

J. A. MEISER.
 PHOTOGRAPHIC PRINTING APPARATUS.
 APPLICATION FILED OCT. 20, 1908.

1,014,767.

Patented Jan. 16, 1912.

5 SHEETS—SHEET 1.

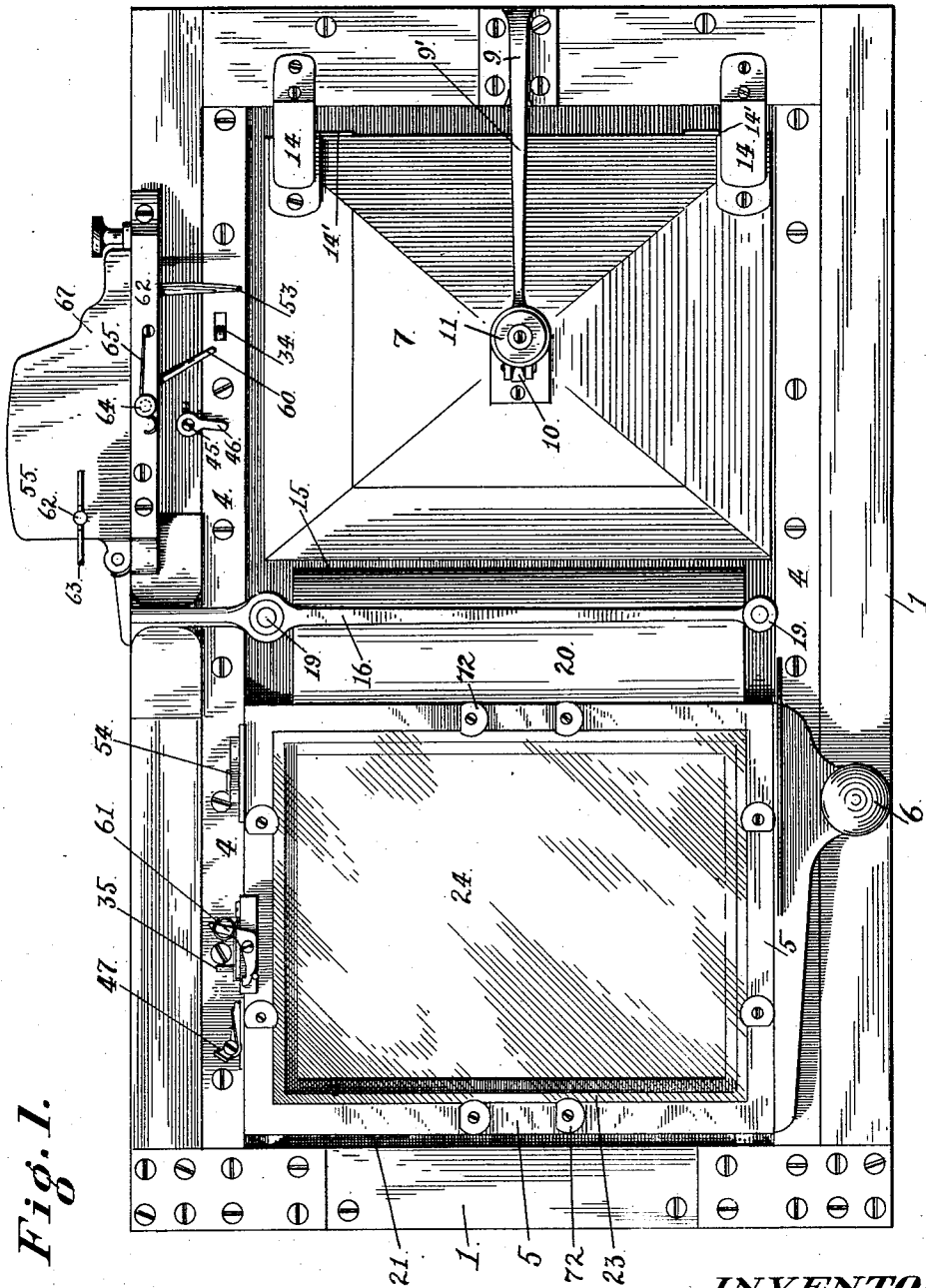


Fig. 1.

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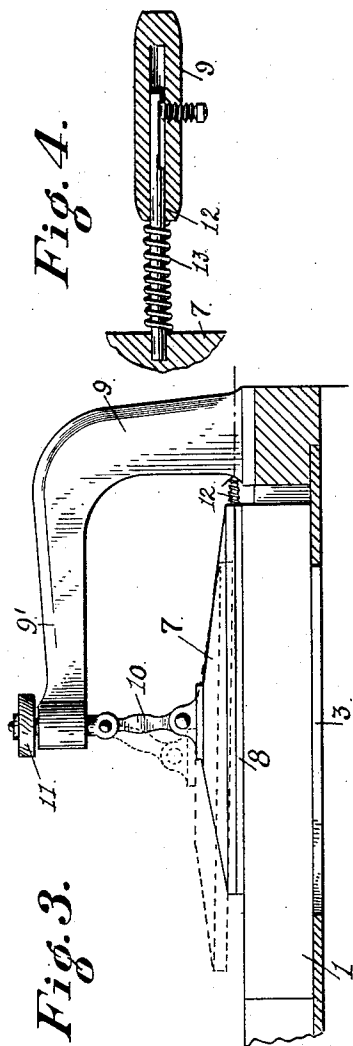
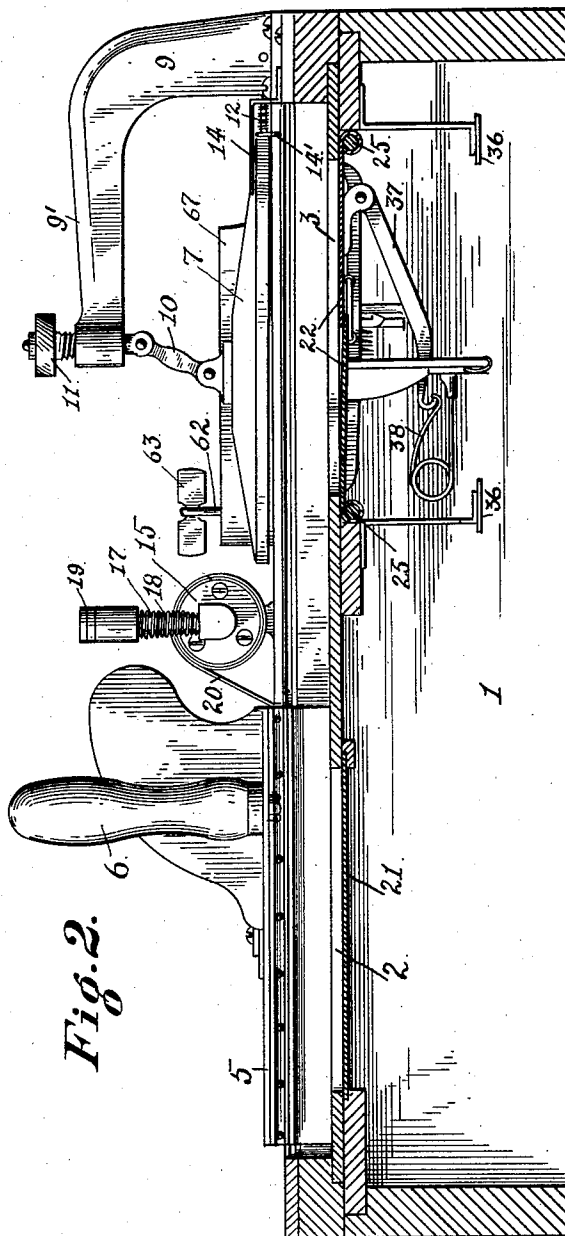
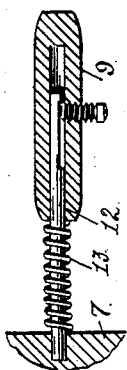


Fig. 4.



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5 SHEETS—SHEET 3.

Fig. 5.

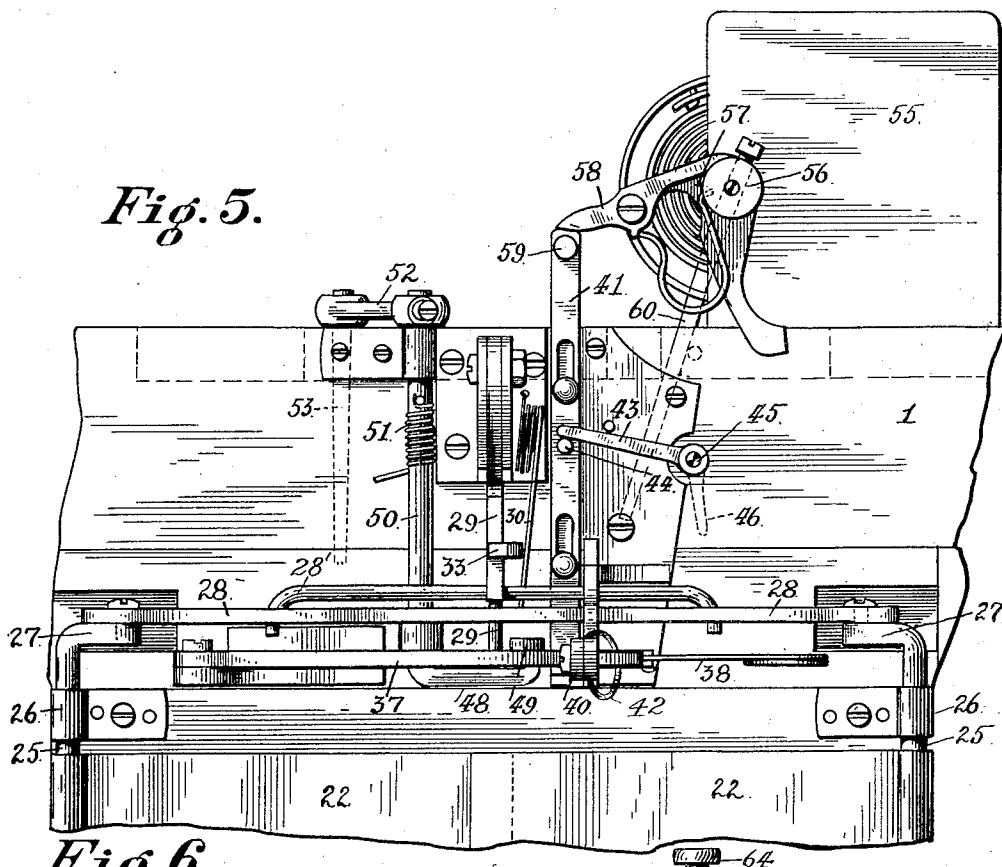
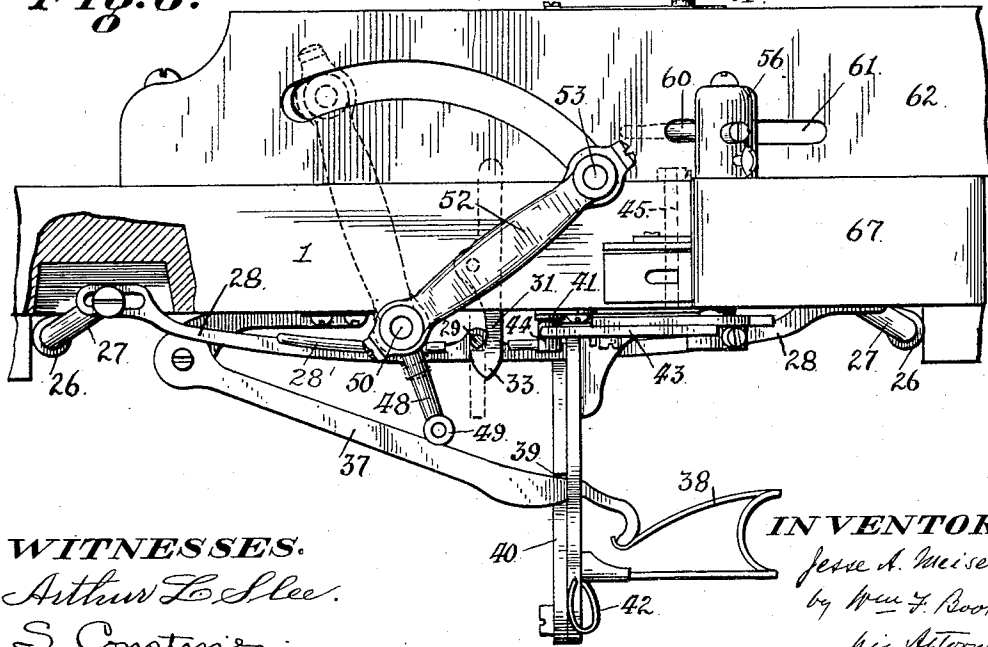


Fig. 6.



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5 SHEETS—SHEET 4.

Fig. 7.

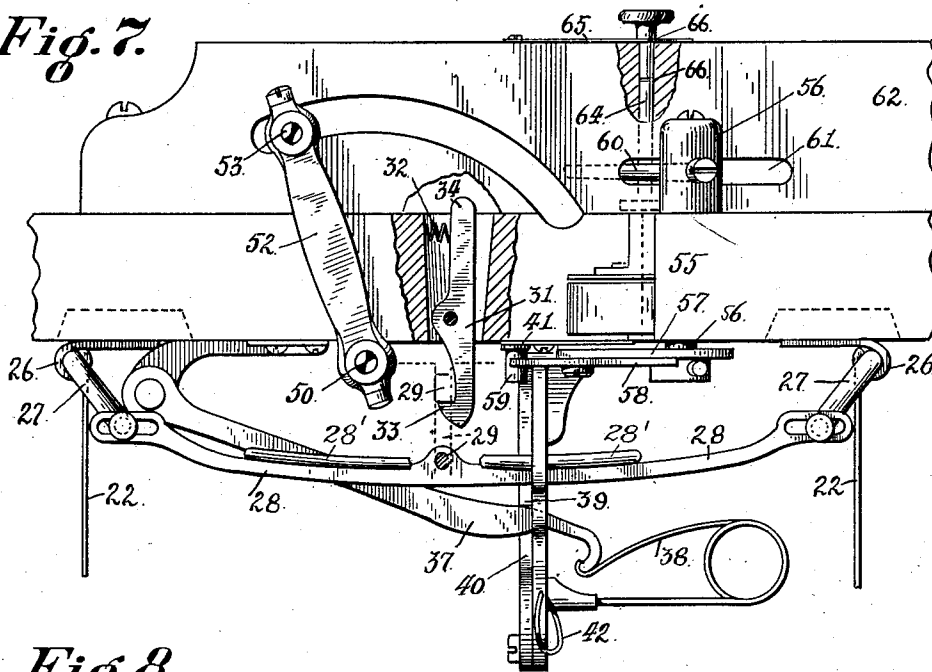
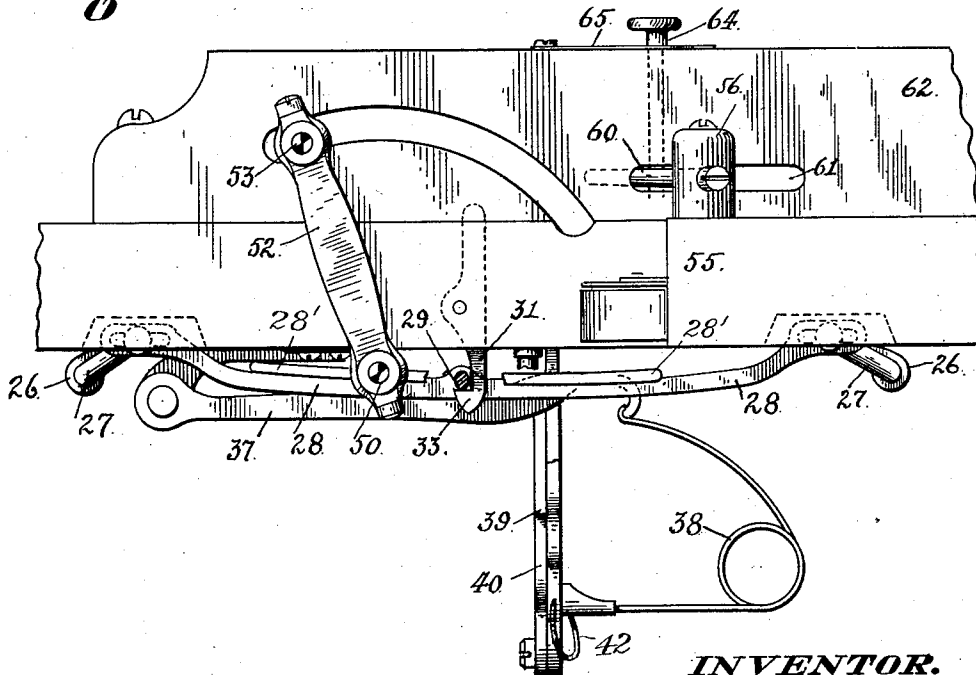


Fig. 8.



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5 SHEETS—SHEET 6.

Fig. 9.

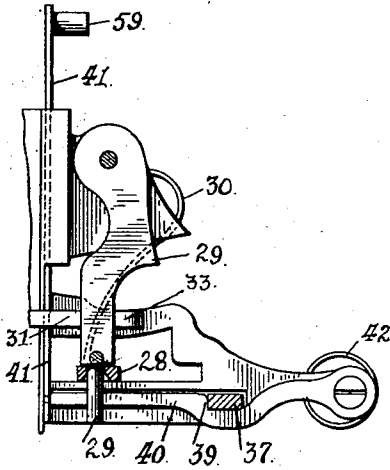


Fig. 10.

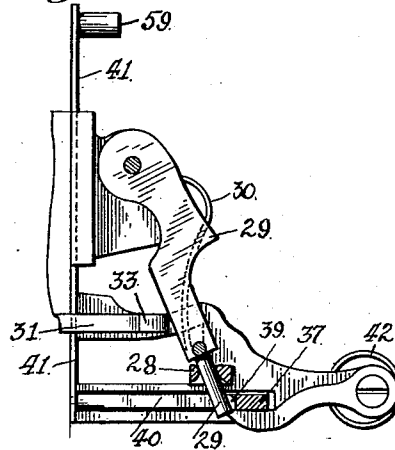


Fig. 11.

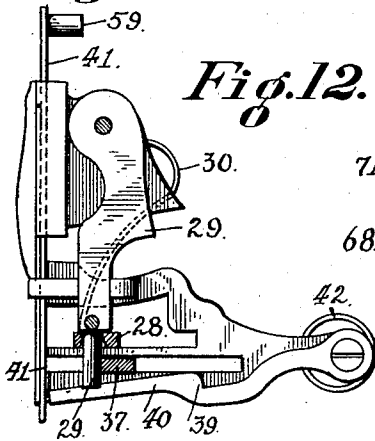


Fig. 12.

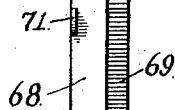
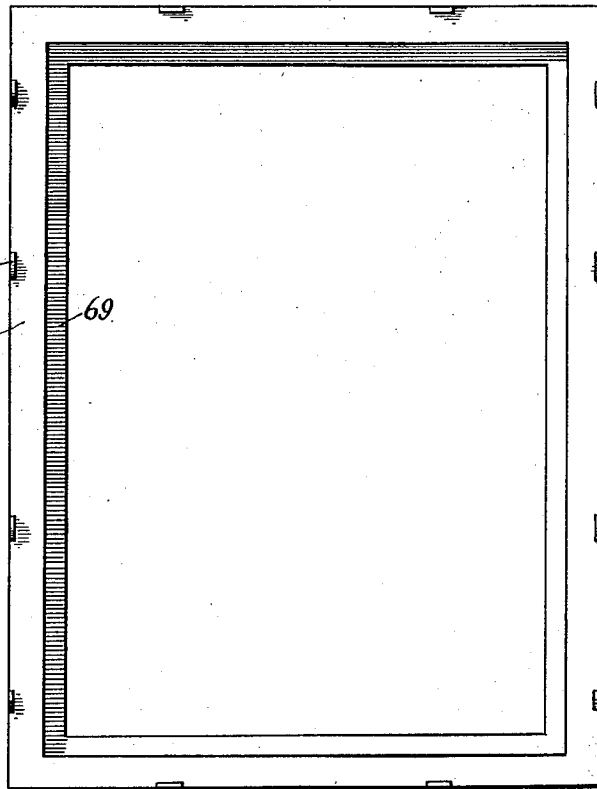
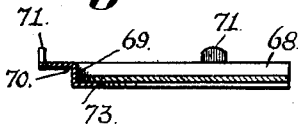


Fig. 13.



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UNITED STATES PATENT OFFICE.

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PHOTOGRAPHIC-PRINTING APPARATUS.

1,014,767.

Specification of Letters Patent.

Patented Jan. 16, 1912.

Application filed October 20, 1908. Serial No. 458,711.

To all whom it may concern:

Be it known that I, JESSE A. MEISER, a citizen of the United States, residing at Eureka, in the county of Humboldt and State of California, have invented certain new and useful Improvements in Photographic-Printing Apparatus, of which the following is a specification.

My invention relates to the class of photographic-printing apparatus in which means are provided for framing the negative and sensitized sheet together, with contacting pressure, and then exposing them.

The object of my invention is to provide a simple and efficient apparatus of this class, adapted for rapid work.

To this end my invention consists in the novel constructions, arrangements and combinations which I shall hereinafter fully describe, by reference to the accompanying drawings in which—

Figure 1 is a top view of my apparatus. Fig. 2 is a side view of the same, with one side of the body frame 1 removed, the upper parts of the apparatus being shown in elevation. Fig. 3 is a side view of the pressure-platen, the dotted lines showing its normal elevation. Fig. 4 is a detail of the spring control of the pressure-platen. Fig. 5 is a bottom plan of the shutter-operating mechanism. Fig. 6 is a top-edge view of the same, showing the setting of the shutter closing devices. Fig. 7 is a view showing the shutters open. Fig. 8 is a view showing the shutter closing mechanism in a position ready to be reset. Fig. 9 is a detail of the shutter closing mechanism reset, the shutters being ready to open. Fig. 10 is a detail of the same when the shutters are open. Fig. 11 is a detail of the same when the shutters are closed by the tripping of the closing mechanism. Fig. 12 is a plan of the printing-frame kit. Fig. 13 is a section of one corner of the same.

1, in Figs. 1 and 2, is a body-frame, having two openings 2 and 3, in its inner portion or in its top according to whether the frame is used in an upright position in a window, or in a horizontal position over an artificial light. For convenience, the descriptive terms of position herein used, will be those which assume the use of the apparatus in a horizontal position as the drawings show it. The opening 2, I shall call

the "sight" opening, its purpose being to enable the operator to properly place and relatively adjust the sensitized sheet and the negative; and the opening 3 I shall call the "exposure" opening, its function being to admit light to the exposed negative and paper. The top of the body-frame is provided or formed with side guides 4 extending lengthwise past both openings 2 and 3. In these guides is fitted and adapted to slide, the printing frame 5, which is provided with a handle 6 whereby it may be conveniently manipulated. This printing frame 5 is adapted to travel from the sight opening 2 to the exposure opening 3 and back again.

7 is a pressure-platen, the face of which has a suitable pad 8. The operation of the platen is automatic both as to pressure and release, and is effected by the following construction: 9 is a bracket fixed to the body frame 1, the arm 9' of said bracket overlying the platen. The platen is suspended from the extremity of the bracket-arm by a link 10, which at one end is pivoted to the back of the platen and at its other end is pivoted to the lower end of a screw 11 threaded through the bracket-arm, so that the plane in which the platen is suspended can be nicely varied and adjusted, in order to regulate the pressure. From one edge of the platen projects a pin 12, which plays freely in a socket in the bracket 9. See Fig. 4. Around this pin is a spring 13, the effect of which is to normally throw the platen over to one extremity of its arc of movement in which position its suspending link 10 is at an angle to the perpendicular, and said platen is limited in this position by stops 14, secured to the body frame 1 and overlapping the edge of the platen. In this position the platen lies in its highest plane, and it is obvious that if it be swung through its arc of movement, it will, due to the cam effect of the link 10 descend from said plane, to the point at which the link is perpendicular to it as seen in Fig. 3, at which point it is again limited by the vertical portions of the stops 14. In this position, the spring 13 is compressed, and when the platen is released, the spring will return it on its rising movement. Secured to the edge of the platen are downwardly projecting stops 14', Fig. 2.

15 is a cross roller which is suspended from

a bracket 16, secured to the body-frame 1. The roller is a spring controlled one, like a curtain roller. The means for suspending the roller are yielding ones, and comprise
 5 end hangers 17, Fig. 2, which slide freely in the bracket, are controlled by springs 18, and adjusted by nuts 19 on their upper ends. Secured to and adapted to wind upon the roller 15 is a pressure-equalizing pad 20 of
 10 some suitable material. Plush or thick velvet answers very well for this pad; the pile or nap being best turned outermost. The edge of this pad is secured to the edge of the printing-frame 5, Fig. 2.

15 In the sight-opening 2 is fitted a red glass 21, Fig. 2, or other translucent non-actinic plate or sheet. In the exposure opening are fitted the shutters 22, Fig. 2.

It will now be well to describe the operation up to this point.

20 The negative 23, Fig. 1, is placed in the frame 5, when said frame lies over the sight-opening 2. The sensitized sheet 24 is then laid upon the negative, the light coming
 25 through the non-actinic plate 21 being ample to show all that is needed for proper adjustment. Now the handle 6 is grasped and the printing frame 5 is moved over to the right. In passing under the spring de-
 30 pressed roller 15, the pressure-equalizing pad 20 of said roller, being carried along by the frame to which it is attached, immediately grips down upon the sensitized sheet and holds it on the negative, and as the printing
 35 frame continues on its journey said pad unwinds from the roller and finally covers the entire sensitized sheet. The printing-frame by this time has passed completely under the normally elevated pressure platen, and
 40 when nearly at the limit of its stroke the edge of said frame comes in contact with the downwardly projecting stops 14' on the edge of the platen. This contact, under the further travel of the printing-frame to com-
 45 plete its movement, has the effect of carrying the platen with it, and the platen hanging from its suspending link 10 will swing down upon the underlying equalizing pad, sensitized sheet and negative, and thus ap-
 50 ply the necessary and equally distributed contact pressure. At this point the printing-frame is limited by the end shoulder of the body-frame and the platen is limited by its stops 14. The shutters 22 being opened,
 55 as I shall presently explain, the negative is exposed to the white light coming through opening 3. When the time of exposure is complete, the shutters 22 close and the print-
 60 ing-frame is moved back to its initial position. At the beginning of its return movement, as soon as it relieves the platen, the latter will return to its normal elevated position, under the influence of the spring 13. The equalizing pad will rewind on its roller
 65 and when the printing-frame is at its initial

point, the sensitized sheet is removed and another placed on the negative for a repetition of the operation.

In the foregoing description I have assumed the proper and timely opening and closing of the exposure opening shutters 22. A shutter to control the exposure-opening is a necessity, not so much for the accurate timing of the exposure, (though this, of course, it does) as for the prevention of white light entering the apparatus and in-
 75 juring the sensitized paper when being fitted to the printing-frame. My invention contemplates the automatic control of the exposure shutters by the movement of the printing-frame to and from its printing station. For this purpose suitable controls and trips are provided, a good form of which is as follows: The shutter 22 is a centrally divided overlapping one, com-
 85 prising two leaves. Each leaf is provided on its outer edge with a pintle 25, Fig. 5, which is journaled in suitable bearings 26 secured under the body-frame top, thereby forming hinges. One end of each pintle is
 90 formed or provided with a crank 27, the two cranks being united by a connecting link 28 freely slotted over the cranks, as seen in Fig. 6 to compensate for their arc of movement and to cause them to operate in unison. A yoke member 28', seen best in Fig. 5, se-
 95 cured to the connecting link 28, serves to stiffen said link. Pivoted to the body frame is an arm 29, Figs. 9, 10 and 11, the other end of which is suitably connected with the connecting link 28 as by passing through it as shown. A spring 30 bears upon the con-
 100 necting link and serves to throw said link, thereby, through the cranked pintles 25, throwing said shutter leaves open. Pivoted in the body-frame top is a trip-lever 31, Figs. 6, 7 and 8, controlled by a spring 32, Fig. 7. The lower end of this lever is
 105 formed with a beveled catch 33 which is adapted to engage the arm 29 of the link 28 and to normally hold it in such position that the shutter-leaves are closed. The upper end 34 of the trip-lever 31 projects above the body-frame top and lies in the path of
 110 a stud 35 fixed in the edge of the printing frame 5, Fig. 1. The operation of these parts is as follows. The shutters being closed, which is the position of Fig. 6, are held so by the trip lever 31, the beveled catch 33 of which engages the connecting
 115 link 28 of the shutter pintles. When the printing-frame 5 is moved over to its exposure position and just before its limit is reached, the stud 35 in its edge comes in contact with the upper end 34 of the trip-
 120 lever 31, and by pushing it over, effects the release of its catch 33 from the connecting link 28. The spring 30, thereupon, throws the link 28 down and swings the shutters open.

36, Fig. 2, are fixed buffers to cushion the shutters at their limit of opening movement.

Now follows the description of the mechanism for closing the shutters, said mechanism being also dependent upon the movement of the printing-frame.

37 is a lever pivoted under the body-frame top and passing behind or underneath the end of the arm 29 of the connecting link 28, as seen in Figs. 9, 10 and 11. The free end of this lever is controlled by a spring 38, the normal tendency of which is to press said lever up. This end of the lever is, however, normally held down by a catch-shoulder 39 on a pivoted trip-lever 40, the other end of which is connected with a slide-bar 41. A spring 42 controls the trip-lever 40, keeping it normally pressed to its engagement. The slide-bar 41 is operated by a crank arm 43, Fig. 5, which bears against a stud 44 of said bar. The crank-arm 43 is carried by a rock-pin 45 mounted to oscillate in the top of the body-frame. The upper end of the rock-pin carries a crank arm 46, Fig. 1, which lies in the path of a spring-controlled trigger 47, which is pivoted to the edge of the printing-frame 5. This trigger is so constructed and mounted as to yield in one direction, but to be rigid in the other direction, these directions being such that in the outward movement of the printing-frame, the trigger yields to the contact with the crank-arm 46 of the rock-pin 45 and passes without moving it, but upon the return of the printing-frame the trigger is rigid to this contact and thereby swings said crank-arm. 48, Figs. 5 and 6, is a swinging crank, provided on its end with a roller stud 49, which swings in the plane of the shutter closing lever 37. This crank 48 is carried by a rock-shaft 50, to which is applied a spring 51, Fig. 5, which normally holds the shaft and its crank close up under the body-frame top, in a position out of the way. The rock-shaft passes outwardly through one side of the body-frame, and carries on its outer end a crank 52, the top of which has a horizontal contact pin 53, Fig. 1, which projects into the path of a spring-controlled trigger 54 pivoted on the edge of the printing-frame 5, and mounted to yield in one direction and to be rigid in the other. A description of the operation of these devices will now serve to make them clear.

Resuming at the point where the shutters have been thrown open, it may be stated, that at this time, the trigger 47 has passed the crank arm 46 without affecting it, and the trigger 54 has also passed the contact pin 53 without disturbing it, and has gone a considerable distance beyond said pin. Now, upon the return of the printing-frame, when the exposure is complete, the now rigid trigger 47 immediately contacts with

the crank-arm 46, thereby turning its rock-pin 45 on its axis. This has the effect of throwing over the crank-arm 43 on the lower end of the rock-pin, and said arm bearing against the stud 44, Fig. 5, on the slide-bar 41, moves said bar over, which thereby swings its connected trip-lever 40 with the effect of releasing the catch-shoulder 39 of said lever from its engagement with the closing lever 37, as seen in Fig. 11. This latter lever being now free, will, under the power of its spring 38 swing upwardly. In this movement, bearing under the arm 29, it will lift the connecting link 28 to its limit, thereby closing the shutters. After this is done, the now rigid trigger 54 reaches and comes in contact with the pin 53 of the crank 52. It moves said pin along through an extensive arc, until at its limit the pin slips under the trigger and frees itself and returns. But in the meantime the movement of the pin has, through the crank 52, rocked the shaft 50 which movement of the shaft throws its inner crank 48 down. The roller 49 of this crank 48 bears upon the closing lever 37 and forces it down to its limit, where it is automatically caught and held by the shoulder 39 of the trip-lever 40, Fig. 6. Thus the shutter-closing lever 37 is reset, and is moved down out of the way of the shutter opening devices. All the parts are now in their initial position, ready for a repetition of the operation.

Thus far it has been assumed that the time of exposure, that is, the time during which the shutter-leaves are open is determined in any manner, as, for example, by counting. This is quite practical, with an experienced operator, but if, for any reason, the time of exposure should be kept constant, I provide the following time attachment which may be used or not as circumstances require: Secured to the body frame is a clock-work mechanism indicated generally at 55, Figs. 1 and 5. The spring-carrying arbor 56 of this mechanism, carries at one end a crank 57 to which is pivoted a spring controlled arm 58 which is moved by the arbor in a path adapting it to contact with a stud 59 on the outer end of the slide-bar 41, Fig. 5, of the shutter closing mechanism. The pivoted arm 58 yields in one direction but is rigid in the other. The other end of the arbor 56 carries a crank lever 60, which passes through, plays in, and is limited by a slot 61 in a flange 62 of the body frame, Figs. 7 and 8. The free end of the crank lever 60, lies in the path of a spring-controlled trigger 61 mounted on the printing-frame 5, said trigger being yieldable in one direction and rigid in the other. 62, Fig. 1, is the final arbor of the clock-work gear-train, and 63 is a fan carried by said arbor. The operation of these parts is as follows:—The tendency of the main-spring of the

clock-work 55 is to hold the crank-lever 60 to one limit of its guide slot 61, and in this position the mechanism is at rest. When the printing-frame 5 is advanced on its forward stroke, the first contact is that of the trigger 61 with the crank-lever 60. The trigger being rigid in this direction, picks up the crank-lever and forces it over to the other limit of its guide slot. By this movement the main-spring is wound, and the arm 58 on the other end of the spring-arbor is slipped by and moved past the stud 59 of the slide-bar 41 without affecting it, as said arm yields in this direction. Now, just as the limit of the printing-frame stroke is reached and the shutters are opened, as heretofore described, the crank lever 60, on account of its arc of movement, slips off the trigger 61 and the main-spring sets the clock mechanism in action. The arm 58 now moves into contact with the stud 59 of the slide-bar 41, and said arm being rigid in this direction, it moves the slide-bar, with the tripping effect to close the shutters as heretofore described. The length of time it takes the arm 58 to reach the slide bar determines the time of exposure, and this time is dependent upon rate of movement of the clock-work, and may be varied by the use of different sized fans 63. The employment of this timing mechanism in no wise interferes with the devices for closing the shutters directly by the movement of the printing-frame. When not in use the timer is conveniently held out of action by a locking pin 64, Fig. 7, which crosses the guide slot 61 and holds the crank-lever 60 in that end of the slot which allows its end in that position to clear the path of the trigger 61. The locking pin 64 is conveniently held in a position to lock the lever, or in position when partially withdrawn, to free the lever, by a spring strip 65 which fits either of two slits 66 made in the pin, Fig. 7. A suitable hinged cover 67 is provided for the timer.

In order to provide for a suitable light distributor or equalizer, or vignetter, whether of ground-glass or tissue paper, I have a kit 68. This, as seen in Fig. 12, is a skeleton frame with an inside rabbet 69 and an outside rabbet 70, as in Fig. 13. The outside rabbet fits the ordinary rabbet of the printing-frame 5 and small spring clips 71 around the edge of the kit serve the double purpose of holding the kit in place and of holding the negative on the kit surface. Pivoted clips 72 on the frame 5, Fig. 1, adapted to overlap the negative, further hold the kit and negative. In the inside rabbet 69 of the kit fits the plate 73, which may be ground-glass or it may be plain glass to serve as a support for tissue paper or for a paper vignetter.

A brief resumé of the complete operation may now be given.

The body-frame is placed in proper position with relation to the light employed. The shutters are closed over the exposure opening, and the only light admitted is through the red-glass in the sight opening. The supporting plate 73 is fitted to the inside rabbet of the kit 68, which is itself fitted to the printing-frame 5. The tissue paper, if such is used, is placed on the plate 73 and then the negative is laid on the surface of the kit and there held by the clips 72. The sensitized sheet is then placed on the negative and immediately the printing-frame is moved rapidly over to the right. The pressure-equalizing pad from the roller at once overlies the sensitized sheet, and with the frame and its contents passes under the pressure-platen. The printing-frame near the end of its stroke picks up the platen and moves it through its eccentric arc to effect its pressure. At this time the tripping devices, under the final movement of the printing-frame, release the shutters, which fly open. The exposure is thus made, and upon its completion, the printing-frame is moved rapidly on its return stroke. This movement of the frame operates the tripping devices which throw into action the shutter closing means, and the shutters thus close. Immediately thereafter, the traveling frame operates the means for resetting the shutter-closing devices, and thereupon the printing-frame reaches its initial point, and the exposed sheet is removed; another is substituted and the operation is repeated. In case the exposure should be automatically timed, the timing mechanism is thrown into use.

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

1. In an apparatus of the class described, a body-frame having near one end a sight opening and near the other end an exposure opening; a normally closed shutter for said exposure opening; a printing-frame mounted to travel in said body-frame into and out of register successively with its exposure and sight openings; and means for operating said shutter to make the exposure.

2. In an apparatus of the class described, a body-frame having near one end a sight opening and near the other end an exposure opening; a normally closed shutter for said exposure opening; a printing-frame mounted to travel in said body-frame into and out of register successively with its exposure and sight openings; and means operated by the moving printing-frame for opening said shutter to make the exposure.

3. In an apparatus of the class described, a body-frame having near one end a sight opening and near the other end an exposure opening; a shutter for said exposure opening; a printing-frame mounted to travel in

said body-frame into and out of register successively with said openings; means operated by the moving printing-frame for opening said shutter to make the exposure; and means operated by said moving frame to close said shutter after exposure.

4. In an apparatus of the class described, a body-frame having near one end a non-actinic sight opening and near the other end an exposure opening; a normally closed shutter controlling the exposure opening; a printing-frame mounted to travel in said body-frame to successively register with its openings; and means for operating the shutter to make the exposure.

5. In an apparatus of the class described, a body-frame having near one end a non-actinic sight opening and near the other end an exposure opening; a normally closed shutter controlling said exposure opening; a printing-frame mounted to travel in said body-frame to successively register with its openings; and means operated by the moving printing-frame for opening said shutter to make the exposure.

6. In an apparatus of the class described, a body-frame having near one end a non-actinic sight opening and near the other end an exposure opening; a shutter controlling the exposure opening; a printing-frame mounted to travel in the body-frame to successively register with its openings; means operated by the moving printing-frame for opening said shutter to make the exposure; and means operated by said moving frame to close said shutter after exposure.

7. In an apparatus of the class described, a body-frame having an exposure opening; a printing-frame mounted to travel in the body-frame into and out of register with said exposure opening; a normally elevated pressure-platen overlying the exposure opening and adapted to receive the printing-frame under it; and means operated by the moving printing-frame for effecting the pressure of the platen upon the frame contents while said frame is in register with the exposure opening.

8. In an apparatus of the class described, a body-frame having an exposure opening; a shutter controlling said opening; a printing frame mounted to travel in the body frame into and out of register with said exposure opening; a normally elevated pressure-platen overlying the exposure opening and adapted to receive the printing-frame under it; means operated by the moving printing-frame for opening and closing the shutter; and means operated by said frame for effecting the pressure of the platen upon the frame contents while said frame is in register with the exposure opening.

9. In an apparatus of the class described, a body-frame having near one end a non-actinic sight opening and near the other end

an exposure opening; a shutter controlling said exposure opening; a printing-frame mounted to travel in the body-frame into successive register with its openings; a normally elevated pressure platen overlying the exposure opening and adapted to receive the printing-frame under it; means operated by the moving printing-frame for opening and closing the shutter; and means operated by said frame for effecting the pressure of the platen upon the frame contents while said frame is in register with the exposure opening.

10. In an apparatus of the class described, a body-frame having an exposure opening; an open-backed printing-frame mounted to travel in the body-frame into and out of register with said exposure opening; a spring controlled pressure roller carried by the body frame disposed to permit the moving printing-frame to pass under it; and a pressure-equalizing pad wound upon said roller and secured to the edge of the printing-frame said pad being arranged to lie upon the frame contents as said printing-frame passes under the roller on its course to the exposure opening, and to rewind upon said roller as the printing-frame returns.

11. In an apparatus of the class described, a body-frame having an exposure opening; an open-backed printing-frame mounted to travel in the body-frame into and out of register with said exposure opening; a spring-controlled pressure roller carried by the body frame disposed to permit the moving printing-frame to pass under it; a pressure-equalizing pad wound upon said roller and secured to the edge of the printing-frame, said pad being arranged to lie upon the frame contents as said printing-frame passes under the roller on its course to the exposure opening and to rewind upon said roller as the printing-frame returns; and a pressure-platen overlying the exposure opening adapted to receive the printing-frame under it and to press upon the equalizing pad while the printing-frame is in register with the exposure opening.

12. In an apparatus of the class described, a body-frame having an exposure opening; an open-backed printing-frame mounted to travel in the body-frame into and out of register with said exposure opening; a spring-controlled pressure roller carried by the body frame disposed to permit the moving printing-frame to pass under it; a pressure-equalizing pad wound upon said roller and secured to the edge of the printing-frame, said pad being arranged to lie upon the frame contents as said printing-frame passes under the roller on its course to the exposure opening and to rewind upon said roller as the printing-frame returns; a normally elevated pressure-platen overlying the exposure opening and adapted to receive the

printing-frame and its equalizing pad under it; and means operated by the moving printing-frame to effect the pressure of said platen upon said equalizing pad, while the printing frame is in register with the exposure opening.

13. In an apparatus of the class described, a body-frame having an exposure opening; a shutter controlling said opening; an open-backed printing-frame mounted to travel in the body-frame into and out of register with said exposure opening; a spring-controlled pressure roller carried by the body-frame disposed to permit the moving printing-frame to pass under it; a pressure equalizing pad wound upon said roller and secured to the edge of the printing-frame, said pad being arranged to lie upon the frame contents as the printing-frame passes under the roller on its course to the exposure opening and to rewind upon said roller as the printing-frame returns; a normally elevated pressure-platen overlying the exposure opening and adapted to receive the printing-frame and its equalizing pad under it; means operated by the moving printing-frame to effect the pressure of said platen upon said equalizing pad, while the printing-frame is in register with the exposure opening; and means operated by the moving printing-frame for opening and closing the exposure-opening shutter.

14. An apparatus of the class described comprising a body-frame having near one end a non-actinic sight opening, and near the other end an exposure opening, a shutter controlling said exposure opening; an open-backed printing-frame mounted to travel in the body-frame into successive register with its openings; a spring-controlled pressure roller carried by the body-frame disposed to permit the moving printing-frame to pass under it; a pressure equalizing pad wound upon said roller and secured to the edge of the printing frame, said pad being arranged to lie upon the frame contents as the printing-frame passes under the roller on its course to the exposure opening and to rewind upon said roller as the printing-frame returns; a normally elevated pressure platen overlying the exposure opening and adapted to receive the printing-frame and its equalizing pad under it; means operated by the moving printing-frame to effect the pressure of said platen upon said equalizing pad, while the printing-frame is in register with the exposure opening; and means operated by the moving printing-frame for opening and closing the exposure-opening shutter.

15. In an apparatus of the class described, a body-frame having near one end a sight opening and near the other end an exposure-opening; a shutter controlling said exposure-opening; a printing-frame mounted to travel in the body-frame into and out of register

successively with said exposure and sight openings; means operated by the moving printing-frame for opening said shutter to effect the exposure; means for closing the shutter; and a timing mechanism carried by the frame and set in operation by the moving printing-frame for actuating the shutter closing means upon a predetermined interval.

16. In an apparatus of the class described, a body-frame having an exposure opening; a printing-frame mounted to travel in said body-frame into and out of register with the exposure-opening; a pressure platen overlying the exposure opening and adapted to receive the printing-frame under it; a pivoted link suspending said platen; a spring to normally hold the platen with its suspending link out of perpendicular to said platen; stops to limit the upward movement of the platen; and stops on the platen with which the moving printing-frame comes in contact to swing the platen down to its pressure on said frame while registering with the exposure opening.

17. In an apparatus of the class described, a body-frame having an exposure opening; a printing-frame mounted to travel in said body-frame into and out of register with the exposure opening; a pressure-platen overlying the exposure opening and adapted to receive the printing-frame under it; a bracket secured to the body-frame and overlying the platen; a suspending link adjustably and pivotally secured at its upper end to the bracket and pivoted at its lower end to the platen; a spring acting against the platen to normally hold it in a position with its suspending link out of perpendicular; stops to limit the upward movement of the platen; and stops on the platen with which the moving printing-frame comes in contact to swing the platen down to its pressure on said frame while registering with the exposure opening.

18. In apparatus of the class set forth, a body having an exposure opening and a sight opening adapted to transmit only non-actinic light, a printing frame mounted to travel in said body into and out of registering successively with said exposure and sight openings, a pressure platen disposed to receive the printing-frame under it and to press upon its contents while said frame is registered with the exposure opening, and shutter means disposed to close said exposure opening when said printing frame is not fully registered therewith.

19. In apparatus of the class set forth, a body having exposure and sight openings, a printing frame mounted to travel into and out of registering successively with said exposure and sight openings, a pressure platen disposed to receive the printing frame under it and to press upon its contents while said

frame is registered with the exposure opening, shutter means disposed to close and open said exposure opening, means whereby the shutter means is held in closed position, and means to release said shutter holding means when said frame fully registers with said opening.

20. In apparatus of the class set forth, a body having an exposure opening, a printing frame mounted to travel in said body into and out of registering with said opening, a flexible pressure member secured by one end to said frame and disposed to press upon its contents while said frame is registered with said opening and means for turning the opposite end of said pressure member away from said frame when the latter is moved from registering with said exposure opening.

21. In apparatus of the class set forth, a

body having an exposure opening, a printing frame mounted to travel in said body into and out of registering with said opening, a flexible pressure member carried by said frame on one end, a guide adapted to turn the free end of said pressure member back when said frame is moved from registering with said opening and a pressure element cooperating with said pressure member to press the latter upon the contents of said frame when registered with said opening.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JESSE A. MEISER.

Witnesses:

JOHN S. DEUEL,
G. A. McLEAN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."