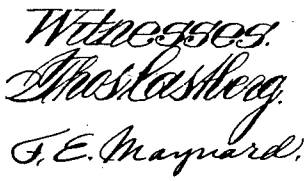


1,062,294.

2 SHEETS—SHEET 1.



Troy, N.Y.
Louis J. Mitchell,
By G. H. Strong.
his Atty.

L. J. MITCHELL.
 PHOTOGRAPHIC PRINTING APPARATUS.
 APPLICATION FILED JUNE 8, 1911.

1,062,294.

Patented May 20, 1913.

2 SHEETS-SHEET 2.

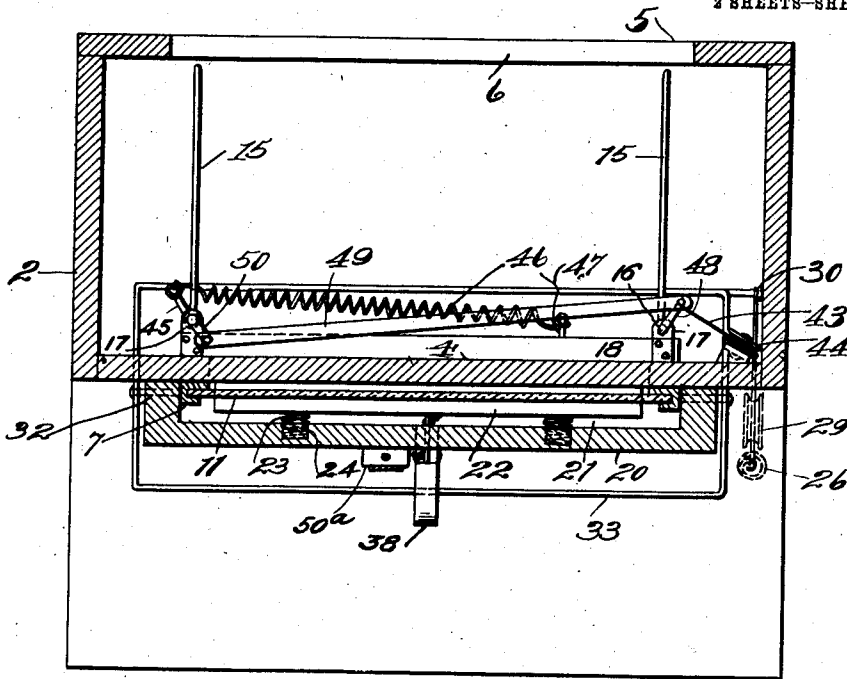


Fig. 2.

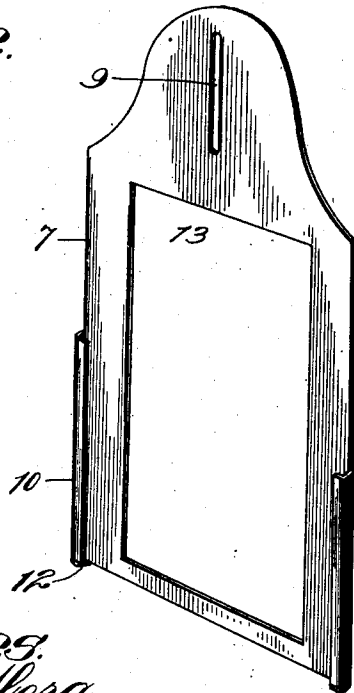


Fig. 3.

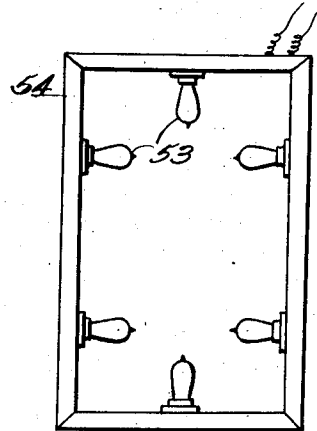


Fig. 4.

Witnesses:
 Chas. Kaskberg
 G. E. Maynard.

Inventor:
 Louis J. Mitchell,
 By G. H. Strong
 his Atty.

UNITED STATES PATENT OFFICE.

LOUIS J. MITCHELL, OF FRESNO, CALIFORNIA.

PHOTOGRAPHIC-PRINTING APPARATUS.

1,062,294.

Specification of Letters Patent.

Patented May 20, 1913.

Application filed June 8, 1911. Serial No. 632,083.

To all whom it may concern:

Be it known that I, LOUIS J. MITCHELL, citizen of the United States, residing at Fresno, in the county of Fresno and State of California, have invented new and useful Improvements in Photographic-Printing Apparatus, of which the following is a specification.

This invention relates to apparatus for the printing and exposure of photographic films and plates.

The object of the present invention is to provide a simple, substantial, portable apparatus wherein may be exposed and printed, photographic or other sensitized negatives, films, or sheets of material; and to provide an apparatus which can be operated quickly and effectively and is adjustable to accommodate photographic paraphernalia of different sizes and in which the devices to be exposed or printed may be subjected to natural or artificial light rays.

Other objects of the invention will be made manifest in the following specification.

The invention consists of the parts and the construction and combination of parts as hereinafter more fully described and claimed, having reference to the accompanying drawings, in which—

Figure 1 is a vertical, transverse section through the apparatus. Fig. 2 is a transverse, horizontal section on the line X—X, Fig. 1 looking downward. Fig. 3 is a view of the plate holder. Fig. 4 is a view of the lamp frame.

The present invention comprehends a device for the exposure of sensitive photographic paper, films, or plates, and includes in its illustrated embodiment a casing 2 of suitable material, shape and size, which is provided adjacent to one of its sides with brackets or devices 3 by which the casing 2 may be suspended in juxtaposition to an opening through which natural light rays may be admitted into the interior of the casing 2. The casing 2 is provided with an operator's board 4 forming the back of the casing, and a front board 5 forming the front of the casing, and in this is provided an opening, as 6, of suitable area to be disposed with relation to a window or other opening so that light may have access to the interior of the casing 2.

Upon the outer side of the back 4, which

may be arranged in a vertical position, is mounted a plate holder 7, of suitable material and size, adjustably clamped against the back 4, by means of a screw or other equivalent device 8 passing through a slot 9 made in the upper portion of the plate holder 7. The lower vertical edges of the plate holder 7 are bent to form plate receiving flanges 10, of sufficient width to receive between their facing edges a negative, indicated at 11, which is supported by stops 12 adjacent to the lower edge of the plate holder 7. The plate holder is provided with an opening 13, of sufficient area to practically expose the entire area of the negative when the latter is placed in position against the rear of the plate holder 7 and between the flanges 10. When pictures or negatives of different sizes are to be exposed to the light, different sizes of plate holders may be provided to accompany the apparatus and that particular plate holder 7 which is best adapted to fit a given negative may be inserted in position upon the back 4 of the apparatus and clamped in its proper adjusted position by the screw 8. That portion of the back 4 of the casing 2 which is adjacent to the normal position of the plate holder 7, is made with an opening 14 of approximately the size of the largest plate to be exposed in the casing. The opening 14 is closable normally by a pair of cooperative shutters 15, vertically pivoted upon spindles 16, which are mounted in bearing flanges 17, attached to a frame 18 surrounding the opening 14 in the back 4. In the normally closed position the shutters 15 are swung toward and overlap each other effectively cutting out the light rays coming through the opening 6 of the front of the apparatus, thereby permitting the operator to adjust a sensitive sheet or film 19 in position upon the negative, indicated at 11, whereby a picture is reproduced upon the sensitive medium 19 placed against the negative 11.

Secured to the outside of the back 4 of the apparatus, and below the exposure opening 14, is a guide block 20, having a longitudinal recess 21 formed in its side adjacent to the surface of the back 4. In this recess there is loosely mounted a movable stop strip 22, approximately equal in length to the length of the recess 21, and of sufficient height to be approximately even with the lower edge of the opening 14, and adapted

to be pressed forwardly to rest under the lower edge of the negative 11, when inserted in the plate holder 7, by expansible springs 23 concealed in pockets 24 formed for its reception in the block 20. The function of the stop strip 22 is to support the sheet of sensitized material or paper 19, when placed by the operator against the negative 11 in the plate holder 7, so that the lower edge of the sheet 19 to be printed will rest upon the upper horizontal edge of the stop strip 22. Having thus inserted a sheet 19 to be printed against the negative, the operator depresses a pedal 25, so as to pull downwardly an expansible link 26, here shown in the form of a tightly coiled, helical spring, to the upper eye 27 of which is connected a cord or other suitable flexible connection 28, passing over a guide roller 29 appropriately mounted on the back of the apparatus. The other end of the flexible connection 28 is then connected at 30 to a lever 31, which is pivoted in bearings 32 fastened upon the surface of the back 4.

The lever 31 is bent across from the pivoted portion supported in the brackets 32 to form a bail 33 reaching horizontally across the back 4 of the apparatus. Upon the bail 33 rests a pressure pad 34, hinged at 35 and adapted to be swung upwardly about its pivots or hinges 35 when the operator depresses pedal 25 and rocks the lever 31 on its bearings 32, so that the horizontal portion of the bail 33, engaging the back of the pad member 34, forces this forwardly against the sensitized paper 19 and holds this firmly against the negative shown at 11. So long as the operator depresses the pedal 25 and keeps the flexible link 26 under sufficient tension to hold the bail 33, by reason of its lever 31 and the flexible connection 28 under sufficient tension, a firm pressure is maintained on the sheet. As the operator releases the pedal 25, the lever 31 is released and the pad 34 is quickly drawn backward about its hinges 35 by a contractile spring or equivalent device 36, connected at one end adjacent to the upper portion of the pad 34, and the other end is connected to a projecting portion 37 of the back plate 4. The pressure pad 34 being swung backwardly under the contractile action of the spring 36, releases the printing paper 19 from pressure against the negative 11 and if permitted to swing back very quickly the pressure pad 34, having fastened on its rear surface a flexible abutment member 42, the latter will trip a pawl 38, hinged at 39, and rapidly rock the pawl sufficiently to pull backwardly the stop strip 22, which is connected to the pawl by a link 38' passing through an opening 38^a formed adjacent to the upper edge of the block 20. The tripping movement of the pawl 38 is at times so rapid that the card or sheet 19 does not

have time to slide down a channel 40 provided between the plate 20 and the back 4. The channel 40 leads to a receiver 41 provided to catch the sheets as they are allowed to fall, as will be explained later.

The object of preventing the release of certain of the printed sheets 19 is to allow the operator to pick the sheet from in position behind the negative 11 when he desires to obtain proofs for determining the length of time of exposure. To obtain these proof copies he releases the pedal 25 quickly, as before stated, so that the spring arm 42 on the back of the pressure pad 34 will trip the pawl 38 very rapidly.

If the operator releases the pedal gradually, the action of the spring 36 connected to the pressure pad 34 is retarded, so that the pad 34 will swing back slowly and the abutment arm 42, fastened to the back of the pad 34, engages the projecting pawl 38 and this will be sustained in a partly open position by the arm 42, thus allowing the pawl 38 to slowly swing on its pivot 39 and actuate the stop strip 22 to release the printed sheet 19. When the operator inserts the next sensitive sheet 19 into position behind the negative and presses firmly upon the outwardly tilted, pressure pad 34, which is temporarily interrupted in its movement by the abutment of the arm 42 upon the pawl 38 the arm 42 will yield outwardly and pass over the pawl 38, which yielding action is automatic when the pedal 25 is released rapidly and the spring 36 allowed to exercise its full contractile tension or pull on the pressure pad 34. After once having obtained a proof and determined the time of exposure a given negative requires to produce good prints, he no longer has to release the pedal 25 rapidly but may allow it to rise slowly, as the contractile spring 36 will pull back the pressure pad 34 and through the instrumentality of the pressure pad 34 thus will depress the bail 33. The pawl 38 is sustained in its normal vertical position by reason of the expansion of the spring 23 pressing against the stop strip 22 which is connected to the pawl 38 by the link 38'. When the pressure pad 34 swings backwardly and the yieldable arm 42 engages the pawl 38, the latter is rocked, pulling on the link 38' and so moving the stop strip 22 as to permit a printed strip, resting upon its upper horizontal edge, to slip downwardly into the receiver 41. When the yieldable arm 42 has swung a given or limited distance, the pawl 38 becomes released and is pulled backwardly into vertical normal position, and the stop strip 22 again assumes a position to receive and support upon its upper edge the next inserted card or sheet 19. The foregoing portion of this description relates to the means for holding a negative and pressing a sensitized sheet in posi-

tion against the negative so that the sheet can be exposed to light rays. This exposure of the sensitized sheet or strip to light rays is controlled, as hereinbefore stated, by means of suitable shutters or wings 15 which are mounted to swing about vertical axes to overlap one another and cut off light before it can reach the negative 11 in position in the holder 7.

After the operator has inserted a sensitive card or sheet in position against the negative and pulled the pressure pad upwardly to hold the sensitive sheet firmly in position by depressing the pedal 25 through means of its connections 26 and 28 with the lever 31, the shutter members 15 are then automatically opened by reason of suitable connections with the pedal 25. These connections comprise in the present instance a flexible link or cord 43, one end of which is connected to the lower eye of the spring 26, and then passes upwardly through the spring over the guide roller 29 and other guide rollers 44 and is then connected to a crank arm 45 at the lower end of one of the spindles 16. The other crank arm 45 is connected to a contractile spring 46, one end of which is fastened to a stationary projection or part 47 on the inside of the cover member 4.

When a pull is transmitted to the crank arm 45 through the depression of the pedal 25 and the connection 43, the crank arm swings in an arc to open one shutter 15, at the upper end of the supporting spindle 16 of which is formed another crank arm 48 swinging in an arc similar to that of the lower crank arm 45. The upper crank arm 48 is connected by a transverse horizontal link 49 to a crank 50 formed upon the spindle 16 of the other shutter section; the relation of the cranks 48 and 50 being as shown in Fig. 2, that is, one at substantially right angles to the other, so that the link 49 will swing the crank 50 and its shutter section 15 to open the latter.

For the purpose of permitting the sensitized sheet to be firmly pressed against the negative by the pressure pad 34 before the shutters 15 are opened, I make the flexible link or cord 43, which operates the shutters, sufficiently longer than the cord 28, which operates the pressure pad, to allow the spring 26 to become operative to pull the cord 28 as soon as the pedal 25 is depressed.

When the pressure pad 34 is topped in its motion by the face of the negative, then further pressure on the pedal 25 causes the spring 26 to distend so that the lower eye moves away from the upper eye 27 and thus takes up the slack in the cord 43 which is connected to the lower eye of the spring. As soon as the cord 28 has become tight and the pad 34 pressed against the negative, then when the slack is taken out of the cord 43

by the distension of the spring 26 and the cord 43 becomes tight, this will pull on the lower crank 45 of the shutter spindle and swing the crank in an arc of approximately 90° or more and at the same time shift the horizontal link 49, mounted on the upper cranks 48 and 50 by their respective shutter spindles 16, to open the other shutter 15.

In operation, after the operator has adjusted the negative from which prints are to be made over the opening 14 of the apparatus, he may place against the negative and in front of the pad 34, a sensitive card or sheet and by depressing the pedal 25 pulls the pad 34 with firm pressure against the sensitive card so as to hold it in close contact with the negative. As stated, immediately after the pad has been swung into position against the negative, a further movement of the pedal takes the slack out of the operating cord 43 and the shutter sections 15 are swung open to allow light to have access to the interior of the casing 2 and through the opening 14, thence reaching the sensitized card or print through the negative. Having determined by trial the length of time that each print should be exposed, the operator releases pressure from the pedal 25 when the shutters have remained open a certain length of time, and they are automatically closed by the contraction of the spring 46 which is distended when the cord 43 pulls on the crank 45. The closing of the shutters 15 takes place at the primary upward portion of the movement of the pedal 25. As soon as they are closed the spring 36 becomes effective to pull backwardly the pressure pad 34 and permits the abutment arm 42 to engage and swing backwardly the pawl 38, this in turn pulling on the stop strip 22 from the top edge of which the printed card or sheet falls through the channel 40 into the receiver 41.

It is important in photographic establishments where various numbers of prints of different negatives are being constantly produced, that the operator be relieved of the burden of keeping a metal tally of the number of prints from each negative. For this purpose I have shown mounted upon the back plate 20 a suitable counting device 50^a, the tappet of which projects upwardly sufficiently to be encountered and depressed by the pressure pad 34 when this is swung back fully so that each print released by the opening of the pressure pad 34 will be counted and registered upon the counting device 50^a. This apparatus may be used in natural light or, when necessary, the exposures can be made by artificial light by reason of the closing of a suitable electric circuit 51 at the proper instant, preferably just before the shutters 15 are opened. The circuit 51 includes contact members 52, one of which is stationary and the other being

moved into circuit closing engagement with the stationary member. As shown, the stationary member 52 may be mounted upon the back 4 of the apparatus and the movable member mounted upon the pad 34, so that when the two members are brought into contact a circuit will be completed through wires in the circuit 51 to cause the illumination of incandescent lights 53 fastened in suitable sockets having connections in the circuit 51; the lights being mounted in a detachable frame 54 which may be connected to the casing 2 by means of the brackets or fastening devices indicated at 3.

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

1. A photographic printing apparatus comprising a suitable casing having a front and a back, each having an opening, shutters pivoted at the sides of the opening and operating inside of the casing, a foot pedal, a link connecting the shutters for simultaneously moving the same, a spring for maintaining the shutters closed, a flexible, resilient device connecting the pedal and one of the shutters whereby, when the pedal is moved, the shutters are opened, a tiltable actuator journaled on the casing, a medium connecting the actuator and said pedal, an automatically opening platen pivoted on the back and bearing upon the tiltable actuator, and a plate holder adjustable upon the back over the opening therein against a plate in which may be held a sensitized sheet, said actuator being effective when the pedal is pressed to force the platen up, further move-

ment of the lever acting through the flexible device to open the shutters.

2. In a photographic printing apparatus, the combination of a casing having a back with an aperture, shutters pivoted at the sides of the opening, a link connecting the shutters to operate the same in unison, a spring for automatically closing the shutters, a plate holder on the back and adjacent to the opening, a collecting box below the aperture, a sheet stop at the lower edge of the plate-holder in a recess formed for its reception in the casing, springs projecting the stop forward beneath the edge of the plate-holder, a conduit extending from the stop to the collecting box, a tripper connected to the stop for pulling it back to open the conduit to allow printed sheets to drop, a platen for pressing sheets on a negative, its retracting spring, a resilient arm on the platen for engaging the tripper, a tiltable actuator journaled on the case for pressing the actuator against the plate-holder, a pedal, a connection coupling the pedal and the actuator, and an extensible connection coupling the pedal and the shutters, the initial movement of the pedal lifting the platen and the subsequent movement opening the shutters and operating conversely on the release of the pedal.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

LOUIS J. MITCHELL.

Witnesses:

J. W. HARPER,

T. G. McCULLOCH.