

J. A. DICK.
 PHOTOGRAPHIC PRINTING APPARATUS.
 APPLICATION FILED MAR. 16, 1908.

916,119.

Patented Mar. 23, 1909.

FIG. 1.

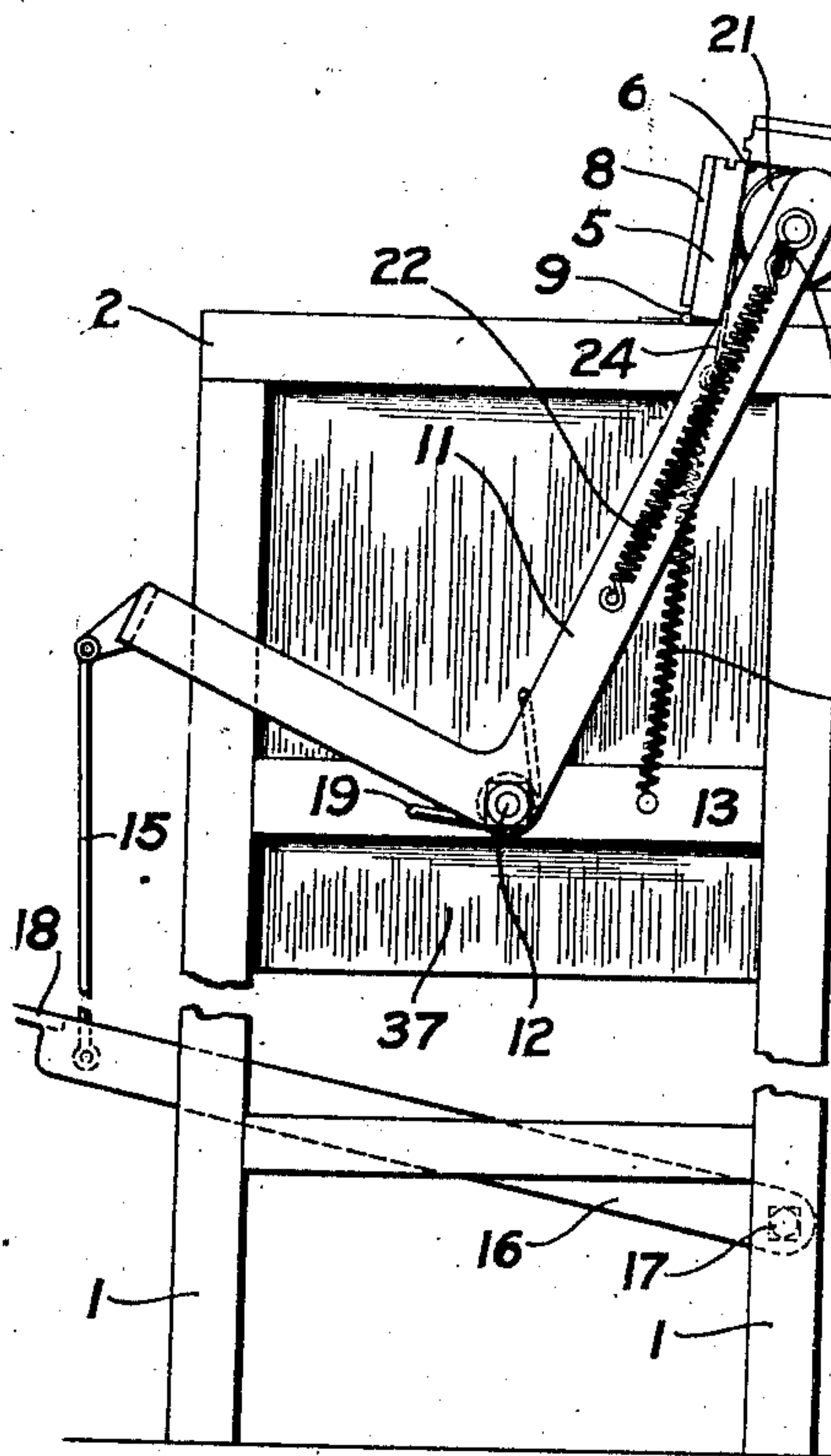


FIG. 2.

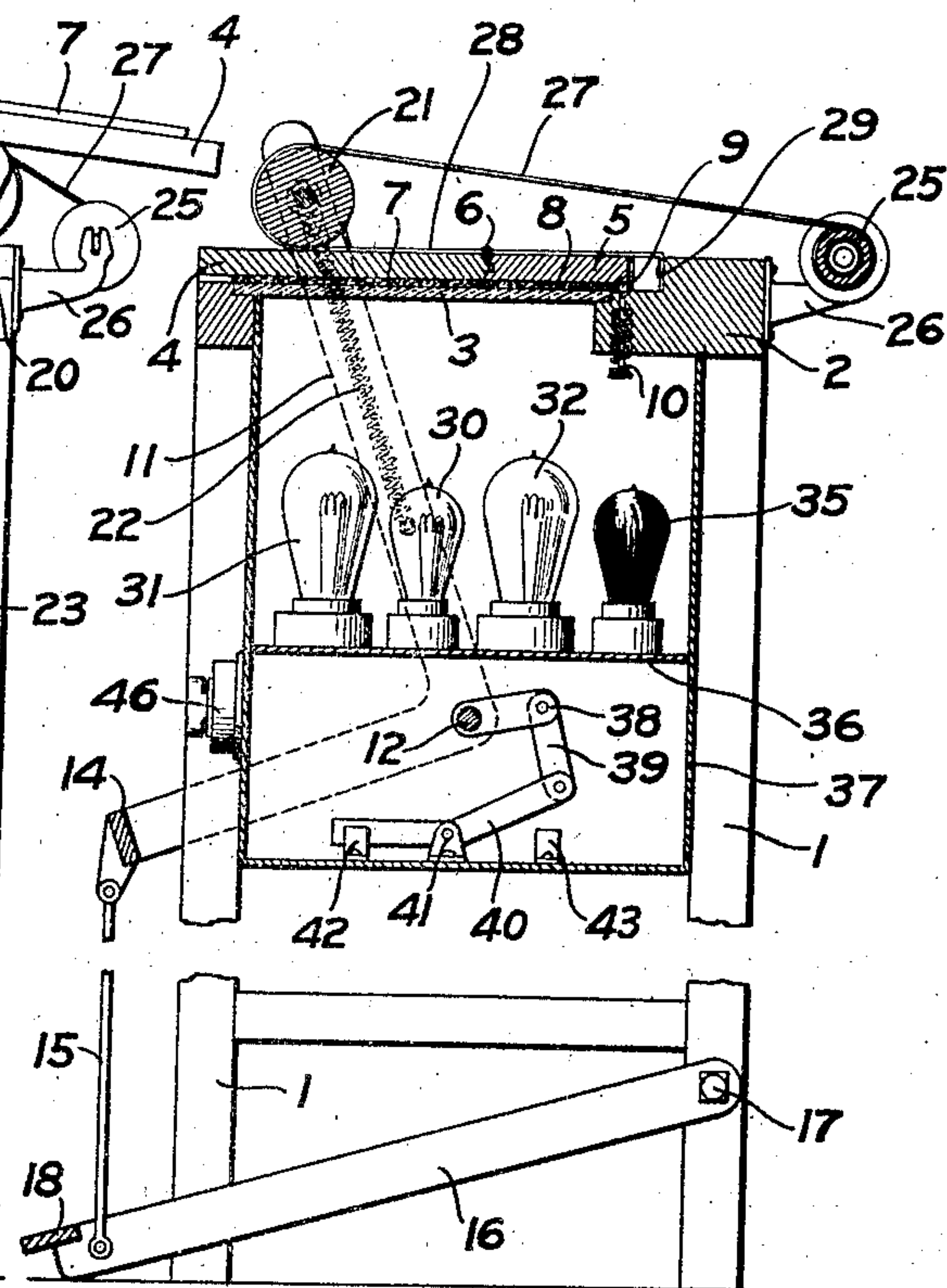
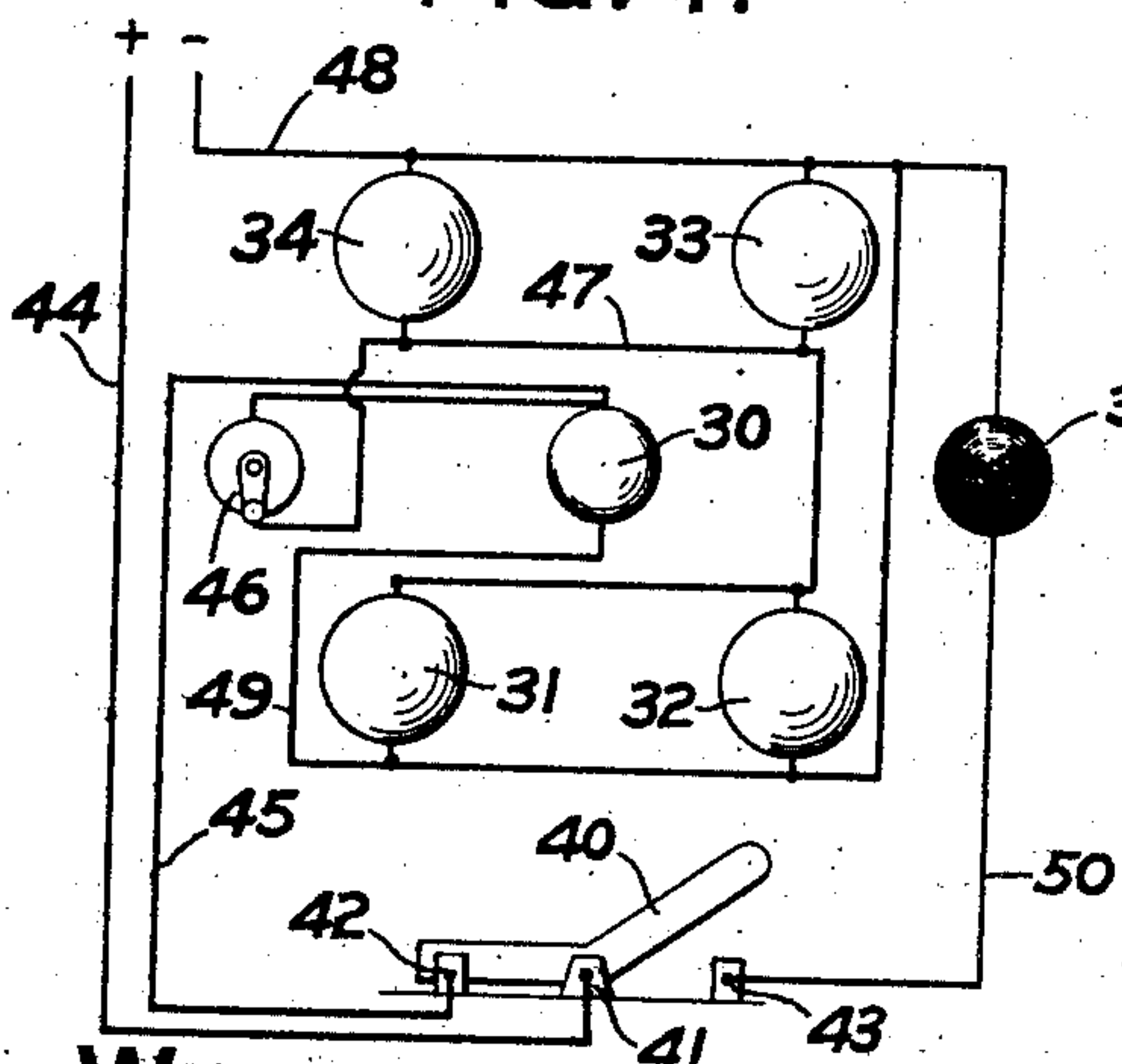


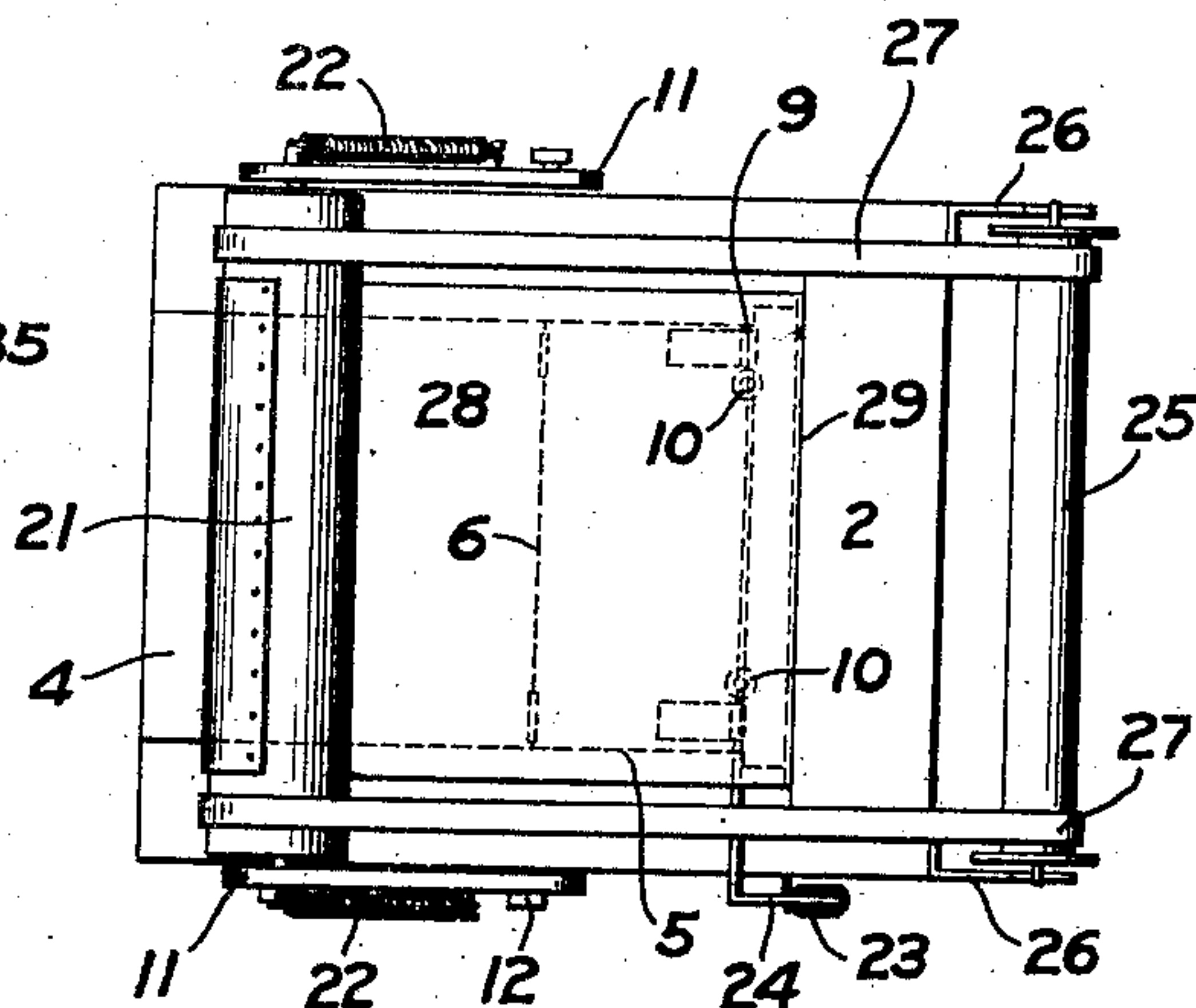
FIG. 4.



WITNESSES:

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FIG. 3.



INVENTOR:

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his attys

UNITED STATES PATENT OFFICE.

JOHN A. DICK, OF CANANDAIGUA, NEW YORK, ASSIGNOR, BY MESNE ASSIGNMENTS, TO
MARIE ELIZABETH DICK, OF CANANDAIGUA, NEW YORK.

PHOTOGRAPHIC-PRINTING APPARATUS.

No. 916,119.

Specification of Letters Patent.

Patented March 23, 1909.

Application filed March 16, 1908. Serial No. 421,322.

To all whom it may concern:

Be it known that I, JOHN A. DICK, a citizen of the United States, and resident of Canandaigua, in the county of Ontario and State of New York, have invented certain new and useful Improvements in Photographic-Printing Apparatus, of which the following is a specification.

This invention relates to photographic printing apparatus, and consists in the apparatus hereinafter described and claimed. Its object is to produce an efficient device for rapid commercial printing, in which the pressure board is raised automatically and is lowered to contact position by the operator, preferably by pressure of the operator's foot.

Means are also provided whereby when the frame is open a non-actinic light is automatically turned on, and when the frame is closed for printing, one or more actinic lights are turned on and the ruby lamp is turned off.

Other features will appear in the following description:

In the drawings:—Figure 1 is a side elevation of the device, open to receive a negative; Fig. 2 is a central vertical section, showing the parts in position for printing; Fig. 3 is a top-plan view projected from Fig. 2; and Fig. 4 is a diagram of the lamps and the connections therefor.

The device has uprights or corner pieces 1, suitably braced together to form a stand. Across the top of these uprights extends a rectangular frame 2. A sheet of glass 3 is set therein so as to lie flush with its top face, and on this glass may be laid the negative and printing paper.

The cover or pressure back which is adapted to press the paper against the negative is made, in the present instance, of two boards 4 and 5, hinged together at 6, and having suitable pads 7 and 8, respectively, upon their under sides. The board 5 is hinged to the frame 2 at 9, and to insure good contact between said board and the glass 3 at this point, the hinge may be connected to the frame by a spring 10 (Fig. 2), which tends to pull said pin downward by reacting on the under side of the frame 2. On each side of the device is a bell-crank lever 11, pivoted at 12 to the brace 13. Both of said bell-crank levers are connected by a transverse bar 14. A rod 15 connects said bar with a treadle-lever 16 that is pivoted to the frame at 17.

When the operator presses downward on the treadle 18, the levers 11 are thrown forward (Fig. 2), and when the pressure on said treadle is removed, the levers are returned to the position shown in Fig. 1, by means of springs 19. In the upper ends of the levers 11 are slots 20, in which is set a pressure-bar adapted to cooperate with the pressure-back aforesaid, and in the present instance comprises a revoluble roller 21. Said roller is normally forced toward the bottom of said slots by the tension of springs 22 (Fig. 1).

When the parts are in the position shown in Fig. 2, the roller 21 is pressed downward upon the board 4, holding it tightly against the negative lying upon the top of the glass 3. When the operator releases the treadle 18, the springs 19 return the levers 11 and the roller 21 to the position shown in Fig. 1, and the said roller then presses upon the frame 2. The upper end of a spring 23 is fastened to a lever 24 that extends from one side of the board 5 and overhangs the pivot 9 (Fig. 1). The tension of this spring, acting upon the lever 24, tilts the board 5 around its hinge 9 as soon as the roller 21 has passed over the latter, and the board 4 is thrown upward by reason of its connection to the board 5, and lies over said roller as shown. Another downward movement of the treadle 18 carries the roller 21 forward, and the latter again forces the boards 5 and 4 down upon the glass 3. The roller 21 is a mere pressure-bar, as would obviously be the case were it not rotary in its bearings.

Means may be provided, if desired, to supplement the springs 19 in returning the levers 11, etc. to the "open" position. A spring-actuated roller 25, such as a curtain roller, may be pivoted as shown, in brackets 26 (Fig. 3) and connected to the roller 21 by flexible bands 27, which are wound around each of said rollers in the direction shown to prevent the bands 27 being unwound from the roller 21 before it returns with the levers 11. A strip of fabric 28, such as canvas, is fastened at one end to the said roller and at the other end to the frame 2 at 29. As the roller 21 moves forward, the bands 27 are wound upon it, and the strip of fabric 28 is unwound. When said roller moves backward, the bands 27 can unwind only as fast as the fabric 28 is wound on, and the tension of said bands is therefore maintained constant.

The lamps by which the printing is ac-

complished are shown in the present case as a plurality of incandescent light bulbs, fastened to the device in such a manner as to project rays of light upward through the glass 3 and through the negative lying thereon. The lamps 30, 31, 32, 33, and 34, are adapted to produce an actinic effect, and the lamp 35 is adapted to produce a non-actinic effect, and to this end it may consist of an ordinary ruby bulb. The central lamp 30 is of considerably less candle-power than either of the lamps 31, 32, 33 or 34. All the said lamps are set in suitable sockets on a plate 36, and the whole structure may be inclosed in a light-tight box 37, which is fixed between the uprights 1.

On the shaft 12 of the levers 11 is fixed an arm 38, which actuates, by means of a link 39, a tilting lever 40 that constitutes a double-throw contact switch. Said lever 40 is pivoted to the bottom of the box 37 at 41, and its one end is adapted to contact with a post 42 when the pressure-back aforesaid is down, and with a similar post 43 when said pressure-back is up.

The main feed-wire 44 (Fig. 4) leads from a source of current to the pivot 41 of the tilting lever 40. From the post 42 a wire 45 leads to one side of the lamp 30 and thence to a button-switch 46, which latter may be placed on the front side of the box 37. From said switch a wire 47 connects with each of the lamps 31, 32, 33 and 34, and from the opposite side of said lamps connections lead to the main return wire 48. A wire 49 leads from the negative side of the lamp 30 to the main return wire 48, and current may pass through said lamp whether the switch 46 is open or closed.

As is apparent by reference to Fig. 2, the lever 40 is in contact with the post 42 when the pressure-back is down. If the switch 46 is closed, current may flow through the lamps 30, 31, 32, 33, and 34, and the printing is accomplished in a very short time. If less light is desired for printing, as in border work on masked negatives, the switch 46 is opened, thereby breaking the circuit through the lamps 31, 32, 33 and 34, but not cutting off the current from the lamp 30. Said lamp then burns until the treadle 18 is released. When this occurs, the lever 40 is tilted in the opposite direction, thus breaking the contact with the post 42, and making contact with the post 43. In the latter position current may flow through but one path, namely, from the wire 44, through the lever 40, the post 43, the wire 50, the ruby lamp 35, and to the return wire 48. Thus, when the frame is open (Fig. 1) only the ruby lamp is burning, and by the light therefrom the negative and paper may be adjusted as desired upon the glass 3. As the operator presses the treadle 18 downward, the circuit through the ruby lamps 35 is broken, and when the

pressure-back is completely in contact position, the said circuit is broken, and the circuit through the lamp 30, or through the lamps 30, 31, 32, 33 and 34, is closed.

What I claim is:

1. In a photographic printing apparatus, the combination of a frame having a negative support, a two-part pressure-back hinged at one end to the support and having the two parts thereof hinged together, means for automatically throwing said pressure-back away from the negative support, a pair of bell crank levers pivoted to said frame, spring means for throwing said levers in one direction, a pressure-roller carried by said levers and adapted to roll against said pressure-back to close the same upon the negative support and to press said pressure-back against the same, a spring-actuated roller upon said frame, a flexible band therefrom to said pressure-roller for rotating and retracting the same, a flexible band attached to the frame and wound on said pressure-roller oppositely to the first mentioned band, an actinic electric light, a non-actinic electric light, a source of electric current, a switch operated by one of said levers for throwing said actinic light into circuit when the non-actinic light is thrown out of circuit and for throwing the non-actinic light into circuit when the actinic light is thrown out of circuit, an actinic electric light of lower power, means for throwing the same into circuit and for throwing said first mentioned actinic light out of circuit and vice versa, and means for operating said levers and said switch.

2. In a photographic printing apparatus, the combination of a frame having a negative support, a two-part pressure-back hinged at one end to the support and having the two parts thereof hinged together, means for automatically throwing said pressure-back away from the negative support, a pair of bell crank levers pivoted to said frame, spring means for throwing said levers in one direction, a pressure-roller carried by said levers and adapted to roll against said pressure-back to close the same upon the negative support and to press said pressure-back against the same, a spring-actuated roller upon said frame, a flexible band therefrom to said pressure-roller for rotating and retracting the same, a flexible band attached to the frame and wound on said pressure-roller oppositely to the first mentioned band, an actinic electric light, a non-actinic electric light, a source of electric current, a switch operated by one of said levers for alternately throwing said actinic light into circuit when the non-actinic light is thrown out of circuit and for throwing the non-actinic light into circuit when the actinic light is thrown out of circuit, and means for operating said levers and said switch.

3. In a photographic printing apparatus, the combination of a frame having a negative support, a two-part pressure back that is rigid when in the pressure position and is hinged at one end to the support and composed of two parts hinged rigidly together, means for automatically throwing said pressure-back away from the negative support, a roller-carrier, a spring-supported pressure-roller carried thereby adapted to roll along said pressure-back to close the same upon the negative support and to press said pressure-back against the same, a spring-actuated roller upon said frame, a flexible band therefrom to said pressure-roller for rotating and retracting the same, a flexible band attached to the frame and wound on said pressure-roller oppositely to the first mentioned band, an actinic electric light, a non-actinic electric light, a source of electric current, a switch for throwing said actinic light into circuit when the non-actinic light is thrown out of circuit and for throwing the non-actinic light into circuit when the actinic light is thrown out of circuit, an actinic electric light of different power, means for throwing the same into circuit and for throwing said first mentioned actinic light out of circuit and vice versa, and means for operating said pressure-roller and said switch.

4. In a photographic printing apparatus, the combination of a frame having a negative support, a two-part pressure back that is rigid when in the pressure position and is hinged at one end to the support and composed of two parts hinged rigidly together, means for automatically throwing said pressure-back away from the negative support, a roller-carrier, a spring-supported pressure-roller carried thereby adapted to roll along said pressure-back to close the same upon the negative support and to press said pressure-back against the same, a spring-actuated roller upon said frame, a flexible band therefrom to said pressure-roller for rotating and retracting the same, a flexible band attached to the frame and wound on said pressure-roller oppositely to the first mentioned band, an actinic electric light, a non-actinic electric light, a source of electric current, a switch for throwing said actinic light into circuit when the non-actinic light is thrown out of circuit and for throwing the non-actinic light into circuit when the actinic light is thrown out of circuit, and means for operating said pressure-roller and said switch.

5. In a photographic printing apparatus, the combination of a frame having a negative support, a two-part pressure-back that is rigid when in the pressure position and is hinged at one end to the support by a yielding connection, means for automatically throwing said pressure-back away from the

negative support, a roller-carrier, spring means for moving the same in one direction, a spring supported pressure-roller carried by said carrier and adapted to roll along said pressure-back and to close the same upon the negative support and to press the pressure-back against the same, a yielding connection between said pressure-roller and said carrier, a spring-actuated roller upon said frame, a flexible band therefrom to said pressure-roller for rotating and retracting the same, a flexible band attached to the frame and wound on said pressure-roller oppositely to the first mentioned band, and means for operating said roller-carrier.

6. In a photographic printing apparatus, the combination of a frame having a negative support, a pressure-back pivoted to said frame, actuating means for moving said pressure-back toward and from the support, an actinic light, a non-actinic light, and means operated by said actuating means for automatically and alternately turning said two lights off and on when the pressure-back is against the negative support or away from it.

7. In a photographic printing apparatus, the combination of a frame having a negative support, a pressure-back hinged at one end to the support by a yielding connection, a yielding pressure-bar for pressing the other end of the back toward the support, means for automatically moving said pressure-back away from the support, and an oscillating pressure-bar for turning said pressure-back on its hinge and for pressing it toward the same.

8. In a photographic printing apparatus, the combination of a frame having a negative support, a pressure-back connected to the support by a yielding connection, a yielding pressure-bar for pressing the back toward the support, means for automatically moving said pressure-back away from the support, and an oscillating pressure-bar for turning said pressure-back toward the support and for pressing it toward the same.

9. In a photographic printing apparatus, the combination of a frame having a negative support, a pressure-back that is rigid when in the pressure position and is hinged at one end to the support by a yielding connection, a spring-supported yielding pressure-bar for pressing the other end of the back toward the support, means for automatically moving said pressure-back away from the support, and means for operating said pressure-bar.

10. In a photographic printing apparatus, the combination of a frame having a negative support, a pressure-back that is rigid when in the pressure position and is hinged to the support by a yielding connection, a spring-supported yielding pressure-bar for tilting the back on its hinge and for pressing the back toward the support, means for

automatically moving said pressure-back away from the support, and means for operating said pressure-bar.

11. In a photographic printing apparatus, the combination of a frame having a negative support, a two-part pressure-back having its rear part hinged at one end to the support and in which two flat, rigid parts are hinged together, means for automatically moving said pressure-back from the support, and means for turning said rear part on its hinge, whereby it clamps part of the positive material against the negative, and then for turning the other part on its hinge whereby it clamps the remainder of said positive material against the negative.

12. In a photographic printing apparatus, the combination of a frame having a negative support, a two-part pressure-back that is rigid when in the pressure position and is hinged at one end to the support, means for automatically moving said pressure-back from the support, and reciprocatory means having a path of movement along the pressure back for turning said pressure-back on its hinge, whereby one part thereof clamps part of the paper against the negative and then the other part clamps the remainder of said paper against the negative.

13. In a photographic printing apparatus, the combination of a frame having a negative support, a pressure-back that is rigid when in the pressure position and is hinged to the support and comprising means for

clamping part of the printing paper to the support and then for pressing the remainder of the paper against the same, means for automatically moving said pressure-back from the support, and reciprocatory means having a path of movement along the pressure-back for moving said pressure-back toward the support and for pressing it toward the same.

14. In a photographic printing apparatus, the combination of a frame having a negative support, a pressure-back that is rigid when in the pressure position and is hinged to the support, means for automatically moving said pressure-back from the support, and reciprocatory means having a path of movement along the pressure-back for moving said pressure-back on its hinge and for pressing it toward the same.

15. In a photographic printing apparatus, the combination of a frame having a negative support, a pressure-back that is rigid when in the pressure position and is yieldingly connected to the support, means for automatically moving said pressure-back from the support, and spring-yielding reciprocatory means having a path of movement along the pressure-back for moving said pressure-back toward the support and for pressing it toward the same.

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Witnesses:

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