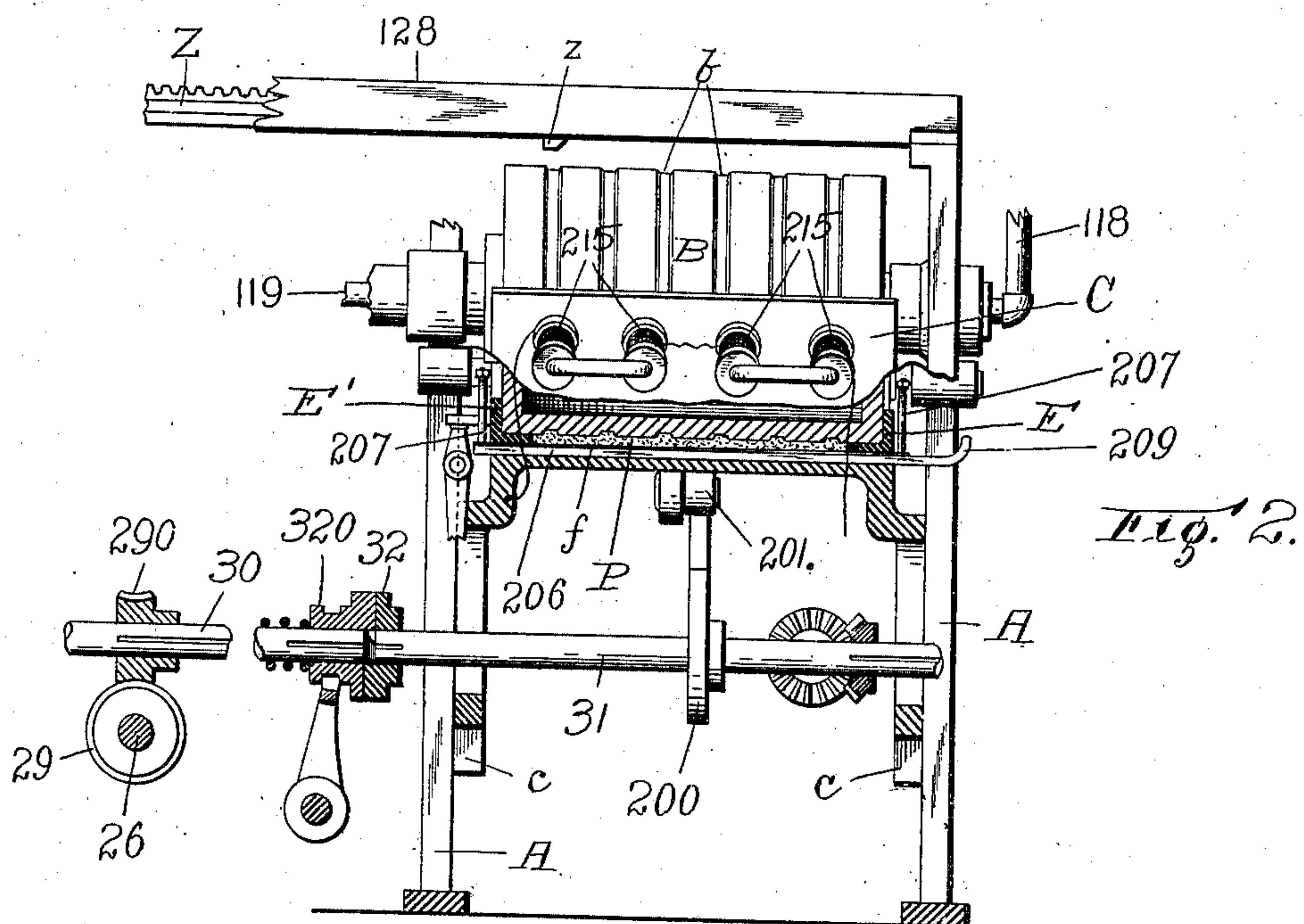


STEREOTYPE PRINTING PLATE CASTING MACHINE.
APPLICATION FILED MAR. 3, 1902. RENEWED JUNE 2, 1910.

Patented Jan. 3, 1911.



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3 SHEETS—SHEET 2.

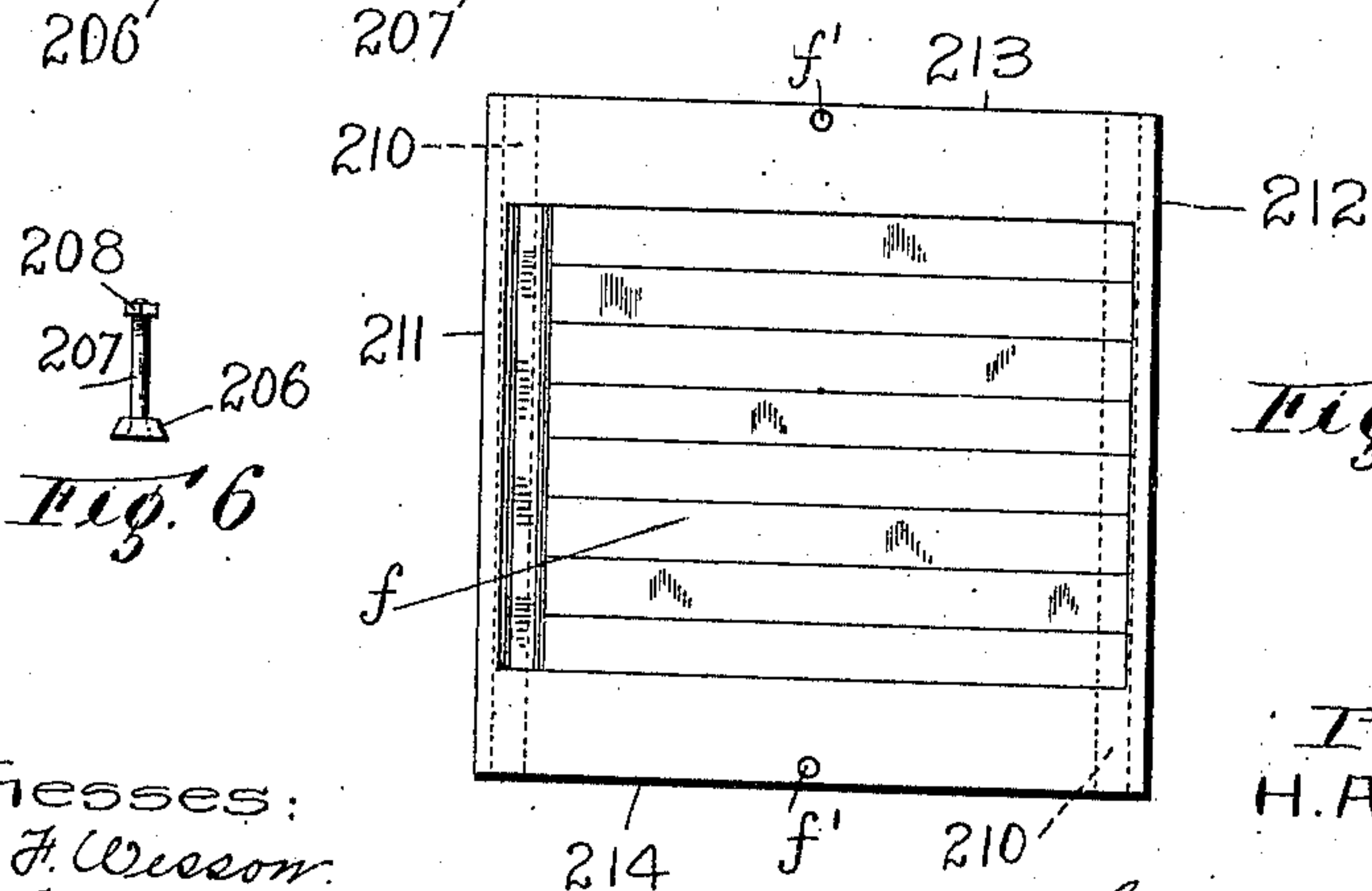
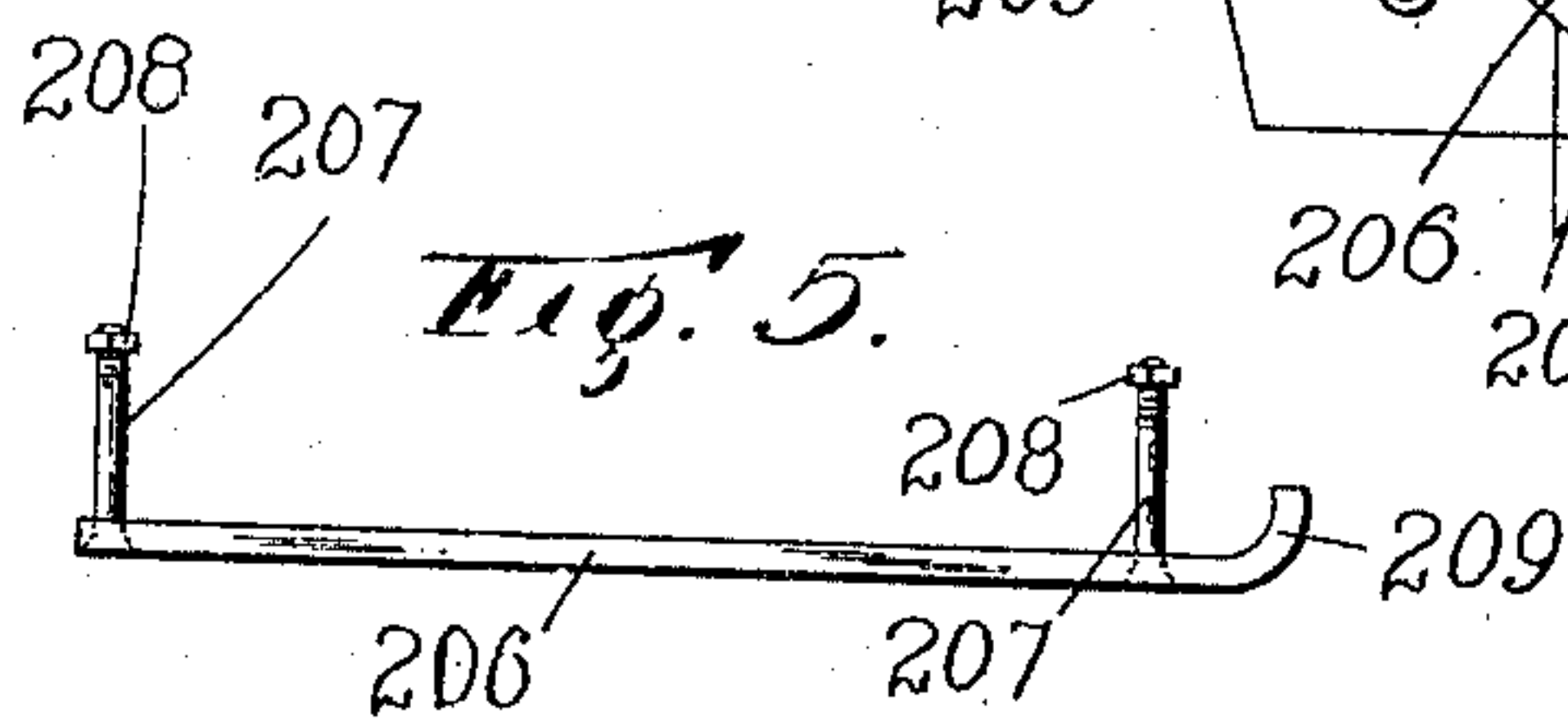
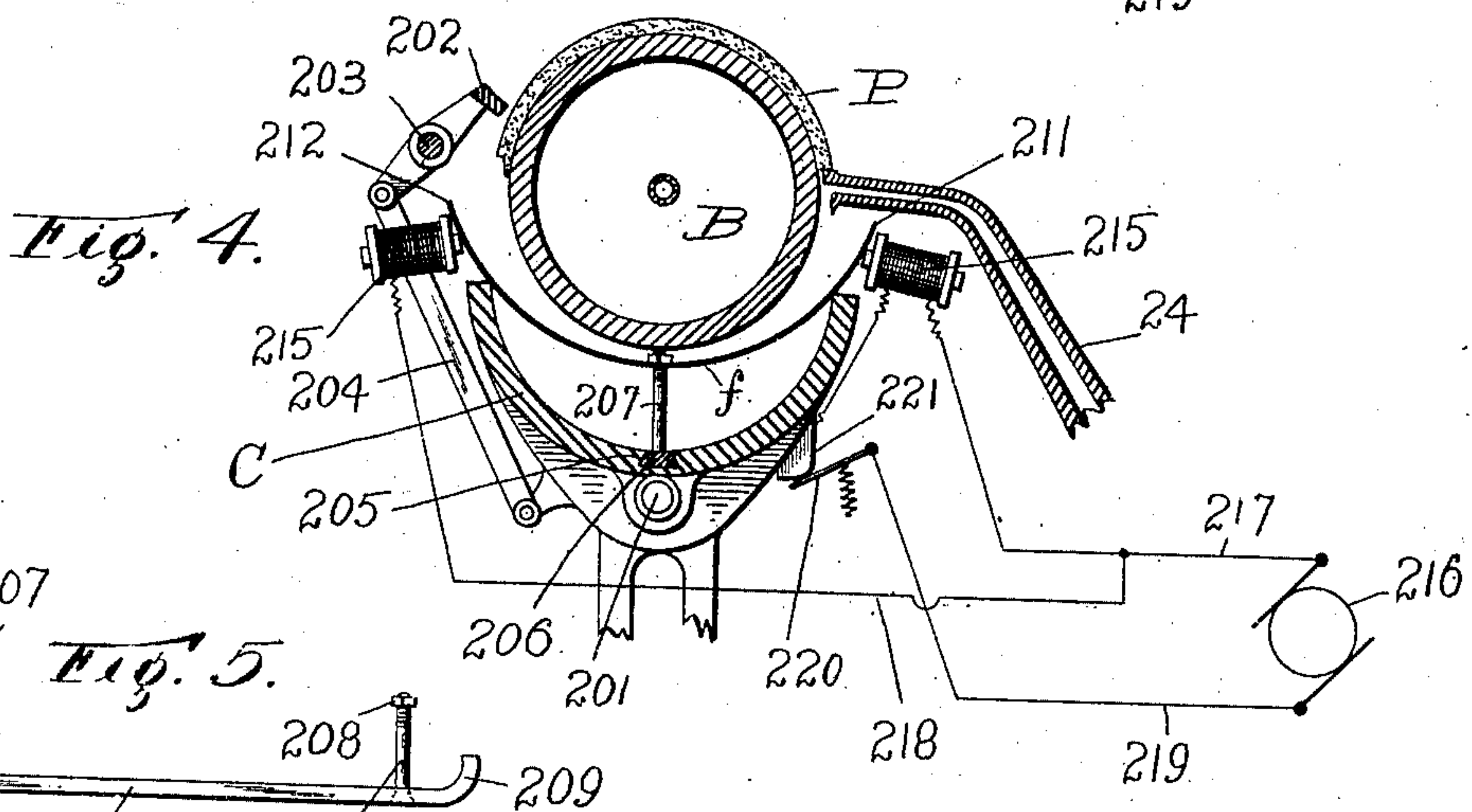
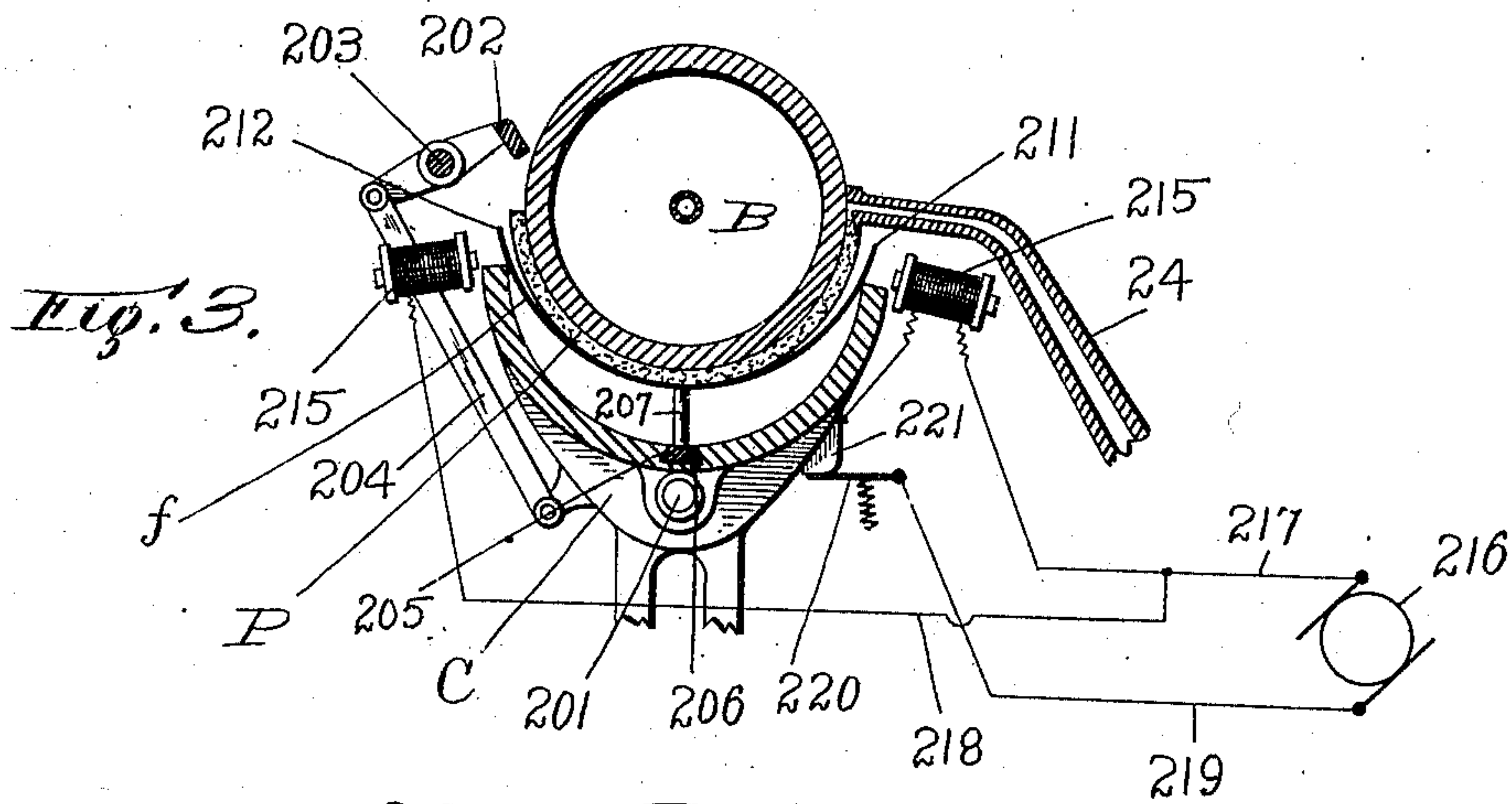


Fig. 7.

Witnesses:
 G. F. Wesson.
 M. E. Fride.

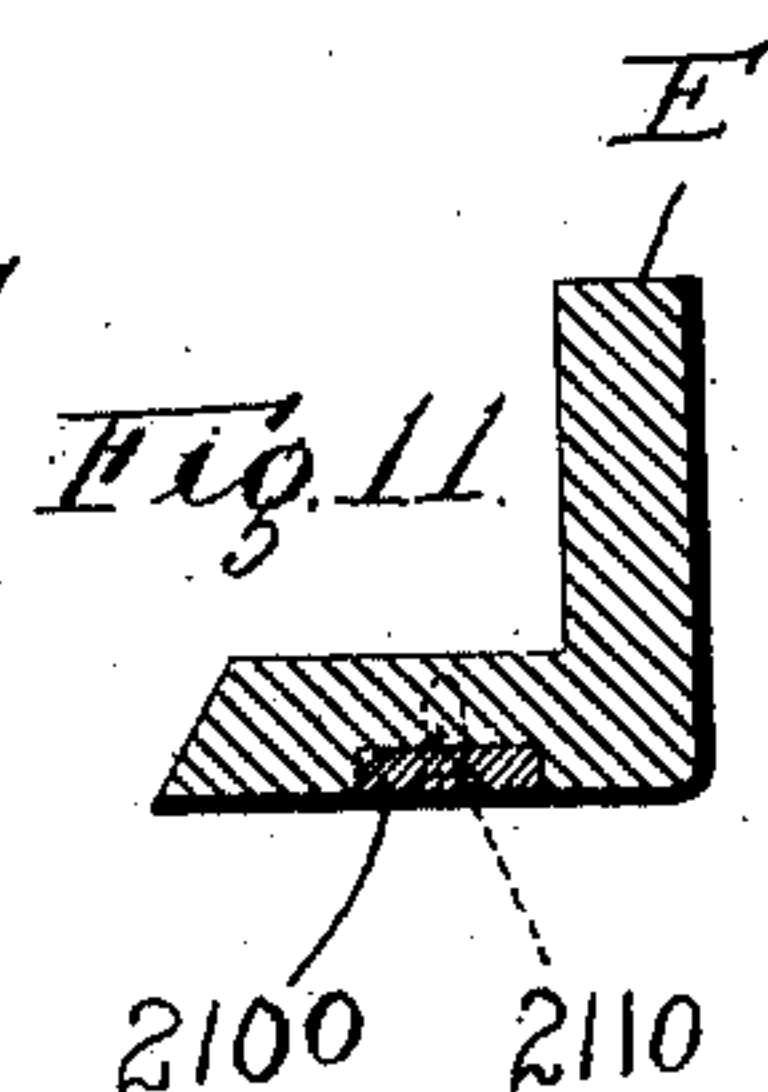
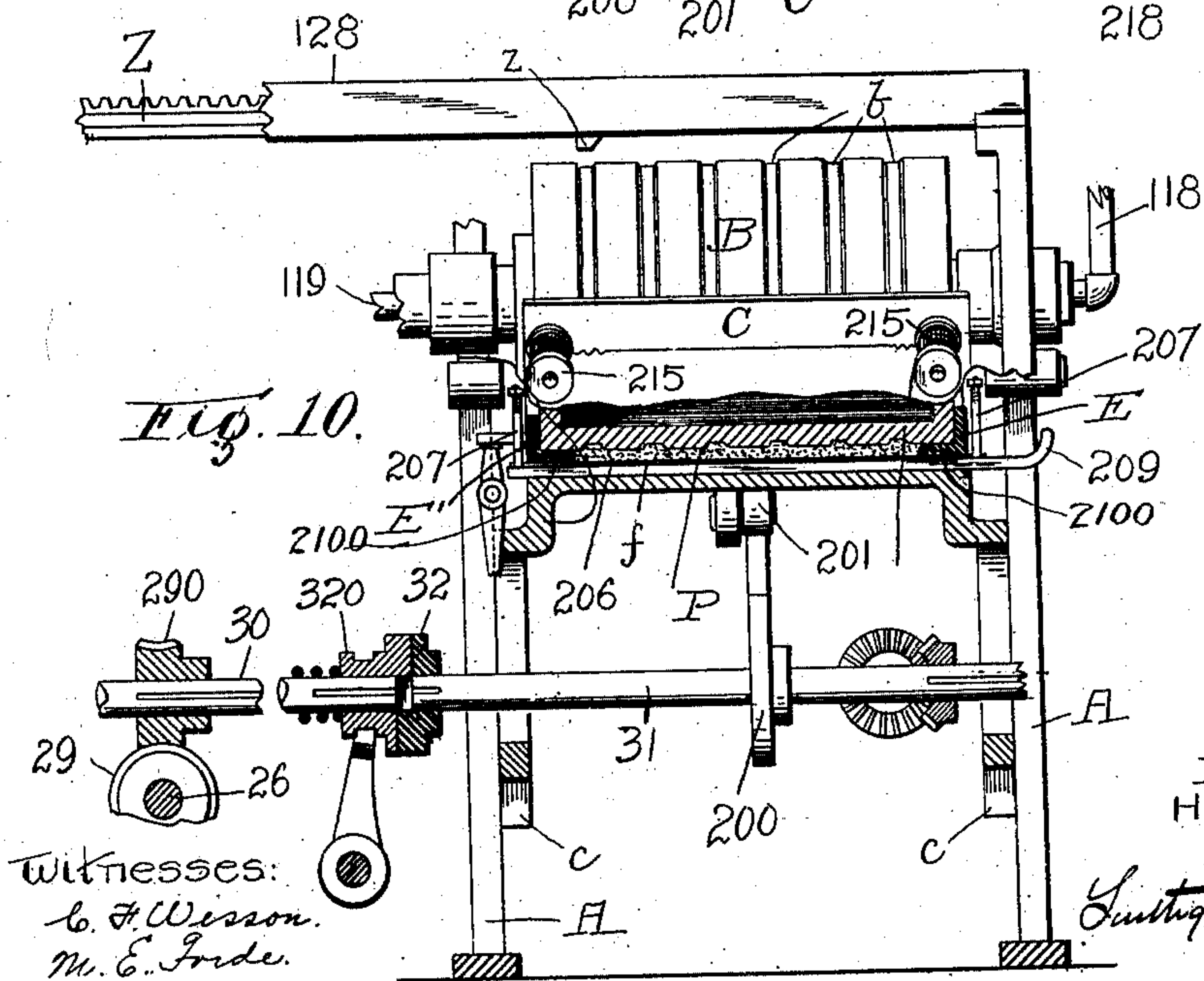
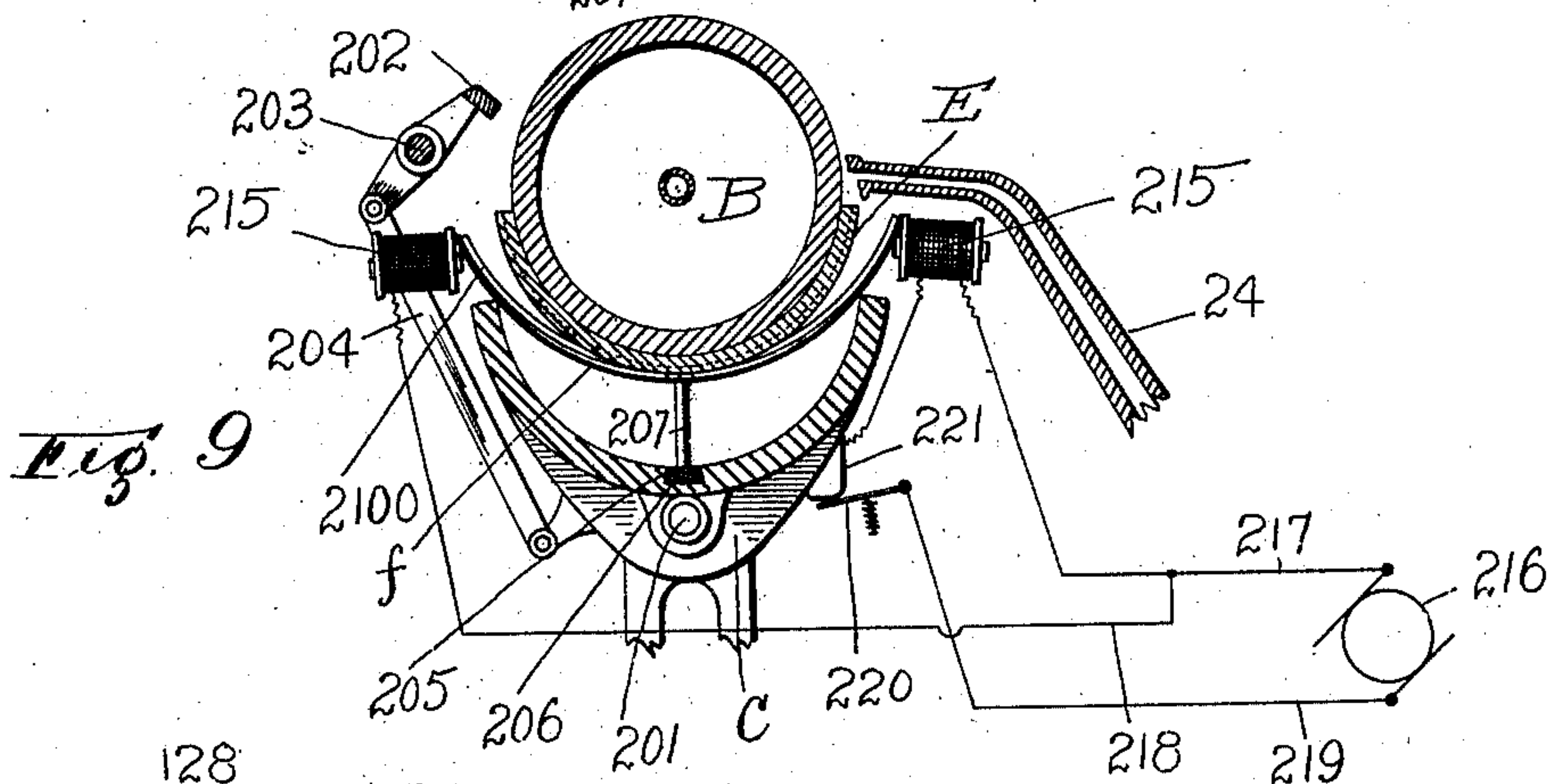
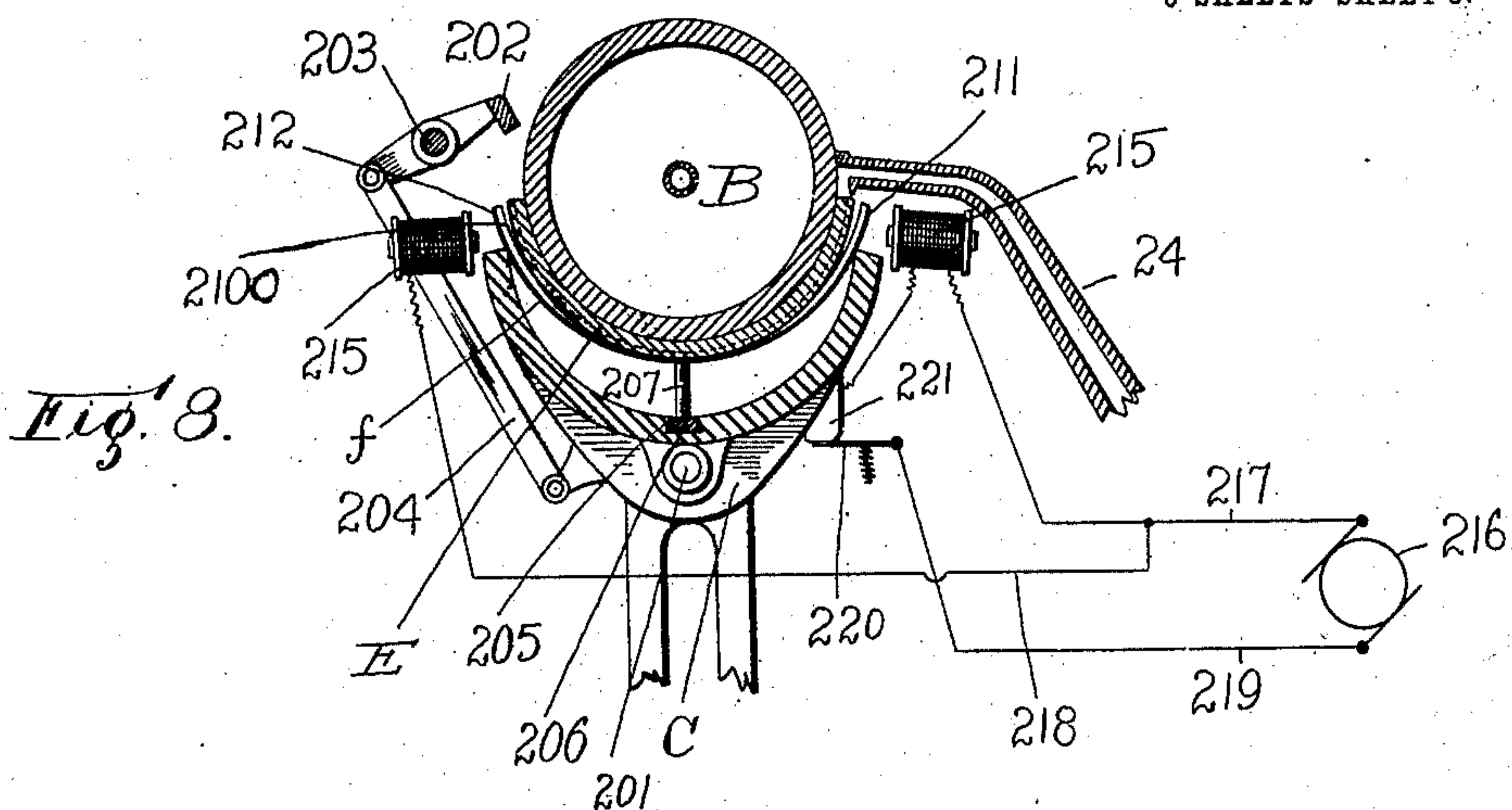
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3 SHEETS—SHEET 3.



Witnesses:
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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 MACHINE.

980,468.

Specification of Letters Patent.

Patented Jan. 3, 1911.

Application filed March 3, 1902, Serial No. 96,406. Renewed June 2, 1910. Serial No. 564,685.

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 Machine, of which the following is a specification.

In my Patent No. 721,117 dated Feb. 17, 1903, I have shown, described and claimed an organized machine for casting and finishing curved stereotype printing plates.

The inventions or improvements covered by this application for patent relate to an improved or modified form of stereotype printing plate mechanism adapted for use in the manner described in said patent or in other or simpler forms of mechanism.

The present invention or improvements relate to an improved or modified way of stripping or unwinding the flexible matrix from the surface of the cast plate. Magnetically operated means or mechanism is employed for this purpose.

The magnetic means preferably is energized by an electric current. A circuit making and breaking device is employed so that the magnetic means will operate at the proper time. Strips of magnetic material are embodied or made in the flexible matrix, or placed in a suitable way in the casting chamber. When the casting box is opened so that the cast plate with the flexible matrix adhering thereto is exposed, the magnets are energized, and by their influence, the matrix is stripped from the surface of the cast plate.

The inventions further consist of points of constructions hereinafter pointed out and more particularly referred to in the specific claims.

Enough of a stereotype printing plate casting machine is shown in the accompanying three sheets of drawings to enable one skilled in the art to practice the inventions.

Referring to said drawings, and in detail, Figure 1 is a cross-sectional view through the casting box, Fig. 2 is a side elevation partly in section, Figs. 3 and 4 are partial views similar to Fig. 1, showing the parts in different positions to illustrate the operation, Fig. 5 is a side view, and Fig. 6 an end view of the mechanism for holding the matrix in position in the casting box, Fig.

7 is a plan view of the flexible matrix with the magnetically responsive material attached thereto or embodied therein, Figs. 8 and 9 are cross-sectional views, Fig. 10 is a side elevation partly in section of a modification, and Fig. 11 is a detail view of a part used in the modification.

In the drawings, enough of the mechanism described in said patent is shown modified to practice the present improvement.

The details of the gearing and various parts are not described or shown at length in this case, as they may be substantially the same as described and illustrated in said patent.

Referring to the drawings, A designates the framing.

B designates the core or cylinder, which is journaled by means of suitable projecting hubs in the framing A. The said cylinder B is provided with small grooves $b-b$, so that the cast plate will have the usual small ribs on its inside or concave periphery.

An inlet pipe 118 projects in through one hub of the core, and an outlet pipe 119 extends through the other hub of the core so that the plate can be cooled after the casting operation.

C designates the segmental back. The same is provided with guides $c-c$ bearing on the framing A, so that said back is capable of a movement toward and away from the core B.

E designates an end rim carried by the framing A, which stops off the right-hand end of the casting chamber. E' designates a similar rim arranged to stop off the left-hand end of the casting chamber. These rims are arranged as described in said patent, and the left-hand rim E' is preferably slightly eased off of the end of the cast plate after the casting operation by the mechanism described in said previous patent so that the plate can be easily delivered from the casting chamber, as hereinafter described.

P designates the cast plate.

f designates the flexible matrix, which is made as hereinafter described and which is provided with holes $f'-f'$ near its two curved edges.

Z designates a conveyer having a tooth z . This conveyer is arranged in a frame 128, and is actuated by a suitable mechanism to

reciprocate to move the finished plate away from the top of the core.

24 designates a spout by which the molten metal is directed into the casting chamber.

5 26 designates a power shaft which carries suitable tight and loose pulleys 27 and 28, by which power is applied to the machine. Arranged on the shaft 26 is a worm 29, which meshes with a worm-wheel 290 mounted on a shaft 30.

10 31 designates a shaft which is arranged to operate the casting mechanism. On the end of this shaft is arranged one member 32 of a clutch; and the other member 320 of this clutch is keyed on the end of the shaft 30. A mechanism is provided as shown in my prior patent so that this clutch member can be moved back and forth to engage and disengage with the member 32, so that the casting mechanism can be thrown into and out of operation. Arranged on said shaft 31, is a cam 200, which bears on a roller 201 carried by the segmental back C.

20 A stopping piece 202 for the front side of the casting chamber is arranged on suitable arms projecting from a shaft 203 journaled in the framing. A rearwardly extending arm is also mounted on this shaft and connects by link 204 to the segmental back, whereby said stopping-piece will move to the position shown in Fig. 1 to close the front end of the casting chamber when the segmental back is raised to its highest position, and so that the stopping-piece will move away from the surface of the core or cylinder when the segmental back is lowered, as shown in Figs. 3 and 4, to allow for the delivery of the cast plate.

25 The back C has a dove-tailed groove 205 cut therein, substantially along its center line. A frame 206 is adapted to slide into this groove. This frame is provided with projecting bolts 207, on which are arranged nuts 208. A handle 209 is arranged on the end of this frame.

30 The matrix which is used in this arrangement of the present improvement is made responsive to magnetic influence. This can be done by securing thereto, or embedding therein, strips or pieces 210 of magnetic material—iron or steel. This magnetic material is embedded in or attached to the flexible matrix near the straight ends 211 and 212 thereof. I use the term "straight ends" in referring to the matrix to distinguish from the edges 213 and 214 thereof, which assume substantially a semi-cylindrical contour when the casting box is closed. A series of powerful electro-magnets 215 is arranged in the framing adjacent to the straight ends of the segmental back.

35 216 diagrammatically represents a dynamo or suitable source of electricity. One pole of said dynamo connects by wire or conductor 217, to the series of electro-mag-

70 nets arranged at the rear of the core under the spout. The last coil of these magnets connects by a flexible wire to the segmental back C. A shunt wire or conductor 218 leads from the wire 217 and connects to the series of electro-magnets on the other side of the machine. The last coil of the series of these magnets is also flexibly connected to the segmental back C. The other pole of the dynamo connects by wire 219 to a spring-controlled contact-piece or brush 220, which is arranged to bear on a contact-piece 221 on the segmental back C when the latter is in a lowered position, as in Figs. 3 and 4. The contact-pieces 220 and 221 are separated when the segmental back is in its highest position, as shown in Fig. 1.

75 The operation of this device is substantially as follows: The matrix, prepared as above specified, is placed on the bolts 207 of the frame 206 and held in place by the nuts 208; said bolts 207 passing through the holes $f'-f'$. The frame is then slid into position in the segmental back C, when the casting box is open. Then as the casting box closes, that is, as the segmental back rises to its highest position, the matrix will be pushed or forced by the end rims E—E' to assume the proper casting position; that is, to assume a semi-cylindrical position bearing snugly against the inside of the segmental back. The molten metal is then forced into the casting chamber. When the plate thus cast has sufficiently solidified, the segmental back drops down from the core or cylinder. When the back reaches the position shown in Fig. 3, the circuits, through the electro-magnets 215, will be completed and said magnets will be energized and will forcibly strip or pull the flexible matrix by its two straight ends 211 and 212 off of the surface of the cast plate. As the segmental back continues its downward movement, the flexible matrix will assume an arched position and its straight ends will finally come in contact with the electro-magnets, as shown in Fig. 4. As the segmental back lowers, the central line of the matrix will not be disturbed until the nuts 208 come in contact with the matrix. As this takes place, the matrix will be entirely freed from the cast plate. This last operation is not absolutely necessary, as the pull of the electro-magnets arching the flexible matrix will, for most purposes, strip or unwind the flexible matrix to the necessary degree. This additional movement is provided as a safeguard. After the matrix has been stripped in this way, the core or cylinder is given a half turn to deliver the cast plate from the casting chamber. The plate is slightly lifted up off of the surface of the core or cylinder and the conveyer is actuated to slide the plate along to deliver the same; these operations taking place as is particularly set

forth in said patent. This completes the cycle of operations, which is then repeated for the next plate which is cast. The pull of the magnets will exercise an easy and accurate strain to strip the flexible matrix from the surface of the cast plate.

Another way the matrix can be made or rendered susceptible to magnetic influence is to provide a device independent of the matrix, which is actuated by magnetic influence to strip or unwind the matrix. One construction for this purpose is shown in the third sheet of the drawings. In this modification, the strips of magnetic material 2100 are placed in grooves cut in the end-rims E—E'. These strips 2100 are held in place at the central points of the rims by screws 2110. These strips are made out of material susceptible to magnetic influence, as iron or steel, and are flexible throughout their length. These strips will bear on the matrix near the curved edges thereof. The remaining parts of the device are arranged as previously described. When the box is opened, the magnets will be energized and the strips 2100 will be moved, as shown in Figs. 8 and 9, to strip the matrix from the surface of the cast plate.

In the device previously described, the core and segmental back are preferably made out of brass, bronze, or material which is not susceptible to magnetic influence, so that the lines of force from the electro-magnets will not be diverted.

I am aware that other forms of magnetically operating devices besides magnetic strips may be used to hold or control the matrix so that it may be manipulated or stripped by magnetic influence.

I am further aware that many changes may be made in the apparatus herein shown and described, 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 of the United States is:—

1. The combination in a stereotype printing plate casting box for casting stereotype printing plates from a flexible matrix, of a core, segmental back, and magnetically operated means for stripping the flexible matrix from the surface of the cast plate.

2. The combination in a stereotype printing plate casting box, of a core, segmental back, and magnetically operated means for stripping the flexible matrix from the surface of the cast plate by both of its straight ends.

3. The combination in a stereotype printing plate casting box for casting stereotype printing plates from a flexible matrix, of a core, segmental back, means for holding the flexible matrix in said box so that the same will assume the proper curved shape and

magnetically operated means for stripping the flexible matrix from the surface of the cast plate.

4. The combination in a stereotype printing plate casting box for casting stereotype printing plates from a flexible matrix, of a core, segmental back, a matrix, means for rendering the matrix susceptible to magnetic influence, and magnetically operated means for stripping the flexible matrix from the surface of the cast plate.

5. The combination in a stereotype printing plate casting box for casting stereotype printing plates from a flexible matrix, of a core and segmental back which may be separated to open the casting box, magnetically operated means for stripping the flexible matrix from the surface of the cast plate when the core and segmental back are separated, and means for restoring the flexible matrix to casting shape when the casting chamber is again closed.

6. The combination in a stereotype printing plate casting box for casting stereotype printing plates from a flexible matrix, of a core, segmental back and flexible matrix having a magnetic material combined therewith, and magnetically operated means for stripping the flexible matrix from the surface of the cast plate.

7. The combination in a stereotype printing plate casting box for casting stereotype printing plates from a flexible matrix, of a core, segmental back, a matrix, means for rendering the matrix susceptible to magnetic influence, and electro-magnets for stripping the same from the surface of the cast plate.

8. The combination in a stereotype printing plate casting box for casting stereotype printing plates from a flexible matrix, of a core, segmental back, a flexible matrix, means for rendering the matrix susceptible to magnetic influence, and two series of electro-magnets for stripping the flexible matrix by both of its straight ends from the surface of the cast plate.

9. The combination in a stereotype printing plate casting box for casting stereotype printing plates from a flexible matrix, of a core, segmental back, a flexible matrix, means for rendering the matrix susceptible to magnetic influence, electro-magnetic means for stripping the flexible matrix from the surface of the cast plate, and means for energizing said electromagnetic means.

10. The combination in a stereotype printing plate casting box for casting stereotype printing plates from a flexible matrix, of a core and segmental back which may be separated to open the casting box, a flexible matrix, means for rendering the matrix susceptible to magnetic influence, electro-magnetic means for stripping the same from the surface of the cast plate, a source of electricity connected to said electro-magnetic

means, and means for making and breaking the circuit thereof as the box is opened and closed.

11. The combination in a stereotype printing plate casting box for casting stereotype printing plates from a flexible matrix, of a core and segmental back which may be separated to open the casting box, a flexible matrix, means for rendering the matrix susceptible to magnetic influence, electro-magnets for stripping said matrix from the surface of the cast plate, a source of electricity connected to said electro-magnets, and means for making and breaking the circuit as the box is opened and closed.

12. The combination in a stereotype printing plate casting box for casting stereotype printing plates from a flexible matrix, of a core and segmental back which may be separated to open the cast box, a flexible matrix, means for rendering the matrix susceptible to magnetic influence, electro-magnets for stripping the matrix from the surface of the cast plate, a source of electricity connected thereto, and circuit making and breaking device carried by the member of the casting box, which moves to open the same.

13. The combination in a stereotype printing plate casting box for casting stereotype printing plates from a flexible matrix, of a core and segmental back, means for holding

a matrix in said box along its central line, means for making said matrix susceptible to magnetic influence, and magnetically operated means for stripping the matrix from the surface of the cast plate along both of its straight edges.

14. As an article of manufacture, a flexible matrix having magnetic material combined therewith so that the matrix may be flexed by magnetic action.

15. As an article of manufacture, a flexible matrix having magnetic material combined therewith along its two straight edges so that the matrix may be flexed by magnetic action.

16. As an article of manufacture, a flexible matrix having steel strips combined therewith so that the matrix may be flexed by magnetic action.

17. As an article of manufacture, a flexible stereotype printing plate matrix having steel strips combined therewith along its two straight edges so that the matrix may be flexed by magnetic action.

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

H. A. WISE WOOD.

Witnesses:

SEYMOUR CONOVER,
ANNIE B. WALTERS.