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2 SHEETS-SHEET 1.



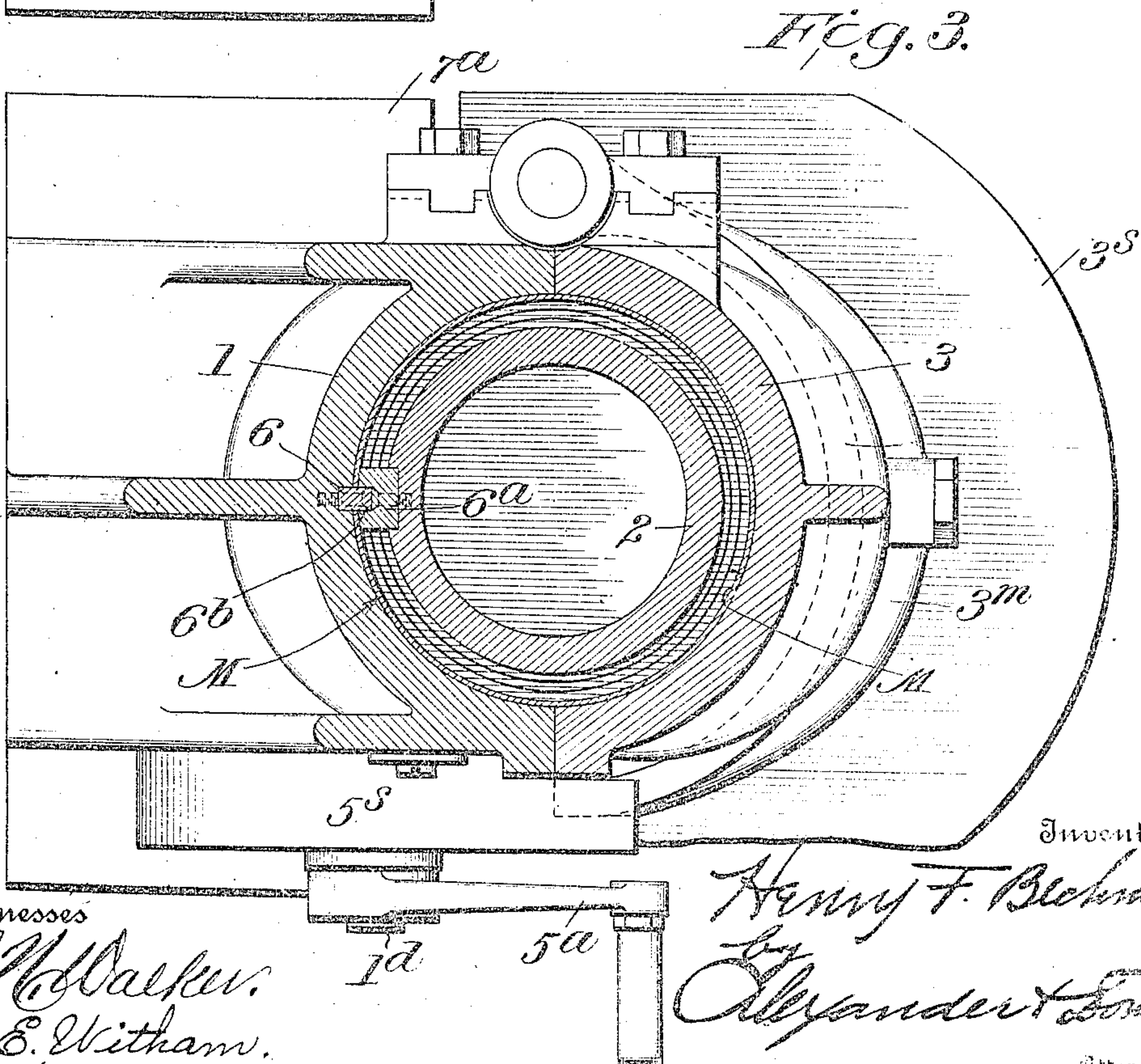
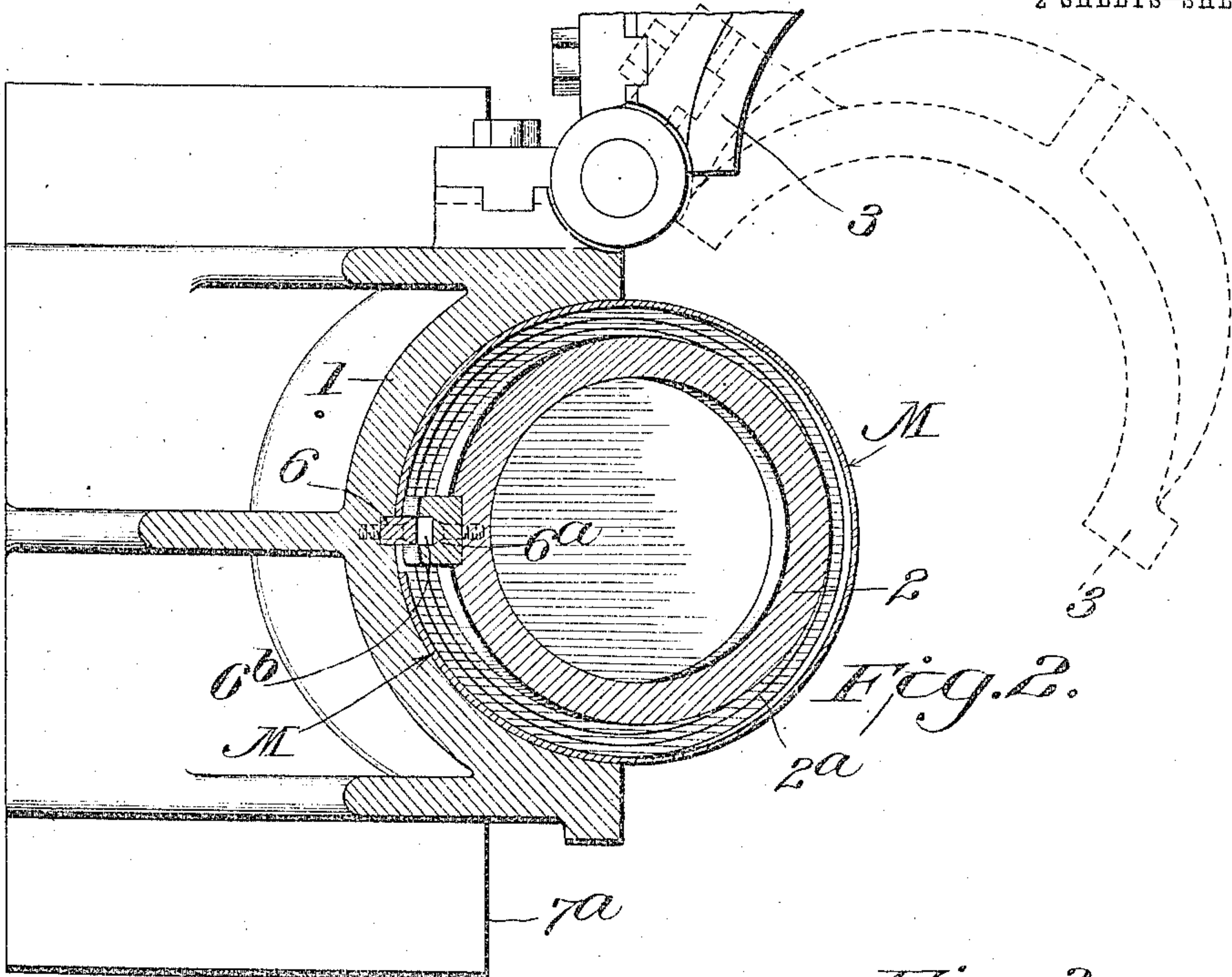
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H. F. BECHMAN.
 STEREOTYPE PLATE CASTING APPARATUS.
 APPLICATION FILED SEPT. 12, 1910.

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Patented June 20, 1911.

2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

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STEREOTYPE-PLATE-CASTING APPARATUS.

995,655.

Specification of Letters Patent. Patented June 20, 1911.

Application filed September 12, 1910. Serial No. 581,601.

To all whom it may concern:

Be it known that I, HENRY F. BECHMAN, of Battle Creek, in the county of Calhoun and State of Michigan, have invented certain new and useful Improvements in Stereotype-Plate-Casting Apparatus; and I hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form part of this specification.

This invention is an improvement in stereotype casting boxes of the type shown in my Patent No. 945,678 of January 4, 1910; and its objects are to simplify the construction of the matrix fastenings and lessen the time required for casting a plate; and these are attained by dispensing with side matrix clamps such as shown in my said patent and securing the matrix in the box by practically automatic means so that the matrix can be easily inserted in the box and will be properly positioned and fastened in position by closing the cope. The operator does not have to manipulate any matrix clamp or lock in or on the box prior to closing of the cope in this invention; and practically all that is required in placing a matrix in the box is to start the opposite edges of the matrix into the edges of the space between the drag and core and then close the cope.

I will now explain the invention with reference to the accompanying drawings which show the present preferred practical form of casting box embodying the invention and will enable those familiar with the art to construct and use the same.

In said drawings—Figure 1 is a side elevation of a complete casting box, showing the parts in closed position and also showing the cope and core in open position, in dotted lines. Fig. 2 is an enlarged transverse sectional view of the box indicating the manner of inserting a matrix into the box prior to closing the cope. Fig. 3 is a similar view showing the parts closed and the matrix locked in position.

The machine or casting box is especially designed to cast tubular stereotype plates such as are used in connection with the novel rotary web printing press shown in my Patents No. 867,230 and No. 867,213 of October 1, 1907, and Reissue No. 13,129 of July 12, 1910.

The machine or casting box embodies a drag 1, which is preferably mounted in vertical position upon a supporting frame, composed of side pieces 7 and base plate 7^a. This drag has a semicircular recess in its front face corresponding in contour to one half of the cylindrical plate to be cast in the machine.

The core 2 is preferably cylindrical in cross section and substantially corresponds in diameter to that of the plate cylinder of the press on which the plates are to be used. Said core has a circumferential flange 2^a near its lower end which forms the bottom of the mold during the casting operations. The core is provided at its lower end with trunnions 2^b upon which are mounted rollers 2^c that rest upon the upper edges of the side pieces 7; and below these trunnions, and in axial alinement with the core 2, and rigidly connected therewith, is a weight or counterbalance 2^d, which is calculated to practically equal the weight of the core, and thus enable the core to be readily swung upon the trunnions to either vertical or inclined position. The core 2 is guided in its movements to and from the drag 1, and prevented from running off the side pieces 7, by means of arms 2^e which are rigidly fastened to the trunnions 2^b, or lower part of the core; and are provided with pins 2^f, which may be provided with rollers, that engage curved guide slots 7^b in the side pieces 7, and not only limit the lateral movements of the core, but cause it to swing to an inclined position when it is pulled away from the drag, and to assume a vertical position when it is moved toward the drag. The upper end of the core is preferably made conical to facilitate pouring of the metal into the mold.

Hinged to one side of the drag 1 is a cope 3, which has a semi-circular recess in its inner face corresponding in contour to one-half the plate to be cast, and slightly greater in diameter than the core; and is adapted, when the core is in position in the drag, to be closed against the drag and therewith completely surround the core, as indicated in Figs. 2 and 3; the space between the cope and drag, and the interposed core forming an annular casting chamber into which metal can be poured at the top of the core. The cope may be fastened to the drag, when closed, by any suitable means. As shown a

yoke 3^m is hinged to the side of the drag intermediate the cope hinges and is adapted to embrace the cope, when the latter is closed, and to contact with a central rib or boss on the cope and force the cope closely against the drag, when the yoke is locked. The yoke is provided on its free end with a pin 3^a which is adapted to be engaged by a hook 4^a, on a slide 4, which is supported on a pin 1^c, attached to the drag, and upon an eccentric 5 attached to a pin or stub shaft 1^d having a handle 5^a as shown. The pin 1^d may be additionally supported by a bracket 5^c attached to the drag, said bracket serving as a guide to prevent lateral displacement of the sliding catch in locking or unlocking the yoke.

A guard or shield 5^s may be attached to the side of the drag 1 above the slide 4 so as to protect the operative parts of the yoke clamp from being clogged with molten metal, which might be spilled thereupon during the operation of pumping metal into the mold. The cope 3 may also be provided with a skirt 3^s to protect the underlying part from being clogged with metal which might splash thereupon during the operation of filling the mold when the cope is closed.

Journalled in the frame 7 is a transverse shaft 7^m to one end of which is attached a lever 7ⁿ which is provided with an inclined slot 7^o adapted to engage the projecting end of the adjacent trunnion pin 2^b of the core. This lever 7ⁿ extends forward beyond said trunnion and is provided at a point in advance of the inclined slot 7^o with a notch 7^p which is adapted to engage the trunnion 2^b when the box is opened and the core is lowered into the position shown in dotted lines in Fig. 1, to hold the core in such position.

Thus far the parts described are or may be constructed substantially the same as similarly lettered parts described in my Patent No. 945,678 aforesaid—and I will now describe the features which more particularly embody the present invention.

Attached to the drag, at the center of the inside face thereof, is a single vertical rib or bar 6; and attached to the opposed surface of the core 2 is a vertical rib or bar 6^a, which has a groove 6^b corresponding to and adapted to receive the rib 6 on the drag; the bar 6^a is of a width corresponding to the space desired between the ends of the printing surface of the cylindric plate; or to the "slot" in such cylindric plate as described in my press patents aforesaid; which "slot" equals the marginal space desired between successive impressions made on the web by such plate. The rib 6^a preferably projects from the face of the core a distance equal to the desired thickness of the plate to be cast, and when the core is closed the ribs 6, 6^a interlock, as shown in Fig. 3. After the core 2

has been almost entered into the drag 1, see Fig. 2, and preferably so that the lower end of rib 6 has begun to enter the lower end of groove 6^b in rib 6^a, the previously prepared matrix indicated at M, Figs. 2 and 3, is bent into somewhat tubular form and its two sides inserted into the opposite sides of the space between the core and the drag, as indicated in Fig. 2, while the cope is opened. The cope is then closed against and around the core, and in so doing pushes the matrix inward until both edges of the matrix come against the rib 6 Fig. 3, and the core is simultaneously brought into central position, as described in my aforesaid patent; and the core and the edges of the matrix are clamped against the drag, on opposite sides of the rib 6, by the flanges of the rib 6^a, see Fig. 3; and the cope is then locked in closed position by yoke 3^m.

Operation: The cope can be thrown open and the core lowered to the position shown in dotted lines in Fig. 1, so that a previously cast plate can be removed. The core is then turned back almost into the drag, as in Fig. 2; then a matrix M is bent around the core and its opposite side edges inserted between the core and the drag, and pushed as far in as can be conveniently done by hand. Then the cope is closed and the yoke 3^m swung against the cope and secured as described in my said Patent No. 945,678. The closing of the cope first forces the matrix M fully inward until its side edges abut against the rib 6, then as the core moves into exact central position the edges of the matrix are firmly held between the flanges of rib 6^a and the inner face of the drag at opposite sides of rib 6 on the drag. Thus the setting up and locking of the matrix is practically automatic; there is no matrix clamp to be manually handled; but the ribs hold the side edges of the matrix securely when the box is closed. There is no matrix lock to be handled or fastened or set; only the cope lock has to be secured. It is impossible for the matrix to slip out of position as the interior surfaces of the cope and drag, to which it must conform, will force it to position and its inner edges against the stop or rib 6 as they are brought together. The flange 2^a on the bottom of the core makes a tight joint with the opposed surfaces of the drag and core, and closes the bottom of the mold formed by the space between the inner faces of the drag and cope and the external face of the core. When the cope is closed a removable guard or collar 3ⁱ may be placed in the top of the box to prevent metal splashing thereupon, and then the molten metal is poured into the top of the box and after the metal has set the cope is opened and the core with the cylindrical plate thereon is swung out of the drag, as indicated in dotted lines Fig. 1,—then the cast plate may be slipped

endwise off the core. The metal is delivered in the mold in such manner that it will naturally tend to force the matrix outward against the walls of the drag and cope and insure a clean and perfect casting. As the ribs 6, 6^a, are located at the center of the drag, instead of at the side thereof, it follows that when the metal is pumped into the box it divides and flows equally around the core to the ribs, and the resultant plates are more uniform.

By reason of the practically automatic securing of the matrix in the box, the apparatus can practically be operated more quickly and easily than other style boxes; and this apparatus is the only one in which the operator does not have to straighten and line up the matrix by hand and then clamp it by hand before closing the box; while in my apparatus all that is necessary is to start the edges of the matrix well in on the respective sides of the core and then close the cope.

What I claim is:

1. In a stereotype casting apparatus, the combination of a drag, a cope, and a cylindric core having a vertical rib opposite the center of the drag adapted to clamp opposite adjacent edges of the matrix against the drag when the core is closed and to secure the matrix in position when the cope is closed.

2. In a stereotype casting box, the combination of a cope, a drag having a rib, and a core having an opposed rib, said ribs being adapted to position a matrix around the core when the core is closed and to engage and hold the opposite adjacent edges of the matrix in position when the cope is closed.

3. In a stereotype casting box, the combination of a drag having a longitudinal fixed rib, a cope, and a cylindric core having a longitudinal fixed rib opposite that on the drag and adapted to position the matrix bent around the core, when the core is closed, and to secure the opposite edges of the matrix when the cope is closed.

4. In a stereotype casting apparatus, the combination of a drag having a central vertical rib, a cope, and a cylindric core having a vertical rib adapted to co-act with the rib

on the drag and position and secure the matrix, when the cope is closed.

5. In a stereotype casting box, the combination of a drag and a core, and opposed ribs thereon, one of said ribs being slotted to receive the other, and said ribs being adapted to position and secure the edges of a matrix when the core is closed.

6. In a stereotype casting box, the combination of a drag having a vertical rib, and an opposed core having a vertical rib opposite that of the drag, one of said ribs being slotted to receive the other, and the slotted rib being adapted to secure the edges of a matrix, when the core is closed.

7. In a stereotype casting box, the combination of a drag, a core, a cope, and a matrix guide adapted to automatically position a matrix for casting.

8. In a stereotype casting box, the combination of a drag, a cope and a matrix stop adapted to position a matrix in the box as the box is closed.

9. In a stereotype casting box, the combination of a drag, a cope, a core, and a matrix stop bar adapted to position a matrix in the box as the box is closed.

10. In a stereotype casting apparatus, the combination of a drag having a rib, a swinging cope, and a core having a rib adapted to clamp the adjacent opposite edges of a matrix bent around the core against the drag at opposite sides of the rib thereon, when the cope is closed.

11. In a stereotype casting apparatus, the combination of a drag having a rib, a swinging cope, and a tiltable core having a longitudinal grooved rib adapted to embrace the rib on the drag and clamp the opposite adjacent edges of a matrix bent around the core against the drag, when the cope is closed.

In testimony that I claim the foregoing as my own, I affix my signature in presence of two witnesses.

HENRY F. BECHMAN.

Witnesses:

J. K. STONE,
CHARLES A. GRAMES.