hollow concrete structures, the combination with an upper framework having radial arms and means for suspending the framework at the center, of an inner and an outer shell, supporting devices connecting the shells with the radial arms of the framework, and means for independently adjusting the inner and outer shells to varying diameters, substantially as set forth.

2. In apparatus for building hollow concrete structures, the combination with an upper framework having radial arms and means for suspending the framework at the center, of an inner and an outer shell, supporting devices connecting the shells with the radial arms of the framework, said shells being composed of two or more overlapping sections, and provided at their meeting ends with laterally-arranged flanges and securing-bolts capable of holding the shells at varying diameters, substantially as set forth.

3. In apparatus for building hollow concrete structures, the combination with an upper framework having radial arms and means for suspending the framework at the center, of an inner and an outer shell, supporting devices connecting the shells with the radial arms of the framework, said shells being composed of two or more overlapping sections, and provided at their meeting ends with overlapping terminals and laterally-arranged flanges, and securing-bolts capable of holding the shells at varying diameters, substantially as set forth.

4. In apparatus for building hollow concrete structures, the combination with an upper framework having radial arms and

means for suspending the framework at the center, of an inner and an outer shell, supporting devices connecting the shells with the radial arms of the framework and adapted to allow of limited relative lateral movement with relation to said framework, said shells being composed of two or more overlapping sections, and provided at their meeting ends with overlapping terminals and laterally-arranged flanges, and securing-bolts capable of holding the shells at varying diameters, substantially as set forth.

5. In apparatus for building hollow concrete structures, the combination of a supporting-framework provided with a circular platform, and a depending mold comprising an inner and an outer shell the edge of said platform approximately conforming to the circumferential space between the shells, substantially as set forth.

6. In apparatus for building hollow concrete structures, the combination of a supporting-framework provided with a circular platform, and a depending mold comprising an inner and an outer shell, with means for varying the intervening distance between said shells the edge of said platform approximately conforming to the circumferential space between the shells, substantially as set forth.

7. In apparatus for building hollow concrete structures, the combination of a supporting-framework provided with a circular platform, and a depending mold comprising an inner and an outer shell, with means for adjusting the diameter of each shell the edge of said platform approximately conforming to the circumferential space between the shells, substantially as set forth.

8. In apparatus for building hollow concrete structures, the combination of a supporting-framework suspended at its center and provided with a covering-platform, independent inner and outer cylindrical shells of sheet metal supported below said framework by depending rods or links, said shells being composed of two or more sections and provided at their meeting ends with overlapping extensions and laterally-disposed flanges, with adjusting-bolts engaging the flanges and capable of tightening the shells or of allowing expansion thereof, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN HUGH McCOY.

Witnesses:

W. J. HARSHAW,
C. G. HARSHAW.