W. T. OXLEY.

PHOTOGRAPHIC PRINTING MACHINE.

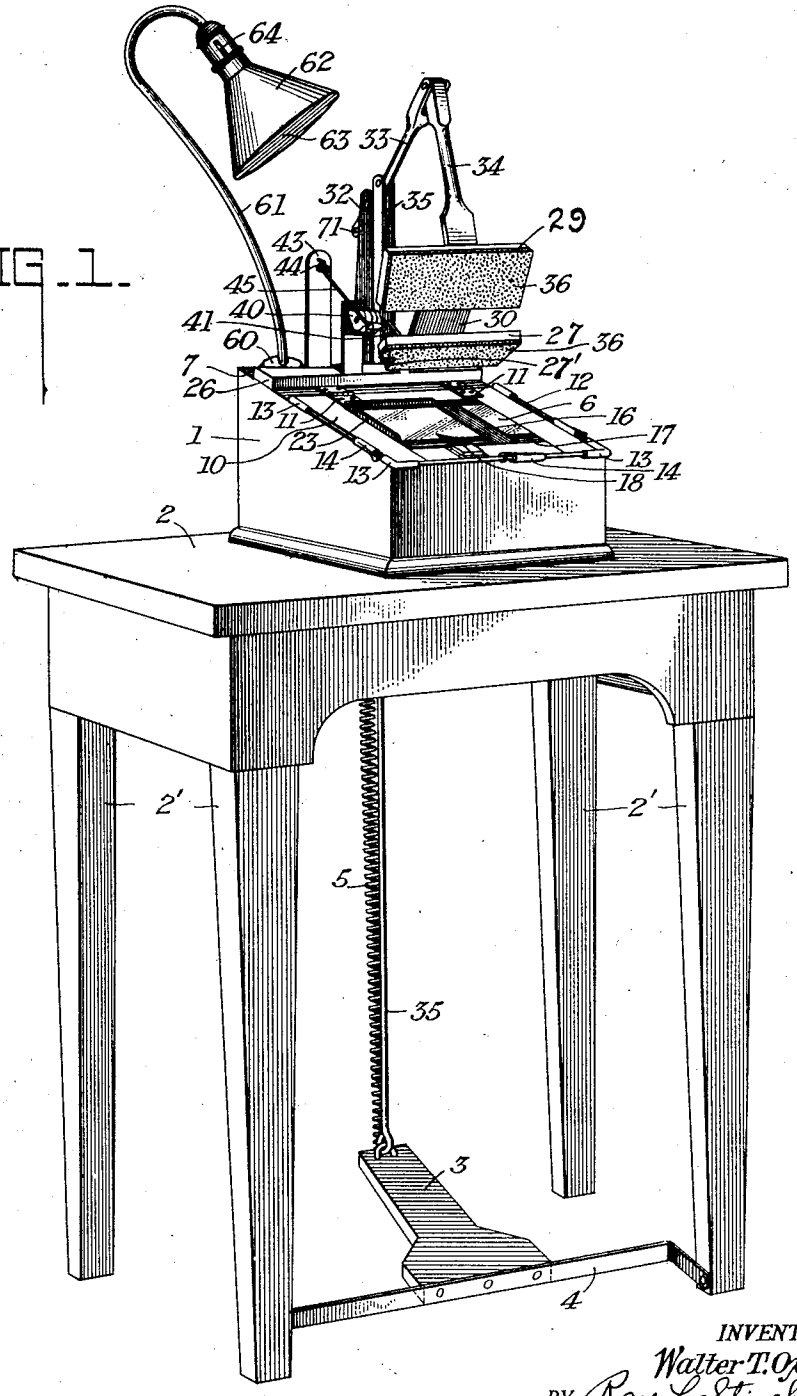
APPLICATION FILED JULY 30, 1919.

1,332,854.

Patented Mar. 2, 1920.

3 SHEETS—SHEET 1.

FIG. 1.



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3 SHEETS—SHEET 2.

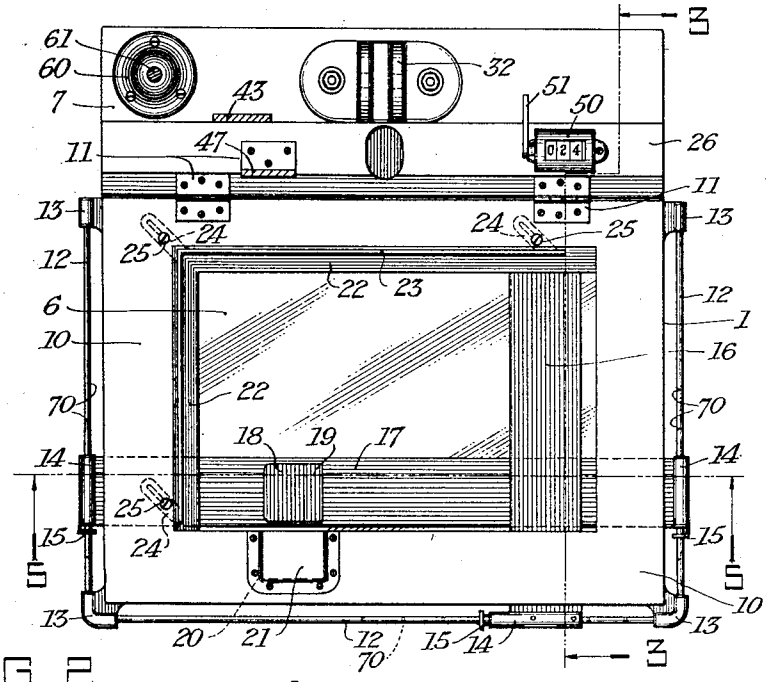


FIG. 2.

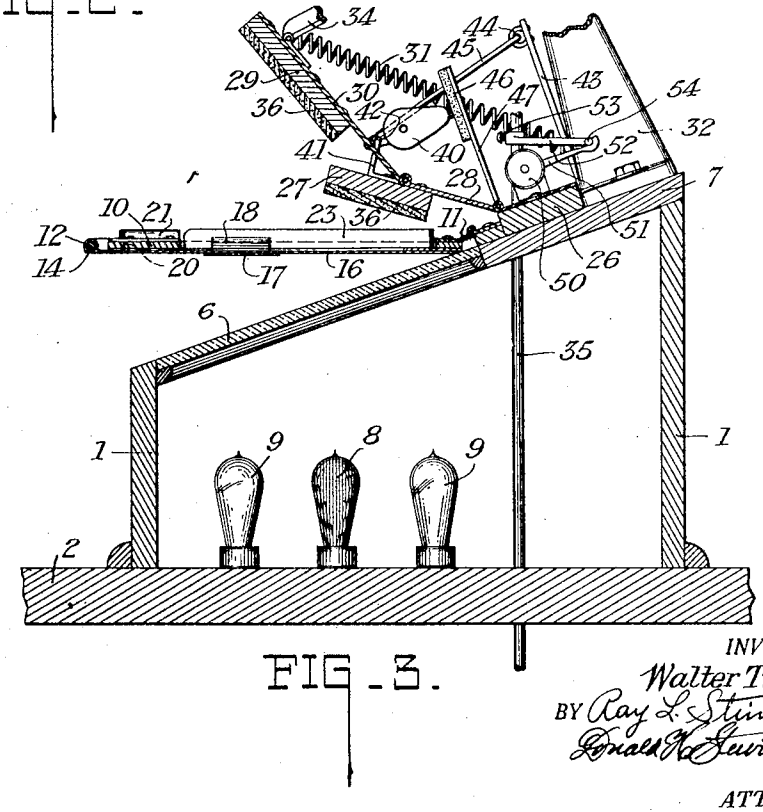


FIG. 3.

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3 SHEETS—SHEET 3.

FIG. 4.

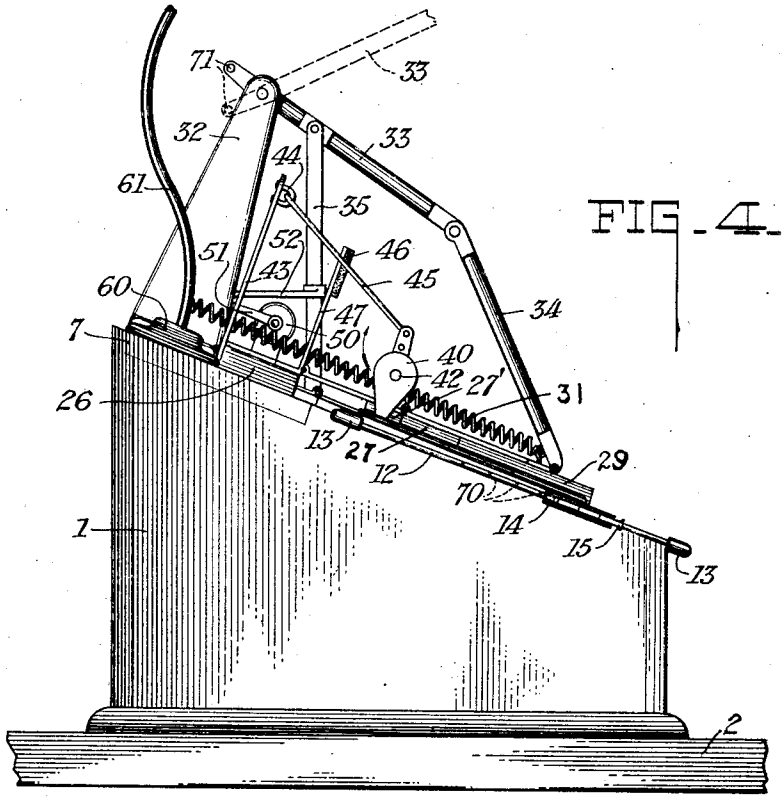
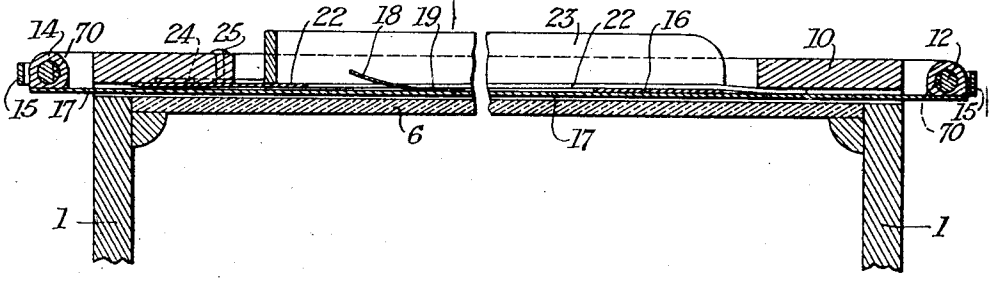


FIG. 5.



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UNITED STATES PATENT OFFICE.

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PHOTOGRAPHIC-PRINTING MACHINE.

1,332,854. Specification of Letters Patent. Patented Mar. 2, 1920.

Application filed July 30, 1919. Serial No. 314,239.

To all whom it may concern:

Be it known that I, WALTER T. OXLEY, citizen of the United States of America, residing at Fergus Falls, in the county of Otter Tail and State of Minnesota, have invented certain new and useful Improvements in Photographic-Printing Machines, of which the following is a full, clear, and exact specification.

This invention relates to photography and more particularly to photographic printing machines, and it has for its object to provide a compact, simple, durable and efficient machine for making contact prints from negatives rapidly. To these ends the improvements are directed particularly to the means for masking the negative to the desired size; means for holding either a single negative or a roll of negatives in printing position; means for clamping and discharging the paper from printing position; means for numbering each lot of prints; and means for counting the number of exposures made. With these and other objects in view, the invention consists in certain improvements and combinations of parts, all as will be hereinafter more fully described, the novel features being pointed out in the claims at the end of the specification.

In the drawings in which like characters designate the same parts:

Figure 1 is a perspective of my machine complete.

Fig. 2 is a plan view of the masking member and lamp house, the platen and platen operating levers being removed.

Fig. 3 is a section on line 3—3 of Fig. 2, showing also in section the platen and platen operating mechanism.

Fig. 4 is a side elevation of the lamp house and mechanism mounted thereon.

Fig. 5 is a section through line 5—5 of Fig. 2.

This printing machine is preferably of the type in which a light-tight box bearing a translucent frame is mounted on a table, a foot treadle operating the platen and lamps, leaving the operator's hands free to manipulate the masking members, negatives, paper, etc. I have illustrated a preferred form in the drawings where a lamp house 1 is mounted on a table 2, supported by legs 2′ of convenient height. To the front legs 2′ there is hingedly connected a foot treadle 3 by an iron strap 4, the foot treadle being normally held in raised position by a spring 5, fastened at one end to the under side of the table top 2 and at the other end to the foot treadle 3.

The lamp house 1 is preferably constructed with the back higher than the front as illustrated, thereby making the various parts more accessible. A glass panel 6 is mounted in the forward side of the top 7 of the lamp house, the glass being made flush with the top 7 as best illustrated in Fig. 3. A pilot lamp 8 and printing lamps 9 are mounted in the box, and electrically connected preferably, so that the pilot lamp is lighted when the platen is raised and the printing lamps when the platen is lowered. I have not shown a wiring diagram for this arrangement since it is well known in the art.

The masking device is mounted on the top 7 of the lamp house, being hinged at the rear of the glass panel 6, so that it may be easily and quickly raised to insert and adjust a negative between the source of light 9 and the mask. The masking device consists of a frame 10 hinged at 11 to the top 7. This frame 10 carries a rod 12 around three sides just beyond their edges, the ends and corners of the rod being confined by small castings 13. This insures correct alinement, since to produce accurate margins around prints requires substantial and carefully made parts. These rods or runners 12 carry castings 14, bored out to slide smoothly on the rods, and preferably provided with spring latches 15 adapted to hold the castings 14 in certain positions determined by the standard dimensions for prints; small notches 70 in the rods serving to hold the latches 15 against accidental displacement. The vertical masking member comprises a thin metal sheet 16 fastened to a casting 14. The horizontal masking member is also a thin metal band or strip of sheet metal 17 fastened to castings 14 mounted on the rods to either side of the frame 10. On one of the masking members, preferably the horizontal one as shown, a spring ejector 18 is mounted by soldering, riveting or otherwise, along one edge 19 as shown in Fig. 5.

The advantage of placing the ejector 18 on a movable mask member is that as it moves with the mask for the various sized sheets of paper to be printed upon, it engages substantially the same area of any of

the various sized sheets; whereas if placed on a stationary part, it would not operate satisfactorily with sheets of paper of different sizes.

This spring 18 is of light metal which requires but little pressure to be pressed flat against member 17, yet is strong enough to raise a sheet of paper so that the operator can readily remove it from the machine. In order to allow a comparatively large sized print to be made utilizing substantially all of the glass panel 6, I provide a cut out portion 20 in the frame 10, which I preferably cover with a protecting cap 21 to prevent injury to spring 18 when in its lowermost position. On the opposite sides from the movable mask members 16 and 17 there is a stationary masking member 22 fastened to frame 10, preferably made in one piece in the shape of a carpenter's square or L shaped, although it may be made of several pieces. To provide a stop for the paper there is over this mask member 22 a second L shaped member 23 mounted on lugs 24 adapted to slide on pins 25 on the frame 10. It can readily be seen that this member 23 also allows the width of the margin to be varied within desirable limits. This is a useful provision since by using standard sized paper the print can be made with a uniform margin entirely eliminating trimming. The masking apparatus is self-contained and is mounted so that it may be easily raised or the parts adjusted with the minimum effort. The weight of the frame 10 and parts mounted thereon is sufficient to hold a negative between it and the glass panel 6, no latches or springs being required.

The platen or presser back of this machine is hinged to a bar 26 fastened across the back 7 of the lamp casing 1. It comprises two parts, one of which 27 is fastened to a hinge member 28 which in turn is fastened to bar 26. The outer portion of the platen 29 is hinged to a second section 30 of the hinge 28 so that the platen will move as will be hereinafter described. A spring 31 fastened to section 29 and to the top 7 of casing 1 assists in holding the platen in raised position as shown in Fig. 3, and is arranged so that when the platen is lowered (Fig. 4) the spring extends substantially parallel to the platen so that it exerts very little pull on the platen, requiring no additional effort to hold the platen in lowered position. To raise and lower the platen 27—29 the following mechanism is used; A bracket 32 is fastened to the back of top 7 to which is pivotally connected a lever 33. A lever 34 connects the end of lever 33 to platen section 29, forming a toggle joint. A rod 35 connects the outer end of the foot treadle 3 with lever 33, so that by depressing the foot treadle 3 the levers 33 and 34 lower first section 27 and then 29 of the platen, the hinge 28—30 being so arranged that a firm, even pressure can be produced over the entire surface of the paper. To secure the best results I have covered the lower side of the platens 27 and 29 with felt 36. To limit the upward movement of the platen I provide a stop 71 on the end of lever 33 which as shown in Fig. 4 contacts with bracket 32 in its uppermost position. There is a material advantage in having platen 27 press upon the glass panel 6 before section 29, since it enables the operator to hold the outer edge of a sheet of paper until the inner part is clamped to the negative by platen 27 thereby insuring proper register with the mask and negative. As the outer edge of the paper lies over the spring ejector 18, section 29 of the platen presses both paper and the ejector 18 into contact with the negative and mask member 17 respectively, when the foot treadle 3 is lowered; when released, and the platen section 29 is raised, ejector 18 raises one edge of the paper so that the operator can easily remove the paper without the usual difficulty of picking up a flat sheet from a substantially flat surface.

In order to number the prints on the back, as is generally done by amateur finishers by hand, to differentiate between the various orders, I provide an automatically operated stamp 40. Since it is usually the practice to give all the prints of one order the same number, I provide a stamp which will repeat the same number until changed, although if the occasion demanded I could use a stamp which would number the prints consecutively. The stamp 40, which is of a well known type wherein the bands carrying the numbers are manually adjusted, is mounted on platen 27 by a bracket 41 to which it is revolubly attached at 42. A support 43 is fastened at the bottom to the top 7 of the lamp house and carries at its upper end a ring 44. This support 43 is preferably made of resilient metal although it may be rigid. A link 45 connects the ring 44 to the stamp 40 just beyond the point 42 where it is pivotally connected to bracket 41. A small portion of platen is cut away at 27', Fig. 1, so the stamp can contact with the paper being printed upon. As platen 27 rises the stamp 40 will revolve about pivot 42 in the direction of arrow in Fig. 4, as link 45 will, being eccentric to the pivot 42, cause it to rotate. This movement is desirable since the stamp must be inked. An ink pad 46 is supported by top 7 on a bracket 47, which is preferably made of springy band material so that firm contact will be secured between the rubber stamp 40 and the pad 46. It can readily be seen that by making brackets 43 and 47 resilient, the platen has considerable latitude of move-

ment without resetting or adjusting the inking mechanism.

It is frequently desirable to count the prints made, and where there are large orders from one negative this a tedious job. To obviate the necessity of counting, I provide an automatic numbering machine 50 which is preferably attached to top 7. This machine 50 is of a well known type wherein a partial revolution of a shaft moves forward a number, so that the device counts one at each cycle of movement, and registers such count on a dial before a small window. I use an arm 51 attached to the operating shaft of machine 50 in such a way that each depression operates the counter. To the rod 35, which lowers the platen, is fastened an arm 52 by a set screw 53 so that the outer end 54 rests in the end of arm 51. Each time the foot treadle 3 is depressed, rod 35 moves downwardly, depressing arm 52 thereby operating the counter through arm 51, so that the number of prints can be ascertained from the dial of the counter 50. This may be set to number each order of prints, or the number of prints from a single negative, as convenient.

Operators sometimes have difficulty in having sufficient light in the printing room outside of that coming from the printing box. I have found that a lamp mounted on an adjustable rod is convenient. On the back of the top 7 there is a plate 60 supporting a flexible metal tube 61 which in turn supports a lamp shade 62. This shade is preferably of some color such as red or yellow which will pass only such light as will be safe for photographic papers. I may use a colored screen 63 over the end of the shade 62 or, if preferred, the lamp bulb (not shown) may be colored, so as to pass only the desired colored light rays. The tube 61 being flexible can be adjusted in any direction, and carries the necessary wires to the lamp. A button 64 is placed so the operator can conveniently use the lamp 60 as desired.

The operation of the machine can be most easily described by enumerating the steps necessary to make a print. Suppose a print is to be made of one negative in a strip of film. The operator raises frame 10 and lays the film over glass panel 6, adjusting the negative by means of pilot lamp 8 to the desired position and lowers frame 10 over the film. The negative having been placed so that two sides are properly masked by member 22, then masking members 16 and 17 are adjusted to suit the negative as previously described. If a half inch wide margin is desired, the margin gage 23 is moved to a position one half inch from the inner edges of mask 22. The sensitive paper is then held by the outer portion of the sheet, and is placed with the upper and left hand edges contacting with guide 22. As the foot lever 3 is depressed rod 35 causes levers 33 and 34 to lower section 27 of the platen which clamps the paper to the negative. The operator then releases his hold on the paper and section 29 being lowered by further movement of foot treadle 3 presses firmly on the other part of the negative, also pressing ejector 18 flat beneath the paper. The lamps 9 are automatically lighted when the platen is completely lowered. As the pressure on treadle 3 is released platen 29 rises, allowing ejector 18 to raise the inner edge of the paper. The operator may grasp the paper before section 27 releases the paper or afterward, as convenient. The lamps 9 are automatically extinguished and the pilot lamp 8 turned on when this platen 29 rises.

It will be seen by the foregoing description that I have a machine which can be used with the maximum speed and minimum effort; one which is well adapted for the use of the amateur, amateur finisher and the professional.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:

1. In a photographic printing machine, the combination with a panel having a printing area, a frame pivoted to the panel and operating by gravity to press against the panel so as to hold a negative in position over the printing area, and a pivoted presser back adapted to be pressed against said frame to hold a sheet of paper in position thereon.

2. In a photographic printing machine, the combination with a panel having a printing area, a frame pivoted to the panel and operating by gravity to press against the panel to hold a negative in position thereon, adjustable masks on said frame, an adjustable margin gage on the frame over one of said masks, and a presser back adapted to be pressed against said frame to hold a sheet of paper in position thereon.

3. In a printing machine the combination of a lamp housing and a transparent panel mounted therein, with a frame hinged to the lamp housing, and carrying mask members, two of said mask members being slidably connected to said frame, a fixed mask member, a margin gage adjustable over a mask member, and a platen hinged to the lamp housing adapted to cover said mask members when said platen is lowered.

4. In a photographic printing machine, the combination of a transparent panel with a frame movable relative to said transparent panel having masking members mounted thereon, a platen adapted to cover and uncover the said transparent panel and masking members, an ejector mounted on one of the masking members adapted to be operated through said platen.

5. In a photographic printing machine

the combination of a transparent panel with a frame movable relative to said transparent panel having masking members mounted thereon, a platen adapted to cover and uncover the said transparent panel and masking members, said masking members being slidable on said movable frame, an ejector mounted on one of said movable masking members, said ejector comprising a leaf spring fastened by one end to the masking member and adapted to lie flat upon said mask member when compressed by said platen, and to extend above said mask member when released.

6. In a photographic printing machine, a transparent panel, means adapted to exert pressure over a portion of said panel to hold one portion of a piece of paper firmly, and a spring positioned near said panel and tending to press outwardly therefrom so as to space another portion of such paper from said panel, to render it readily accessible, and a second pressing means arranged opposite the spring and adapted to exert pressure over a portion of the panel and against the spring, so as to hold the portion of paper adjacent the spring firmly in position against the panel.

7. In a photographic printing machine the combination of a transparent panel, with means for holding a negative over said transparent panel, means for engaging a sheet of paper to be printed upon, comprising a presser back, a paper raising means comprising a spring, the said presser back consisting of two parts, the first being adapted to clamp a portion of the paper while a portion of the paper is held spaced from said negative, the second part of said presser back being adapted to engage and release said paper raising spring, so that the paper to be printed upon may be accessible just before and just after being clamped to the negative.

8. In a photographic printing machine, a frame having a printing area, a presser back hinged to the frame, a spring connecting the frame and back and tending to hold the back away from the frame, means for moving said back into contact with the frame against the tension of the spring, the spring when the back is thus in contact with the frame being positioned substantially parallel to the frame and back so as to be in a position of only slight mechanical advantage.

9. In a printing machine of the class described, the combination of a table supporting a light transmitting panel, a platen operating over the said panel, said operating means comprising a toggle, a toggle operating rod, a foot treadle for operating the rod, and a spring to normally hold said foot treadle in raised position, a second spring normally tending to rotate the platen into a raised position, said second spring positioned to exert but little rotative force when said platen is lowered by pressure upon said foot treadle moving it against the action of said first mentioned spring.

10. In a photographic printing machine, the combination of a frame having a printing area, a platen for pressing sensitized material against the printing area, said platen being in two parts, one hinged to the frame, and the other hinged to the first mentioned part, means for exerting a downward pressure on the last mentioned platen member, a spring attached to the last mentioned platen member and to the frame, said spring operating to hold said last mentioned platen member out of contact with the frame until after the first mentioned member has contacted therewith, under the influence of the pressure exerting means.

11. In a photographic printing machine, the combination of a table carrying a lamp housing having a transparent panel in the top, with a frame carrying masking members hinged to the lamp housing, a two part platen one part of which is hinged to the lamp housing the other part being hinged to the first mentioned part, means for lowering and raising the platen, a spring connecting one of the platens to the lamp housing so that when the platens are lowered one will be brought into contact with the said transparent panel and masking members in advance of the other.

12. In a photographic printing machine, the combination of a table carrying a lamp housing having a transparent panel in the top, with a frame carrying masking members hinged to the lamp housing, a two part platen one part of which is hinged to the lamp housing the other part being hinged to the first mentioned part, means for lowering and raising the platen, a spring connecting one of the platens to the lamp housing so that when the platens are lowered one will be brought into contact with the said transparent panel and masking members in advance of the other, said spring being arranged to exert an increasing rotative movement to the said platen as the platen is raised.

Signed at Fergus Falls, Minn., this 24th day of July, 1919.

WALTER T. OXLEY.