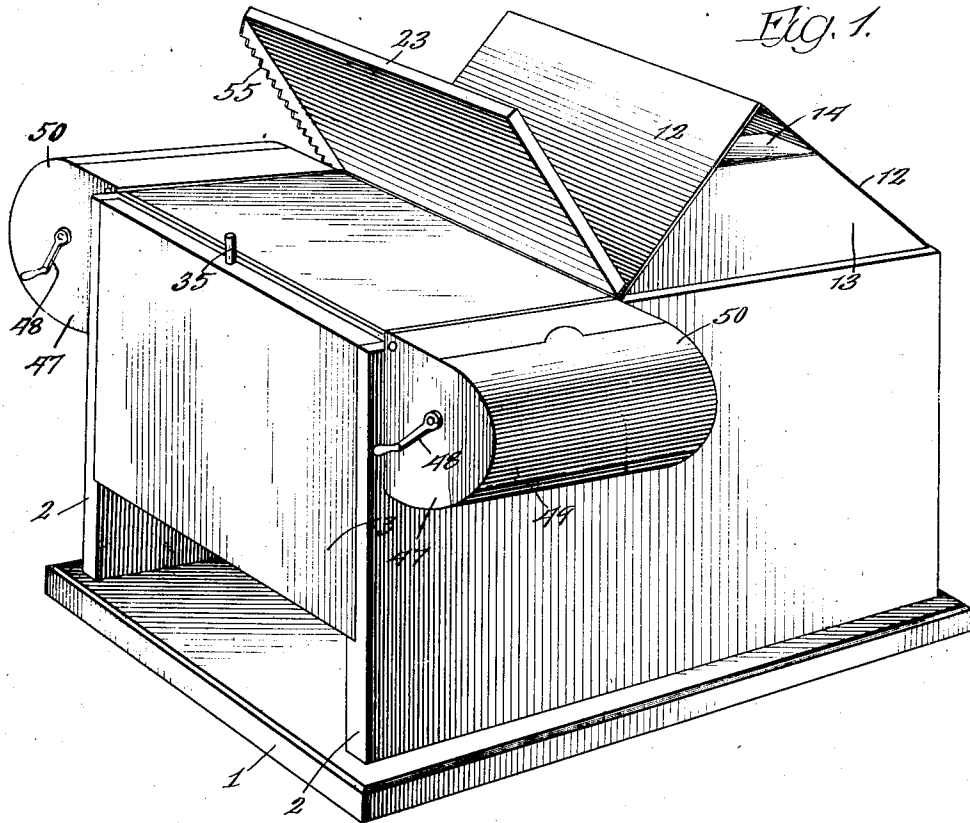
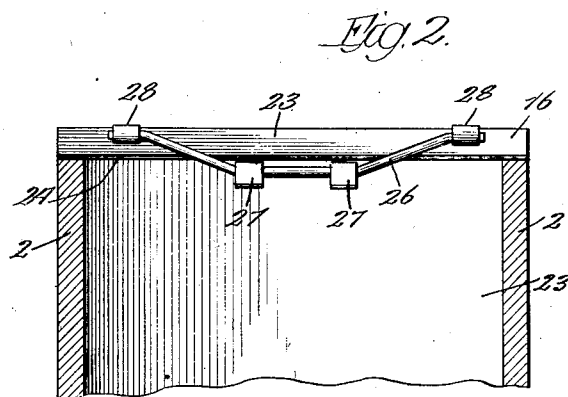


P. W. HUTTON.
 PHOTOGRAPHIC PRINTING APPARATUS.
 APPLICATION FILED MAR. 31, 1915.

1,185,801.

Patented June 6, 1916.
 3 SHEETS—SHEET 1.



Witnesses:
H. B. Smith
Ed. J. Kemp

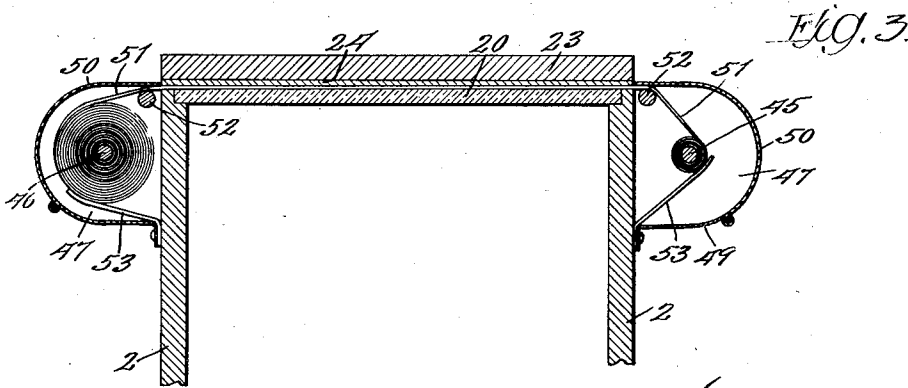
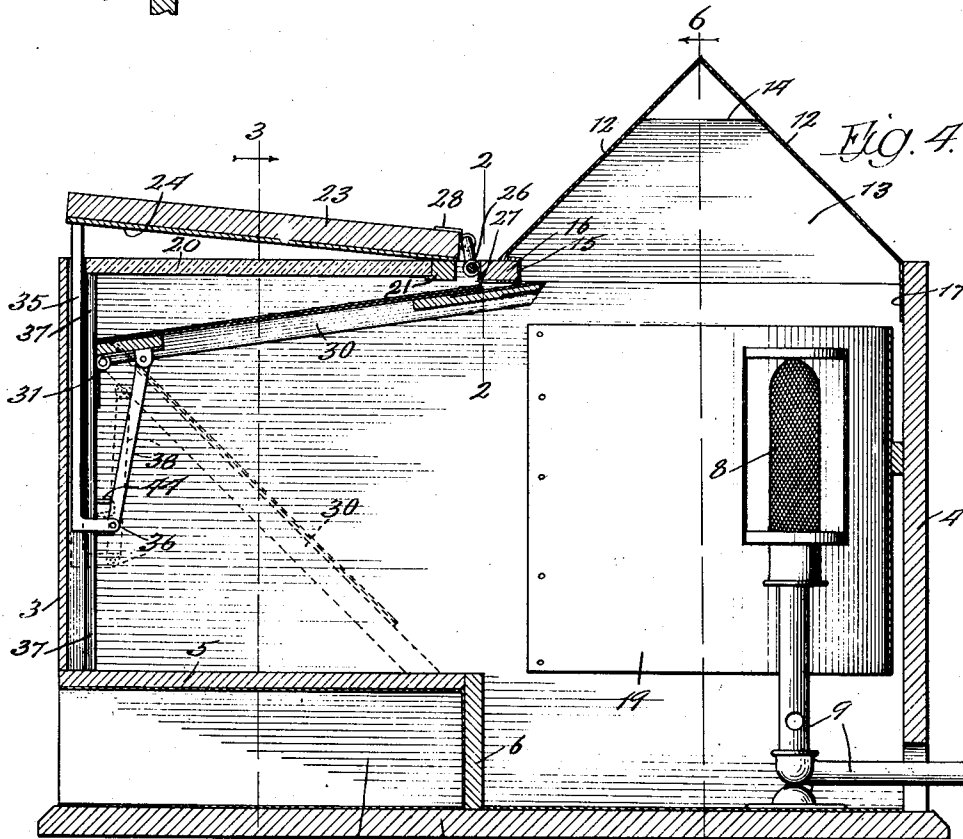
Inventor:
 PHILIP W. HUTTON
 By *Cheever & Cox*
 Attys.

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3 SHEETS—SHEET 2.

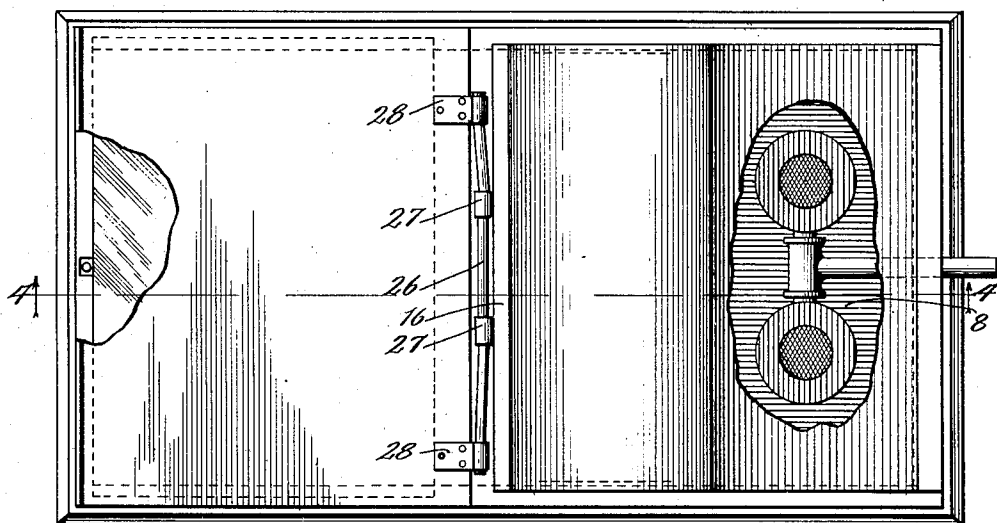
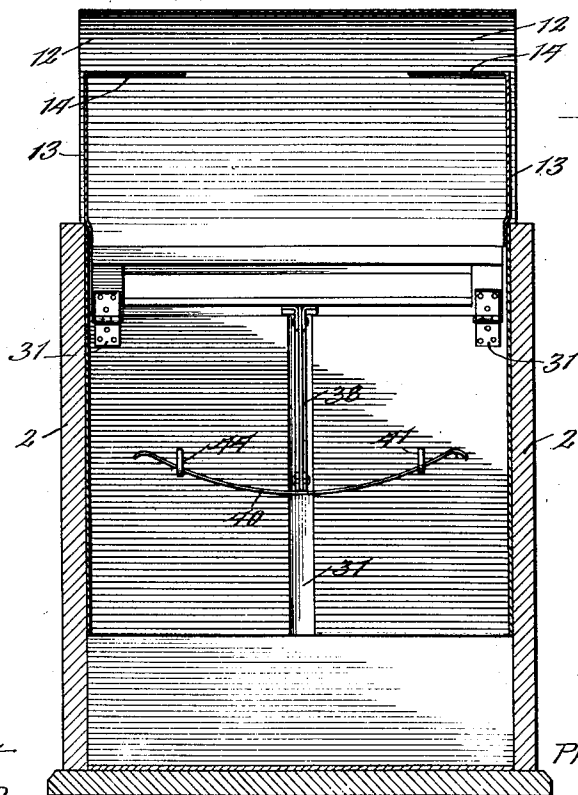


Witnesses:
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 J. D. Long

Inventor
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1,185,801.

Fig. 5.



Mitresses!

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UNITED STATES PATENT OFFICE.

PHILIP W. HUTTON, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF TO ERNEST E. COLE, OF CHICAGO, ILLINOIS.

PHOTOGRAPHIC-PRINTING APPARATUS.

1,185,801.

Specification of Letters Patent.

Patented June 6, 1916.

Application filed March 31, 1915. Serial No. 18,288.

To all whom it may concern:

Be it known that I, PHILIP W. HUTTON, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Photographic-Printing Apparatus, of which the following is a specification.

My invention relates to apparatus for making prints from photographic negatives, and the general object of the invention is to provide a construction by which the ease and rapidity of making prints will be facilitated. This general object is accomplished as a result of a number of contributory characteristics and features of construction which will become apparent in detail as the description proceeds. Among them may be mentioned the fact that in my apparatus a swinging element is provided which forms a screen for protecting the sensitized sheet from the source of light while the sheet and negative are being adjusted, and which automatically moves out of the way as the lid is closed, thereupon becoming a reflector for throwing the light toward the negative and sheet. In my construction also, the lid is so mounted as to automatically accommodate itself to negatives of different thickness, it sometimes being desirable to employ glass plate negatives and at other times to employ films. I have also provided means for supporting and manipulating the sensitized sheet in the form of a long strip and have provided means whereby a number of prints may be made upon this strip before it is removed and placed in the fixing and washing baths. I have also provided means for perforating such a strip at the ends of the prints, thereby rendering it easy to sever one print from the next and to enable the operator to readily determine where one print ends and the next begins. I have also provided a simple and effective heat-resisting and ventilating hood over the lamp.

In the form of apparatus selected to illustrate the invention Figure 1 is a perspective of the complete apparatus showing the lid partially raised. Fig. 2 is a detail showing the compensating or self adjusting hinge by which the lid is connected to the casing. Fig. 3 is a transverse sectional elevation on the line 3—3, Fig. 4. Fig. 4 is a longitudinal sectional elevation on the line 4—4, Fig. 5. Fig. 5 is a top plan view showing por-

tions of the hood and of the lid broken away to better show the construction of the parts beneath. Fig. 6 is a transverse sectional elevation on the line 6—6, Fig. 4.

Similar numerals refer to similar parts throughout the several views.

In the form shown, the casing consists primarily of a base 1, side walls 2, front wall 3 and back wall 4. In the front part of the casing a false floor 5 is placed which forms a stop for the sewing element hereinafter described. Said floor, in connection with the rear partition 6, also forms a chamber 7 which is convenient for temporarily storing negatives or prints.

It will be understood that my apparatus will ordinarily be employed in a darkened room and for this reason, and the fact that the chamber 7 is light proof except at the front, said chamber thoroughly protects the unfinished prints from the light of the lamp.

Toward the back of the casing is a lamp 8 which forms the source of light for printing. In the present instance this lamp is shown in the form of a gas mantle supplied through a gas pipe 9. The form of light, however, is not important and any other lamp may be substituted.

A hood covers the back part of the apparatus, and while the form and material thereof may be varied, in the present design it consists of a unitary structure of tin plated metal removably supported upon the casing. It is in the form of a ridge roof having two slopes 12, 12 with gables 13 at the ends. The ridge runs transversely and the gables do not reach to it but have inward bends 14 affording ventilation; see Figs. 1 and 6. The forward slope is bent to form a channel 15 which engages the cross beam 16 of the casing, as best shown in Fig. 4. At the back, a descending flange 17 engages the inner surface of the back wall 4 and holds the channel in engagement with the beam. The slopes 12 project slightly beyond the gables 13, as shown in Figs. 1 and 6, and thus support the structure by resting upon the upper edges of the side walls 2. Said gables descend far enough to engage the inner surfaces of the side walls near the top thereof, thus preventing transverse displacement of the hood. Being made of tin, plated metal, the parts are slightly flexible and hence the hood may

be readily placed and removed, and when in place will be securely held against movement in any direction. A curved reflector 19 is secured within the casing at the back and sides for the purpose of throwing the rays of light from the lamp forward toward the front of the casing. A glass plate 20 is arranged horizontally at the top of the front of the casing, the upper surface preferably being flush with the upper edges of the front and side walls. Across the back it is supported by a cross beam 21 as best shown in Fig. 4. Lid 23 is hinged at the top of the casing and is of such dimensions as to cover the glass. By preference the lid is of the full width of the casing and its forward edge comes flush with the front surface of the casing. On its under-side the lid is provided with a pad 24 of felt or similar material.

In order to permit the lid to accommodate itself to negatives of different thickness laid upon the supporting glass, I have provided a special hinge which is shown in detail in Fig. 2, and is also seen in Figs. 4 and 5. In the form selected for illustration a rod 26 passes through two eyes 27, 27, fastened to cross beam 16, the ends of the rod being journaled in eyes 28 fastened to the rear edge of the lid. The rod is resilient and hence permits the eyes of the lid to come and go within reasonable limits and enables the lid to lie flat upon the sensitized sheet and make good contact whether a thin or a thick negative is being used. By preference the axes of the eyes 27 are in line with each other and the axes of the eyes 28 are in line with each other but out of line with the axes of the eyes 27; and the rod is given a permanent offset to correspond. This prevents lateral displacement of the lid.

The swinging frame 30 is pivotally attached by a hinge 31 to the inner surface of the front wall 3 at a point somewhere below the glass plate 20 as shown in Figs. 4 and 6. This frame extends approximately across the casing from one side wall to the other, but is short enough to swing freely. It extends backward beyond the rear edge of the glass plate. Its upward movement is limited by the cross beam 16 and its descent is limited by the floor 5. When the frame is in uppermost position it is approximately horizontal, but as it engages the beam 16 it prevents the light of the lamp from passing forward over its edge and gaining access to the plate 20. When the frame is in lowermost position it assumes an angle of about 45° to the horizon. Said frame supports two translucent sheets of paper or analogous substance. The upper sheet is white or substantially so, and the lower sheet is red or of some other color which will cut off most of the actinic rays from the lamp. The re-

sult is that when the frame is up, most of the light is cut off from plate 20, the light being forced to filter through both the red and the white sheet. When the frame is down the light strikes the white sheet at an angle of approximately 45° and is reflected upward toward the plate. From the foregoing it will be evident that the hinged frame with its paper sheets constitutes a screen in one position and a reflector in another position.

I will now describe the means which I employ for automatically throwing the reflector screen from raised position when the negative and sheet are being adjusted, to lowered position when the print is being made: A push rod 35 is mounted within the front wall, near the center thereof. Said rod is vertically movable and normally protrudes a short distance above the upper edge of the casing. At its lower end the rod has a foot 36 which slides within the slot 37 formed in the inner surface of the wall, as best shown in Figs. 4 and 6. A link 38 connects the foot with frame 30 at a point slightly behind the axis of the hinges 31. The result is that the raising and lowering of the rod 35 raises and lowers the frame. The parts are normally held in raised position by a spring 40 which may assume various forms, but, in the present instance, consists of a strip of flat spring steel supported near its ends in eyes or staples 41 fastened to the inside of the front wall. Said spring passes beneath the foot 36 and tends to hold it in raised position.

Under certain conditions it is desirable to employ a continuous strip of sensitized paper instead of individual sheets, and for such occasions I have provided two reels 45 and 46 journaled in plates 47 mounted on the side walls 2. These reels are operated by crank handles 48 and housed within casings 49 provided with hinged covers 50. The paper strip 51 is guided by rollers 52 located in such position as to cause the paper to pass across the glass plate 20. Friction brakes 53 are provided for preventing accidental movement of the strip and it will be evident that by winding the strip up upon one of the reels a series of prints may be made without removing the strip or the negative.

At one edge of the lid is a perforator and marker 55, which consists preferably of a metallic strip having teeth formed on the lower edge. Whenever the lid is lowered this perforator makes a series of perforations or indentations in the strip of paper and thus serves the dual purpose of enabling the different prints to be readily severed from each other and serves to mark the end of the finished print. By drawing the sheet across the plate until the perforations reach the opposite edge thereof, the oper-

ator knows that he is exposing a fresh portion of the surface to the action of the light.

In operation, when it is desired to make a print the lid is first raised. This permits the spring 40 to raise the reflector screen to screening position, thus cutting off the light of the lamp from the supporting plate 20. The negative, whether of glass or film, is then placed upon said plate and above this is placed the sensitized sheet, either in an individual piece or in the form of a strip. The lid is then lowered and as soon as it comes into contact with the push rod 35, forces the reflector screen down to reflecting position, shown in dotted lines in Fig. 4. This causes the reflector screen to reflect the light rays upward through the glass supporting plate, whereupon the light acts upon the sensitized sheet in the usual manner. The lid, being lined with felt, holds the sheet in close contact with the negative, and as the hinge is flexible it permits the lid to automatically accommodate itself to the different elevations caused by negatives of different thickness. If the sensitized sheet is in the form of a strip or roll the descent of the lid causes the blade 55 to perforate the strip and to mark the same in the manner previously described. After the sheet has been exposed for a sufficient length of time the lid is raised, whereupon the reflector screen automatically rises and shuts off light from the sheet. The operator then either removes the sheet entirely or rotates one of the crank handles 48, thus bringing a fresh portion of the strip into position above the supporting plate for making a new print. The apparatus is then ready to have the operation repeated.

Although I prefer to employ red and white sheets of paper for my screen, it is evident that other material, for example, glass suitably colored or painted may be substituted for the paper. It will also be evident to those skilled in the art that other modifications in structure and materials may be made without departing from the spirit of the invention.

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

1. Photographic printing apparatus having a casing provided with a transparent plate for supporting the negative, a lid hinged to said casing for backing up the sensitized sheet over said plate, a source of light in said casing, a mirror movably mounted in said casing and deflecting the light rays from said source toward said plate, and automatic means operated by said lid for moving the mirror to a position to cut off said rays from said plate.

2. Photographic printing apparatus having a casing provided with a transparent plate for supporting the negative, a lid

hinged to said casing for backing up the sensitized sheet over said plate, a source of light in said casing, a mirror hinged to said casing and deflecting the light rays from said source toward said plate, and means operated by said lid for turning the back of the mirror to said source and simultaneously cutting off the rays from said plate.

3. Photographic printing apparatus having a casing, a source of light near one end of the casing, a transparent plate for supporting the negative, said plate being arranged horizontally near the other end of the casing near the top thereof, a mirror hinged to the casing beneath the transparent plate and capable of swinging about a horizontal axis located near the front of the casing, a lid for holding the sensitized sheet and negative down upon the transparent plate, and means operated by said lid for lowering said mirror when the lid is lowered, said mirror being normally yieldingly held in raised position for screening the plate and when in such position presenting its back to the light and when in lowered position deflecting the light rays from said source to said plate.

4. In a photographic printing apparatus the combination of a casing, a source of light therein, a horizontal transparent plate supported by said casing for supporting the negatives, a lid for backing up the negatives, a reflector screen hinged within the casing and arranged beneath the plate approximately parallel thereto, means operated by the lid for lowering said screen, and a stop for limiting the descent of said screen, the upper surface of said screen having light reflecting properties for the purpose described.

5. Photographic printing apparatus having a casing provided with a glass plate for supporting the negative, means for supplying, at will, light to the inner surface of the plate, a lid for backing up the negative, a resilient hinge rod, and eyelets on said lid and on said casing, said rod passing through said eyelets, the eyelets being located at an appreciable distance apart whereby the rod may bend slightly to permit the lid to accommodate itself to negatives of different thickness.

6. Photographic printing apparatus having a casing, a glass plate mounted thereon, a source of light within the casing, means for controlling, at will, the access of the light rays from said source to the inner surface of the plate, means for causing a sensitized strip to travel intermittently over said plate, a lid for backing up said strip, said lid being hinged to the casing, and a perforator upon said lid in position to act upon said strip.

7. Photographic printing apparatus having a casing, a glass plate mounted thereon

for supporting the negative, a source of light within the casing, means for controlling, at will, the access of the light rays from the source to the inner surface of the plate, reels at opposite ends of the plate for supporting a strip of sensitized paper, means for causing said strip to intermittently travel cross-wise of the plate, a lid for backing up the paper, and a marker on said lid for marking the paper and indicating to the user the distance which the paper should travel for each print.

8. Photographic printing apparatus comprising a casing, a source of light located near one end thereof, a glass plate extending across the top of the casing at the other end thereof, a lid hinged to the casing in

position to descend onto said plate, a reflector screen hinged to the inside of the casing, the axis of the hinge being horizontal, a false floor within the casing serving as a stop to limit the descent of the reflector screen, said floor coöperating with other parts of the casing to form a chamber from which light from said source is excluded, and means operated by said lid for controlling the position of the reflector screen.

In witness whereof, I have hereunto subscribed my name in the presence of two witnesses.

PHILIP W. HUTTON.

Witnesses:

ERNEST E. COLE,
HOWARD M. COX.