

H. A. W. WOOD.
 STEREOTYPE PRINTING PLATE CASTING APPARATUS.
 APPLICATION FILED APR. 6, 1903. RENEWED AUG. 2, 1910.

985,875.

Patented Mar. 7, 1911.

3 SHEETS—SHEET 1.

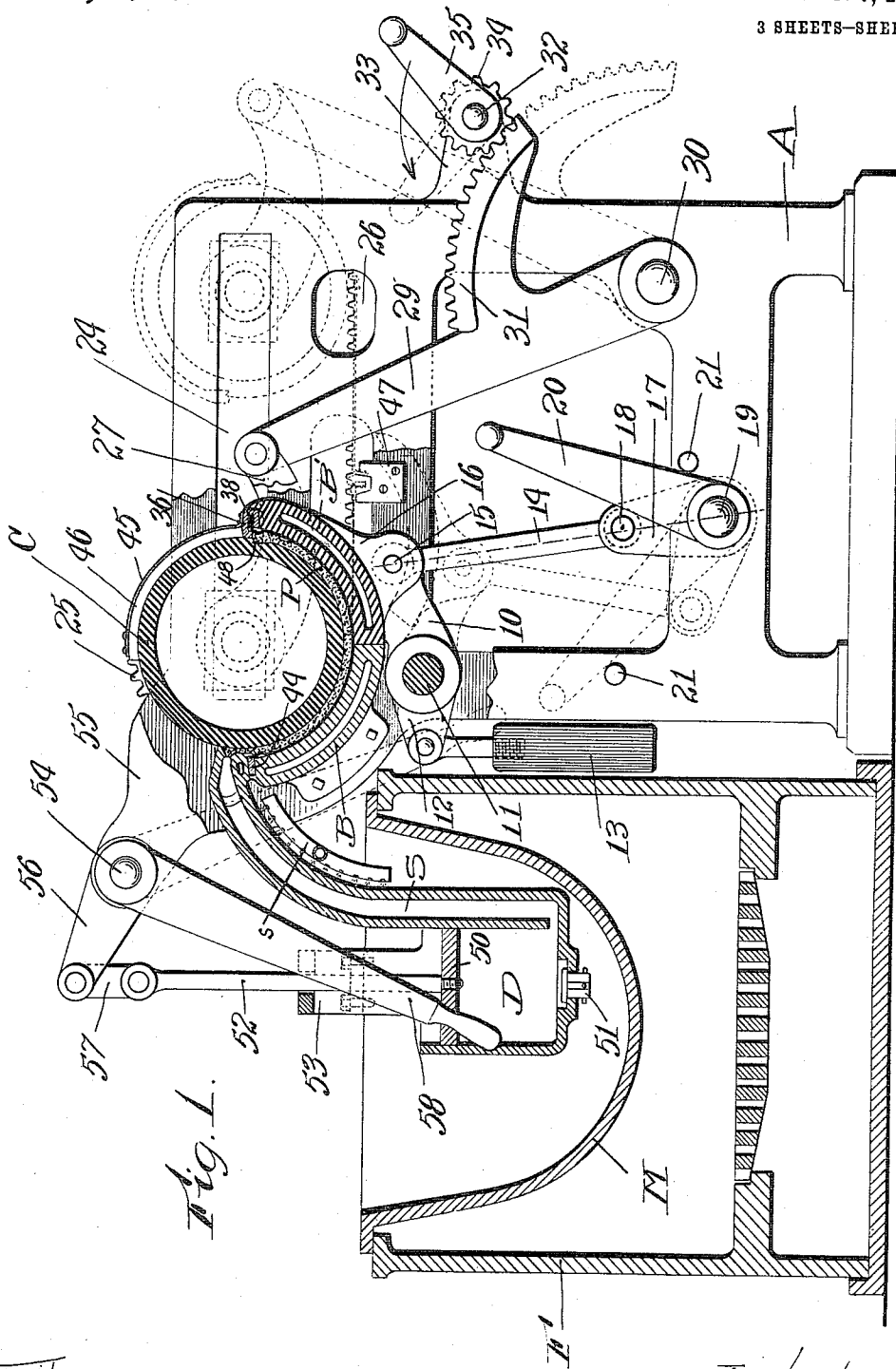


Fig. 1.

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 M. S. Regan.

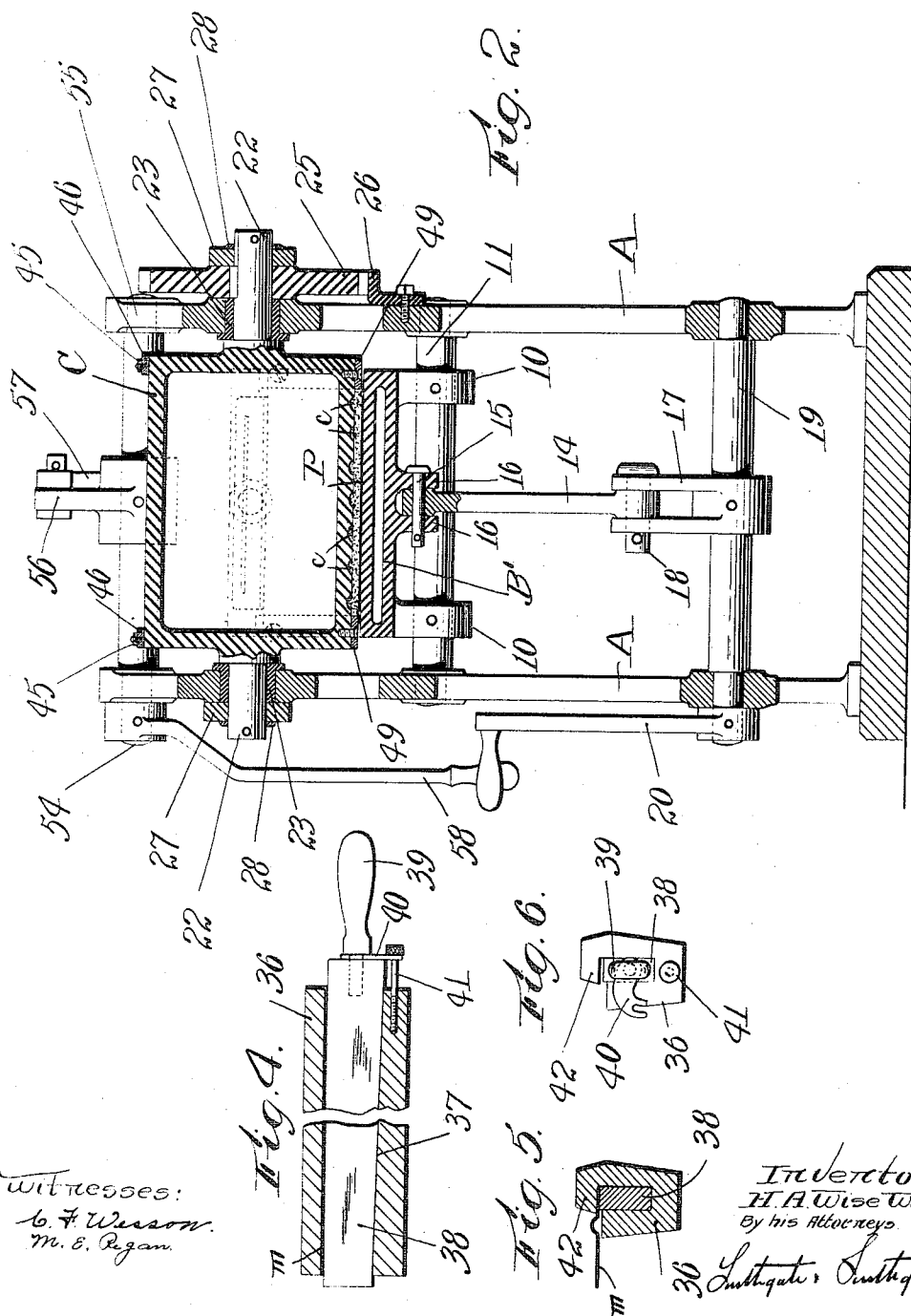
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 By his Attorneys
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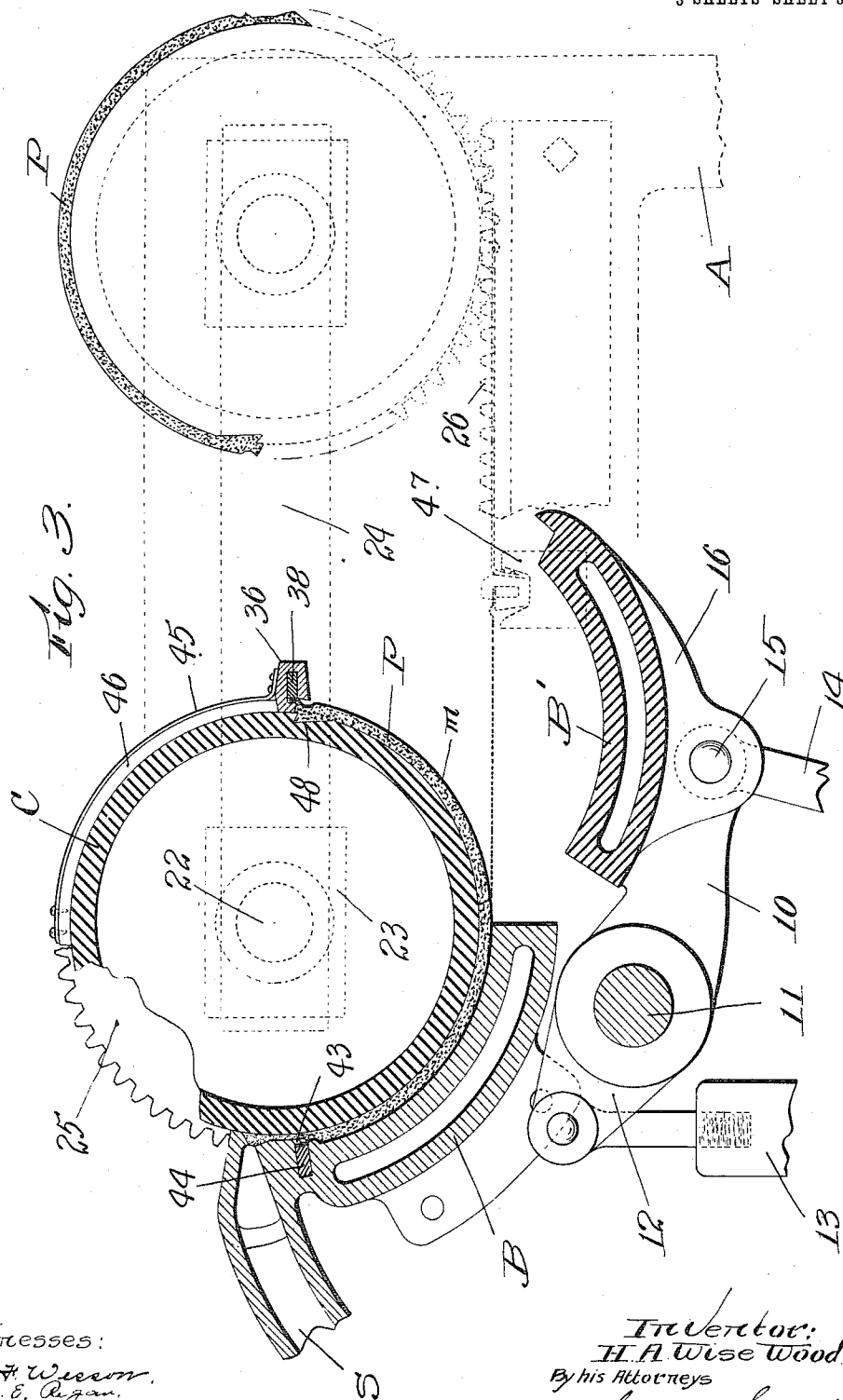
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

HENRY A. WISE WOOD, OF NEW YORK, N. Y., ASSIGNOR TO CAMPBELL PRINTING PRESS & MANUFACTURING COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

STEREOTYPE-PRINTING-PLATE-CASTING APPARATUS.

985,875.

Specification of Letters Patent.

Patented Mar. 7, 1911.

Application filed April 6, 1903, Serial No. 151,359. Renewed August 2, 1910. Serial No. 575,182.

To all whom it may concern:

Be it known that I, HENRY A. WISE WOOD, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented a new and useful Stereotype-Printing-Plate-Casting Apparatus, of which the following is a specification.

The object of this invention is to provide a simple and efficient mechanism for casting semi-cylindrical stereotype printing plates from a flexible matrix.

The especial aim is to provide a device of this character which can be operated rapidly with very little exertion so as to eliminate the hard work and great amount of lifting customary with hand boxes now in use.

The accompanying three sheets of drawings illustrate the best form now known to me for practicing the invention.

Referring to said drawings, Figure 1 is a side elevation partly in section illustrating the casting chamber closed and a plate just cast. Fig. 2 is a cross sectional view. Fig. 3 is a view of the parts making up the casting chamber on an enlarged scale illustrating in dotted lines the delivery of the plate, and Fig. 4 is a sectional elevation, Fig. 5 is a cross sectional view, and Fig. 6 is an end elevation of the matrix holding clip.

Referring to the drawings and in detail, A—A designate the side frames of the device. The casting chamber is formed by the annular space between a segmental back and a cylindrical core C. The segmental back is made in two sections, B and B'. The section B is rigidly secured to the frame work. The section B' has extending arms 10, which are secured to a shaft 11; journaled in the frames A. Extending rigidly from the shaft 11 is an arm 12, connected to which is a counterweight 13. By this arrangement the front section B' of the back can be turned around the shaft 11 as a pivot to open and close the casting chamber. To provide an operating means for this operation the following parts are provided: A link 14 is pivoted on a pin 15, extending through ears 16, extending down from said section B'. The other end of the link 14 is fitted into a pronged lever 17 and journaled thereto by a pin 18. The pronged lever 17 is secured on a shaft 19, which is journaled in the frames A. An operating handle 20 is secured on the end of the shaft

19. The relation of the pronged lever 17, the link 14, the pin 15 and the shaft 19 is such that the lever 17 and link 14 form substantially a toggle operating and locking mechanism for the section B'. That is to say, when the parts are in the position shown in full lines in Fig. 1, the pin 18 is slightly to the right of a line drawn through the pin 15 and the shaft 19 so that the section B' is rigidly locked in its upper position. When the handle 20 is thrown to the position shown in dotted lines the lock is released and the section B' brought down to the position indicated in dotted lines. Pins 21 may be used to limit the movement of the handle 20. By this construction, the casting chamber can be quickly opened and closed and kept locked in closed position.

The cylinder or core C has extending hubs or shafts 22 which are journaled in boxes 23, which boxes are fitted to slide in slots 24 cut in the frames A. Secured on one of the hubs 22 is a gear 25 which meshes with a rack 26 secured to the rear frame A. The diameter of the gear 25 is substantially equal to the diameter of the cylinder C so that as the cylinder is moved forward, it will have a rolling action like a wheel.

Links 27—27 are fitted to the hubs 22 and held in place thereon by suitable collars 28. These links connect to levers 29 mounted in the ends of a common shaft 30. The levers 29 have extending segments 31, on which gear teeth are cut. A shaft 32 is journaled in arms 33 extending out from the frames A. Fitted on said shaft are pinions 34 which engage said segments 31. An operating handle 35 is secured on the end of the shaft 32. By this construction, the cylinder C can be rolled forward and backward.

The flexible matrix is designated by m. The same is held in position by being secured at one end to the section B of the back and at the other end to a matrix supporting clip 36 illustrated particularly in Figs. 4, 5 and 6. Said clip has a mortise 37 formed through the same, the lower edge of which is slightly inclined. Fitted in this mortise is a locking wedge 38, the lower edge of which is slightly inclined to fit the lower edge of the mortise. Said wedge is provided with a handle 39. Arranged under the handle is a small notched clip 40, which can be swung around on the handle as a pivot to engage under the head of a set

screw 41. One corner of the clip is cut away as shown in Figs. 5 and 6 so that an overhanging lip 42 is provided. The matrix is fastened in the clip by having its edge inserted between the lip 42 and the top surface of the wedge which is slightly withdrawn. The wedge is then jammed tightly into place so as to grip the matrix firmly between itself and the said lip 42. The wedge may be held in position by swinging the clip 40 down under said screw 41 if desired. The opposite edge of the matrix is held in place on the back by means of an overhanging lip 43 and a wedge 44 similar in construction to the locking wedge 38 previously described, that is to say, a slot or groove is formed in the segmental back, and the same is cut away so that the edge of the matrix can be inserted into said groove under said lip 43, and the bottom of said groove is cut on a slight taper to match the wedge 44.

The matrix clip 36 is a loose bar attached by steel strips 45 to the cylinder C. Segments 46 are secured on the cylinder C so that said steel strips 45 will wind up and unwind properly on the same. Notched blocks 47 are secured to the side frames A—A to receive and support the said matrix clip 36 when the cylinder is moved to the position shown in dotted lines in Fig. 1. This construction is provided so that the cylinder may be given an extended movement for the purpose hereafter mentioned.

The top edge of the section B' is provided with a lip overhung relatively to the ends of the segments 46 so that when the casting chamber or box is closed, as shown in full lines in Fig. 1, the matrix clip will be tightly held in position to stop off the front edge of the casting chamber.

The cylinder C is provided with a groove 48 so as to get a circumferential grip on the cast plate P. The core is also provided with the usual small grooves *c* to form ribs on the inside periphery of the plate.

End rings or sections 49 are secured to the ends of the cylinder to stop off the ends of the casting chamber. These end rings are preferably but not necessarily made straight on their inner sides instead of with the usual taper so that the plate can be lifted off the cylinder.

The casting apparatus previously described may have metal supplied thereto either by hand or by pump. The preferred way is to pump the metal into the casting chamber. To do this a furnace F is arranged adjacent to the casting apparatus and is provided with a grate or other suitable heating device by which a large volume of metal can be kept in molten condition in the metal pot M. A pump D is arranged in the metal pot and communicates by a spout S attached to the segment B to the casting

chamber. The spout S may be kept hot by a series of burners *s*. This pump is provided with a piston 50 and a suitable inlet valve 51. A piston rod 52 extends up from the piston 50 and is guided by a suitable support 53. A shaft 54 is journaled in arms 55 extending out from the frames A. A lever 56 is secured on the shaft 54 and is connected by link 57 to the piston rod 52 and an operating handle 58 is secured on the end of said shaft 54.

The operation of this mechanism is as follows: Starting with the cylinder in the dotted position shown in Fig. 1, the operator first secures a flexible matrix *m* to the section B of the back and to the matrix clip 36 by the means previously described. He then operates the handle 35 to roll the cylinder back into position in the casting chamber. As the cylinder rolls back it will pick up the matrix clip 36 by reason of the flexible strips 45 and the end rings will bear on the curved edges of the flexible matrix to bring the matrix to proper curved condition and position for casting. The operator then throws the handle 20 from the position shown in dotted lines to the position shown in full lines to bring the section B' of the back into position and to close the casting chamber. The operator then manipulates the handle 58 to fill the casting chamber. When the plate has solidified the handle 20 is thrown to the position shown in dotted lines, thus opening the casting chamber. The handle 35 is then given a turn in the direction indicated by the arrow in Fig. 1. This will cause the cylinder or core C to roll out of the casting box with an advancing movement. This will roll the plate with an advancing movement to flex the matrix therefrom. The advancing rolling movement of the cylinder will bring the plate up on the cylinder as indicated by the dotted lines in Fig. 1 so that the plate can be detached or lifted off of the core or cylinder by lifting up on the front edge. The core is then rolled back into the casting chamber, and the operation gone through again for the next plate. It will be seen that the matrix is flexed or stripped from the surface of the cast plate and is repositioned for the next cast by the rolling movement of the cylinder. It also will be seen that when the matrix is once secured in position it needs no further attention for successive duplicate casts.

The segments B B' of the back are usually made hollow so that water can be circulated through the same, if desired; and water may be circulated through the core in any of the usual ways.

By the mechanism thus described, a simple casting apparatus is provided which, in most instances, can be manipulated by a single operator and the whole series of oper-

ations attained by the manipulation of three handles.

The details and arrangements of parts herein described may be greatly varied by a skilled mechanic without departing from the scope of my invention as described in the claims.

Having thus explained and described my invention what I desire to secure by Letters Patent is:—

1. The combination in a stereotype printing plate casting apparatus, of devices making up a curved casting chamber, with means for rolling the plate with an advancing movement to flex the matrix therefrom.

2. The combination in a stereotype printing plate casting apparatus, of devices making up a curved casting chamber, means for securing one edge of the matrix permanently in position, and means for rolling the plate with an advancing movement to flex the matrix therefrom.

3. The combination in a stereotype printing plate casting apparatus, of a segmental back, a core, and means for rolling the core with an advancing movement to deliver the plate.

4. The combination in a stereotype printing plate casting apparatus, of a segmental back, a core, means for securing a flexible matrix in position, and means for rolling the core with an advancing movement to deliver the plate and flex the matrix.

5. The combination in a stereotype printing plate casting apparatus, of a segmental back, a core, means for securing a flexible matrix in position, and means for rolling the core bodily forward and backward to roll the plate out of the matrix and to reposition the matrix for the next cast.

6. The combination in a stereotype printing plate casting apparatus, of a core, and a segmental back made in two sections, one permanently secured in place and the other movable.

7. The combination in a stereotype printing plate casting apparatus, of a core and a segmental back made in two sections, one section rigidly secured in position and the other section mounted on a pivot.

8. The combination in a stereotype printing plate casting apparatus, of a core, a segmental back made in two sections, one rigidly secured in place and the other mounted on a pivot, and means for turning the same on the pivot.

9. The combination in a stereotype printing plate casting apparatus, of a core, a segmental back made in two sections, one rigidly secured in place, and the other mounted on a pivot, and a toggle actuating mechanism for operating the pivoted section.

10. The combination in a stereotype printing plate casting apparatus, of a core, a

segmental back made in two sections, one rigidly secured in place and the other mounted on a pivot, and means for actuating the pivoted section, comprising a link connected to the pivoted section and a lever mounted on a shaft in such relation to the pivoted section as to lock the pivoted section in casting position.

11. The combination in a stereotype printing plate casting apparatus, of a core, a segmental back made in two sections, one rigidly secured in place and the other mounted on a pivot, and means for actuating the pivoted section comprising a link connected thereto, a shaft carrying a lever connected to said link and an operating handle arranged on said shaft, said lever and link being arranged in proper relation to form a locking toggle.

12. The combination in a stereotype printing plate casting apparatus, of a core, a segmental back made in two sections, one being rigidly secured in place and the other mounted on a pivot, a counterweight for the pivoted section, and an actuating mechanism for operating the pivoted section.

13. The combination in a stereotype printing plate casting apparatus, of a core, a segmental back, means for moving the core bodily relatively to the back, and gearing for turning the core as it moves.

14. The combination in a stereotype printing plate casting apparatus, of a framing, a core having projecting hubs fitted to slide in the framing, means for moving the core forward and backward, and gearing for turning the core as it moves.

15. The combination in a stereotype printing plate casting apparatus, of a framing, a segmental back, a core having projecting hubs, boxes fitted in slots in the framing in which the hubs of the core are journaled, means for moving the core, and gearing for turning the core as it moves.

16. The combination in a stereotype printing plate casting apparatus, of a segmental back, a core, means for moving the core bodily relatively to the back, a gear mounted concentrically with the core, and a rack with which said gear meshes, whereby the core will turn as it moves.

17. The combination in a stereotype printing plate casting apparatus, of a framing, a segmental back, a core mounted to slide in the framing and geared to turn as it moves, and means for moving the core comprising levers connected by links to the core and having segments, and a shaft carrying operating pinions engaging said segments.

18. A matrix supporting device having an inclined mortise, and an inclined locking wedge for directly gripping the edge of the matrix.

19. A matrix supporting clip provided with a projecting lip and a locking wedge

arranged so that the edge of the matrix can be directly gripped between said lip and the wedge.

20. A matrix supporting clip provided with an overhanging lip, a locking wedge for directly gripping the matrix, and means for locking the wedge in position.

21. The combination in a stereotype printing plate casting apparatus, of a bodily moving core, and a matrix supporting clip attached thereto by flexible means.

22. The combination in a stereotype printing plate casting apparatus, of a bodily moving core, and a matrix supporting clip attached thereto by steel strips.

23. The combination in a stereotype printing plate casting apparatus, of a bodily moving core, a matrix supporting clip attached thereto by flexible strips, and segments on which said strips can wind and unwind.

24. The combination in a stereotype printing plate casting apparatus, of a bodily moving core, a matrix clip attached thereto by flexible strips, and supporting pieces for catching and holding said clip.

25. The combination in a stereotype printing plate casting apparatus, of a bodily moving core, a segmental back which may be operated to open and close the casting chamber, means for attaching one end of a flexible matrix permanently in place, and a matrix supporting clip carried by the cylinder to which the opposite end of the matrix is secured.

26. The combination in a stereotype printing plate casting apparatus, of a bodily moving core, a segmental back made in two sections one of which may be operated to open and close the casting chamber, means for attaching one edge of the matrix permanently in position, and a matrix supporting clip

carried by the core to which the opposite edge of the matrix is attached.

27. The combination in a stereotype printing plate casting apparatus, of a bodily moving core, a segmental back made in two sections one of which may be operated to open and close the casting chamber, means for securing one edge of the flexible matrix in position, and a matrix supporting clip to which the opposite edge of the matrix is secured, connected by flexible means to said core.

28. The combination in a stereotype printing plate casting apparatus, of a bodily moving core, a segmental back which can be operated to open and close the casting chamber, a spout connected to the casting chamber, and means for rolling the core away from the spout.

29. The combination in a stereotype printing plate casting apparatus, of a core, a segmental back which can be operated to open and close the casting chamber provided with a lip, and a matrix supporting clip held in place by said lip when the casting chamber is closed.

30. The combination in a stereotype printing plate casting apparatus, of a core, a segmental back which can be operated to open and close the casting chamber, a matrix clip attached to the core by flexible strips, segments on which said strips are supported, and a lip on said back for holding said clip in place against the ends of said segments.

In testimony whereof I have hereunto set my hand, in the presence of two subscribing witnesses.

H. A. WISE WOOD.

Witnesses:

ANNIE B. WALTERS,
H. GUNNING.