

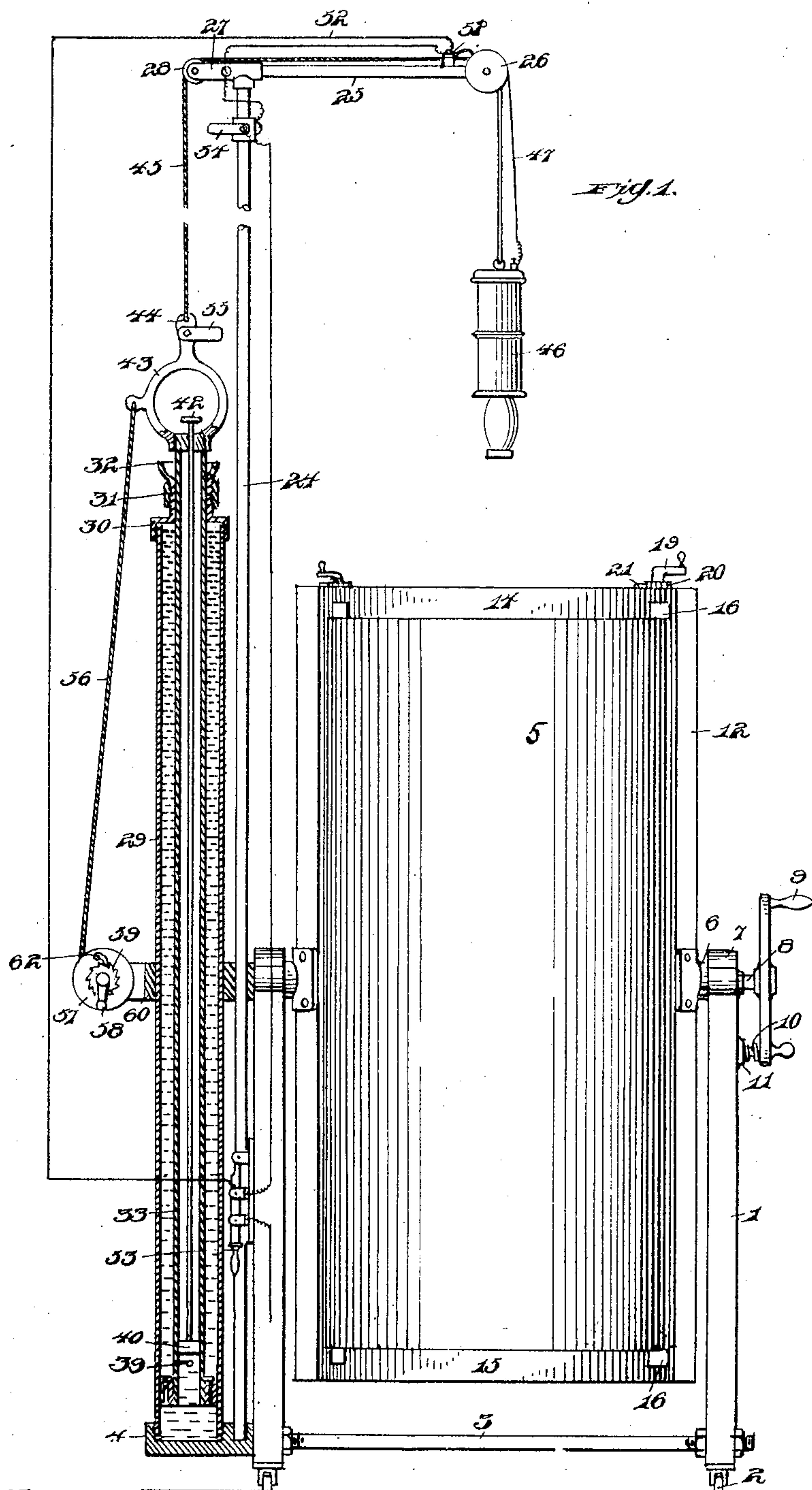
No. 777,096.

PATENTED DEC. 13, 1904.

R. HERMAN.
PRINTING APPARATUS.
APPLICATION FILED OCT. 1, 1901.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses:

J. P. Appleman
E. E. Potter

Inventor

R. Herman

By

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Att'y.

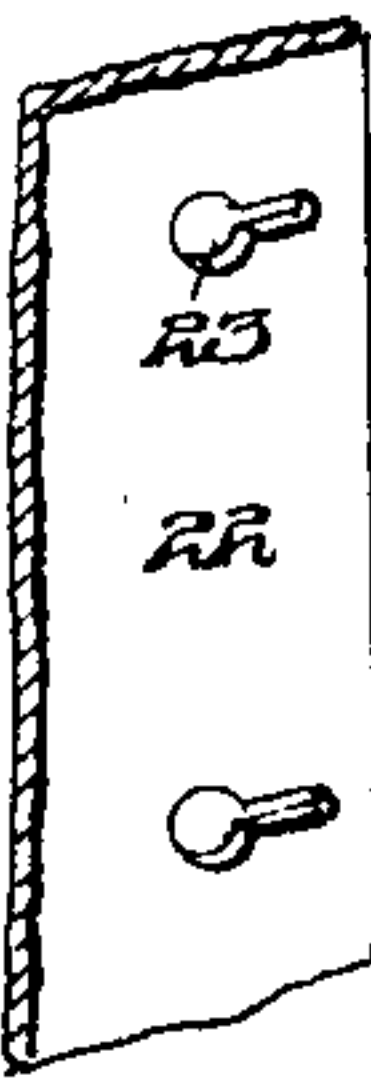
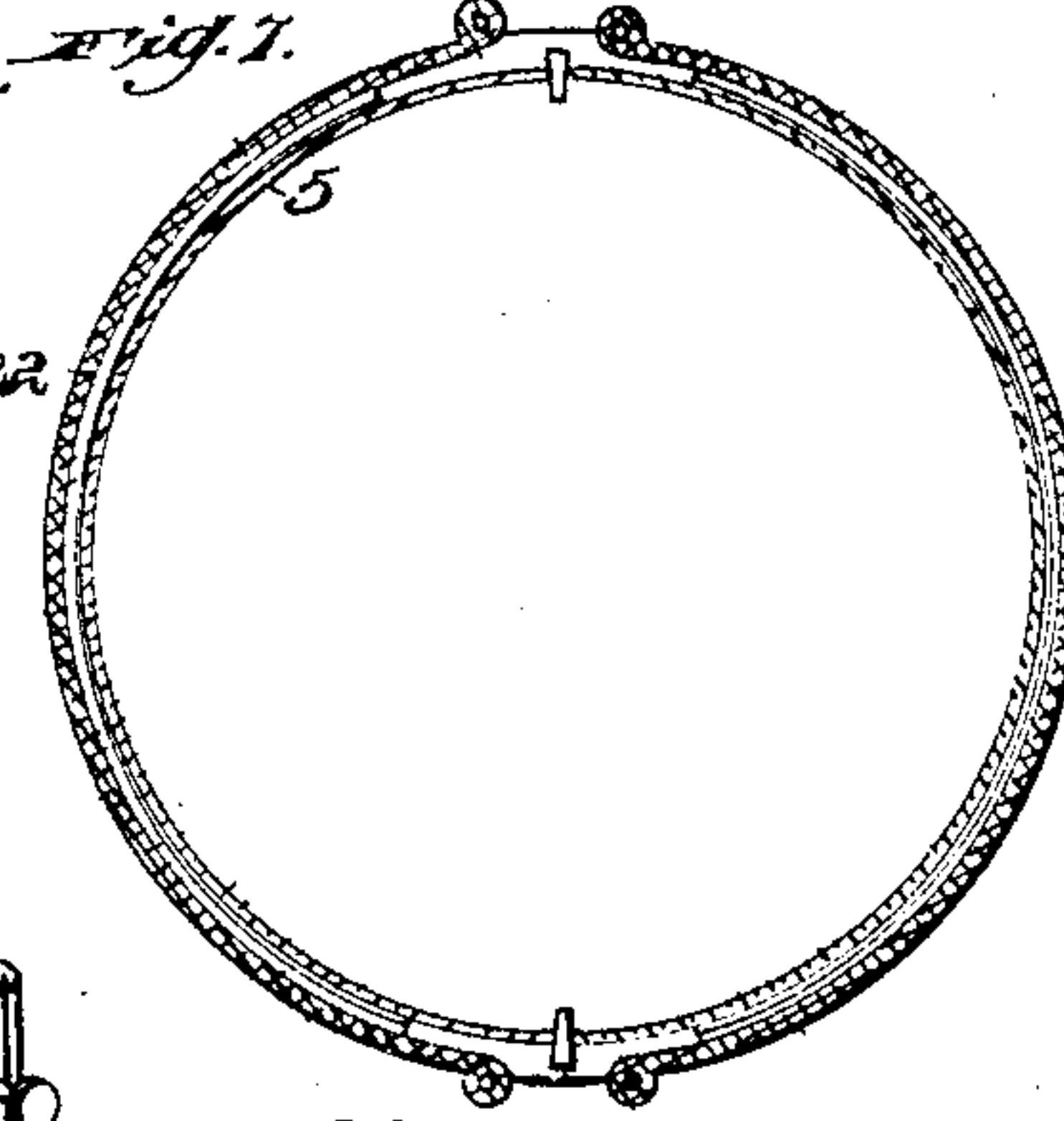
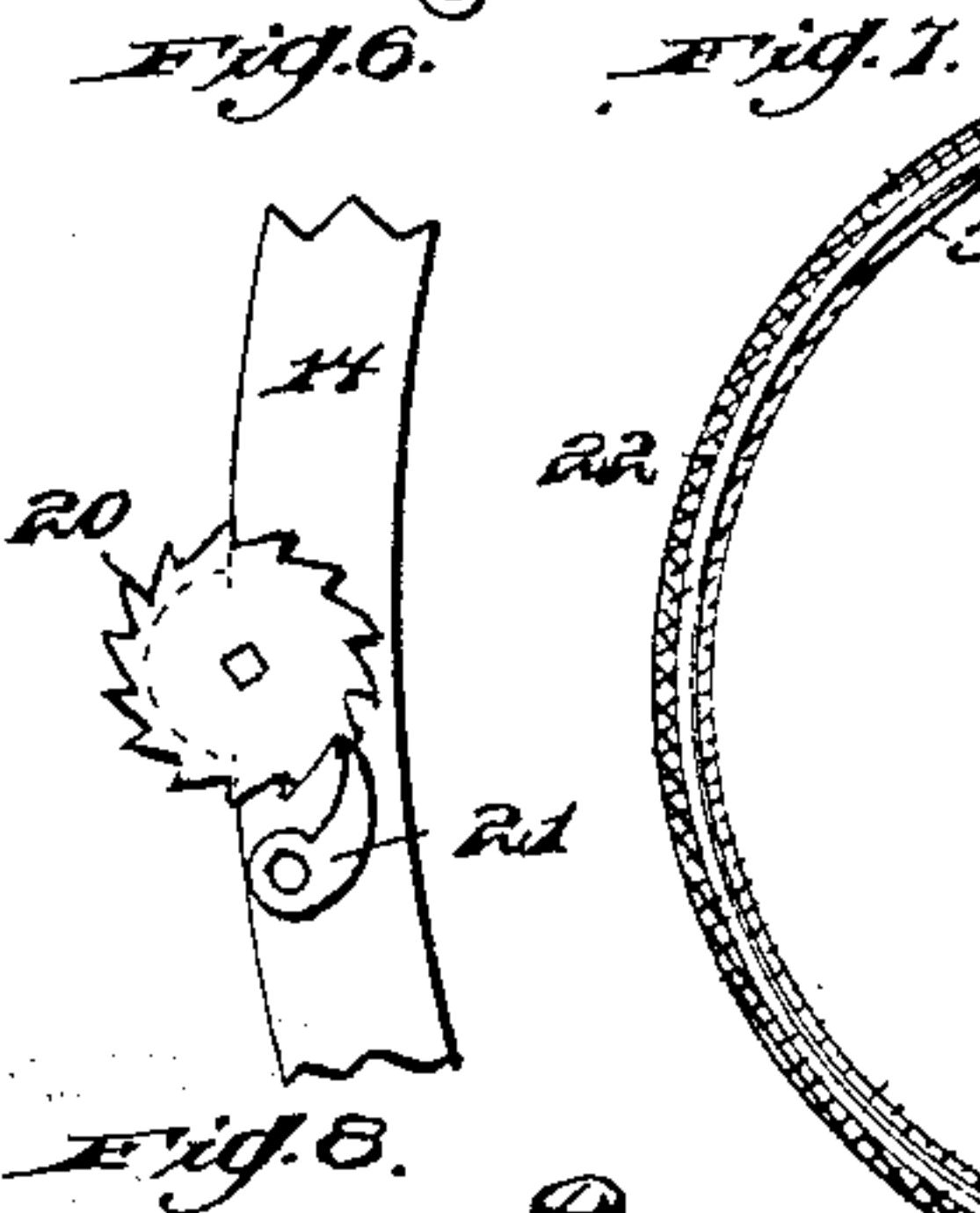
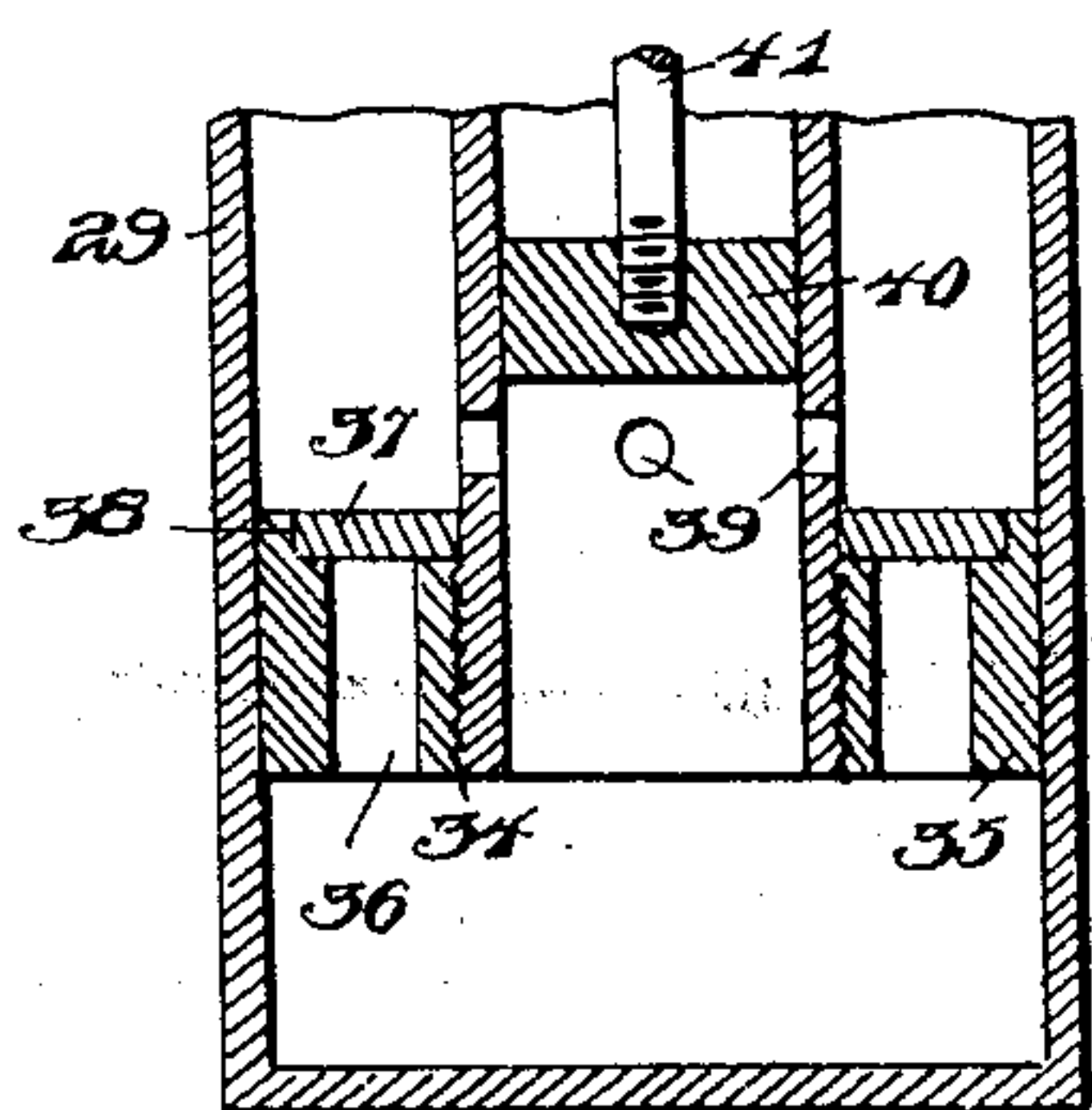
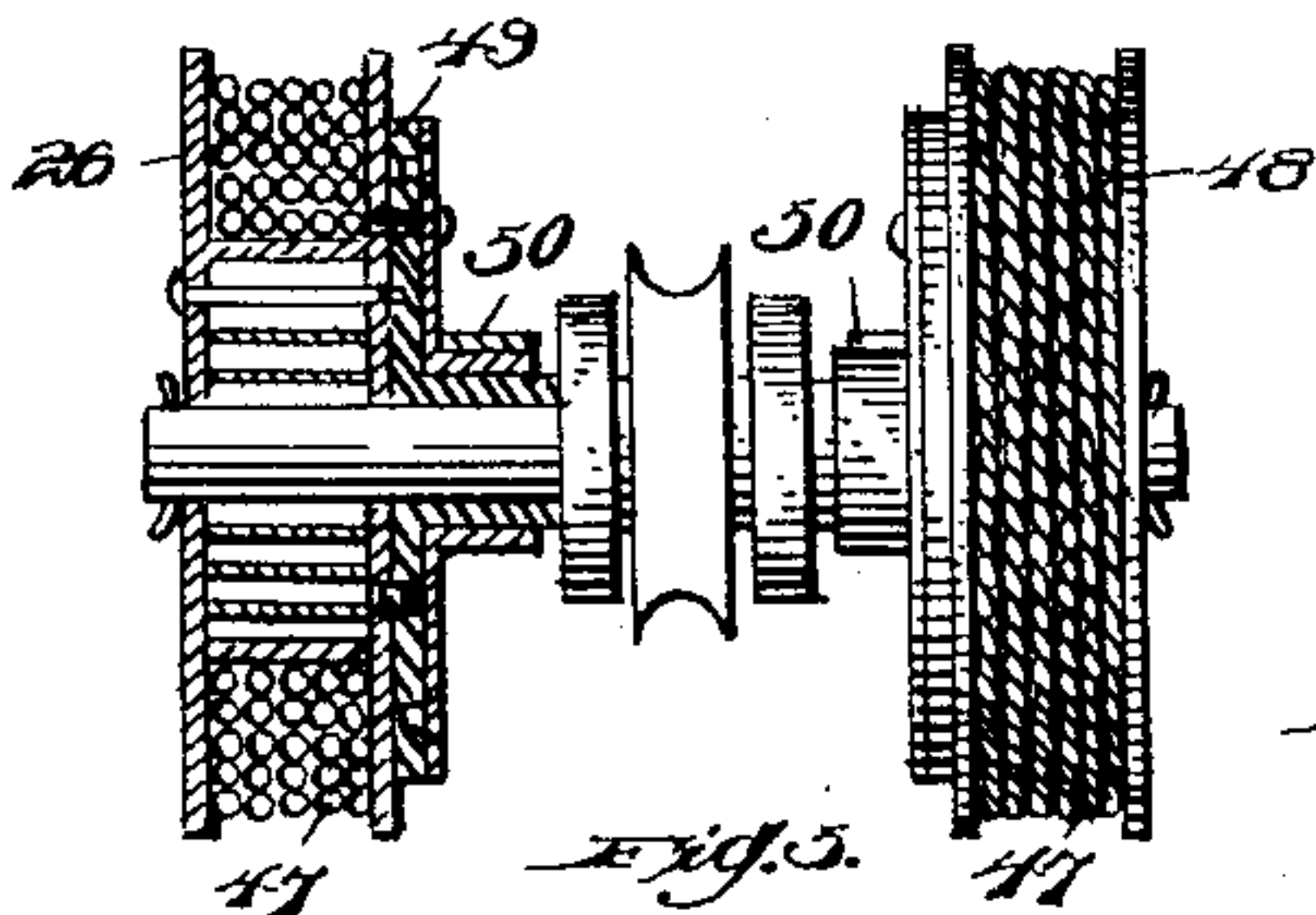
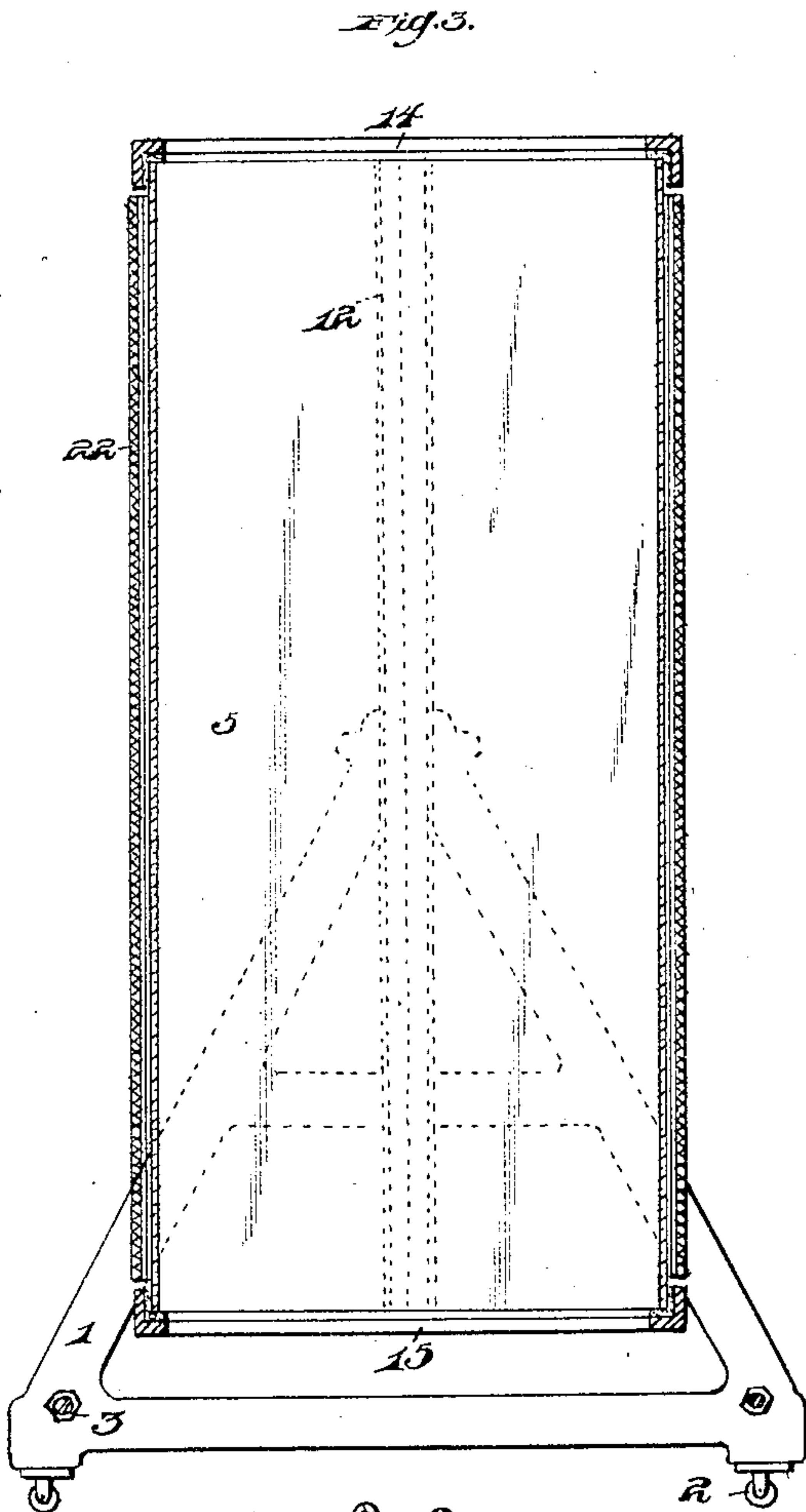
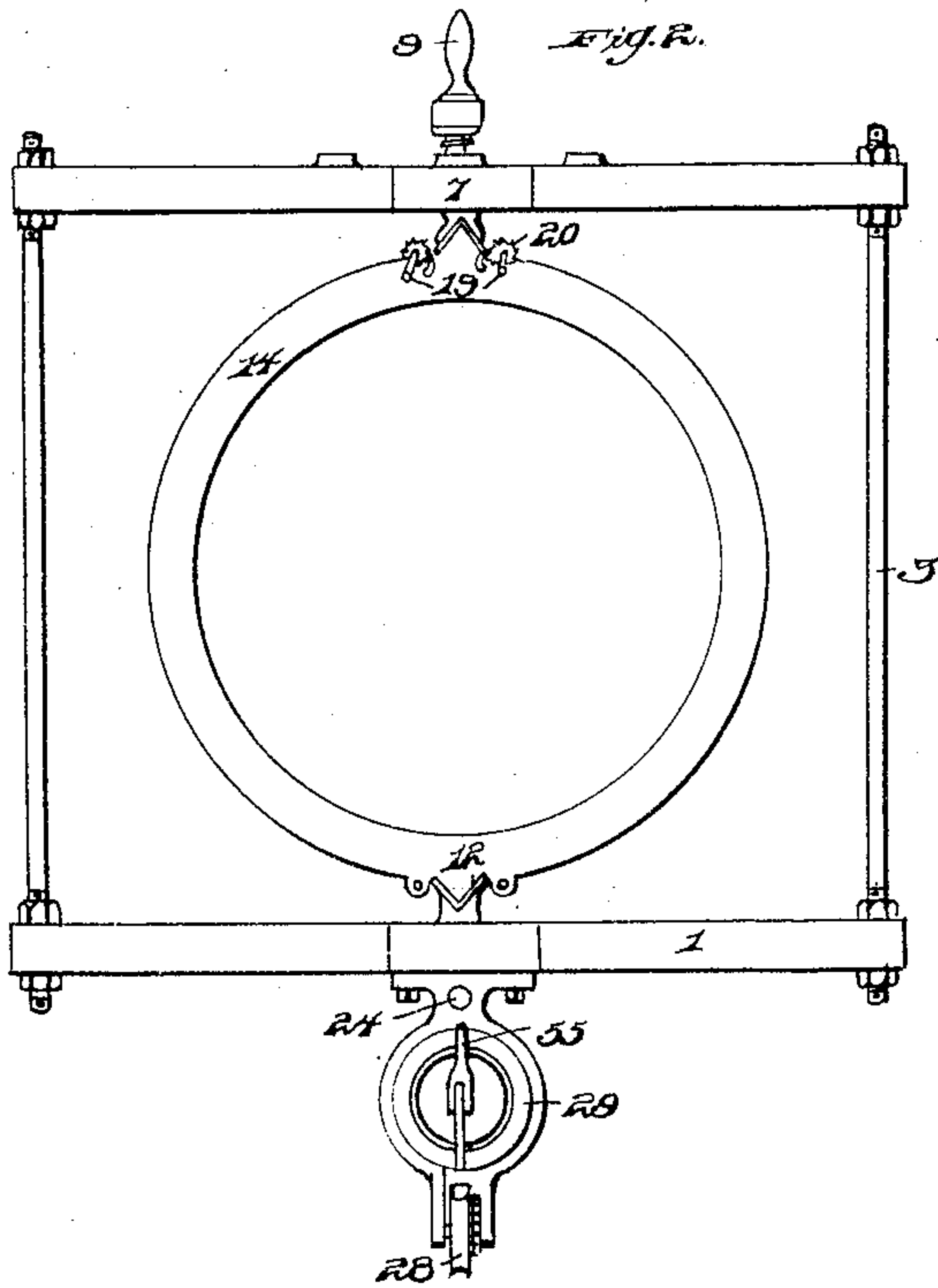
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R. HERMAN.
PRINTING APPARATUS.
APPLICATION FILED OCT. 1, 1901.

NO MODEL.

2 SHEETS—SHEET 2.



Witnesses:

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UNITED STATES PATENT OFFICE.

REINHOLD HERMAN, OF CRAFTON, PENNSYLVANIA.

PRINTING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 777,096, dated December 13, 1904.

Application filed October 1, 1901. Serial No. 77,192. (No model.)

To all whom it may concern:

Be it known that I, REINHOLD HERMAN, a citizen of the United States of America, residing at Crafton, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Printing Apparatus, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to certain new and useful improvements in a printing apparatus, and relates more particularly to that class of machines employed for producing blue solar platinum prints and the like.

The present invention has for its object the provision of novel means whereby prints of the above-described character may be easily produced at night or at any other time by means of artificial light, such as electric light, acetylene-gas light, or the like.

The present invention contemplates to construct a printing apparatus of the above-described character that will be mounted upon a portable frame that may be easily conveyed from one portion of the building to another; furthermore, to provide novel means that will allow a gradual descent of the penetrating light to be steadily lowered into the transparent cylinder, and provide novel means whereby the rapidity of the downward movement of the light may be accurately regulated.

The present invention also contemplates to provide an automatic cut-out that will operate when the light or lamp has reached its maximum downward movement.

A still further object of the present invention is to provide a transparent cylinder which may be rotatably mounted in a portable frame and means whereby said cylinder may be locked at different angles or degrees.

A still further object of my invention is to construct a device of the above-described class that will be extremely simple in construction, strong, durable, comparatively inexpensive to manufacture, and highly efficient in its use.

With the above and other objects in view the invention consists in the novel combination and arrangement of parts to be hereinafter more fully described, and specifically pointed out in the claims.

In describing the invention in detail reference is had to the accompanying drawings, forming a part of this specification, wherein like numerals of reference indicate corresponding parts throughout the several views, in which—

Figure 1 is a side elevation of my improved printing apparatus, partly in section. Fig. 2 is a top plan view thereof. Fig. 3 is a vertical sectional view of the transparent cylinder mounted in the portable frame. Fig. 4 is a front and vertical sectional view of the sheave for the lamp. Fig. 5 is an enlarged perspective view of the lower portion of the liquid-cylinder, piston, piston-rod, and regulating-valve. Fig. 6 is a top plan view of a portion of the upper face of the cylinder, showing the pawl and ratchet. Fig. 7 is a longitudinal sectional view of the transparent cylinder and clamps. Fig. 8 is a fragmentary perspective view showing the end of the canvas and manner of attaching the same to the vertical shafts. Fig. 9 is a perspective view of a portion of the vertical shaft mounted on the outer face of the transparent cylinder, showing the fastening means to engage the canvas.

In the drawings the reference-numeral 1 indicates a portable frame or carriage, being provided with roller-casters 2, this frame 1 being suitably secured together by a brace-rod 3, carrying an extension 4.

The reference-numeral 5 indicates a transparent cylinder which is pivoted centrally at 6 in bearings 7 7, carried by the portable frame. Through one of said bearings extends a shaft 8, carrying on its end a crank-handle 9 and a spring-pressed locking-pin 10, which is adapted to engage in the boss 11, formed integral upon the outer face of the portable frame or carriage 1. A number of said bosses may be arranged upon the frame in order to lock the cylinder at various angles or degrees.

The reference-numeral 12 represents a rotatable frame in which the cylinder is mounted, said frame carrying on its upper and lower extremities a ring 14 and 15. Upon said rings are mounted apertured lugs 16, which are adapted to receive the vertically-extending operating-shafts 17, these shafts carrying studs 18, one of said shafts being provided with an

operating crank-handle 19, to which is fastened the ratchet-wheel 20, operating in conjunction with the locking-pawl 21, pivotally secured upon the ring 14 of the frame.

5 Canvas or other suitable material is arranged upon the transparent cylinder and passes around the shafts 17, the operating-shaft being secured to the canvas 22 by means of the openings 23 and the studs 18.

10 The reference-numeral 24 represents a standard the base of which is secured to the extension 4 of the portable frame or carriage, the upper end of said standard having secured therein an arm 25, upon the end of which is mounted a sheave 26. A bracket 27 is also secured to the arm 25 and extends outwardly from the other side of the standard 24. In said bracket is mounted a pulley 28. The liquid-cylinder 29 is secured to the extension 4 by means of screw-threads, the upper end of said cylinder being provided with a cap 30, carrying a tubular extension 31.

The reference-numeral 32 indicates the funnel-shaped mouth of the tubular extension 31.

25 The reference-numeral 33 represents a hollow piston-rod the lower end of which is screw-threaded, as shown at 34, for securing the piston 35, said piston having formed therein ports 36, which are normally closed upon the upward movement of the piston by means of the annular flap-valve 37, which is seated in the valve-seat 38, formed in the piston.

30 The reference-numeral 39 represents discharge-ports formed in the hollow piston-rod, these ports arranged in close proximity to the piston.

The reference-numeral 40 represents a regulating-valve arranged in the hollow piston, said valve being attached to the operating-rod 41, extending up through the hollow piston, and has formed on its upper end thereof an operating-handle 42.

40 The reference-numeral 43 represents a ring secured to the upper extremity of the hollow piston-rod, said ring carrying an extension 44, to which is attached an operating-cord 45, which passes over the pulley 28 and sheave 26 and carries on its opposite end an electric lamp 46, said lamp having an electrical connection 47, passing over the double pulleys 48 and the sheave 26, said double pulleys having their inner faces insulated, as shown at 49, to carry a brush 50, said brush being connected to the end of the electrical connection 47 and binding-post 51 of the electrical connection 52, said electrical connection 52 having arranged therein a switch 53, secured to the side of the portable frame.

The reference-numeral 54 represents an automatic cut-out, which is operated by a contact 55, carried by an extension 44 of the ring 43. To the latter is also attached an operating-cord 56, which passes over a windlass 57, operated by the crank-handle 58 of the shaft 59, mounted in the bracket 60, attached rig-

idly to the side of the portable frame. Said shaft 59 also carries a ratchet-wheel 61, which is engaged by the gravity-pawl 62, thereby preventing the reverse rotation of the windlass, as will be readily understood.

70 The operation of my improved device is as follows: The picture or drawing that is desired to be printed is first placed upon the transparent cylinder and the sheet of paper or other material upon which said picture is to be printed is placed between the paper and canvas. The latter is then drawn taut by means of the operating crank-handle 19 rotating one of the shafts. By reason of the lamp 46 acting as a counterbalance-weight the piston-rod and piston will be allowed to gradually ascend in the liquid-cylinder, the liquid flowing through the ports 39 of the hollow piston-rod and the downward pressure of the liquid in the cylinder will normally close the flap-valve 37 in the piston as the piston ascends. 80 As the piston-rod and piston gradually ascend in the cylinder the lamp 46 will be allowed to gradually and steadily lower itself in the cylinder until the print is completed, when the lamp will have reached the limit of its downward descent, the contact 55 engaging the cut-out 54 and will cut out the circuit of the electrical connections leading to the lamp. When it is desired to return the lamp to its former position, the windlass 57 is operated by means of the crank-handle 58, thereby lowering the piston and hollow piston-rod, the downward pressure upon the liquid causing to open the flap-valve, which permits a rapid and easy return of the piston and piston-rod to the lowered position in the liquid-cylinder. In order to obtain a more rapid or gradual descent of the lamp, the operating-rod 41 is lowered or raised to either open the ports 39, as shown in the drawings, which will permit a more rapid descent of the lamp than in case the valve 40 is lowered by means of the rod 41 to partially close the ports, which will tend to obstruct the rapid flow of the liquid through the ports, and consequently retard the upward movement of the piston and piston-rod to which the lamp is connected. 100 105 110

The many advantages obtained by the use of my improved apparatus will be readily apparent from the foregoing description, taken in connection with the accompanying drawings. 115

It will be noted that various changes may be made in the details of construction without departing from the general spirit of my invention. 120

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is— 125

1. In a printing apparatus, a transparent cylinder mounted so as to be capable of rotation, means for locking said cylinder at various angles, an electric lamp connected to a suitable source of electrical supply, a cut-out 130

in the connections with said lamp, and means whereby said cut-out is automatically operated when the lamp is lowered to a predetermined point.

5 2. In a printing apparatus, the combination of a frame, a rotatable frame pivotally secured therein, a transparent cylinder composed of two sections secured to said rotatable frame, means for locking said frame at various an-
10 gles, an electric lamp, electrical connections to said lamp, an electrical cut-out in said connections, and means whereby said lamp is automatically lowered, substantially as described.

15 3. In a printing apparatus, the combination of a portable frame, a rotatable frame pivotally secured therein, a transparent cylinder, means for locking said frame at various an-
20 gles, an electric lamp, electrical connections to said lamp, an electrical cut-out in said connections, means whereby said cut-out is automatically operated when said lamp is automatically lowered to a predetermined point, substantially as described.

25 4. In a printing apparatus, the combination of a portable frame, a rotatable frame pivotally secured therein, a transparent cylinder, means for locking said frame at various an-
30 gles, an electric lamp, electrical connections to said lamp, a switch secured in said electrical connections, an automatic cut-out arranged in said connections, and means whereby said lamp is automatically and steadily lowered, substan-
tially as described.

35 5. In a printing apparatus, the combination of a portable frame, a rotatable frame pivotally secured therein, a transparent cylinder in said rotatable frame, an electric lamp, elec-
40 trical connections to said lamp, an independent connection to said lamp, a liquid-cylinder attached to said portable frame, a hollow piston-rod operating in said liquid-cylinder, and means arranged in said hollow piston-rod to
45 allow the same to be raised automatically by means of the counterbalance-weight of said lamp, substantially as described.

50 6. In a printing apparatus, the combination of a portable frame, a rotatable frame pivotally secured therein, a transparent cylinder secured in said rotatable frame, an electric lamp, electrical connections to said lamp, an independent connection to said lamp, a liquid-cylinder secured to said portable frame, a hollow
55 piston-rod arranged in said liquid-cylinder having ports communicating with said cylinder, a piston, a flap-valve attached to the lower end of said piston, and connections between said independent connection of the lamp and cylinder, substantially as described.

60 7. In a printing apparatus, the combination of a portable frame, a rotatable frame pivotally secured therein, a transparent cylinder secured in said rotatable frame, an electric lamp, electrical connections to said lamp, an independent connection to said lamp, a liquid-
65 cylinder secured to said portable frame, a hol-

low piston-rod arranged in said liquid-cylinder having ports communicating with said cylinder, a piston, a flap-valve attached to the lower end of said piston, connections between said independent connections of the lamp and
70 cylinder, and an electric cut-out, all parts being arranged and operating substantially as described.

8. In a printing apparatus, the combination of a frame, a printing-cylinder mounted for
75 rotation in said frame, a lamp, a liquid-cylinder carried by the frame, a hollow piston-rod operating in said liquid-cylinder, and means in said hollow piston-rod to permit of the same automatically raising by the counterbalance-
80 weight of the lamp, substantially as described.

9. In a printing apparatus, a supporting-frame, a printing-cylinder rotatably mounted in the supporting-frame, means for locking
85 the printing-cylinder at various angles, a vertically-movable lamp, and means for automatically lowering said lamp into the printing-cylinder, substantially as described.

10. In a printing apparatus, a supporting-frame, a printing-cylinder rotatably mounted
90 in said frame, means for locking the printing-cylinder at various angles, an electric lamp suitably connected to a source of electrical supply, a cut-out in said connections, and means for automatically lowering the lamp
95 into the printing-cylinder, substantially as described.

11. In a printing apparatus, a rotatable printing-cylinder, means for locking said cyl-
100 nder at various angles, an electric lamp, electrical connections to said lamp, means for operating said lamp to gradually feed the same into the printing-cylinder, and an automatic cut-out in said connections, substantially as
105 described.

12. In a printing apparatus, the combina-
110 tion of a printing-cylinder suitably mounted, an electric lamp, electrical connections with said lamp, a liquid-cylinder, a hollow piston-rod operating in said liquid-cylinder, and means whereby the hollow piston-rod is auto-
matically raised by the counterbalance-weight of the lamp, substantially as described.

13. In a printing apparatus, a suitably-mounted printing-cylinder, an electric lamp,
115 connections to said lamp, an independent connection with the lamp, a suitably-supported liquid-cylinder a hollow piston-rod in the cylinder and provided with ports communicat-
120 ing with said cylinder, a piston in said hollow piston-rod, a flap-valve carried by said piston, and connections between the independent connection of the lamp and cylinder, sub-
stantially as described.

14. In a printing apparatus, the combina-
125 tion of a rotatably-mounted transparent printing-cylinder, means for locking the said cylinder at various angles, an electric lamp, electrical connections with said lamp, means
130 for automatically lowering the lamp into the

transparent printing-cylinder, a cut-out, and means whereby the cut-out is automatically operated when the lamp is lowered to a predetermined point, substantially as described.

5 15. In a printing apparatus, the combination with the transparent cylinder, the lamp, and means for automatically lowering the lamp into the cylinder, of rings engaging the ends of said cylinder and provided with apertured lugs, shafts mounted in said lugs, studs carried by the shafts, a binder secured to said studs, cranks on said shafts, and a pawl and ratchet for locking the shaft, substantially as described.

15 16. In a printing apparatus, a portable frame, a transparent cylinder, carried thereby, an electric lamp suspended from a support carried by the portable frame whereby the lamp is movable in unison with the cylinder and frame, and means supported by the portable frame for automatically lowering the lamp into the cylinder, substantially as described.

20 17. In a printing apparatus, a transparent cylinder, an electric lamp, means for automatically lowering the lamp into the cylinder, a cut-out automatically operated when the lamp has reached a predetermined point, and

a portable frame on which all parts are supported so as to be movable in unison, substantially as described. 30

18. In a machine for making prints, in combination, a cylinder as described, an electric lamp, a cord or cords carrying said lamp, a governing device operating upon said cord or cords to cause said lamp to pass through said cylinder steadily, a cut-out, and an adjustable stop carried by said lamp-carrying cord or cords adapted to engage and operate said cut-out. 35

19. In an apparatus for copying or reproducing drawings, &c., the combination of a cylinder adapted to be rotated, means to support the subject-matter to be copied or reproduced upon the exterior of said cylinder, an arc-lamp adapted to be lowered into said cylinder, and means to automatically break the circuit for the purpose of extinguishing the light, substantially as described. 40

In testimony whereof I affix my signature in the presence of two witnesses. 45

REINHOLD HERMAN.

Witnesses:

JOHN NOLAND,
E. E. POTTER.

DISCLAIMER.

777,096.—*Reinhold Herman*, Crafton, Pa. PRINTING APPARATUS. Patent dated December 13, 1904. Disclaimer filed December 28, 1911, by the patentee.

Enters this disclaimer—

“To that part of the claim in said specification which is in the following words, to wit:

“16. In a printing apparatus, a portable frame, a transparent cylinder, carried thereby, an electric lamp suspended from a support carried by the portable frame whereby the lamp is movable in unison with the cylinder and frame, and means supported by the portable frame for automatically lowering the lamp into the cylinder, substantially as described.

“17. In a printing apparatus, a transparent cylinder, an electric lamp, means for automatically lowering the lamp into the cylinder, a cut-out automatically operated when the lamp has reached a predetermined point, and a portable frame on which all parts are supported so as to be movable in unison, substantially as described.

“18. In a machine for making prints, in combination, a cylinder as described, an electric lamp, a cord or cords carrying said lamp, a governing device operating upon said cord or cords to cause said lamp to pass through said cylinder steadily, a cut-out, and an adjustable stop carried by said lamp-carrying cord or cords adapted to engage and operate said cut-out.”

[*Official Gazette*, January 9, 1912.]