

H. A. W. WOOD.
 STEREOTYPE PRINTING PLATE CASTING MECHANISM.
 APPLICATION FILED JAN. 18, 1906. RENEWED APR. 22, 1911.

1,009,208.

Patented Nov. 21, 1911.

4 SHEETS—SHEET 1.

Fig. 1.

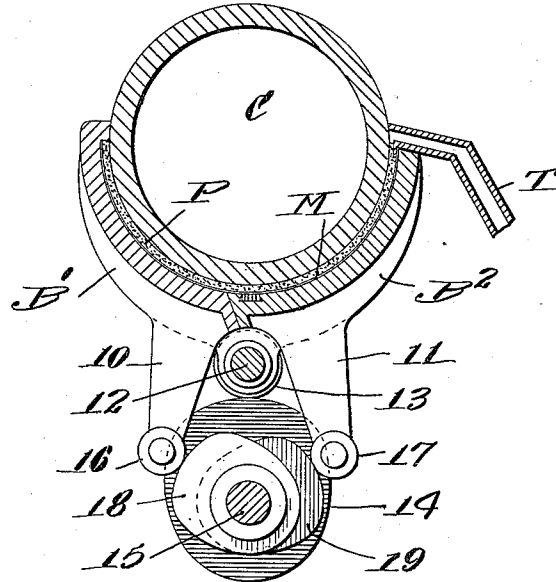
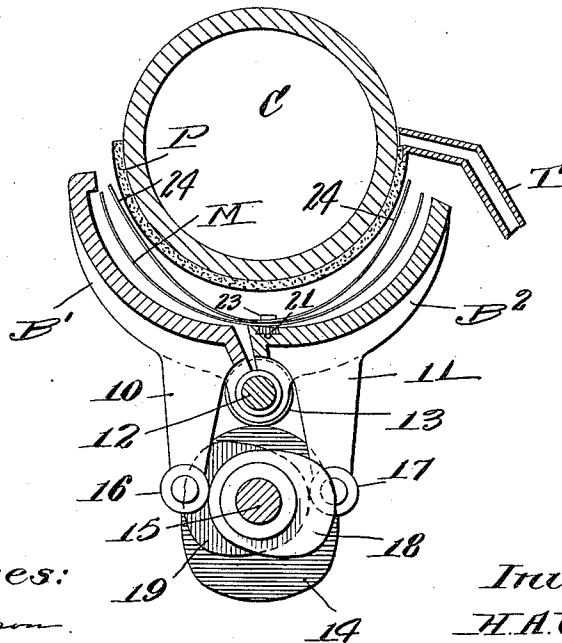


Fig. 2.



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4 SHEETS—SHEET 2.

Fig. 3.

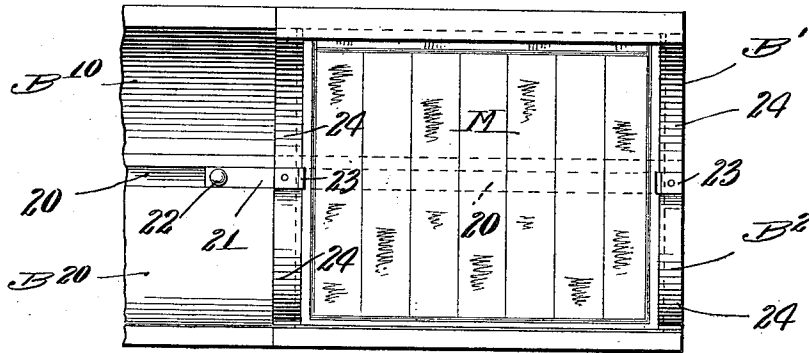


Fig. 4.

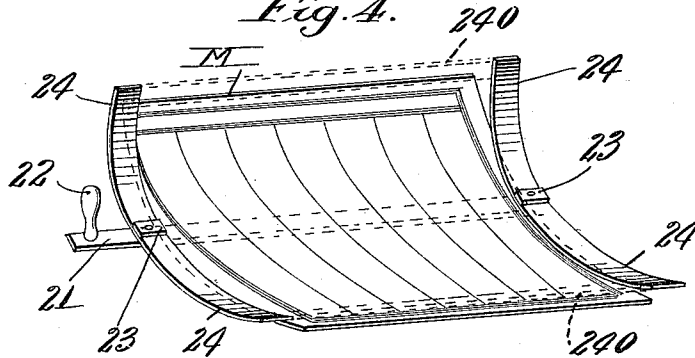
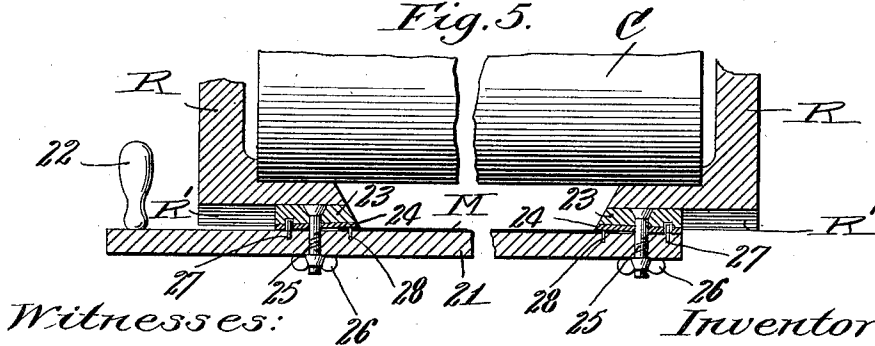


Fig. 5.



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4 SHEETS—SHEET 3.

Fig. 6.

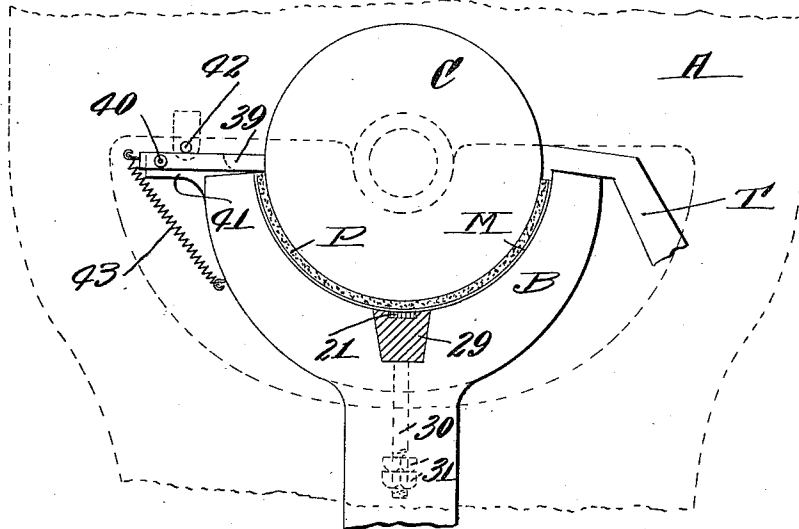


Fig. 7.

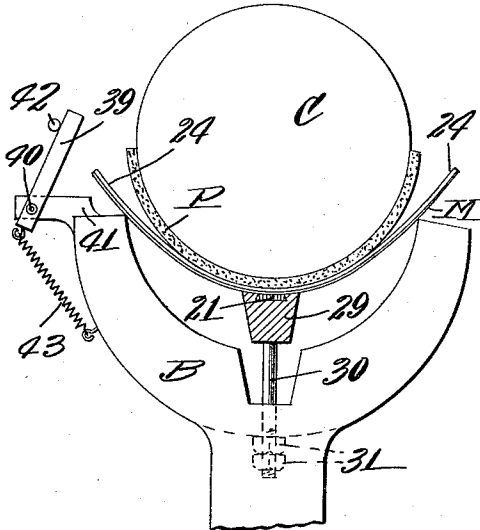
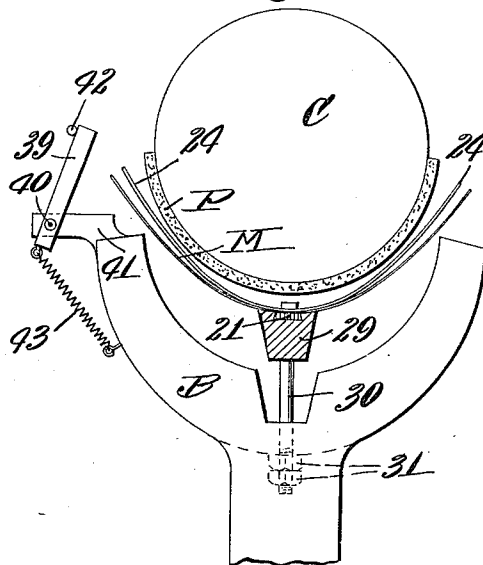


Fig. 8.



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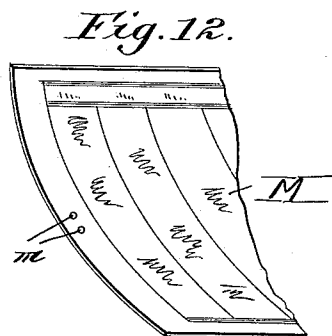
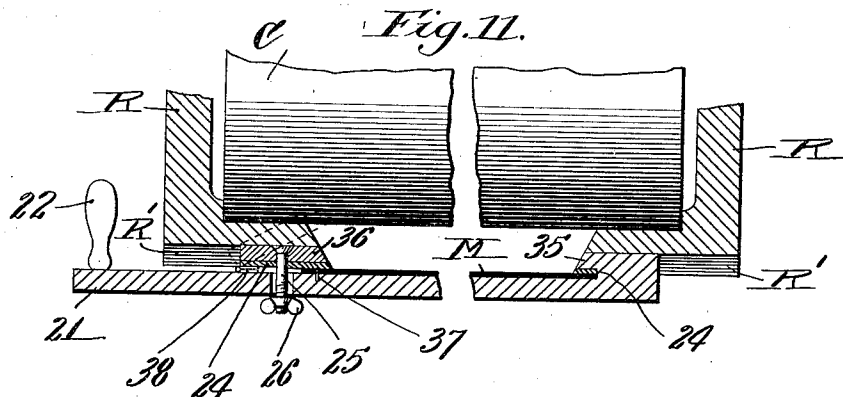
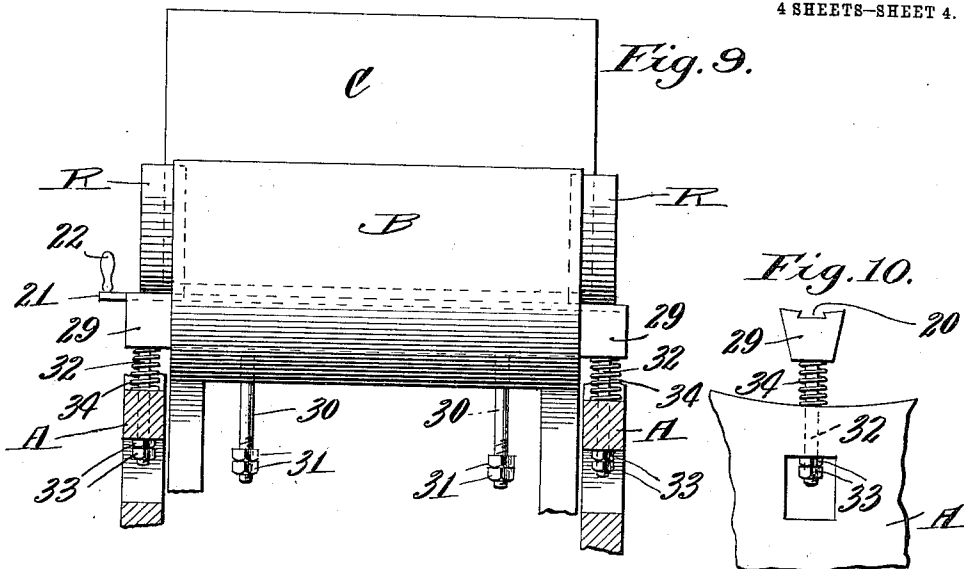
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4 SHEETS—SHEET 4.



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UNITED STATES PATENT OFFICE.

HENRY A. WISE WOOD, OF NEW YORK, N. Y., ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE AUTOPLATE COMPANY OF AMERICA, OF JERSEY CITY, NEW JERSEY, A CORPORATION OF NEW JERSEY.

STEREOTYPE-PRINTING-PLATE-CASTING MECHANISM.

1,009,208.

Specification of Letters Patent. Patented Nov. 21, 1911.

Application filed January 18, 1906, Serial No. 296,716. Renewed April 22, 1911. Serial No. 622,747.

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 new and useful Stereotype-Printing-Plate-Casting Mechanism, of which the following is a specification.

This invention relates to a stereotype printing plate casting mechanism, and especially to improved devices for holding and manipulating the flexible matrix to position the same in the casting chamber, and to strip or remove the same from the surface of the cast plate.

The invention consists of a new and improved means outside of the casting chamber for holding the flexible matrix in an annular casting chamber along a line intermediate of its two side edges, and preferably along its middle line, so that its two side edges will be free, and also in the provision of a new and improved means consisting of resilient half rings or strips for freeing or stripping the matrix from the surface of the cast plate.

In Patent No. 721,117 granted to me February 17, 1903, I have shown what I believe to be the first automatic stereotype printing plate casting mechanism ever devised. The same consists of a cylindrical core on which the plate is cast, and a segmental back made in two parts, the parts being so arranged that the back will open and then drop.

The improvements which are the subject matter of this present application can be applied to this style of machine.

In another application filed by me March 12, 1900, Serial No. 8,384, I have shown a stereotype printing plate casting mechanism composed of a core and a segmental solid or one-piece back, which moves relatively to the core at the proper times to open and close the casting chamber which is formed by the annular space between said core and back. The present improvements are also applicable to this style of machine.

Referring to the accompanying four sheets of drawings forming part of this application, Figure 1 is a sectional view of the core and back illustrated in my Patent No.

721,117, showing how the present improved means for holding and stripping the matrix can be applied thereto, the casting chamber being closed. Fig. 2 is a view similar to Fig. 1 with the casting chamber opened and the flexible matrix moved from the surface of the cast plate. Fig. 3 is a plan of the back. Fig. 4 is a perspective view illustrating the arrangement of matrix-holder and stripping means. Fig. 5 is an enlarged detail view illustrating the construction of the matrix-holder and the rings which stop off the ends of the casting chamber. Figs. 6, 7 and 8 are end diagrammatic views illustrating how the present improved matrix holding and stripping means can be used in connection with the machine shown, described and claimed in my application for patent, filed March 12, 1900. Fig. 9 is a side elevation partly in section of the parts shown in Sheet 3. Fig. 10 is a detail showing the mounting of a part I term the bar. Fig. 11 is an enlarged sectional elevation showing the construction of the matrix-holder and the rings which stop off the ends of the casting chamber, and Fig. 12 is a view of one end of the flexible matrix, showing the registering holes which are formed therein.

In my improved stereotype printing plate casting mechanism, the casting chamber comprises the annular space between a cylindrical core and a segmental back. The back is arranged to move relatively to the core to open and close the casting chamber.

The present improvements comprise a matrix-holder which will hold the matrix along its middle line in position in said chamber with its two side edges free.

The improved means for stripping or freeing the matrix consists of resilient strips or half rings, which preferably are carried by said matrix-holder, and which bear on the matrix just inside the end edges which are curved or semi-cylindrical when the matrix is placed in position in the casting chamber, in such positions and manner so that when the back is moved away from the core, the same will spring out and free or strip the matrix from the surface of the cast plate, and so that the continued movement of the back will entirely clear the ma-

trix from the surface of the cast plate, whereby the cast plate can be delivered from the casting chamber by turning the core, with the plate adhering to the same, as is
5 shown and described in my two previous applications.

Referring now to the drawings, I will first particularly describe the application of my invention to the machine shown, described and claimed in my Patent No. 721,117, and reference to follow this description should be had to the first two sheets of drawings. In these sheets, C designates the core and B' and B² the two parts of the segmental back. T designates the throat through which the molten metal is forced into the casting chamber. P designates the cast plate, and M the flexible matrix or papier-mâché sheet from which the type surface of the plate is formed. Extending from the sections B' and B² of the segmental back are arms 10 and 11. The said two sections B' and B² are hinged together on the shaft 12. This shaft 12 carries rollers 13 which bear on cams 14 mounted on shaft 15. The arms 10 and 11 are provided with rollers 16 and 17 which engage cams 18 and 19 on said shaft 15. These parts are arranged as described in my said patent, so that at the proper time the two parts of the segmental back will swing away from each other, and will then drop or move down relatively to the core. The dividing line between the two sections B' and B² is made to one side of the middle of the casting chamber, and a dove-tailed groove 20 is cut in the section B² so as to come substantially along the middle line of said back. The parts B' and B² are formed with extensions B¹⁰ and B²⁰ the slot 20 extending out into the part B²⁰ as shown in Fig. 3. Fitting into said groove 20 is a matrix-holder 21, which has a handle 22 so that the same can be slid back and forth in said groove. The matrix-holder is provided with jaws 23. These parts are arranged to clamp the matrix along the middle line thereof by means of bolts 25 which project through the matrix-holder 21 and which have nuts 26 on the ends thereof. The jaws 23 are kept in proper position by means of pins 27 which fit loosely therein. Small pins 28 extend up from the matrix-holder 21 in position to fit into holes which are formed in the matrix for the purpose of accurately registering the matrix in position in the holder. Extending from each jaw 23 and preferably fitted under the same, are spring-arms 24, each set of which form substantially a half ring, one of which half rings bears on the matrix, as shown in Fig. 4. The rings R—R which stop off or close the ends of the casting chamber are suitably cut away as at R'—R', so that the matrix-holder with the matrix
65 can be slid in position. The strips 24 come

in such position relatively to the rings that they will lie under the rings, so that when the casting chamber is closed the said arms will be nipped or held between said rings and the back, and will thus bring the matrix to exact position and shape for the casting operation. The way this device is used is as follows: The matrix-holder 21 is pulled way out. The flexible matrix is then secured under the inner clamping jaw 23. The matrix-holder 21 is then pushed part-way in and the matrix is then secured under the other jaw 23, the extensions B¹⁰ and B²⁰ aiding in this latter operation. The matrix-holder with the matrix is then slid into position under the core. The machine is then started when the casting chamber will close, bringing the parts to the position shown in Fig. 1. A charge of molten metal will then be forced into the casting chamber, and the same will solidify to form the plate P. The two parts B' and B of the casting chamber will then swing outwardly on the shaft 12. This will allow the spring or resilient arms 24—24 to strip or free the side edges of the matrix from off the surface of the cast plate, and then the two parts of the back will move back from the core, which will move the matrix entirely clear of the surface of the cast plate, as shown in Fig. 2. This will easily and nicely strip the matrix from the cast plate. The core or cylinder can then turn to deliver the plate from the casting chamber, as in the mechanism shown and described in my said patent, wherein a half-turn is imparted to the core, one-half of the surface of the core being used for one cast and the other half for the following cast.

In the third and fourth sheets of the drawings, I have shown how the present improvements can be applied to the machine shown, described and claimed in my said application for patent filed March 12, 1900. In this mechanism the back B is made in one piece. In applying the present improvements thereto, the back is cut out so as to receive a loose section or bar 29. This section or bar has a dove-tailed groove cut therein, in which the matrix-holder 21 slides. Rods or bolts 30 extend down from said bar through the bottom of the back, as shown in Fig. 9, and are provided with nuts 31 on their ends, thus forming a lost motion connection between said bar and back. Extending down from the ends of the bar 29 are rods 32 which pass through the framing A, as shown in Fig. 10. Nuts 33 are screwed on the ends of said rods 32, as shown in Fig. 10, so that the upper position of the bar 29 can be accurately determined. Springs 34 are arranged on said rods 32 between the framing A and said bar to hold said bar normally in its highest position. The matrix-holder in this application of the improvements is made slightly different

from the construction previously described. The same has a stationary jaw 35 into which one spring arm 24 is fitted, and underneath which the matrix fits. The matrix-holder 5 is also provided with a jaw 36 which is hinged to the matrix-holder 21 by hinge 38 as shown in Fig. 11 and underneath which jaw the other spring arm 24 fits. Said jaw is provided with a bolt 25 and locking-nut 10 26 as in the previous modification. In this modification two pins 37 are used to fit into holes *m-m* formed in the curved edge of the matrix which comes under said jaw 36. The arms 24—24 project from the jaws for the purpose of stripping the matrix as in the device previously described. With this modification, I provide a mechanism for stopping off the edge of the casting chamber. This consists of a jaw or part 39, 20 which is pivoted on a rod 40 extending between ears 41 secured on the back. This jaw or stop-piece is arranged to engage a pin 42 on the framing A, and is normally held in its raised position by spring 43. With this construction the operation is as follows: 25 When the casting chamber is closed to receive the charge of molten metal, the parts assume the position shown in Fig. 6.

After the plate P has solidified the back 30 drops down. As this action takes place, the bar 29 will remain stationary. This will allow the spring-arms 24 to strip the matrix from the edges of the cast plate, as shown in Fig. 7. The continued downward movement of the back will cause the same to 35 strike on the nuts 31 which will then cause the bar 29 to move down with the back to free the middle portion of the matrix from the surface of the cast plate, as shown in 40 Fig. 8. By this arrangement, the matrix will be easily stripped from the surface of the cast plate without injury or distortion. As the back moves down relatively to the core, the stopping strip or jaw 39 will move 45 upwardly out of the way, so that the plate which adheres to the core can be delivered by rotating the core.

It is an advantageous arrangement with some forms of matrices to leave the two side 50 edges thereof free, so that the same can come and go with the plate as the same solidifies, and this desirable result is accomplished by the mechanism of the present improvements.

55 In some cases, I contemplate connecting the arms 24—24 together by strips 240 as indicated in dotted lines in Fig. 4, so that the resilient means used for stripping the matrix from the surface of the cast plate 60 will act not only along the curved edges of the matrix, but along its side edges as well.

The details of the various mechanisms for operating the parts which go to form the casting chamber are not herein detailed and 65 described at length, as they are fully gone

into in my two previous applications referred to.

The details and arrangements herein described as constituting the present improvements may be greatly varied by skilled 70 mechanics without departing from the scope of my invention as expressed in the claims.

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

75 1. The combination in a stereotype printing plate casting apparatus, of a core, a segmental back, and a flexible matrix arranged so that the annular space between the matrix and the core will form a casting 80 chamber, and means outside of the casting chamber for holding the flexible matrix on a line intermediate of its side edges.

2. The combination in a stereotype printing plate casting apparatus, of a core, a 85 segmental back, and a flexible matrix, the annular space between the core and matrix forming a casting chamber, and means outside of the casting chamber for holding the flexible matrix in position along the middle 90 line between its side edges.

3. The combination in a stereotype printing plate casting apparatus, of a core, a segmental back, and a flexible matrix, the annular space between the core and matrix 95 forming a casting chamber, and means outside of the casting chamber for holding the flexible matrix in position on said back on a line intermediate of the side edges of the matrix. 100

4. 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, and means for holding a flexible matrix to 105 said back therein on a line intermediate of its side edges and with two said side edges free.

5. The combination in a stereotype printing plate casting mechanism, of the core 110 and back, the space between the two forming a casting chamber, means for holding a flexible matrix to said back on a line intermediate of its side edges in position therein, and means for stripping the said matrix 115 from the surface of the cast plate.

6. 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, means 120 for holding a flexible matrix to said back in position on said back on a line intermediate of its side edges, and means for freeing or stripping said matrix from the surface of the cast plate. 125

7. The combination in a stereotype printing plate casting mechanism, of the core and back, the annular space between the two forming a casting chamber, means for opening and closing said chamber, means 130

for holding a flexible matrix to said back in position in said chamber on a line intermediate of its side edges, and means for stripping the said matrix from the surface of the cast plate as said chamber opens.

8. The combination in a stereotype printing plate casting mechanism, of the core and back, the annular space between the two forming a casting chamber, means for opening and closing said chamber, means for holding a flexible matrix to said back in position in said chamber on a line intermediate of its side edges, and resilient strips contained within said chamber and bearing on the matrix.

9. The combination in a stereotype printing plate casting mechanism, of the core and back, the annular space between the two forming a casting chamber, means for opening and closing said chamber, means for holding a flexible matrix in position in said chamber on a line intermediate of its side edges, and a resilient strip engaging the matrix near each curved edge thereof for stripping the same from the surface of the cast plate.

10. 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, means for opening and closing said chamber, and a matrix holder secured to said back on a line intermediate of the side edges of the back for holding said matrix to the back, independent of the core.

11. 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, and a matrix-holder detachably fitted to said back along a line intermediate of its side edges.

12. 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, and a matrix-holder detachably fitted to said back along the middle line between its side edges.

13. 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 matrix-holder fitted to said back along a line between its side edges, and resilient stripping-arms carried by said matrix-holder.

14. 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, rings for stopping off or closing the ends of the casting chamber, and resilient strips arranged in said casting chamber underneath said rings for stripping the matrix

from the surface of the cast plate, the parts being so arranged that when the chamber is closed said strips will be held between said back and said rings.

15. 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, means for moving said back relatively to the core, means carried by said back for holding a flexible matrix along a line intermediate of its side edges, and means for stripping the matrix from the surface of the cast plate, the parts being so arranged that the movement of the back away from the core will move the flexible matrix clear of the cast plate.

16. 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, means for moving the back relatively to the core, means carried by said back for holding a flexible matrix along a line intermediate of its side edges, and resilient strips for stripping the matrix from the surface of the cast plate, the parts being so arranged that the movement of the back from the core will allow said resilient strips to act, and the continued movement thereof will clear the matrix from the cast plate.

17. The combination in a stereotype printing plate casting mechanism, of the core and back, with a matrix holder having two holding or clamping devices for holding a flexible matrix along a line intermediate of its side edges, and resilient stripping-arms bearing on the matrix.

18. The combination in a stereotype printing plate casting mechanism, of the core and moving back, said back having a loose section or bar intermediate of its side edges, means for holding the matrix to said bar, and means for stripping the matrix from the cast plate.

19. The combination in a stereotype printing plate casting mechanism, of the core and moving back, said back having a loose section or bar intermediate of its side edges, means for holding the matrix to said bar, means for stripping the matrix from the cast plate, and a connection between said bar and back allowing a lost motion between the two parts.

20. The combination in a stereotype printing plate casting mechanism, of the core and moving back, said back having a loose section or bar intermediate of its straight edges, means for holding the matrix on said bar, springs for normally holding the bar in its raised position, and a connection between said bar and back having a lost motion.

21. The combination in a stereotype printing plate casting mechanism, of the core and moving segmental back, said back hav-

ing a loose section or bar intermediate of its straight edges, a matrix holder fitted to slide into said bar, and means for stripping the matrix from the cast plate.

- 5 22. The combination in a stereotype printing plate casting mechanism, of the core and moving segmental back, said back having a loose section or bar intermediate of its straight edges, the matrix holder fitted to
10 slide into said bar, means for stripping the

matrix from the cast plate, and a lost motion connection between said back and bar.

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

H. A. WISE WOOD.

Witnesses:

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MARY E. McCADDEN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."