

No. 757,114.

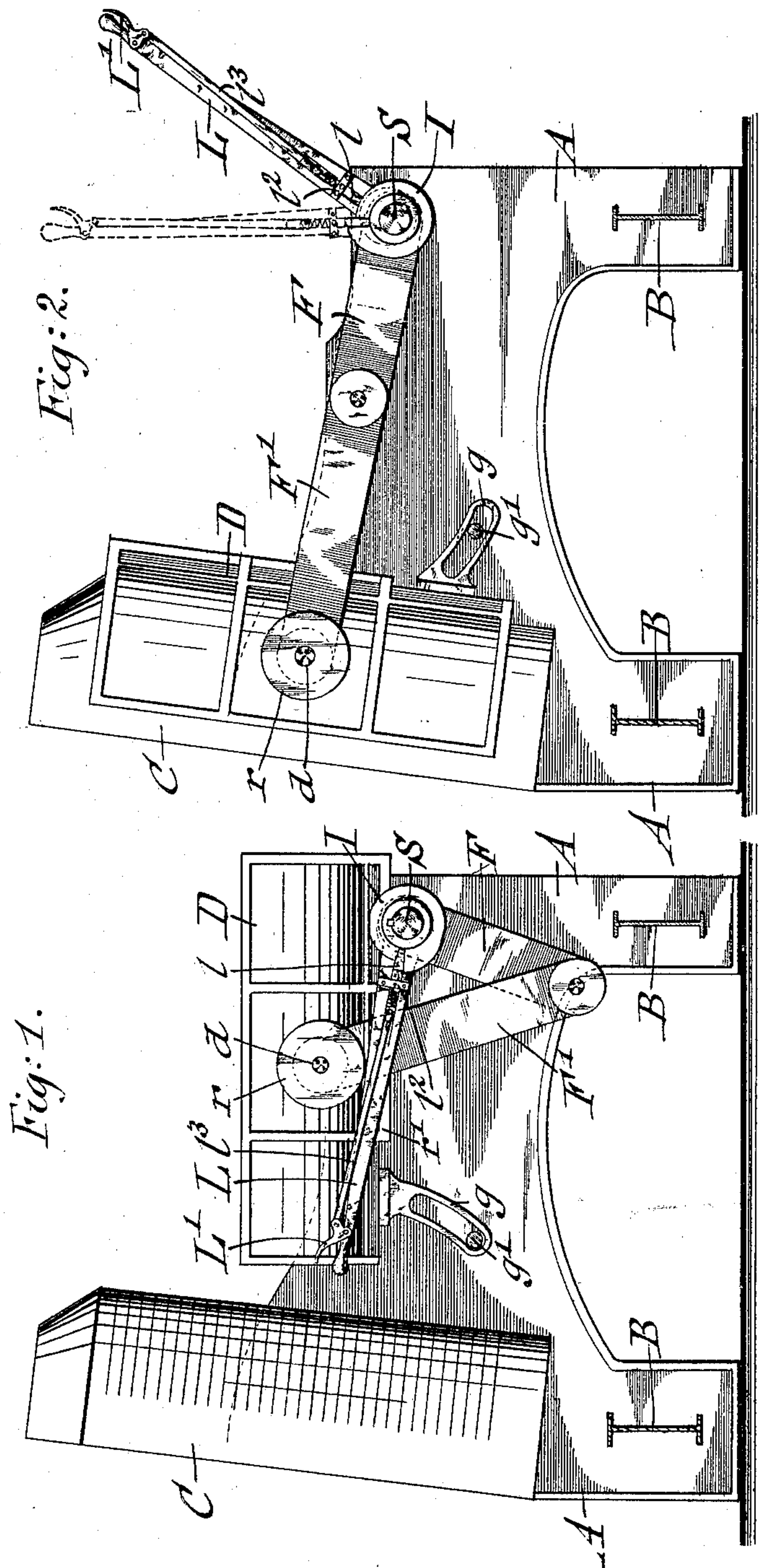
PATENTED APR. 12, 1904.

C. E. HOPKINS.
STEREOTYPE CASTING MACHINE.

APPLICATION FILED JULY 18, 1903.

NO MODEL.

3 SHEETS—SHEET 1.



Witnesses
Henry J. Suberier
Jacob H. Glaesser

Inventor
Charles E. Hopkins
By his Attorneys
Goepel & Niles.

No. 757,114.

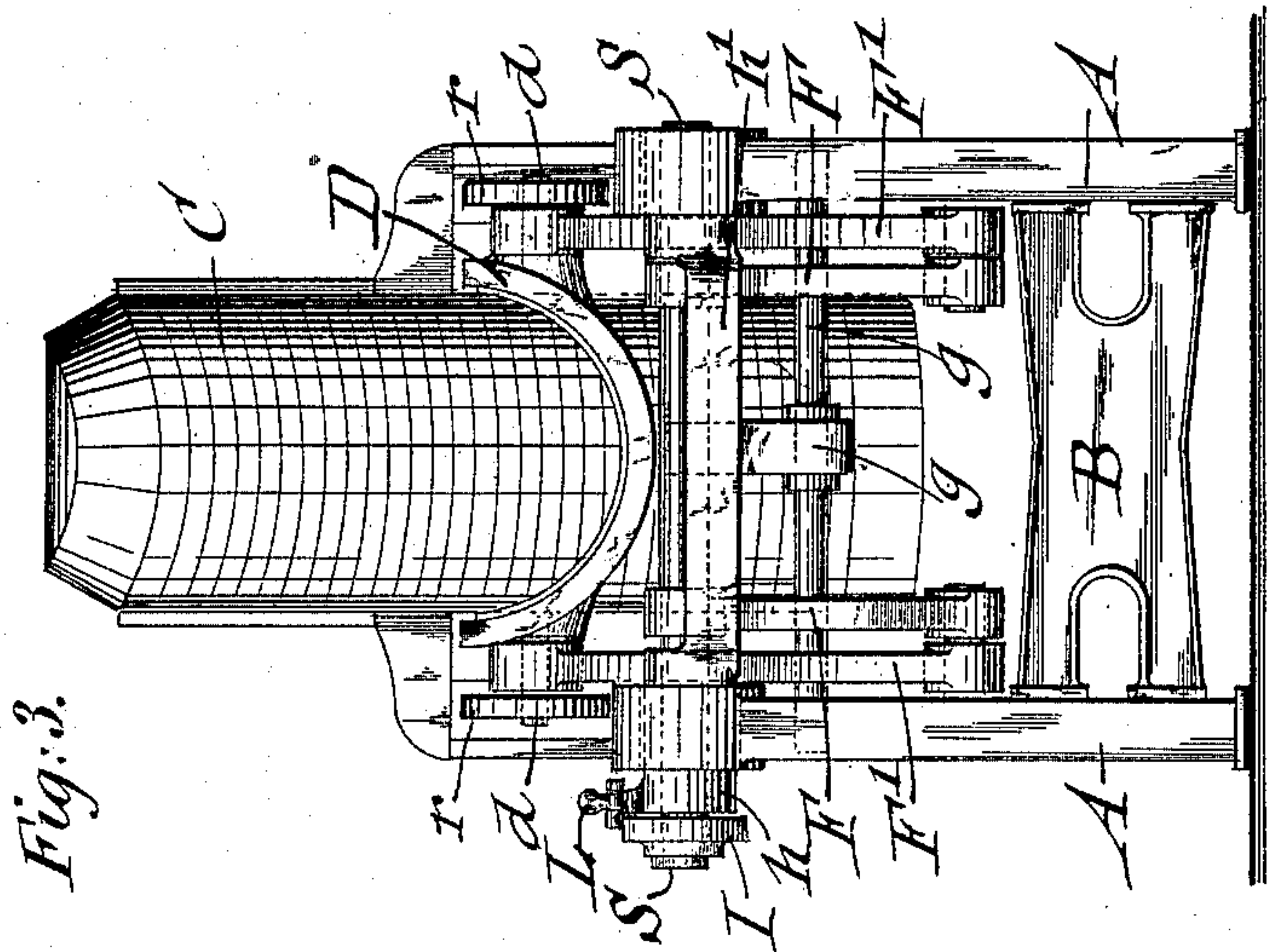
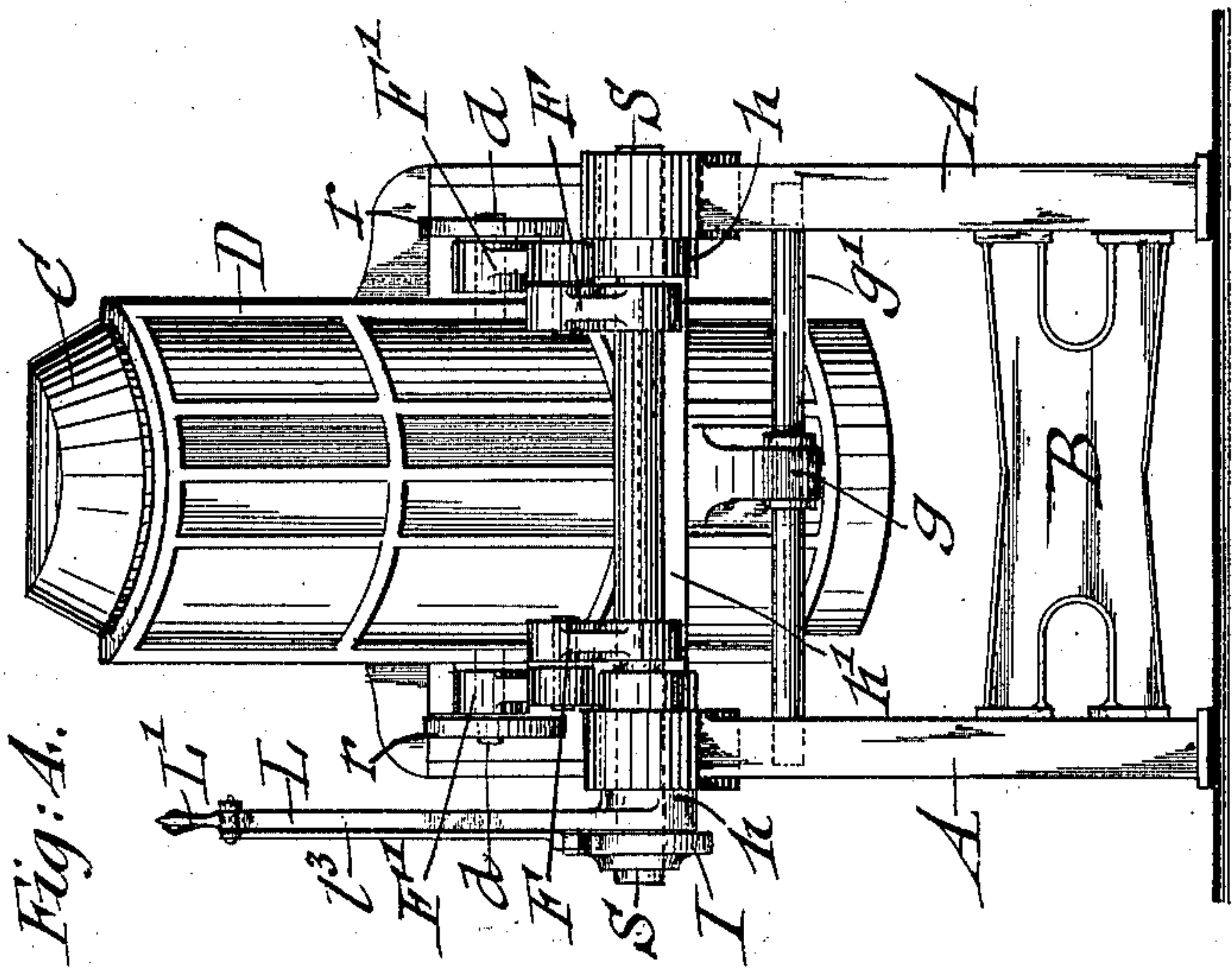
PATENTED APR. 12, 1904.

C. E. HOPKINS.
STEREOTYPE CASTING MACHINE.

APPLICATION FILED JULY 18, 1903.

NO MODEL.

3 SHEETS—SHEET 2.



Witnesses
Henry J. Suhrbier
Jacob H. Glaesser.

Inventor
Charles E. Hopkins
By his Attorneys
Goepel & Niles.

No. 757,114.

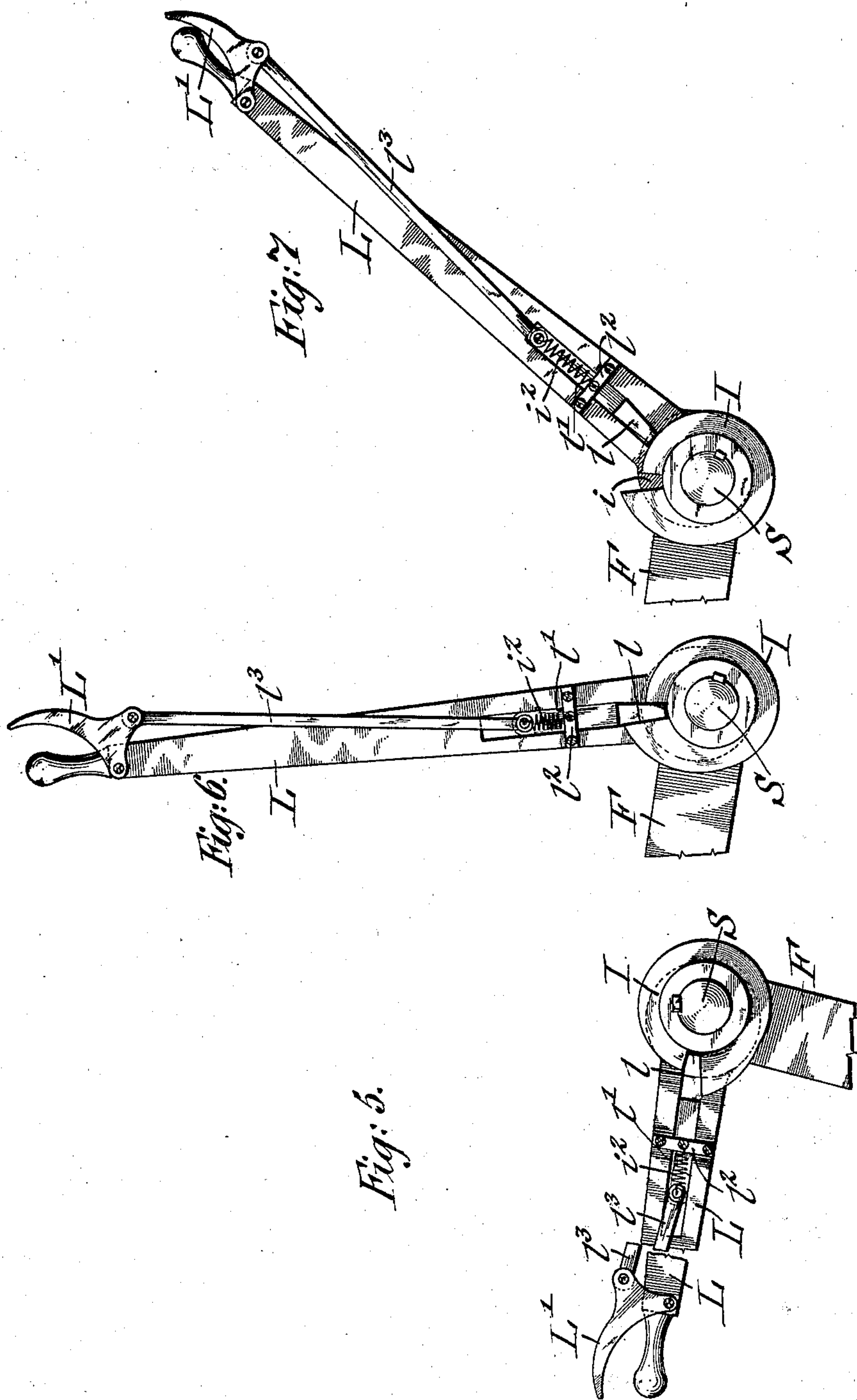
PATENTED APR. 12, 1904.

C. E. HOPKINS.
STEREOTYPE CASTING MACHINE.

APPLICATION FILED JULY 18, 1903.

NO MODEL.

3 SHEETS—SHEET 3.



Witnesses
Henry J. Subrier
Jacob H. Glaesser

Investor
Charles C. Hopkins
By his Attorneys Goepel & Niles.

UNITED STATES PATENT OFFICE.

CHARLES E. HOPKINS, OF WORCESTER, MASSACHUSETTS, ASSIGNOR OF
ONE-HALF TO FERDINAND WESEL, OF BROOKLYN, NEW YORK.

STEREOTYPE-CASTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 757,114, dated April 12, 1904.

Application filed July 18, 1903. Serial No. 166,093. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. HOPKINS, a citizen of the United States, residing in Worcester, county of Worcester, and State of Massachusetts, have invented certain new and useful Improvements in Stereotype-Casting Machines, of which the following is a specification.

This invention relates to improvements in casting-boxes for curved stereotype-plates of that class in which a stationary cope supported in upright position is used in connection with a drag and with mechanism by which the drag is carried from its open horizontal position about half-way between the upper and lower ends of the stationary cope into upright position and working contact with said cope; and for this purpose the invention consists of a stereotype-casting machine composed of a stationary cope supported in upright position, a movable part or drag, mechanism for moving the drag from a horizontal position about midway between the upper and lower ends of the cope into an upright position in front of the cope, and mechanism for then moving the drag from its upright position into working contact with said cope.

The invention consists, further, of a stereotype-casting machines comprising a stationary cope supported in upright position, a movable drag, a toggle-lever mechanism by which the drag is moved from a horizontal position about half-way between the upper and lower ends of the cope into an upright position in front of the same, and eccentric-cam mechanism by which the drag is moved into working contact with the cope by two separate motions, as will be fully described hereinafter, and finally pointed out in the claims.

In the accompanying drawings, Figures 1 and 2 represent side elevations, partly in section, showing the drag of my improved casting-machine respectively in a horizontal position and in an upright position in working contact with the cope. Figs. 3 and 4 are front views of my improved stereotype-casting box, as shown, respectively, in Figs. 1

and 2; and Figs. 5, 6, and 7 show the different positions of the eccentric-cam mechanism for bringing the drag into final working contact with the cope.

Similar letters of reference indicate corresponding parts.

Referring to the drawings, A A represent upright supporting-standards which are arranged parallel with each other and connected by transverse brace-pieces B of I-shaped cross-section. At the rear ends of the upright supporting-frames A is supported a stationary upright cope C of the usual approved construction and of segmental shape. A drag D, also of segmental shape, is provided with central trunnions *d* at opposite sides, said trunnions being provided with rollers *r*, that are supported on horizontal ways *r'* at the inner sides of the standards A, so that the drag is supported on the rollers when in horizontal position midway between the upper and lower ends of the cope, and in which position the upper or front end of the drag rests on a transverse shaft S, that is supported in eccentric sleeves or cams *h*, which turn in bearings of the supporting-frames A. The eccentric sleeves *h* are connected by a transverse brace-bar *h'* of segmental cross-section, said brace-bar being slightly set off from the eccentric sleeves *h*. To one of said sleeves *h* is keyed a hand-lever L, by which both sleeves can be turned simultaneously on their axis. To the shaft S are keyed at points between the upright standards A the shorter members F of two toggle-lever mechanisms, the longer members F' of which are pivotally connected with the ends of the shorter members and with the trunnions *d* at opposite sides of the drag D, as shown clearly in Figs. 3 and 4. The lower or inner end of the drag D is provided at its under side with a slotted bracket *g* of segmental shape, which is guided on a transverse rod *g'* that connects the upright standards A A and that serves for the purpose of guiding the segmental bracket during the motion of the drag from its horizontal position into upright position toward the cope C.

To the outer end of the shaft S adjacent to

the head-lever L is keyed an eccentric cam I, provided at its point of greatest eccentricity with a recess i , that is engaged by a slide-piece l , which is guided in the recess l' in the lever L and retained in the same by a suitable transverse keeper l'' , that is attached to the hand-lever L. The shank l'' of the interlocking slide-piece l is connected by a helical spring l''' with the pivoted end of a connecting-rod l'''' , that extends alongside of the hand-lever L to the handle end of the same and is pivotally connected to an auxiliary handle L', that is pivoted to the end of the hand-lever L near the handle of the same. When the slide-piece l interlocks with the recess of the cam I, the auxiliary handle L' is located at some distance from the handle of the operating-lever L, so that when the lever is turned from its lower or approximately horizontal position, which it assumes when the drag is in open position, into upright position the drag will be moved by the joint action of the toggle-lever mechanisms and the segmental guide-bracket along the transverse guide-rod g' from a horizontal position into a vertical position in front of the stationary cope, as shown in Fig. 2. By this motion, however, the drag is not moved into closed or working contact with the cope, but is held in upright position a short distance from the same, it being then finally brought up against the face of the cope, so as to be in absolutely tight working or locking contact with the same, by an additional forward motion imparted to the drag by the action of the auxiliary handle L', which is grasped after the operating-lever has arrived in its upright position. (Shown in dotted lines in Fig. 2 and in full lines in Fig. 6.) The interlocking slide-piece l is withdrawn from the recess i of the cam I and by the simultaneous forward motion of the hand-lever the eccentric sleeves turned and the shaft S moved from its normal position into a position so that the axes of the eccentric sleeves are parallel with the axes of the toggle-lever mechanism, whereby the shaft S is moved into forward direction, so as to press thereby the drag with increased force against the face of the cope into tight locking or working contact with the same ready for the casting operation. During the final motion of the operating-lever L into the position shown in full lines in Figs. 2 and 7 the slide-piece l rides on the cam I and is held in unlocked position thereby. As soon as the casting of the metal in the casting-chamber formed by the cope and drag is completed and the metal has sufficiently solidified for permitting the opening of the casting-box the handle of the operating-lever L and auxiliary handle L' are grasped by the hand of the operator and moved from the inclined position (shown in Figs. 2 and 7) into its intermediate position, (shown in Fig. 6,) so that the slide-piece is returned into the recess of the cam I

and the drag first moved back by the eccentric sleeves from its working contact with the cope into upright position at a short distance away in front of the cope, after which by continuing the downward motion of the operating-lever and simultaneously releasing the auxiliary handle the toggle-lever mechanism is called into operation, so that the drag is returned by the joint action of the toggle-levers and the slotted bracket at the inner end of the drag by means of the rollers on the supporting-rails into open horizontal position, as shown in Figs. 1 and 3. The eccentric sleeves, by which the toggle-lever-operating shaft is supported, impart to the shaft a slight backward or forward motion, so as to shift the entire toggle-lever mechanism and the drag onto the face of the cope or away from the same and facilitate thereby the closing as well as the opening of the drag, which heretofore could only be accomplished by the exertion of considerable extra power, enabling thereby even a man of less than ordinary strength to operate the improved stereotype-casting box. As the motion of the drag from its horizontal into a vertical position in front of the cope and then into working contact with the same takes place by two separate motions—namely, first, by the tilting motion produced by the toggle-lever mechanism and, secondly, by the reliable closing or locking together of the drag and cope—the leakage due to imperfect contact of the parts is entirely prevented, and the resistance of the cast plate during the setting or solidifying action of the metal and its consequent resistance to the moving away of the drag from the cope is effectively overcome, for the reason that the eccentric sleeves are during the closing or opening of the drag at their maximum working power. Another advantage of the final motion given by the cam-sleeves to the drag is that the expansion of the cast metal is resisted and that the tendency of the cope to shrink at its ends away from the drag when getting heated, so as not to produce plates of uniform thickness, is entirely overcome by the intimate closing contact of the drag by the final action of the cam-sleeves on the same.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a stereotype-casting machine, the combination, with a stationary cope supported in an upright position, of a movable drag, members movably connected with the drag and arranged when moved to their limit to bring the drag from a horizontal position to a position adjacent the cope, and mechanism arranged to cooperate with said members for advancing the drag into contact with the cope, substantially as set forth.

2. In a stereotype-casting machine, the combination, with a stationary cope supported in upright position and a movable drag, of a tog-

gle-lever mechanism for moving said drag from a horizontal position about half-way between the upper and lower ends of the cope into an upright position in front of and substantially parallel with said cope, and a cam mechanism operated in conjunction with the toggle-lever mechanism for moving the drag into working contact with the cope by two successive operations, substantially as set forth.

3. In a stereotype-casting machine, the combination, with a stationary cope supported in upright position and a movable drag, of a transverse shaft, a toggle-lever mechanism between the shaft and drag, eccentric cam-sleeves for supporting said shaft, a transverse connection between said cam-sleeves, and a lever mechanism attached to one of said cam-sleeves for operating the toggle-lever mechanism and cam-sleeves by two successive op-

erations for moving the drag into working contact with the cope, substantially as set forth.

4. In a stereotype-casting machine, the combination, with a stationary cope supported in an upright position, of a movable drag, mechanism including a lever for moving the drag from a horizontal position to an upright position adjacent the cope, and means on said lever arranged to cause the mechanism to advance the drag into contact with the cope, substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

CHAS. E. HOPKINS.

Witnesses:

PAUL GOEPEL,
HENRY J. SUHRBIER.