

G. R. OLSON.

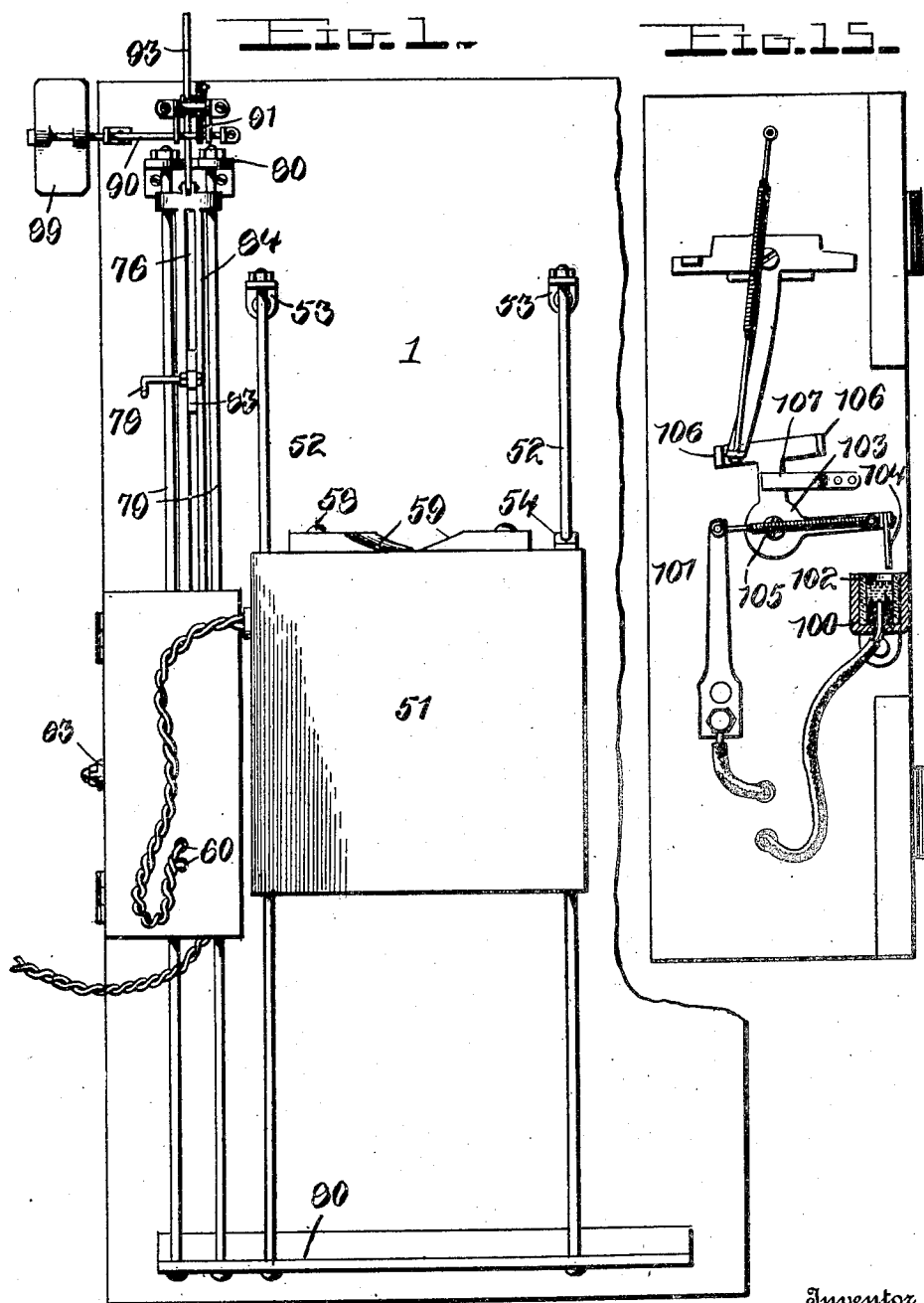
PHOTOGRAPHIC PRINTING MACHINE.

APPLICATION FILED JULY 13, 1910.

1,013,950.

Patented Jan. 9, 1912.

7 SHEETS-SHEET 1.



Inventor

G. R. Olson,

Witnesses

Chas. L. Griebauer.
A. F. Parway

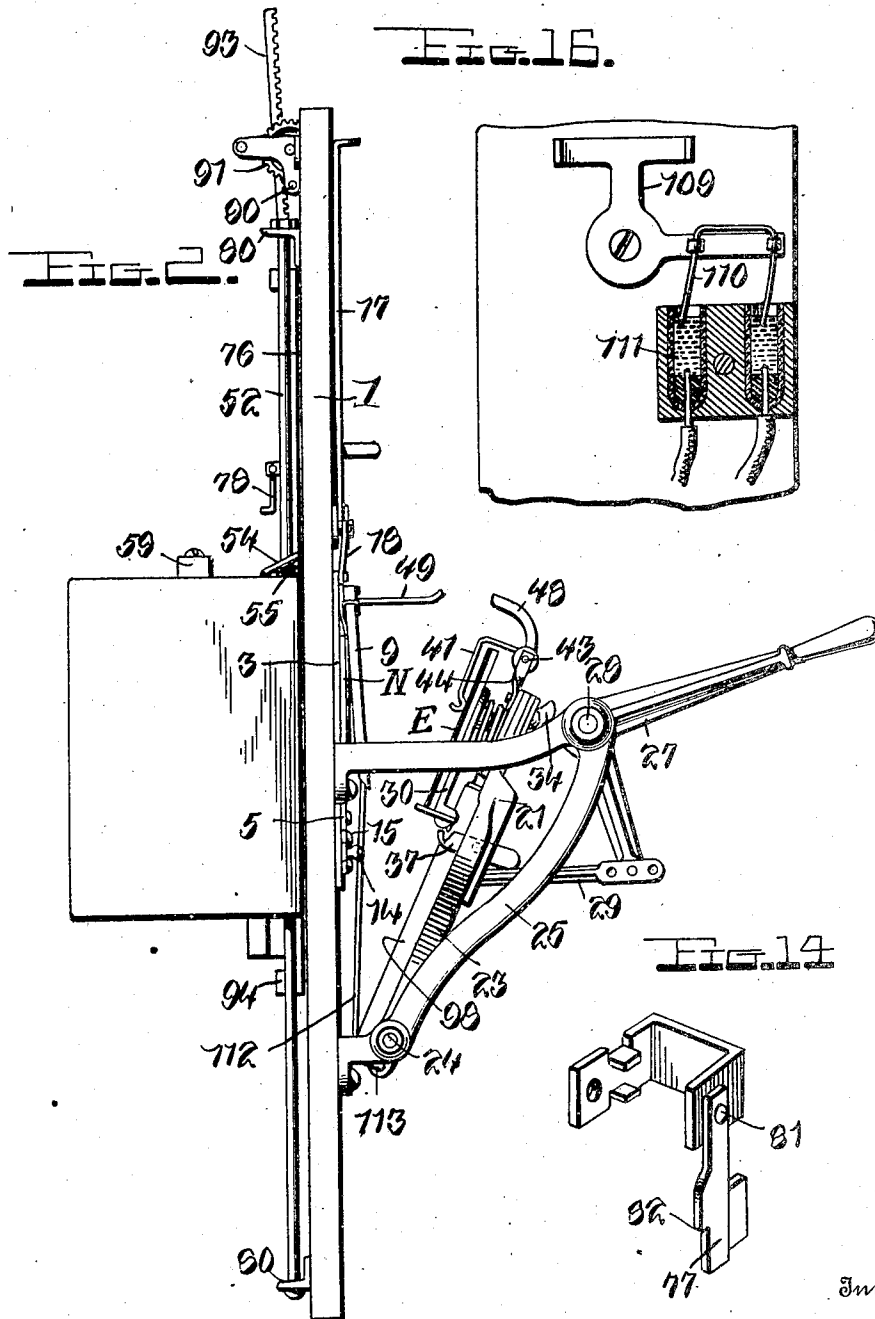
By Watson & Coleman.
Attorney

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7 SHEETS-SHEET 2.



Witnesses

Chas. L. Grisbauer.
A. F. Harvey

G. R. Olson,

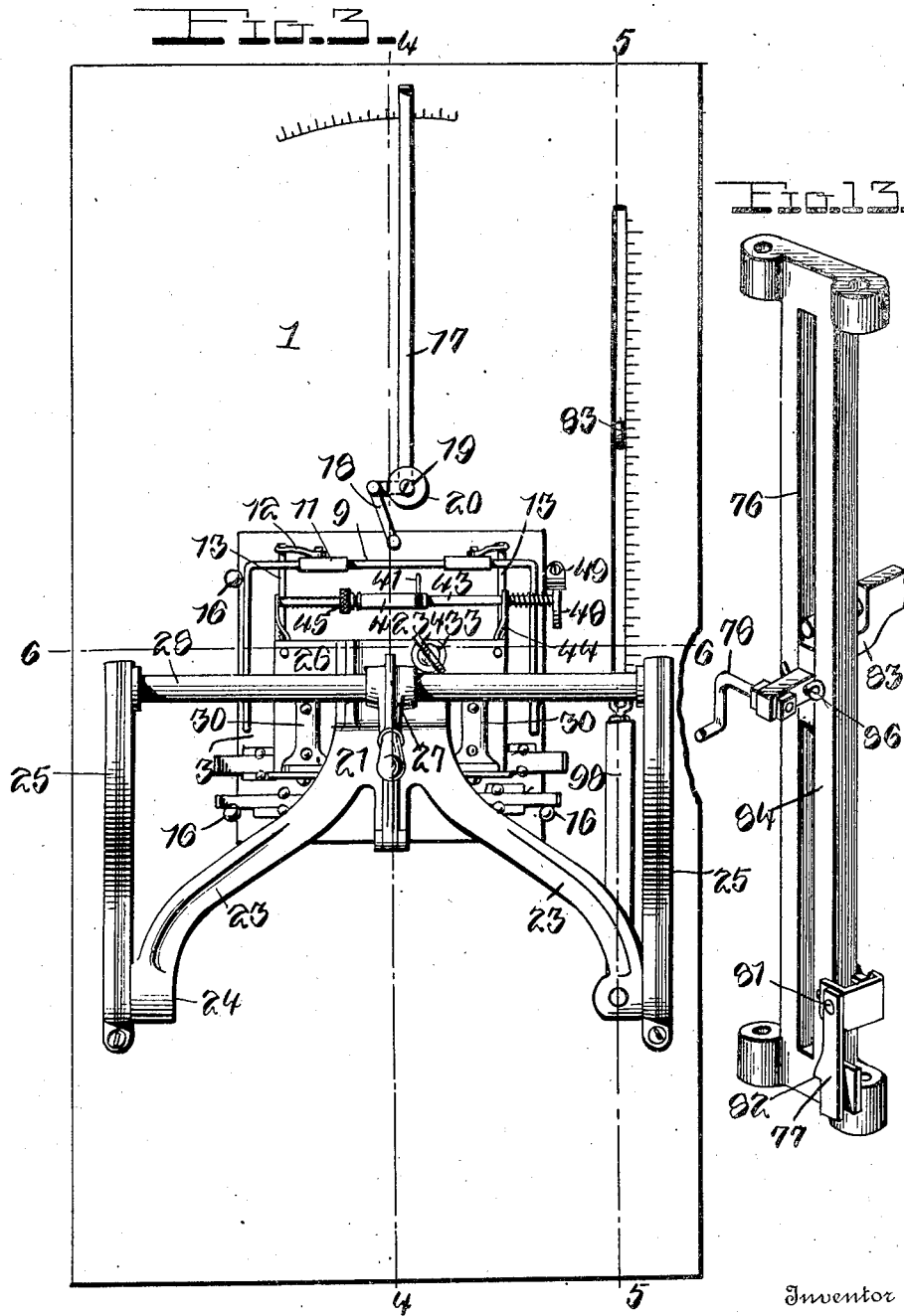
By Watson E. Coleman
 Attorney

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7 SHEETS—SHEET 3.



Inventor

G. R. Olson,

Witnesses

Chas. L. Griebauer.
 A. F. Garvey.

By

Watson E. Coleman.
 Attorney

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G. R. Olson,

Witnesses

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Chas. L. Griebauer.
A. F. Garway.

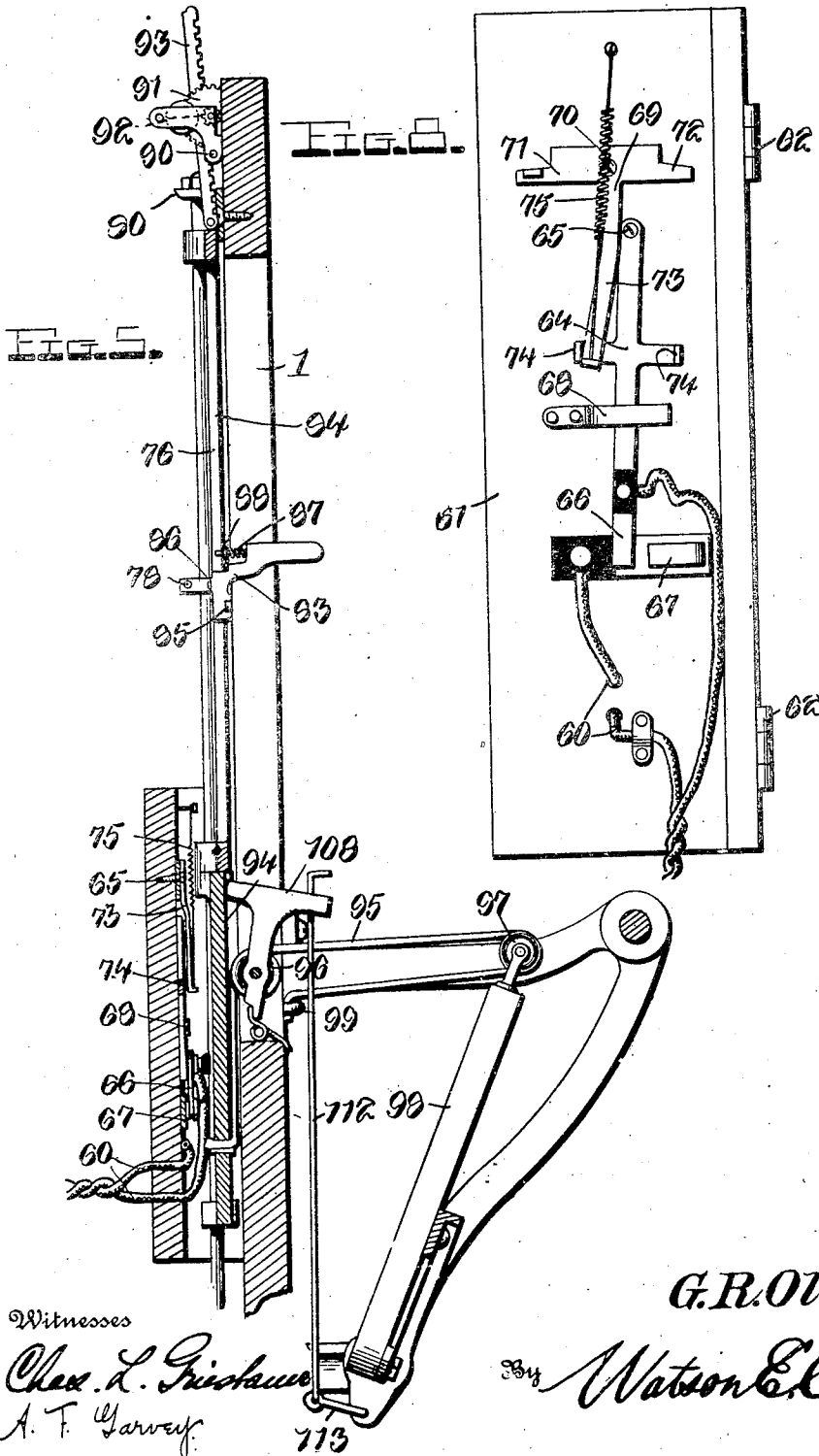
By

By *Watson E. Coleman.*
Attorney

G. R. OLSON.
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 7 SHEETS—SHEET 5.

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Inventor

G. R. Olson,

By *Watson E. Coleman*
 Attorney

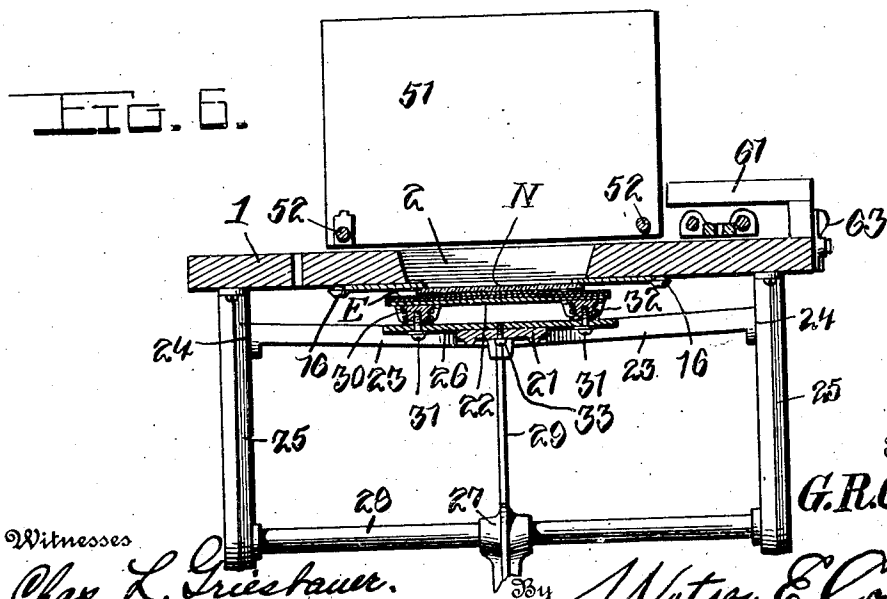
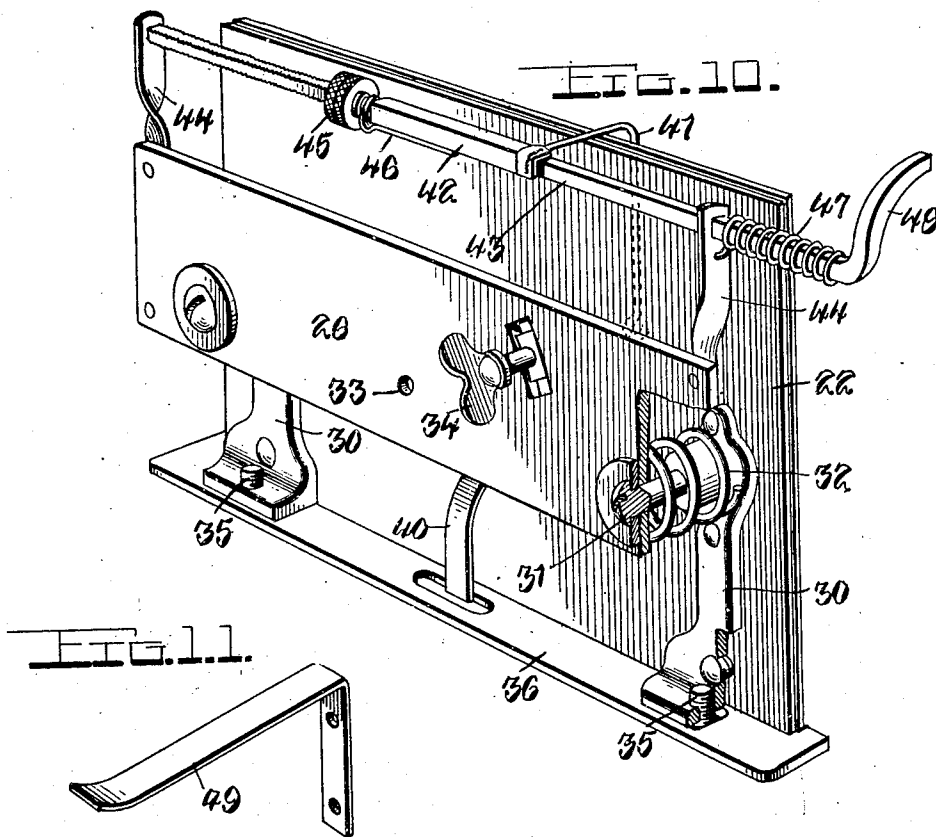
Witnesses

Chas. L. Fisk
A. T. Garway

G. R. OLSON.
 PHOTOGRAPHIC PRINTING MACHINE.
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Patented Jan. 9, 1912.
 7 SHEETS—SHEET 6.

1,013,950.



Witnesses

Chas. L. Griesbauer.
 A. F. Barway

Inventor

G. R. Olson,

Watson E. Coleman.
 Attorney

G. R. OLSON.
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7 SHEETS—SHEET 7.

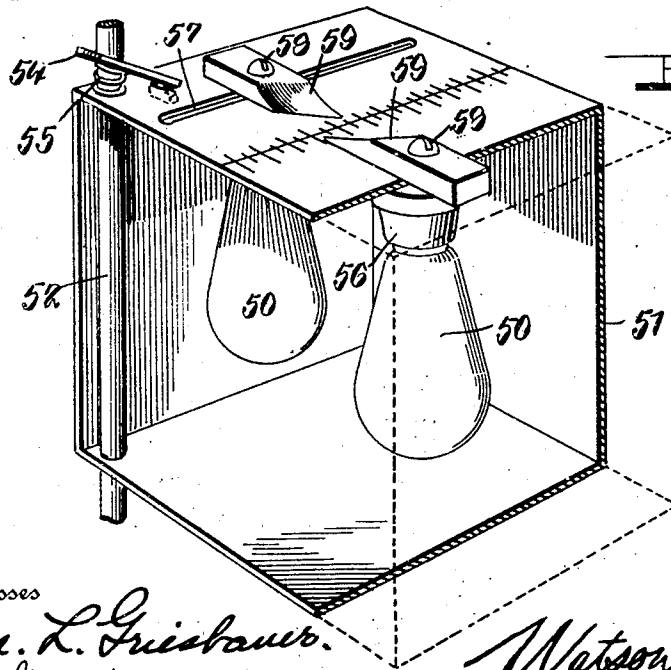
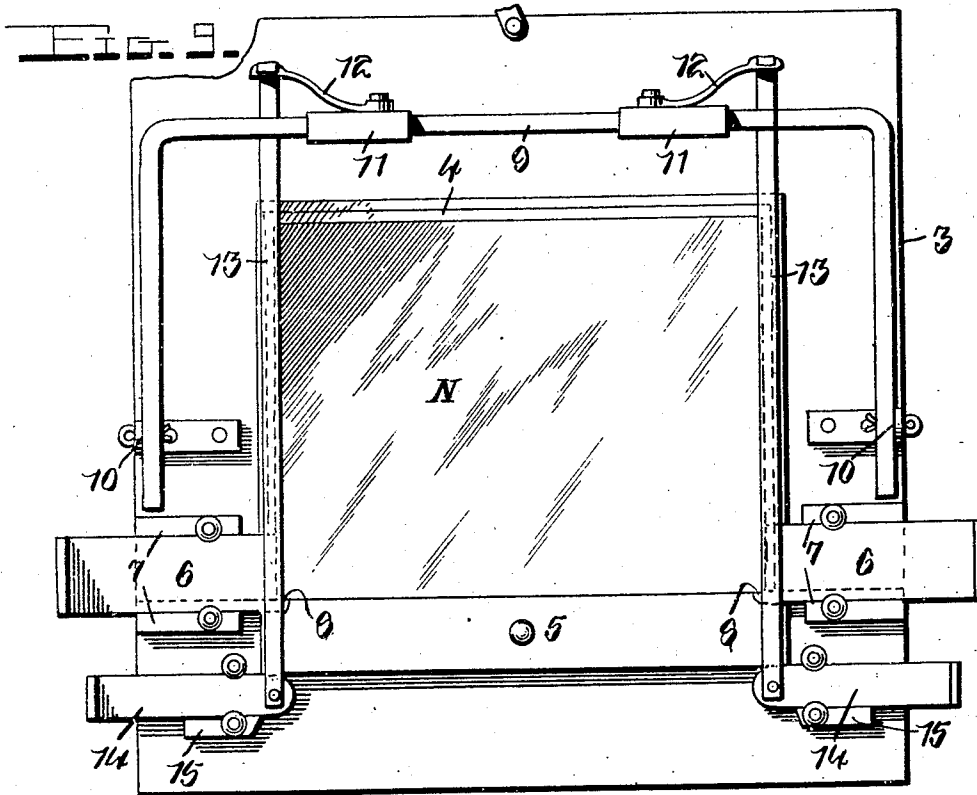


Fig. 7.

Inventor

G. R. Olson.

Witnesses

Chas. L. Griebauer.
 A. F. Parvey.

Watson E. Coleman,
 Attorney

UNITED STATES PATENT OFFICE.

GUSTAVE R. OLSON, OF PLATTSMOUTH, NEBRASKA.

PHOTOGRAPHIC-PRINTING MACHINE.

1,013,950.

Specification of Letters Patent.

Patented Jan. 9, 1912.

Application filed July 13, 1910. Serial No. 571,746.

To all whom it may concern:

Be it known that I, GUSTAVE R. OLSON, a citizen of the United States, residing at Plattsmouth, in the county of Cass and State of Nebraska, have invented certain new and useful Improvements in Photographic-Printing Machines, of which the following is a specification, reference being had to the accompanying drawings.

10 This invention relates to improvements in photographic printing machines or apparatus of that class used for printing a number of photographs from the same negative with a uniform exposure.

15 One object of my present invention is to provide a simple and practical automatic machine of this character in which the printing will be done by the aid of an electric lamp or lamps, of any suitable form.

20 Another object of my invention is to provide an improved light box or support having means for adjustably mounting it and carrying adjustably mounted electric lamps whereby the lamps may be positioned closer to or farther from the negative and opposite different portions of the negative for an obvious purpose.

Another object of the invention is to provide improved means for opening and closing the electric circuit of the lamp or lamps.

30 With the above and other objects in view, the invention consists of the novel features of construction and the combination and arrangement of parts hereinafter fully described and claimed and illustrated in the accompanying drawings in which—

Figure 1 is a front elevation of my improved electric photograph printing machine. Fig. 2 is a side view of the same. 40 Fig. 3 is a rear view. Figs. 4 and 5 are vertical sectional views taken respectively on the planes indicated by the lines 4—4 and 5—5 in Fig. 3. Fig. 6 is a horizontal sectional view taken on the plane indicated by the line 6—6, Fig. 3. Fig. 7 is a sectional perspective view of the light support or box. Fig. 8 is a detail view of the knife switch. Figs. 9 to 14 are detail views of parts. Fig. 15 is a detail view showing another form of switch which may be used instead of the knife switch, and Fig. 16 is a detail view of still another form of switch.

55 In the drawings, 1 denotes a suitable support preferably in the form of a flat upright member or plate having an opening 2 through which light is admitted to a nega-

tive N. The negative is carried by a vertically adjustable holder 3, in the form of a rectangular plate mounted for sliding movement and having an opening which may be covered by the negative or by a glass plate 4. When the negative is of sufficient size to cover the opening in the slide or holder 3, the plate 4 may be dispensed with, and the negative may be placed on a horizontal supporting ledge 5 formed on the plate or holder 3, by securing thereto a strip of metal. When smaller negatives are placed in the machine, they are supported on adjustable slides 6, as shown in the drawing, and they rest against the glass plate 4, which latter is then supported on the ledge 5. The negative supporting slides 6 are arranged for horizontal sliding movement in under-cut guides 7, and their inner corners are notched as shown at 8 for the reception of the lower corners of the negative.

The negative, or both the negative and the plate 4 are held in position by a spring retaining device consisting of an inverted U-shaped member 9 having its arms pivoted adjacent their ends as shown at 10, in angle brackets on the holder 3, whereby the extremities of said arms will serve as stops to limit the swinging movement of the member 9. The upper cross bar of the latter has slidably mounted on it, two sleeves 11, carrying springs 12 for two retaining strips 13 which are adapted to extend across the end portions of the negative or plate, and retain the same in position. The springs 12, are secured at one end to members 11 and have their other free ends notched to receive hooks or eyes on the upper ends of the retaining strips 13. The lower ends of these strips are connected to two adjusting slides 14 arranged in undercut guides 15, on the lower portion of the holder 3. The slides 14, are arranged for horizontal sliding movement, and have at their outer ends finger pieces whereby they may be moved inwardly or outwardly to position the retaining strips or springs 13, opposite the end portions of the negative.

The negative holder or slide 3, is retained and guided on the support or body 1, by having its side edges slidably engaged with headed guide lugs or pins 16. This holder is adjusted and supported by a lever 17, in the form of a bell crank fulcrumed at its angle on the central or upper portion of the support 1, and having its short arm con-

connected by a link 18, to the holder 3. The long upwardly projecting arm of the lever 17 is bent to provide a handle and it co-acts with scale graduations provided on the support 1, for the purpose of indicating the adjustment of the negative holder or slide. The lever 17 is frictionally retained in adjusted position by making its fulcrum in the form of a clamping screw 19, and ranging beneath the head of the latter, a friction plate or washer 20, adapted to bear against the angular portion of the lever.

21 denotes a movable platen for supporting a piece of photographic printing paper or any other sensitized sheet or element E, and holding the same against the negative during the exposure. This platen is pivoted for swinging movement and carries a pressure back 22, on which the sensitized element is supported. The platen is preferably composed of an inverted Y-shaped casting formed with outwardly and downwardly diverging arms 23 which are pivoted at 24 to brackets 25 secured to the rear side of the support 1. The small upper portion of the Y-shaped member or casting has secured to it a transverse plate 26 adapted to support the pressure back 22. The platen is actuated by a hand lever 27, in the form of a bell crank fulcrumed at its angle on a transverse pivot rod 28 supported by the brackets 25. The short depending arm of the lever 27 is connected by a link 29 to a slotted intermediate portion of the platen member 21.

The pressure back 22 is in the form of a metal plate which may have its inner face covered with a sheet of rubber or other cushioning material if desired, while on its outer or rear face are secured, two angular brackets 30, the upper portions of which receive and support guide pins 31, in the form of screws. These pins or screws 31 extend through and slide in the end portions of the cross plate 26, and surrounding them are coil springs 32 to yieldably support the pressure back away from the main portion of the platen. To permit the pressure back to be adjusted angularly with respect to the main portion of the platen, the cross plate 26 is pivoted at its center as shown at 33, to the member or casting 21, and a clamping screw 34 (Fig. 6) is carried by the latter and works in an arcuate slot formed in the cross plate 26.

For the purpose of holding the sensitized element E on the pressure back, a retractable bottom support is provided, and mounted for sliding movement on guide pins 35, said retractable bottom support being in the form of a metal plate extending longitudinally along the bottom of the pressure back and having slots for the reception of the guide pins 35. These pins 35 are preferably in the form of screws threaded into the lower

ends of the angle brackets 30. The bottom support 36 is adapted to be automatically retracted when the platen is swung away from the negative so that the exposed element E may drop out of the machine, and in order to retract said support or plate 36, a latch lever 37 is fulcrumed intermediate its ends as shown at 38 in the slotted portion of the platen member or casting 21. The inner end of the lever 37 is hook-shaped for engagement with a shoulder 39 forward on the latter by stamping out a portion of it. A leaf spring 40 secured to the rear face of the pressure back, has its lower free end bearing in the opening formed by striking out the shoulder or tongue 39, the purpose of the spring being to project the bottom support 36 when the hook-shaped end of the latch lever 37 disengages the shoulder 39. The outer or rear end of the latch lever 37 is of greater weight than its hook-shaped inner end, so that when the platen is swung toward the negative, the hook-shaped end of the latch lever will engage the shoulder 39. Consequently when the platen moves away from the negative, the latch lever will hold the bottom support in retracted position so that the exposed element E will drop from the machine. The outer or rear end of the latch lever is so constructed that it will engage and be actuated by the link 29, when the platen has been retracted a predetermined extent, thereby causing the latch lever to automatically release the bottom support 36, after the element has dropped from the pressure back.

41 denotes a retractable side stop carried by the platen and against which one vertical edge or end of the sensitized element E is placed, when said element is placed on the pressure back and dropped on the retractable bottom support 36. This side stop 41 is in the form of a swinging arm fixed to a sleeve 42, which slides on a flat faced portion of a rock shaft 43, the latter being journaled in brackets 44 on the ends of the cross plate 26. The sleeve 42 is shiftable longitudinally of the shaft 43, for the purpose of positioning the stop arm 41, at different points across the length of the pressure back, according to the size of the negative and the element E. This adjustment is preferably effected by screw threading a portion of the shaft 43 to receive a nut 45, which latter has a swiveled connection with the sleeve 42, by securing to said sleeve a hook-shaped member 46, adapted to extend into an annular groove in the milled nut 45. The rock shaft 43, is actuated in one direction by a coil spring 47 arranged upon it as shown in the drawings, and said shaft is actuated in the other direction or against the tension of the spring 47 by providing on one end of the shaft an arm 48 adapted to engage a stationary cam-trip 49, in the form

of an angle bracket projecting from the support 1. The parts just mentioned are so constructed that when the platen is retracted or swung away from the negative, the spring 47 presses the side stop arm 41 against the inner face of the pressure back, and when said platen is swung toward the negative, the arm 48 swings against the stationary bracket arm or cam 49, so that the latter causes the arm 48 to rock the shaft 43 against the tension of the spring 47, and in a direction to retract the stop arm 41.

Light is supplied to the negative during the exposure by one or more electric lamps 50, which may be incandescent, arc or any other type of electric lamp, and which are arranged in a box or other support 51 adapted to serve also as a reflector. The support 51 is here shown in the form of a rectangular box of sheet metal having an open side turned toward the opening 2 in the support 1, and arranged for vertical movement on the front side of the support 1, whereby the lamps may be positioned opposite different portions of the negative. This mounting of the box or support 51 is preferably effected by mounting it on guides in the form of upright rods 52, having their upper ends secured to angle brackets 53, and their lower ends arranged on the support 1. Openings are formed in the top and bottom portions of the box 51, for the guide rods 52, and in order to retain the box in adjusted position, at any desired elevation, on the rods 52, a locking member or dog 54 is provided. This locking member is in the form of a plate having one end pivotally or hingedly connected to the top of the box and its other end formed with an opening to receive one of the rods 52, whereby the frictional engagement of the plate or member 54 with said rod will securely hold the box in adjusted position. To render the gripping action more effective, a coil spring 55 is preferably placed beneath the member or dog 54 to throw its free end upwardly. To release this gripping member or dog 54, it is only necessary to lift the box 51 slightly and press downwardly on the free portion of the member 54 whereupon the box may be raised or lowered and when released, will be locked. The loose hinge connection between the member 54 and the box is preferably effected by making said member with a hook-shaped extremity which engages a slot or elongated opening in the top of the box.

The lamps 50 are mounted for movement toward and from the negative, and when these lamps are in the form of incandescent electric lamps as illustrated in the drawings, their sockets 56 are slidably mounted, preferably in the top of the box, by providing said top with slots 57 for the reception of guide pins 58 projecting outwardly from the sockets 56. To indicate the adjustment

of the lamps 50, pointers 59 are arranged on the projecting upper ends of the pins or bolts 58, and scale graduations are provided on top of the box along the slots 57 as illustrated.

The electric lamps are included in a circuit 60 which also includes a suitable switch, and a suitable source of electric current supply. The switch shown in Fig. 8 is in the form of a knife switch and is mounted on a swinging support 61 of angular shape hinged at 62 to one side of the main support or body 1, and adapted to swing toward and from a timing mechanism which will be hereinafter described, and which automatically operates the switch. To retain the support or casing 61 in position along side of the box 51, and over the timing mechanism, a turn button or other fastener 63 may be provided on the adjacent edge of the main support 1. The knife switch comprises a swinging knife member 64, pivoted at one end as shown at 65 and having at its other end a knife contact blade 66, adapted to enter a yieldable contact fork 67, on a contact plate secured to the support 61, and provided with a binding post to which latter is connected one of the conductors of the circuit 60. The other conductor of the circuit is connected to a binding post on the switch member or knife 64. A tension spring 68 has one end fixed to the support 61, and its free end bearing on the switch member 64 to retain the latter in adjusted position. The switch member 64 is shifted to make and break the circuit by means of a trigger 69, which is in the form of a T-shaped lever fulcrumed at its angular portion as shown at 70. The cross portions of this T-shaped lever form oppositely projecting arms 71, 72, adapted to be engaged and actuated by trips hereinafter described, and the third branch or arm 73 of the lever 69, is adapted to actuate the switch knife or member 64. Said third arm 73 is adapted to strike against two angular stop arms 74, on the intermediate portion of the switch member 64, and it is actuated in both directions or on either side of the vertical plane of the pivot 70 by a coil spring 75, one end of which is connected to the lower end of the arm 73, and the other end of which is fixed to the support 61, above the pivot 70.

The timing mechanism comprises a vertically slidable timing member 76 adapted to drop by gravity and carrying lower and upper trips 77, 78, to successively engage and actuate the arms or portions 71, 72 of the trigger. The timing member 76 is preferably in the form of a heavy bar and is mounted for vertical movement by forming its upper and lower ends with guide lugs to receive spaced upright guide rods 79, mounted in angle brackets 80 on the upper and lower portions of the support 1. The

lower trip 77, which is adapted to close the switch to complete the electric circuit is carried by the lower end of the slidable timing member or bar 76, and is in the form of a dog pivoted at 81, and having its lower free end formed with a notch or shoulder 82 to engage the arm 71 of the trigger 69. Said lower end of the dog or trip 77 is weighted so that the shoulder 82 will be held normally in the path of the arm 71, and by pivotally mounting said dog, it is permitted to pass the arm 71, when the timing member is elevated or retracted, the said shoulder having an inclined face which forms a cam which, by engagement with the arm 71, moves the dog or trip to one side out of the path of the arm on the downward movement of the latter.

The upper trip 78 is adapted to actuate the switch to break the circuit and thereby terminate the exposure, and said dog is adjustably mounted on the timing member 76 so that the length of the exposure may be varied. As illustrated, said trip 78 is in the form of an angular bracket arm bolted or otherwise secured at one of its ends to a member 83, and having its other end arranged in the path of the arm 72 of the trigger 69. Said member 83 is in the form of a lever adjustably fulcrumed in a longitudinal slot 84 formed in the slidable timing member or bar 76, said lever 83 extending through a vertical slot in the main support 1, and having its handle end arranged within convenient reach of the operator. Said lever 83 is substantially triangular in shape, one of its ends forming the said handle, another end projecting through the slot 84 and carrying the trip 78, and its third end being formed with oppositely projecting pivot lugs 85 to slidably engage one side of the timing member or bar. The lever is adapted to swing on the pivot or fulcrum lugs 85, and its swinging movement is limited by a stop pin 86, arranged in its end or arm which carries the trip 78. A coil spring 87 is arranged on a guide pin and between the handle end of the lever 83 and a washer or metal plate 88, which latter is carried by said guide pin for the spring and is arranged to slide against the timing member or bar whereby said spring will maintain the stop pin 86 and the lugs 85 in engagement with opposite sides of the timing member or arm to frictionally lock the lever in adjusted position. It will be seen that when the handle end of the lever is pressed inwardly or upwardly, the lever will rock on the pivot lugs 85 to swing the stop pin 86 away from the timing member whereupon said lever may be moved vertically to adjust it relatively to the trip 77. When the lever is released, the spring 87 will frictionally lock it in adjusted position. Scale graduations are preferably

provided on the rear face of the support 1, along the slot therein to indicate the adjustment of the movable trip 78.

The downward movement of the timing member or bar 76 may be retarded by any suitable means, but I preferably employ a retarding fan 89 having its shaft 90 suitably journaled upon and projecting laterally from the upper portion of one side of the support 1, and connected by a train of gears 91 to a pinion 92 which meshes with a vertically extending rack bar 93; the latter having its lower end fixed to the upper extremity of the timing member or bar 76. The train of gears 91, may be arranged in a recessed portion of the support 1, and includes a pawl and ratchet device whereby the rack bar 93 may be readily moved upwardly without rotating the fan 89, when the timing member is reset.

For the purpose of resetting the timing member or bar 76, and holding it elevated while a piece of sensitized paper is being placed on the platen, I preferably provide a resetting slide 94, which is similar to the member 76 and arranged for sliding movement beneath the latter on the parallel guide rods 79. The slide 94 has connected to it, one end of a cord or other flexible element 95 which passes over a guide pulley 96 in the slot of the support 1, and also around a pulley 97 on an arm 98 carried by one of the arms 23 of the platen casting 21, the other end of said cord being fixed at 99 to the support 1. Owing to this construction it will be seen that when the platen is swung away from the negative the movement of the pulley 97 with the platen will cause the cord 95 to draw the slide 94 upwardly and consequently elevate the timing slide or member 76. When the platen is swung toward the negative, the resetting slide 94 will drop by gravity. The timing member or slide 76 is held elevated by a spring pressed dog 108 mounted to swing from the pivot of the pulley 96. This dog may be released by any suitable means but as illustrated it is provided with an apertured end for the reception of an operating link 112. This link is connected at its lower end to an arm 113 on the platen casting 21. Owing to this construction it will be seen that when the platen is moved toward the negative the dog 108 will be retracted to release the timing member or bar.

Instead of employing the knife switch above described, I may substitute for the same, the switch shown in Fig. 15 of the drawing. In this switch I pass one terminal of the circuit through the bottom of a cup or receptacle 100 arranged on the swinging support 101, and containing mercury, and I connect the other terminal of the circuit to a switch member 103 carrying a platinum pointed contact arm 101, adapted

to dip into the mercury in the cup 100. Said cup may be of any suitable form and construction, but it preferably includes a glass tube 102 to contain the mercury, and provided with a bottom of non-conducting material through which latter the circuit wire passes.

The switch member 103 is in the form of a bell crank pivoted at its angle at 105 and having one arm carrying oppositely projecting stop arms 106 which are similar to the stop arm 74 above described, and which co-act with the switch actuating trigger. A tension spring 107 is provided to co-act with the switch member. In all other respects, the construction and operation of this switch is the same as that of the one first described, and a more detailed explanation is therefore believed to be unnecessary.

In Fig. 16 of the drawings I have shown a part of another electrical switch similar to the one shown in Fig. 15. This new switch comprises a right angular lever or bell crank 109, similar to the bell crank 103 but carrying on one of its arms, a U-shaped contact wire 110, having platinum pointed ends to dip into the mercury in two cups 111. The latter are similar to the cup 100, and the two conductors of the electric circuit extend into the mercury in said cups so that when the lever or bell crank 109 is actuated the circuit will be closed or opened.

In operation, assuming the negative has been positioned in the holder 3, and the several adjustable parts of the machine properly adjusted, when the hand lever 27 is swung upwardly, the platen will be held away from the negative so that a piece of sensitized paper may be placed on the pressure back against its bottom support 36, and side stop arm 41. When the parts are in this position, the electrical switch is open and the slide 94 holds the timing member or bar 76 in elevated position. After the paper has been placed in position on the platen, the hand lever is operated to move the platen toward the negative, at the same time the slide 94 drops and releases the timing member 76. As the latter descends, its lower trip 77 will engage the arm 71 of the trigger 69 and actuate it sufficiently to swing the lower arm 73 of said trigger across the vertical plane of the pivot 70, whereupon the spring 75 will quickly actuate the trigger in the same direction to a greater extent and cause the arm 73 to throw the switch member 64 in the same direction so that the contact blade or knife 66 will enter the resilient contact fork 67, thereby completing the electric circuit 60, and beginning the exposure. The position of the adjustable stop 78 on the timing member 76, determines the length of the exposure and when said stop 78 descends a predetermined distance it will engage and actuate the arm:

72, and move the latter in the opposite direction until the lower end of its arm 73 passes the vertical plane of the pivot 70, whereupon the spring 75 will quickly actuate the trigger to a greater extent in the same direction, and throw the switch member 64 in a direction to break the circuit, and thus terminate the exposure. After the exposure has been completed the hand lever 27 is swung upwardly to retract the platen and permit the exposed sheet of paper to drop from the pressure back.

It will be understood that when the pressure back is forced against the negative, its bottom support 30 will be retracted and caught by the latch lever so that when the platen is retracted from the negative, the bottom support will be held retracted until the latch lever is released by the link connecting the platen to the hand lever.

The light box 51 may be adjusted vertically and the light or lights may be adjusted horizontally toward or from the negative according to the nature of the latter so that the best results may be attained.

When the platen is retracted, the cord 95 will elevate the resetting slide 94 and cause the latter to in turn elevate or reset the timing member 76.

While I have shown and described in detail, the preferred embodiment of my invention, I wish it understood that I do not limit myself to the form, proportion and arrangement of parts, and the details of construction, since changes may be made within the spirit and scope of the invention.

I claim:

1. In a photographic printing machine, the combination of a support having an opening and means for supporting a negative at said opening, vertical guide rods on the side of said support opposite the negative supporting means, a box connected to the guide rods for vertical movement across the opening and open on the side next the support, means to secure said box at any desired vertical adjustment, and a lamp in and carried by the box and movable therein toward and from the support.

2. In a photographic printing machine, the combination of a support for a negative, vertical guide rods on the support, a box movable vertically on said guide rods across the negative support, a locking dog carried by the box and co-acting with one of the guide rods to support the box at any desired vertical adjustment, and a lamp in and carried by the box.

3. In a photographic printing machine, the combination of a support having an opening, an electric lamp on one side of the support and supported adjacent said opening, an electric switch in circuit with the lamp and including a movable member, a timing mechanism including a movable

member, means actuated by the movable member of the timing mechanism to operate the movable switch member, a platen on the opposite side of and movable toward and from the support and means operated by the platen to set and reset the movable member of the timing mechanism.

4. In a photographic printing machine, the combination of a support having an opening, an electric lamp adjacent said opening, an electric switch in circuit with the lamp and having a movable member, a trigger to operate the movable switch member and a timing mechanism having a movable member provided with trips to successively engage the trigger and move the latter and the movable switch member first in one direction and then in the reverse direction, and setting and releasing means for said movable member of the timing mechanism.

5. In a photographic printing machine, the combination of a support having an opening, an electric lamp adjacent said opening, an electric switch in circuit with the lamp and having a movable member, a trigger to operate the movable switch member and a timing mechanism having a movable member provided with trips to successively engage the trigger and move the latter and the movable switch member first in one direction and then in the reverse direction, setting and releasing means for said movable member of the timing mechanism, and a platen movable toward and from the opening of the support, said setting and releasing means being connected to and operated by said movable platen.

6. In a photographic printing machine, the combination of a negative support, an electric lamp, and a switch in circuit with the lamp and including a movable member, a trigger to operate the movable switch member and a timing mechanism including a movable member having trips to successively move the trigger and the switch member first in one direction and then in the reverse direction, one of said trips being adjustable toward and from the other.

7. In a photographic printing machine, the combination of a negative support, an electric lamp, a switch in circuit with the lamp and including a movable member, a trigger to operate the movable member, a timing mechanism having a movable member provided with trips to successively move the trigger and the movable switch member first in one direction and then in the reverse direction, one of said trips being adjustable toward and from the other, a movable resetting member to move the movable member of the timing mechanism to initial position, a releasing dog for the resetting member, a movable platen, means connecting the platen to the resetting member to cause the latter to move the mov-

able member of the timing mechanism to initial position when the platen is moved in one direction, and means operated by the platen when the latter moves in the reverse direction to release the dog from the resetting member.

8. In a photographic printing machine, the combination of a support having an opening, means for supporting a negative at said opening, a movable platen having means for supporting a sensitized element, and holding the same against said negative, a lamp support arranged opposite the opening in the first named support, an electric lamp carried by said lamp support, an electric switch, an electric circuit including said switch and said lamp, a timing mechanism including a movable member to operate the switch and means controlled by the movement of the platen to reset and release the movable member of the timing mechanism.

9. In a photographic printing machine, the combination of a support having an opening, means for supporting a negative at said opening, a movable platen having means for supporting a sensitized element, and holding the same against said negative, a lamp support arranged opposite the opening in the first named support, an electric lamp carried by said lamp support, an electric switch, an electric circuit including said switch and said lamp, a timing mechanism for controlling and actuating said switch, and means controlled by the movement of the platen for controlling said timing mechanism.

10. In a photographic printing machine, the combination of a support having an opening, means for supporting a negative at said opening, a movable platen having means for supporting a sensitized element, and holding the same against said negative, a lamp support arranged opposite the opening in the first named support, an electric lamp carried by said lamp support, an electric switch, an electric circuit including said switch and said lamp, a movable switch actuating member, a movable timing member, and trips carried by said timing member to successively engage and actuate said switch operating member.

11. In a photographic printing machine, the combination of a support having an opening, means for supporting a negative at said opening, a movable platen having means for supporting a sensitized element, and holding the same against said negative, a lamp support arranged opposite said opening in the first named support, an electric lamp carried by said lamp support, an electric switch, an electric circuit including said switch and said lamp, a switch operating member, a movable timing member, trips carried by the latter to successively engage and actuate said switch operating member,

and means controlled by the movement of the platen for controlling said timing member.

12. In a photographic printing machine, the combination of a support having an opening, means to support a negative at said opening, a movable platen having means to support a sensitized element and hold the same against the negative, a lamp support arranged opposite the opening in the first named support, an electric lamp carried by the lamp support, an electric switch, an electric circuit including the switch and the lamp, a switch operating member, a movable timing member, trips carried by the movable timing member to successively engage and actuate the switch operating member, one of said trips being adjustable, and means controlled by the movement of the platen to control said timing member.

13. In a photographic printing machine, the combination of a support having an opening, means for supporting a negative at said opening, a platen having means to support a sensitized element and adapted to hold the same against said negative, a light support opposite said opening, an electric lamp carried by said light support, an electric switch, an electric circuit including said

switch and said lamp, a slidable timing member for controlling said switch, a resetting slide co-acting with said timing member, a cord having one end fixed and its other end connected to said resetting slide, and a pulley engaged with said cord and carried by the movable platen.

14. In a photographic printing machine, the combination of a support having an opening, an electric lamp supported adjacent said opening, an electric switch having a movable member, an electric circuit including said switch and said lamp, a spring actuated switch operating member co-acting with said movable switch member, a slidable timing member, and trips carried by said timing member and co-acting with said switch operating member, one of said trips being relatively stationary and pivotally mounted, and the other trip being adjustably mounted with respect to the relatively stationary trip.

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

GUSTAVE R. OLSON.

Witnesses:

GEORGE TARTSCH,
GEORGE E. WEIDMAN.