No. 841,867. PATENTED JAN. 22, 1907.

H. J. HOUPT.

MOLD FOR CONSTRUCTING HOLLOW CONCRETE WALLS.

APPLICATION FILED MAY 10, 1906.

2 SHEETS—SHEET 1.

Fig. 1.

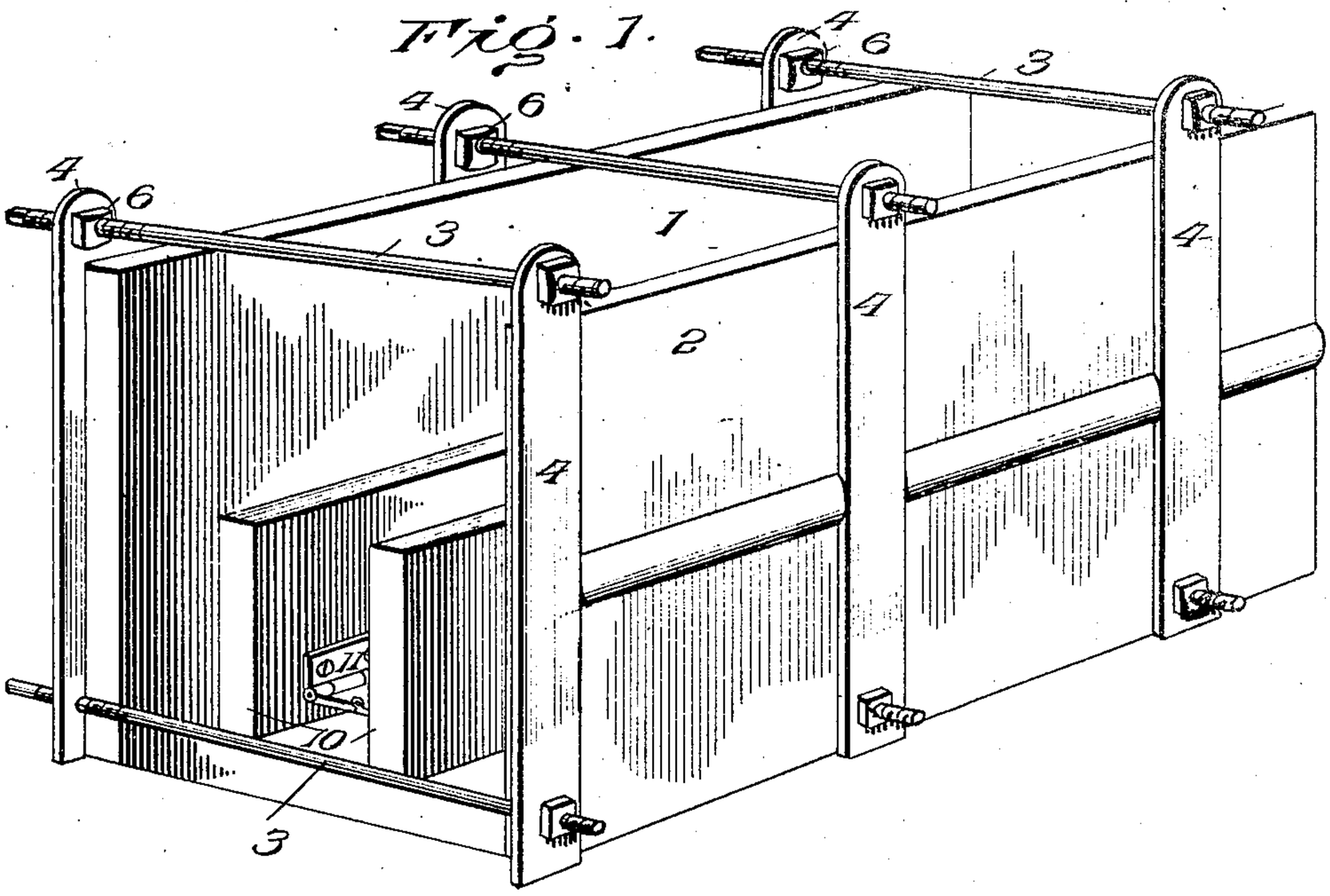
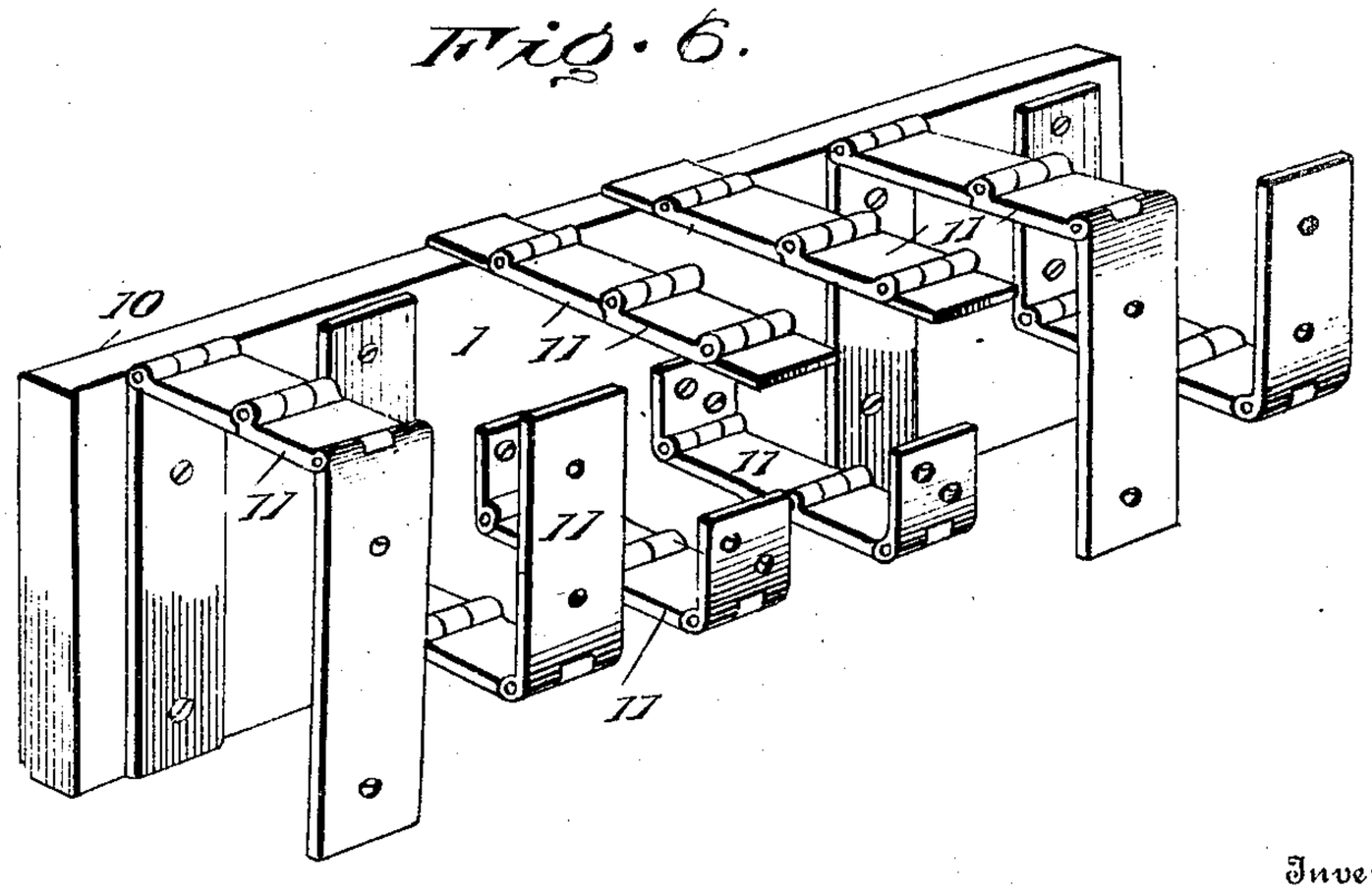


Fig. 6.



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2 SHEETS—SHEET 2.

Fig. 2

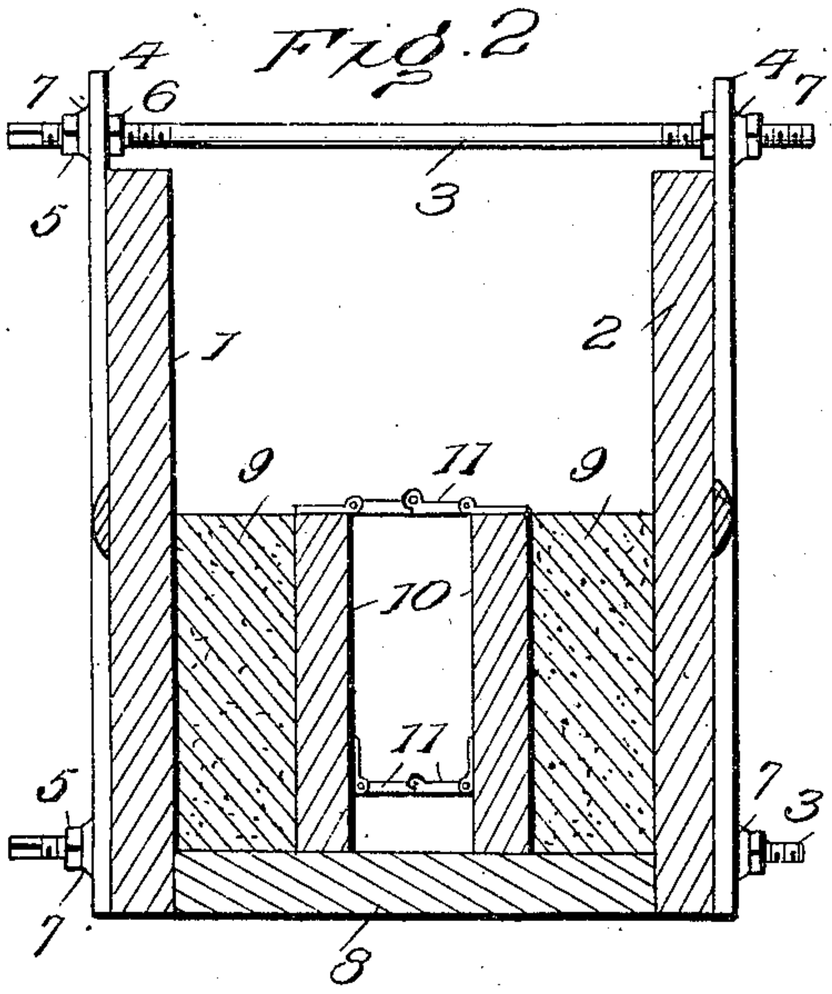


Fig. 3

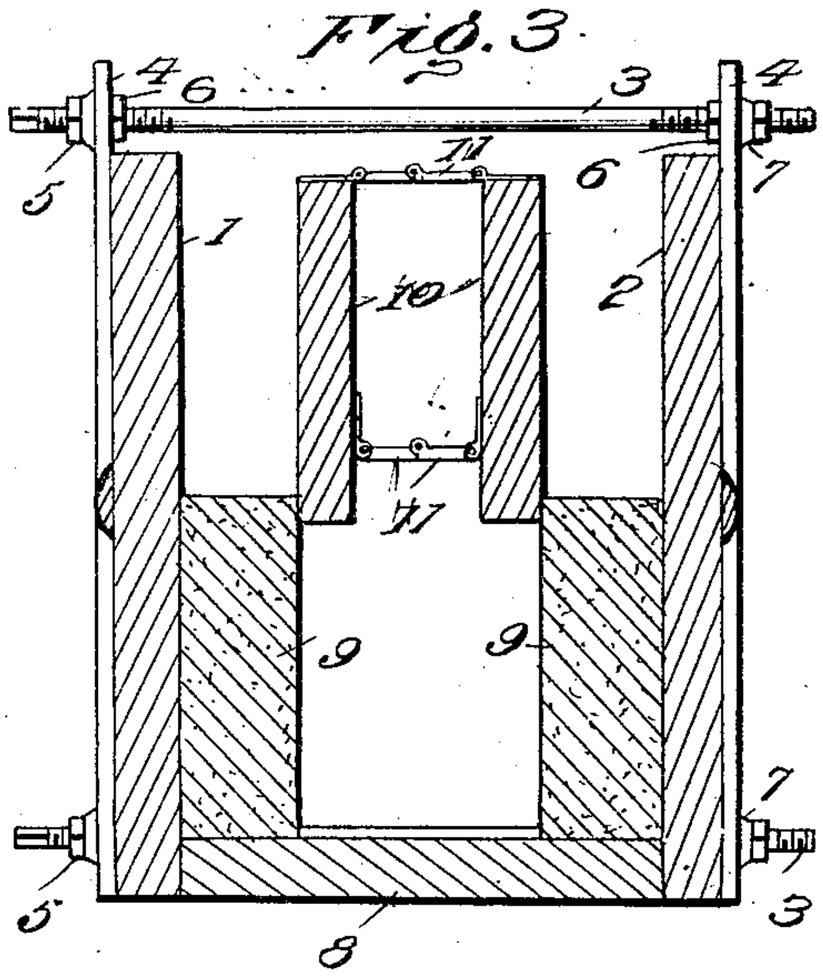


Fig. 4

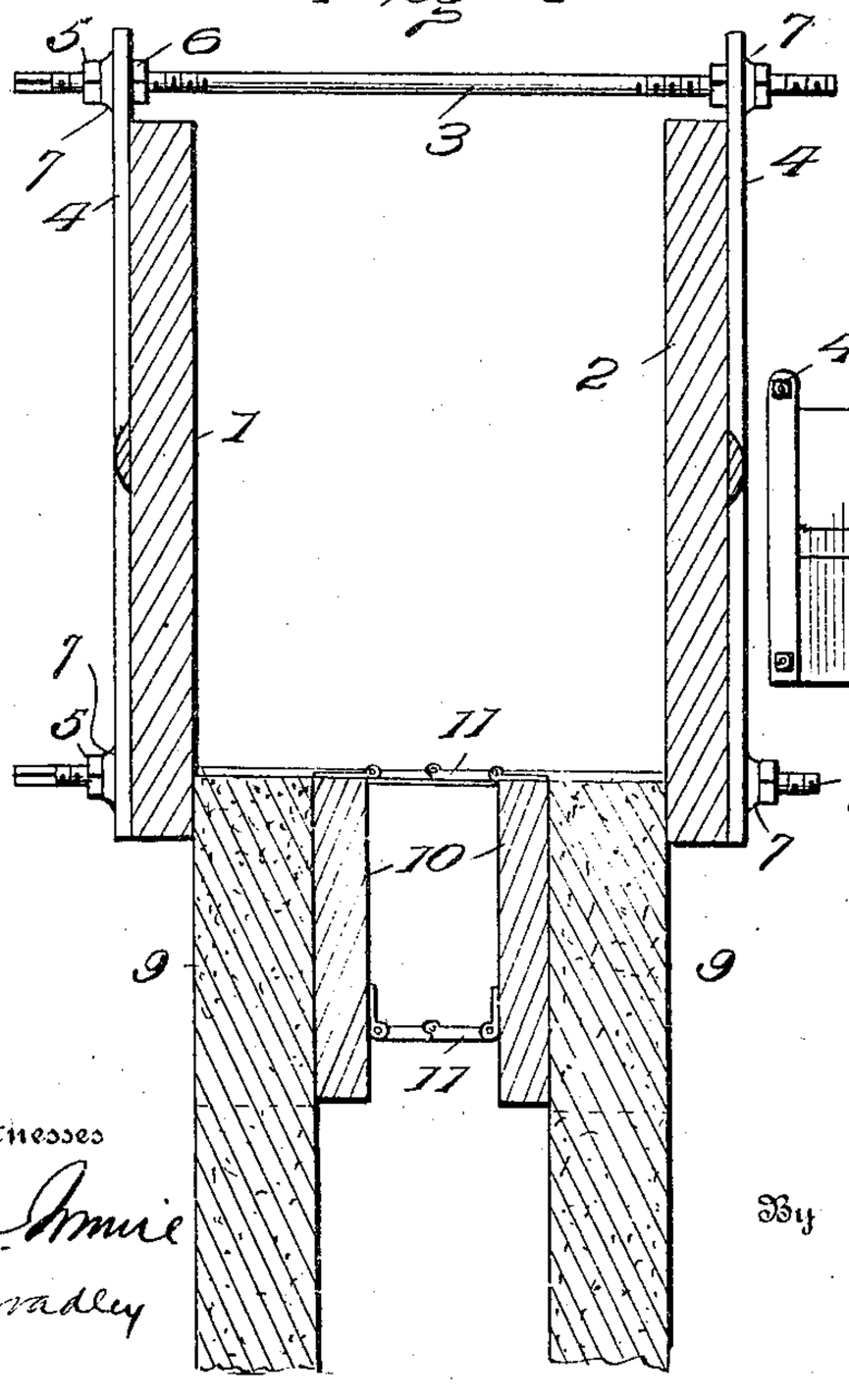
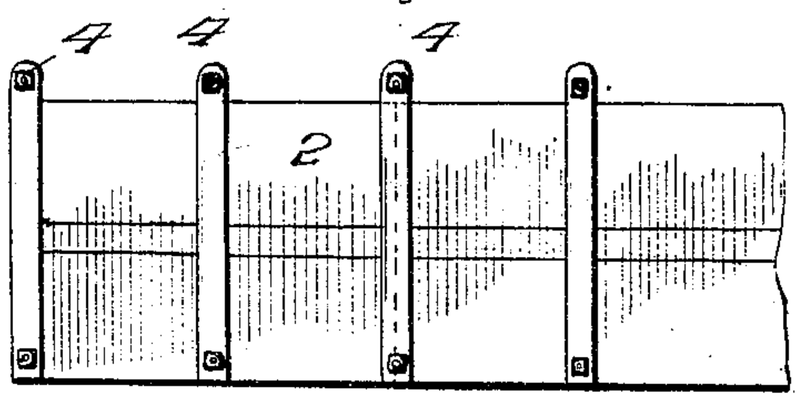


Fig. 5.



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UNITED STATES PATENT OFFICE.

HENRY J. HOUPT, OF LEESBURG, VIRGINIA.

MOLD FOR CONSTRUCTING HOLLOW CONCRETE WALLS.

No. 841,867. Specification of Letters Patent. Patented Jan. 22, 1907.

Application filed May 10, 1906. Serial No. 316,138.

To all whom it may concern:

Be it known that I, HENRY J. HOUPT, a citizen of the United States, residing at Leesburg, in the county of Loudoun and State of Virginia, have invented certain new and useful Improvements in Molds for Constructing Hollow Concrete Walls; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to certain new and useful improvements in molds for building hollow concrete walls, and has for its object to provide molds of simple and economic construction and adapted to be readily elevated and secured in position as the wall is successively added to and heightened, the outer portions and the inner core of the mold being alternately raised and secured in plumb and parallel positions.

My invention also has for its object to so construct the core of the mold that it may be readily collapsed to free it from the partially-set concrete and after being raised to the proper height clamped in position against the inner sides of the partially-formed wall; and with these ends in view my invention consists in the details of construction and arrangement hereinafter more fully set forth.

In order that those skilled in the art to which my invention appertains may know how to make and use my improved molds and fully appreciate the advantages of the same, I will proceed to describe their construction and the manner of using the same, referring by numerals to the accompanying drawings, in which—

Figure 1 is a perspective view showing the outer portion and the inner core of one of my improved molds. Fig. 2 is a vertical section of the same and showing the concrete wall formed between the outer portion and core of the mold. Fig. 3 is a similar view showing the core of the mold after it has been collapsed and raised and clamped in position between the upper extremity of the partially-formed wall. Fig. 4 is a section similar to Fig. 3 and showing the outer portion of the mold lifted up and placed in position after the space between the outer portion and core of the mold, as shown at Fig. 3, has been filled with concrete and before the core is collapsed and again raised to the position shown in said Fig. 3. Fig. 5 is a side elevation showing two molds secured in position end to end and held in proper relation by the stays at one end of one mold overlapping the end of the adjacent mold; and Fig. 6 is an inside elevation of one of the sides of the core and showing the arrangement of the collapsible hinges employed for connecting the two sides and clamping them in position against the insides of the upper extremity of the partially-constructed wall, as illustrated at Fig. 3.

Similar reference-numerals indicate like parts in the several figures of the drawings.

1 2 are the two outside portions of the mold, which are made about twice the height of the sides of the core. These side portions 1 and 2 are secured together and in parallelism by means of screw-rods 3, which have one end squared to receive a hollow crank or other suitable tool for turning the same, and they are threaded for a suitable distance adjacent to the squared end to receive nuts, presently referred to, and are also threaded for a suitable distance at the other or extreme end.

The side portions have secured to their outer surfaces by screws vertical stays 4, composed of iron, through which the screw-rods 3 pass, and these stays on the outer surface of the side 2 are threaded to receive the threads on the extreme end of the rods 3, as clearly shown.

In securing the parts together a nut 5 is first run onto the screw-rod 3, and the latter is passed through a suitable hole or channel in the stay 4. A second nut 6 is then run onto the threads of the rod, and the threaded extreme end of the rod is then run into the threaded passage of the stay. The nuts 6 are not run up to and in contact with the inside of the portion 1 until the opposite portion 2 has been drawn into parallelism and proper adjustment with the portion 1 by means of the rod 3, after which the nuts 6 are run up tightly against the portion 1.

In order that the threaded extreme end of the rods 3 may have sufficient bearing in the stays of the side portion 2, such stays are formed with bosses 7, as clearly shown, and if thought to be necessary or desirable nuts may be run upon the screw-rods each side of the side portion to prevent any accidental movement of such rods.

The rods 3 are located a short distance from the upper and lower edges of the side pieces, as clearly shown in Figs. 2 and 3, so that the lower rods will rest primarily upon a suitable footing or foundation 8 and subsequently upon the upper extremity of suc-

cessively molded portions of the concrete wall 9, as shown at Fig. 4.

The core consists of two sides 10, which are secured together by what I denominate "toggle-hinges" 11, the peculiar construction of which constitutes the subject-matter of another application for Letters Patent filed concurrently herewith and having Serial No. 316,136. These hinges, as clearly shown at Fig. 6, have three pintles and four leaves so constructed and arranged together as to constitute a ruler-joint on the under side of the central pintle, in order that when the leaves each side of the central pintle are brought into horizontal alinement the lower extremities of the core will be forced into contact with the inside of the wall, as shown at Figs. 2 and 3, and held in perfect parallelism with each other and also with the side pieces of the outer portion of the mold, as clearly shown. These hinges are secured to the sides of the core in alternate reverse relation in order that the outer or extreme leaves shall constitute vertical braces for the sides of the core and at the same time hold the upper and lower edges of said sides in the same fixed and parallel relation.

When a portion of the wall 9 has been formed, as shown, at Fig. 2, and has been sufficiently set to justify the removal of the core to the position shown at Fig. 3, the hinges 11 are broken by forcing them downwardly by pressure upon the central pintle, and the core is thus suitably collapsed to permit it to be raised to the position shown at Fig. 3, whereupon the hinges are again straightened out to clamp the core against the upper extremity of the wall in course of construction and into proper parallelism, as heretofore explained.

I prefer to employ one or more of these hinges at the central portion of the side pieces of the core, and the outer leaves of these hinges may be short and secured to the top and bottom edges of the side pieces, while near to the extreme ends of the side pieces the hinges are formed with their outer leaves sufficiently long to extend the whole depth of the side pieces to constitute a more extensive brace and prevent any undue warping of the side pieces of the core.

In order that these hinges may be secured with facility in place upon the inside of the sides of the core, the central pintle should be removable, and the intermediate hinges may also be formed with removable central pintles and the outer leaves similarly secured to the inner surfaces of the side pieces instead of upon the edges, as heretofore stated.

While I have found that the arrangement of the rods 3 and the nuts thereon is entirely satisfactory for securing the sides 1 2 of the outer portion of the mold, I do not wish to be limited in this respect, as other details of construction may be adopted for suitably connecting the side pieces in parallelism by the rods 3—such, for instance, as threaded bushings secured in position within the side pieces and adapted to receive the threaded portions of the rods 3.

From the construction of the mold shown and the method of using the same, as described, it will be seen that when it becomes necessary to raise the outer portion of the mold the upper rods may be slightly loosened, and the lower screw-rods only need to be removed, and the holes thus left in the concrete filled.

The rods 3 pass through vertical stays 4, secured on the outside of the side pieces 1 2, and these stays at one end of the side pieces extend beyond the same, as shown at Figs. 1 and 6, so as to overlap the end of the next adjacent mold and secure the two sections in proper relation and alinement with each other.

The number and position of the stays 4 and screw-rods 3 may be varied according to the length of the molds and the necessity for suitably strengthening the same.

I do not wish to be confined to any exact dimensions as to the length or height of the outer portion of the mold and the core; but I prefer that the core should be substantially about half the height of the outer portion of the mold in order that each succeeding portion of the wall as constructed may be braced and supported alternately by the outside or core portion of the mold, respectively, as the other portion is lifted into position for adding to the height of the wall.

It will also be understood that any design may be given to the outside surface of the wall by a corresponding design upon the inside surfaces of the sides 1 2 of the mold.

I desire to call particular attention to the importance of the collapsible core of my improved mold, because it will be readily seen that contact of the green wall with the sides of the core would render it necessary to exert great power to lift the core unless it is collapsed and the vacuum broken.

Having described the construction and manner of using my improved molds in the erection of concrete walls, what I claim as new, and desire to secure by Letters Patent, is—

1. A mold for constructing hollow concrete walls consisting of an outer portion comprising parallel sides having vertical stays extending above the upper edges thereof; adjustable screw-bolts passing through the parallel sides and the vertical stays near the bottom edge; adjustable screw-bolts passing through the vertical stays above the upper edges of the sides; and a collapsible core consisting of two parallel side pieces and toggle-hinges secured to the side pieces in alternate inverse relation, substantially as hereinbefore set forth.

2. In a mold such as described, a collapsi-

ble core comprising parallel side pieces and four-part toggle-hinges connecting said side pieces; said hinges secured to the side pieces in alternate reverse relation, a portion of said hinges having their secured extremities extending from the top to the bottom edges of the side pieces and constituting braces, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HENRY J. HOUPT.

Witnesses:
D. G. STUART,
JNO. J. HARROWER.