No. 733,313. PATENTED JULY 7, 1903.

A. S. CRAMER.

COLLAPSIBLE CORE FOR MOLDS.

APPLICATION FILED MAR. 20, 1903.

NO MODEL.

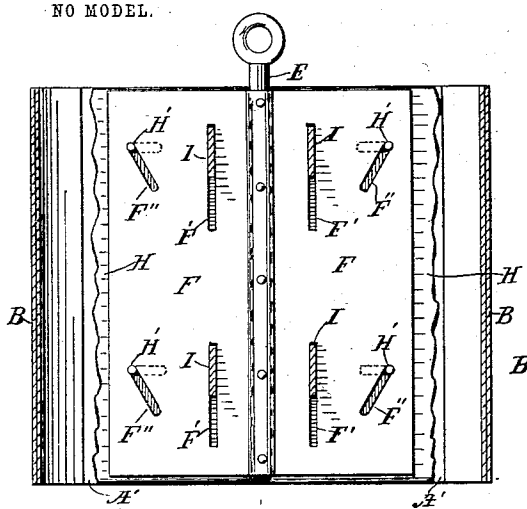


Fig. 1.

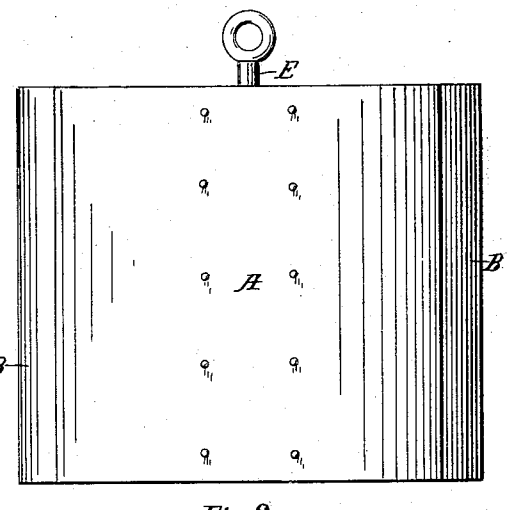


Fig. 2.

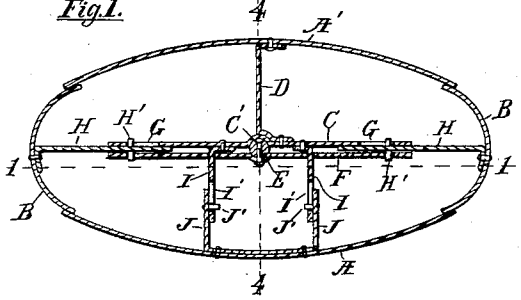


Fig. 3.

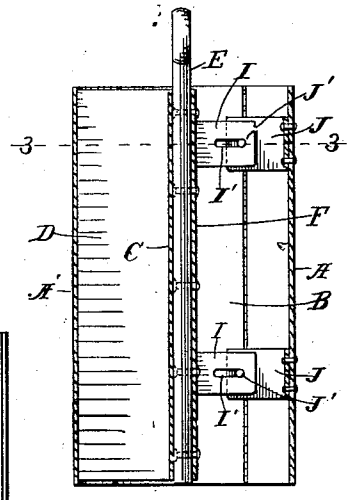


Fig. 4.

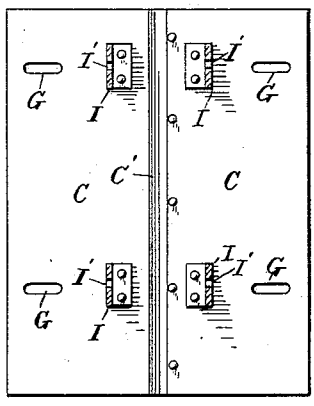


Fig. 5.

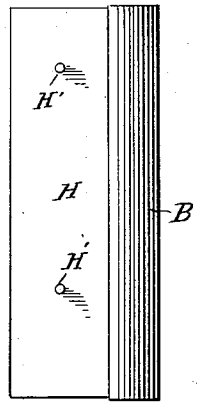


Fig. 6.

Witnesses
Palmer A. Jones.
Georgiana Chace

Inventor
Augustus S. Cramer
By Luther V. Moulton
Attorney

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 733,313. Patented July 7, 1903.

UNITED STATES PATENT OFFICE.

AUGUSTUS S. CRAMER, OF COOPERSVILLE, MICHIGAN.

COLLAPSIBLE CORE FOR MOLDS.

SPECIFICATION forming part of Letters Patent No. 733,313, dated July 7, 1903.

Original application filed January 2, 1903, Serial No. 137,463. Divided and this application filed March 20, 1903. Serial No. 148,696. (No model.)

To all whom it may concern:

Be it known that I, AUGUSTUS S. CRAMER, a citizen of the United States, residing at Coopersville, in the county of Ottawa and State of Michigan, have invented certain new and useful Improvements in Collapsible Cores for Molds; 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 collapsible cores for molds of various kinds, and more particularly to such cores to be used in conjunction with molds for forming concrete walls and other structures, as shown in my application for patent filed January 2, 1903, Serial No. 137,463, of which this application is a division; and its object is to provide a device that will automatically contract and expand when raised and lowered and to provide the device with certain new and useful features hereinafter more fully described, and particularly pointed out in the claims.

My device consists, essentially, of a suitable number of outer plates, a longitudinal center rod, a relatively stationary central plate, to which the various outer plates are movably attached, and a vertically-sliding plate attached to the rod and adapted to move the outer plates radially when operated by the rod, and in the combination and arrangement of parts, as will more fully appear by reference to the accompanying drawings, in which—

Figure 1 is a vertical section of a device embodying my invention, taken on the line 1 1 of Fig. 3; Fig. 2, a side elevation of the same; Fig. 3, a horizontal section of the same on the line 3 3 of Fig. 4; Fig. 4, a transverse vertical section on the line 4 4 of Fig. 3; Fig. 5, a detail of the stationary middle plate, and Fig. 6 a detail of one of the outer plates.

A and A′ represent two equal and opposite sides plates and inclined toward each other near their opposing vertical edges, and B B two equal end plates of less radius than the side plates and slidably overlapping the same near each vertical edge and on the inner side thereof, said overlapping portions of the plates being inclined, so that when the end plates move outward they crowd the side plates outward also.

C is a relatively stationary middle plate arranged in the longer axis of the core and having a vertical groove C′, in which groove is a longitudinally-slidable rod E, having a suitable eye or other means of attachment at the top for lifting the device and lowering the same to place again. Attached to the rod E is a plate F of substantially the same dimensions as the plate C and arranged a short distance therefrom and parallel therewith.

One side plate A′ is preferably rigidly attached to the middle plate C by means of a suitable flanged plate D, attached at its respective edges to the plate A′ and the plate C. The end plates B B and the other side plate A are made movable toward and from the interior of the mold, for which purpose the end plates B are provided with radial plates H, extending between the plates C and F and slidable radially.

In the plates H are oppositely-projecting pins H′, which engage horizontal slots G in the plate C and also diagonal slots F″ in the plate F, whereby as the plate F is moved vertically the pins are moved horizontally to radially adjust the end plates B and B.

Attached to the plate C are arms I, extending through elongated vertical slots F′ in the plate F and slidable therein. The plate A is attached to the arms I by means of a yoke J, overlapping the arms I and slidably connected thereto by means of pins J′, movable in horizontal slots I′.

The operation of the device is as follows: Whenever the device is lifted by any suitable means attached to the rod E, the plate F will slide upward, and thus cause the pins H′ to slide inward and move the end plates B inward, thus releasing the side plate A and permitting it to move inward toward the plate A′. The device is thus reduced in diameter in every horizontal direction and is easily removed from within the surrounding structure. Whenever the mold is lowered to place again, the rod E and plate F will move downward, and thus force the end plates B B outward between the converging sides of the side plates A and A′, thus expanding the structure to its full dimensions again and holding the same

against the pressure of the surrounding material.

I have shown an oval core; but it is obvious that various other forms may be adopted without departing from my invention.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination of two side plates having oppositely-inclined portions near their vertical edges, a middle plate, a rigid support connecting one side plate to the middle plate, a sliding support connecting the other side plate to the middle plate, end plates having inclined portions slidably engaging the edges of the side plates, and means for radially adjusting the end plates.

2. The combination of a middle plate, side plates having converging portions near their opposite edges, end plates slidably engaging the converging portions of the side plates, radial plates on the end plates, means for adjusting the radial plates, a horizontal slidable support connecting one of the side plates with the middle plate, and means for rigidly attaching the other side plate to the middle plate.

3. The combination of two convex side plates, two convex end plates slidably engaging the side plates near their opposite edges, a middle plate having horizontal slots, radial plates on the end plates, pins in the radial plates engaging the slots and slidable therein, a vertically-movable plate having inclined slots engaging said pins, means for moving said plate, and means for connecting the side plates to the middle plate.

4. The combination of two side plates having oppositely-inclined portions near their vertical edges, two end plates slidably engaging the inclined edges of the side plates, a middle plate having horizontal slots, radial plates attached to the end plates, pins in the said radial plates and engaging the slots, a rigid support connecting one of the side plates to the middle plate, arms attached to the middle plate, a yoke slidably connecting the other side plate to the arms, a vertically-movable plate having vertical slotted openings for the arms, and inclined slotted openings for the pins in the radial plates, and means for vertically adjusting said plate.

5. The combination of two concavo-convex side plates, two end plates slidably engaging the concave sides of the side plates, a middle plate having a vertical groove and horizontal slots, radial plates attached to the end plates, pins in the radial plates engaging and traversing the slots, a rod slidable in the groove of the middle plate, a plate attached to the rod and having diagonal slots engaging the pins, and means for attaching the side plates to the middle plate.

6. The combination of two concavo-convex side plates, two convex end plates slidably engaging the concave sides of the side plates, a middle plate having a vertical groove and horizontal slots, arms attached to the middle plate and having horizontal slots, a yoke attached to one of the side plates, pins connecting the yoke with the arms and traversing the slots therein, a rigid support connecting the other side plate with the middle plate, radial plates attached to the end plates and radially movable, pins in the radial plates and traversing the slots of the middle plate, a vertically-movable plate having vertical slots for the arms and diagonal slots for the pins in the radial plates, and a rod attached to the vertically-movable plate and slidable in the groove of the middle plate.

7. In a mold for concrete walls, a core consisting of side plates, end plates movably engaging the respective side plates near their opposite edges, a middle plate within the mold, and means for adjustably connecting the end plates and one of the side plates to the middle plate.

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

AUGUSTUS S. CRAMER.

Witnesses:

LUTHER V. MOULTON,

GEORGIANA CHACE.