No. 721,118. PATENTED FEB. 17, 1903.

H. A. W. WOOD

STEREOTYPE PRINTING PLATE CASTING APPARATUS.

APPLICATION FILED MAR. 4, 1898.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.

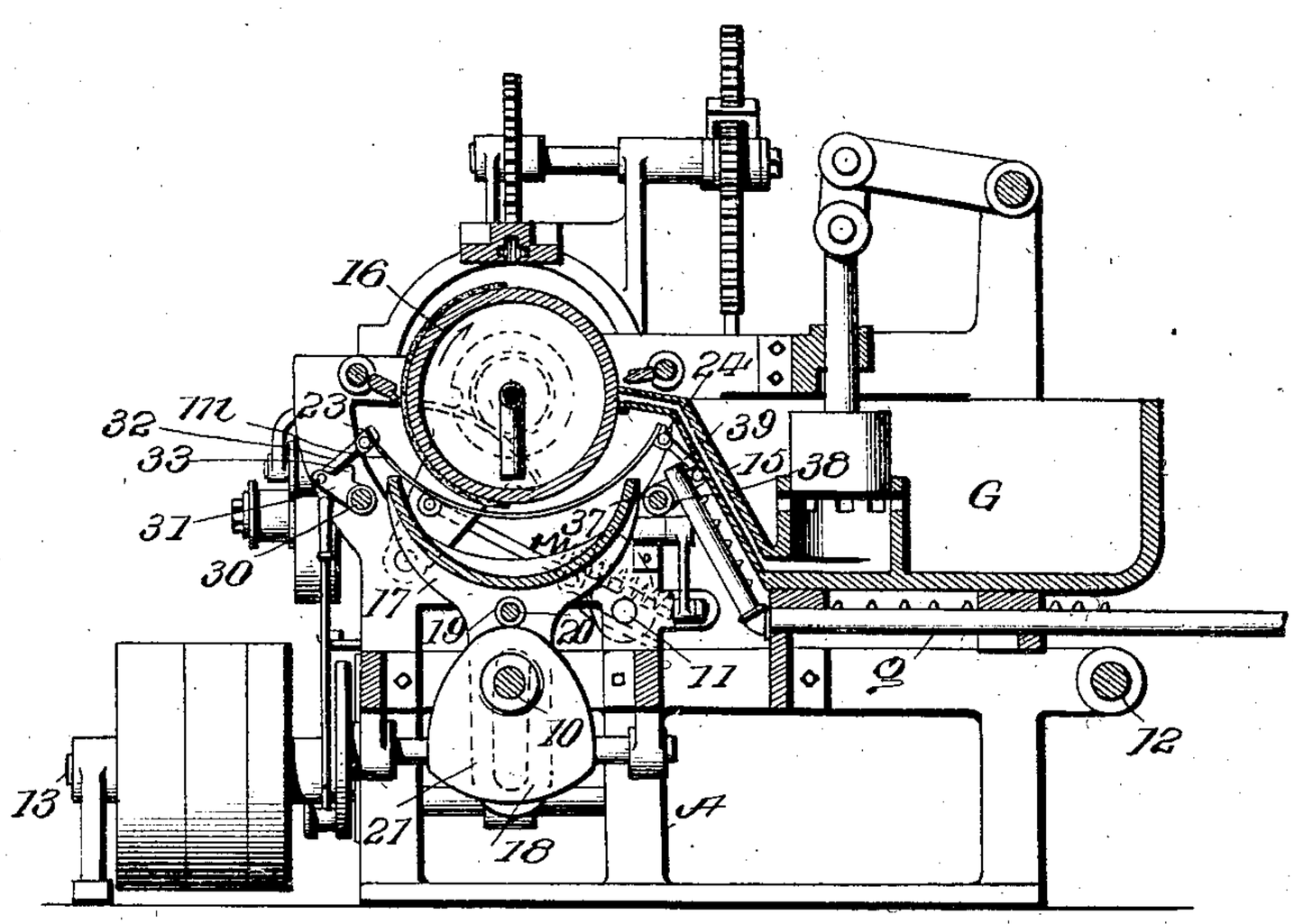
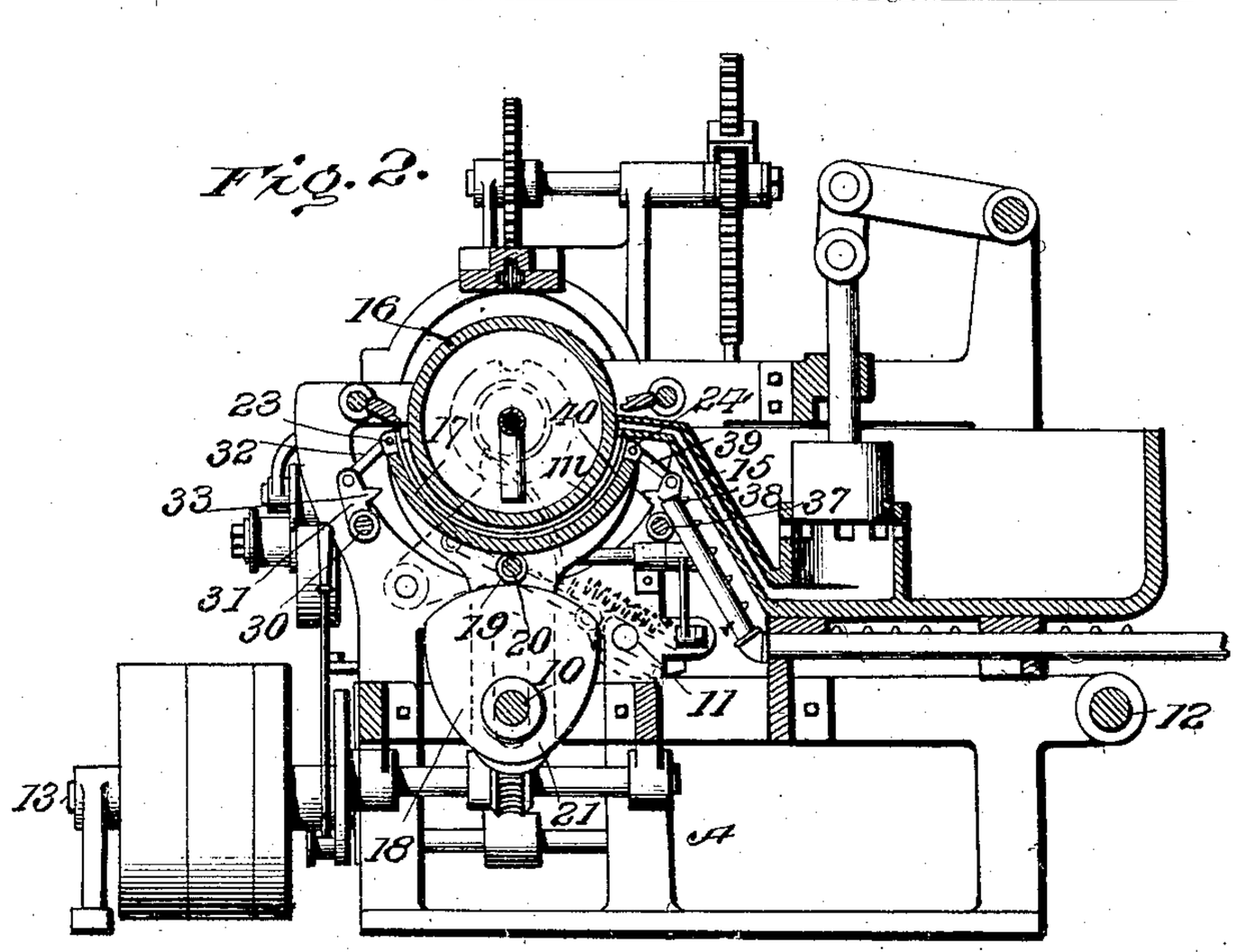


Fig. 2.



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APPLICATION FILED MAR. 4, 1898.

NO MODEL. 2 SHEETS—SHEET 2.

Fig. 3.

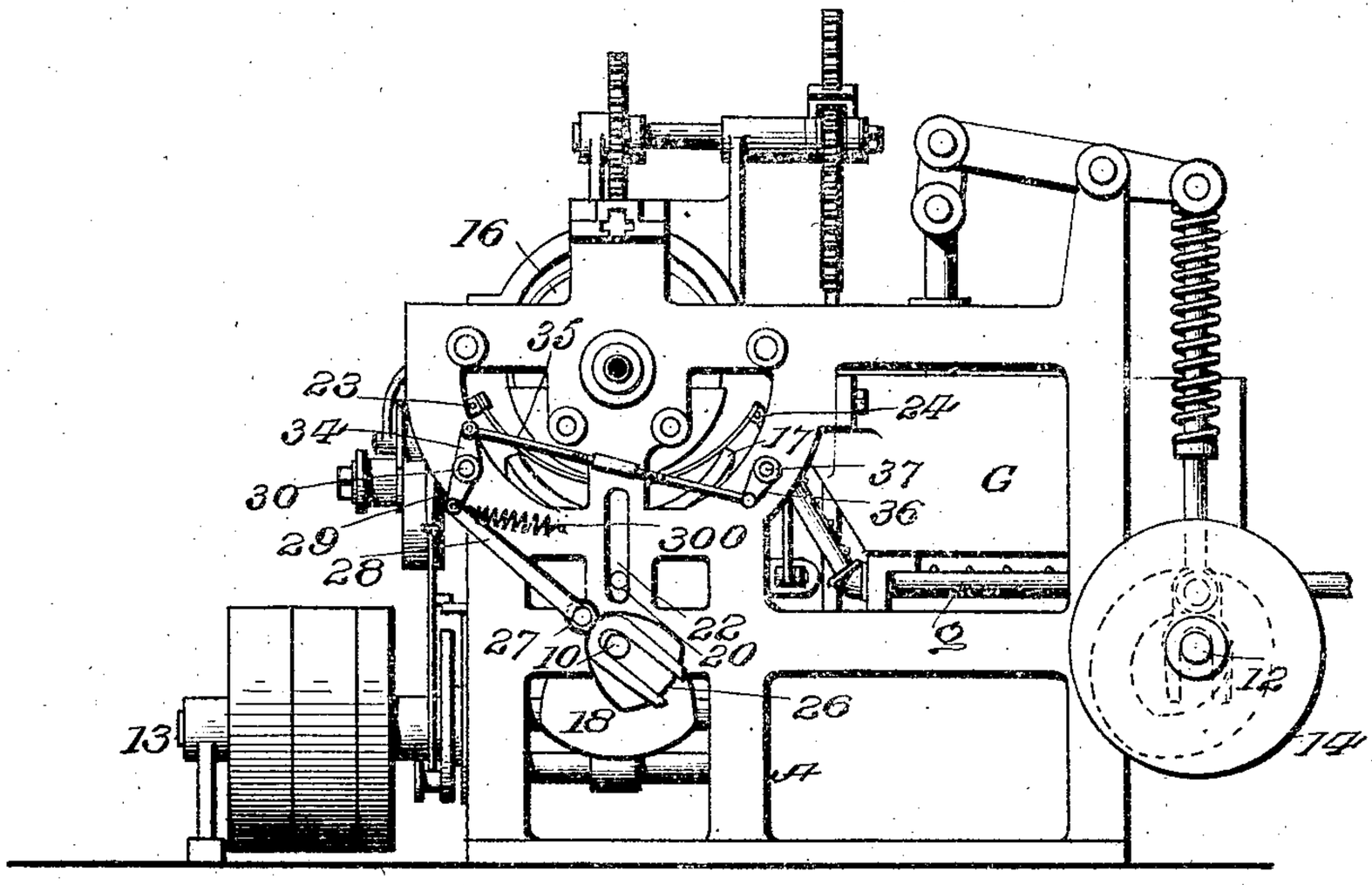


Fig. 4.

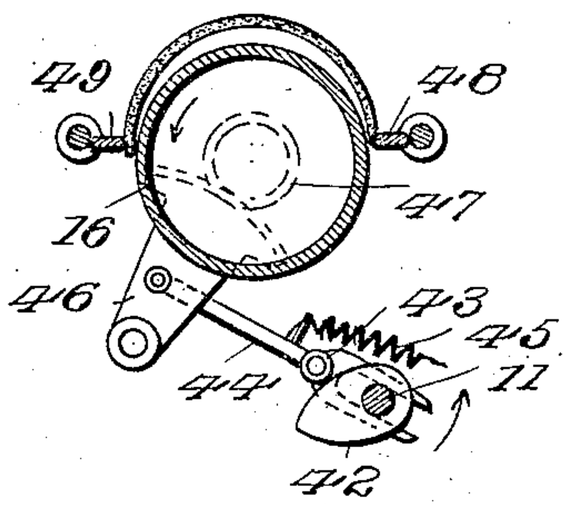
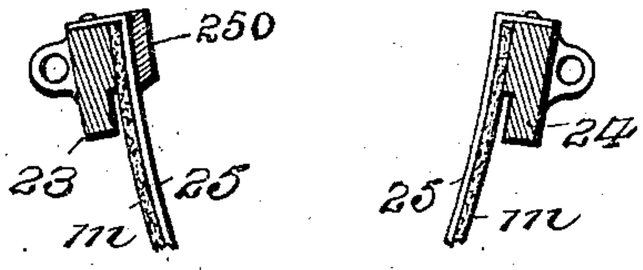


Fig. 5.



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UNITED STATES PATENT OFFICE.

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

STEREOTYPE-PRINTING-PLATE-CASTING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 721,118, dated February 17, 1903.

Application filed March 4, 1898. Serial No. 672,550. (No model.)

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.

My invention relates to an apparatus for casting stereotype printing-plates; and the object of my invention is to improve and simplify the parts which coöperate to form the casting-chamber and to provide independent means for removing the flexible matrix from the surface of the cast plate.

To these ends my invention consists of the parts and combinations of parts, as hereinafter described, and more particularly pointed out in the claims at the end of this specification.

In the accompanying two sheets of drawings, Figure 1 is a transverse sectional view of an automatic plate-casting machine constructed according to my invention. Fig. 2 is a similar view, the parts being shown in a different relative position. Fig. 3 is an end view of the machine, and Figs. 4 and 5 are detail views to be hereinafter referred to.

My present invention has been especially designed as an improvement or modification of the automatic plate casting and finishing machine which is described in an application for Letters Patent filed by me March 4, 1898, Serial No. 672,549, patented of even date herewith.

The machine which is illustrated in the accompanying drawings, which show one embodiment of my present invention, comprises a curved casting-chamber formed by the annular space between a core or cylinder and a movable piece or segment. The movable piece or segment is moved up and down to close and open the casting-chamber. A flexible matrix is mounted in independent strips or arms, and these strips or arms are actuated to strip the matrix from the surface of the cast plate when the casting-chamber is opened. When the casting operation is completed, the central core or cylinder is turned to move the cast plate from the casting-chamber and to present the plate in proper position to be acted upon by suitable lifting and conveying devices, and the core or cylinder is then turned back to its original position before the next casting operation commences.

Referring to the drawings and in detail, A designates a rigid framework which supports the moving parts of the machine. Journaled in the framework A are the driving-shafts 10 and 11 and a pump-actuating shaft 12. These three shafts may be geared to turn together by any of the ordinary forms of gearing—such, for instance, as is shown in my application, Serial No. 672,549—to make one turn for each casting operation and may be driven from the power-shaft 13 in the ordinary way.

At the rear of the machine is a melting-pot G, which is arranged over suitable heating devices or gas-jets, as *g*. Mounted in the melting-pot G is a pumping mechanism for forcing the molten metal into the casting-chamber. The pumping mechanism is actuated by a cam 14, secured near the end of the shaft 12, and the molten metal is led into the casting-chamber through a spout or passage 15. The casting-chamber is formed by the annular space between the oscillating core or cylinder 16 and a movable segment or back piece 17. Journaled on studs 20, carried by the movable piece or segment 17, are rollers 19, which bear on cams 18, secured on the driving-shaft 10. The movable piece or segment 17 is guided to move up and down vertically by means of slotted yokes 21, which fit over the shaft 10, and the said studs 20, which fit into slots 22 in the framework of the machine.

A flexible matrix *m* is secured at its edges in independent strips or arms 23 and 24, the strips 23 and 24 being connected by spring bands or arms 25, as most clearly illustrated in Fig. 5. A stop-piece 250 is secured to the arm 23 in position to stop off the side of the mold into which the spout does not enter. The strips or arms 23 and 24 are actuated by means independent of the movable segment or piece 17 to present the matrix in proper position in the casting-chamber and to strip the matrix from the surface of the cast plates. As shown in Fig. 3, a cam 26 is secured near the end of the driving-shaft 10 and engages with a roller 27, journaled on a yoke 28, which

connects to an arm 29, extending down from a rock-shaft 30. The roller 27 may be held in engagement with its cam 26 by means of a spring 300. The rock-shaft 30 is provided with arms 31, which are connected by links 32 to the matrix-carrying arm or piece 23. The rock-shaft 30 is also provided near its end with an arm 34, which is connected by an adjustable link 35 with an arm 36, extending down from the rock-shaft 37. The rock-shaft 37 is providing with extending arms 38, which are connected to the matrix-carrying strip or arm 24 by means of links 39. In this construction it will be seen that the arms 31 and 38 and the connecting-links 32 and 39 form substantially toggle-levers, which will strip the flexible matrix evenly and efficiently from the surface of the cast plate, while at the same time the matrix will not be unnecessarily strained or stretched. If desired, the arms 31 and 38 may be provided with projecting lugs, as 33 and 40, which will form stops for holding the matrix when in its lowered position. The said lugs 33 and 40 are arranged to strike on the links 32 or 39 when the casting-chamber is open, as shown in Fig. 1, to accomplish this result.

Fig. 4 illustrates a form of gearing which I may employ for turning or oscillating the core or cylinder 16 to remove the cast plate from the casting-chamber. Referring to the figure, 42 designates a cam, which is fastened to the driving-shaft 11. The cam 42 engages with a roller 43, journaled on a yoke 44, which is connected to a toothed sector 46, which is pivoted to frame A and which meshes with a gear or pinion 47, carried by the core or cylinder 16. A spring, as 45, may be connected to the yoke 44 and to the framework of the machine to hold the roller 43 in engagement with its cam 42. By means of this construction the core or cylinder 16 will be turned so that the plate will be presented in position to be engaged by suitable lifter-arms, as 48 and 49, which may be suitably actuated, as by the mechanism shown and described in my other application previously referred to, to forcibly raise the plate from the surface of the cylinder, or, if preferred, the lifter-arm 49 may be interposed below the rear edge of the plate, so that as the core is oscillated to return to its original position the plate will be left in position upon the lifter-arms. In this construction it will be observed that the same surface of the core is always employed to form part of the casting-chamber, and while I have illustrated a core which is substantially cylindrical in form, it is obvious that I may use any form of core having a portion of its surface of cylindrical shape to form part of the casting-chamber.

While the apparatus herein shown is an organized machine operated by power, it is obvious that my improvements can be employed in apparatus or mechanism which is not driven by power without departing from my claims.

I am aware that many other changes may be made by a skilled mechanic in my plate-casting mechanism without departing from the scope of my invention as expressed in the claims, and I do not wish, therefore, to be limited to the construction which I have shown and described; but

What I do claim, and desire to secure by Letters Patent of the United States, is—

1. In an apparatus for casting curved stereotype printing-plates from a flexible matrix, the combination of a core and segmental back, the annular space between the two forming a casting-chamber, and means independent of said back for stripping the flexible matrix from the convex type-surface of the cast plate.

2. In an apparatus for casting curved stereotype printing-plates from a flexible matrix, the combination of a core and a segmental back, the space between the two forming an annular casting-chamber, means for directing molten metal into said casting-chamber, and means independent of said back for stripping the flexible matrix from the convex type-surface of the cast plate.

3. In an apparatus for casting curved stereotype printing-plates from a flexible matrix, the combination of a core and segmental back, the space between the two forming an annular casting-chamber, means independent of said back for stripping the flexible matrix from the convex type-surface of the cast plate, and means for removing the cast plate from the casting-chamber.

4. In an apparatus for casting curved stereotype printing-plates from a flexible matrix, the combination of a core and segmental back, the space between the two forming an annular casting-chamber, means independent of said back for carrying a flexible matrix, and operating connections for this means to strip the matrix from the convex type-surface of the cast plate, and to restore the matrix to casting position.

5. In an apparatus for casting curved stereotype printing-plates from a flexible matrix, the combination of a core and segmental back, the space between the two forming an annular casting-chamber, means for opening and closing the casting-chamber, means independent of said back for carrying a flexible matrix, and mechanism for operating this means to strip the matrix from the convex type-surface of the cast plate.

6. In an apparatus for casting curved stereotype printing-plates, from a flexible matrix, the combination of an annular casting-chamber formed by the space between a core and a segmental back, means for moving said segmental back, and means for oscillating said core.

7. In an apparatus for casting curved stereotype printing-plates from a flexible matrix, the combination of an annular casting-chamber formed by the space between a core and segmental back, means for moving said segmental back to open and close the casting-chamber, independent means for stripping

the matrix from the convex type-surface of the cast plate and means for oscillating said core.

8. A stereotype-printing-plate-casting apparatus for casting stereotype printing-plates from a flexible matrix, comprising a framework, a core and a segmental back, the annular space between the core and back forming a casting-chamber, and matrix-carrying means connected to the apparatus independently of the back to which the matrix is secured so that the matrix can be flexed from the surface of the cast plate and then restored to position and shape in the casting-chamber without disconnecting said matrix-carrying means from the apparatus or the matrix from the carrying means.

9. In a stereotype-printing-plate-casting apparatus, the combination of an axially-journaled core, a segment, means for moving said segment away from the core to open the casting-chamber, and mechanism for oscillating said core about its axis to deliver the plate.

10. In a stereotype-printing-plate-casting apparatus, the combination of an axially-journaled core, a coöperating segment, means for moving said segment to open and close the casting-chamber, matrix-carrying means for supporting said matrix in position, and means for oscillating said core about its axis to deliver the cast plate from the casting-chamber.

11. In a stereotype-printing-plate-casting mechanism, the combination of the core and segmental back, the space between the two forming an annular casting-chamber, means for supporting a matrix in position therein, means for raising and lowering the segmental back to open and close the chamber, and means for oscillating the core to deliver the cast plate when the chamber is opened and to return the core to its casting position when the chamber is closed.

12. In a stereotype-printing-plate-casting mechanism, the combination of the core and segmental back, the annular space between the two forming a casting-chamber, means independent of the core and segmental back for supporting a matrix in position and for stripping the same from the convex type-surface of the cast plate, means for opening and closing the chamber, and means for delivering the cast plate.

13. In a stereotype-printing-plate-casting mechanism, the combination of the core and segmental back, the annular space between the two forming a casting-chamber, means for opening and closing the chamber, and means independent of the segmental back for stripping the matrix from the surface of the cast plate, and for returning the matrix to its casting position.

14. The combination in a stereotype-printing-plate-casting mechanism of the framework, the core and segmental back, the annular space between the two forming a casting-chamber, means for opening and closing the casting-chamber, and means attached to the framework for holding the matrix in position in the casting-chamber and for stripping the same from the convex type-surface of the cast plate.

15. The combination in a stereotype-printing-plate-casting mechanism, of a core having a cylindrical surface and journaled in line with the axis of said cylindrical surface, a segmental back, a cam, and connections therefrom to the core to oscillate the same about said axis to deliver the plate.

16. The combination in a stereotype-printing-plate-casting mechanism of the core and a one-piece segmental back, the annular space between the two forming a casting-chamber, operating-cams, and connections therefrom to the segmental back to move the same bodily away from and toward the core to open and close the casting-chamber.

17. The combination in a stereotype-printing-plate-casting mechanism, of the core and segmental back, the annular space between the two forming a casting-chamber, a cam and connections therefrom to the core to oscillate the core to deliver the plate from the casting-chamber, and cams and connections therefrom to raise and lower the segmental back to open and close the casting-chamber.

18. The combination in a stereotype-printing-plate-casting mechanism, of an axially-journaled cylindrical core, a segmental back, a gear mounted on the core, a pivoted toothed segment meshing therewith, a cam, and connections therefrom to the segment.

19. The combination in a stereotype-printing-plate-casting mechanism, of a core and segmental back, means for opening and closing the casting-chamber formed between these parts, shafts 30 and 37 carrying matrix-supporting means, and mechanism for oscillating said shafts.

20. The combination in a stereotype-printing-plate-casting mechanism, of a core and segmental back, means for opening and closing the casting-chamber formed between these parts, shafts 30 and 37, matrix-supporting means carried thereby, means for oscillating the shaft 30, and connections from the shaft 30 to the shaft 37 so that the latter will oscillate oppositely to the shaft 30.

21. The combination in a stereotype-printing-plate-casting mechanism, of a core and segmental back, shafts 30 and 37 having matrix-supporting means, cam 26 connected to actuate the shaft 30, levers 34 and 36 on said shafts, and connecting-link 35 between said levers.

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

H. A. WISE WOOD.

Witnesses:
HENRY W. COZZEN, Jr.,
LOUIS W. SOUTHGATE.