No. 894,154. PATENTED JULY 21, 1908.

A. KAISER.

COMBINED PRINTING MACHINE AND ENLARGING CAMERA.

APPLICATION FILED FEB. 23, 1907.

3 SHEETS—SHEET 1.

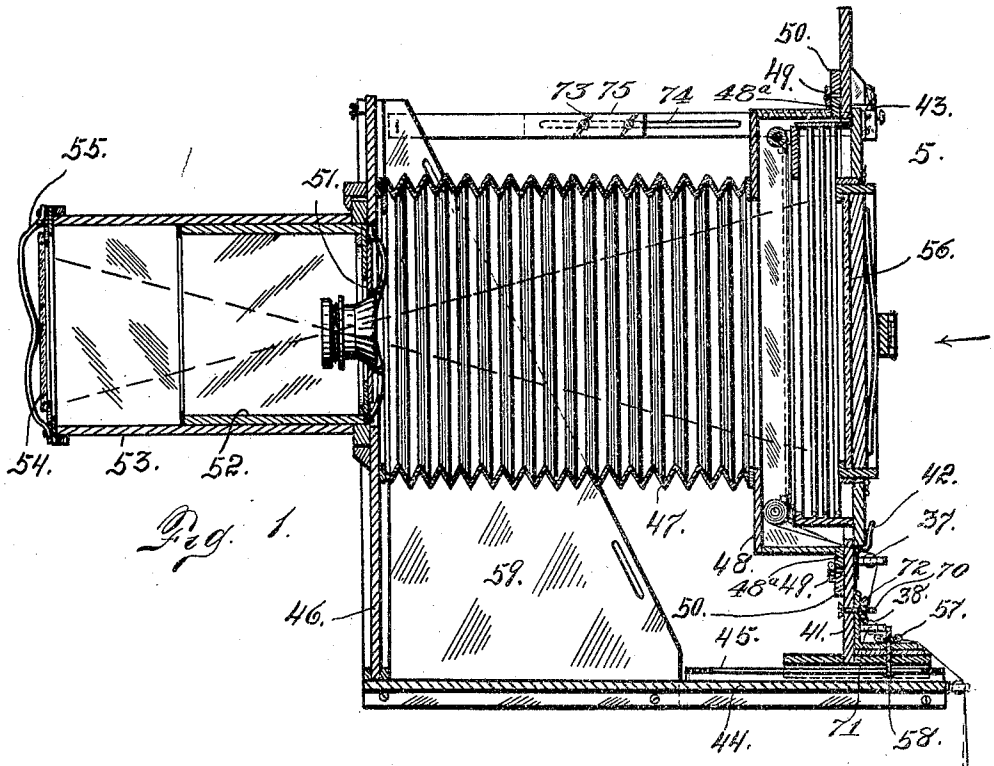


Fig. 1.

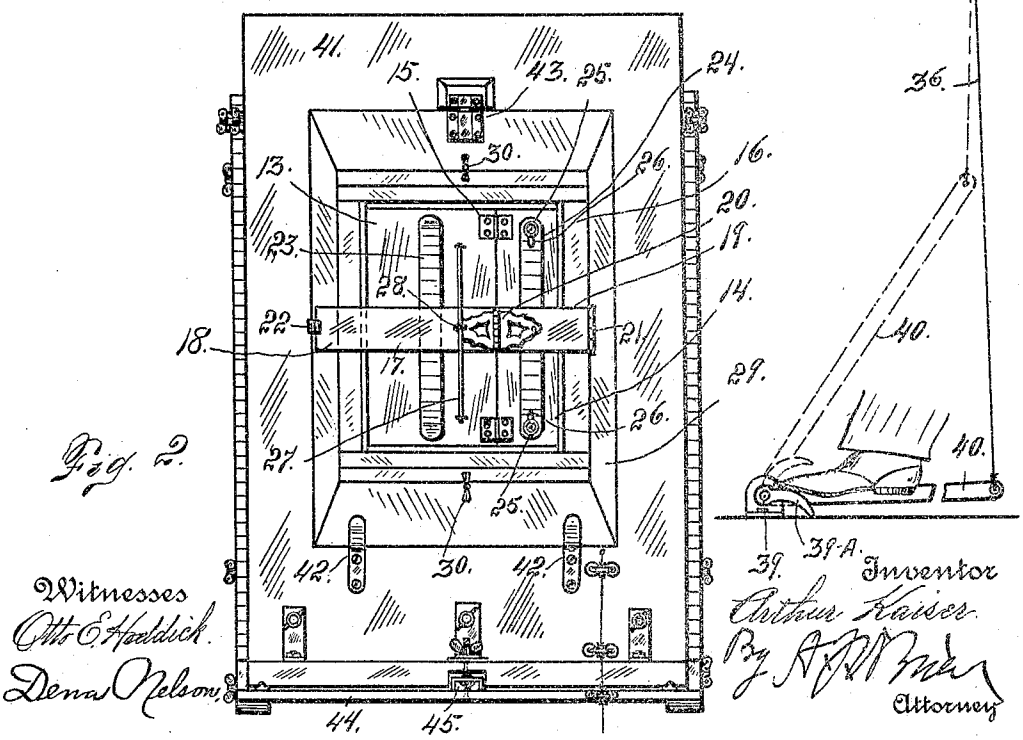


Fig. 2.

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3 SHEETS—SHEET 2.

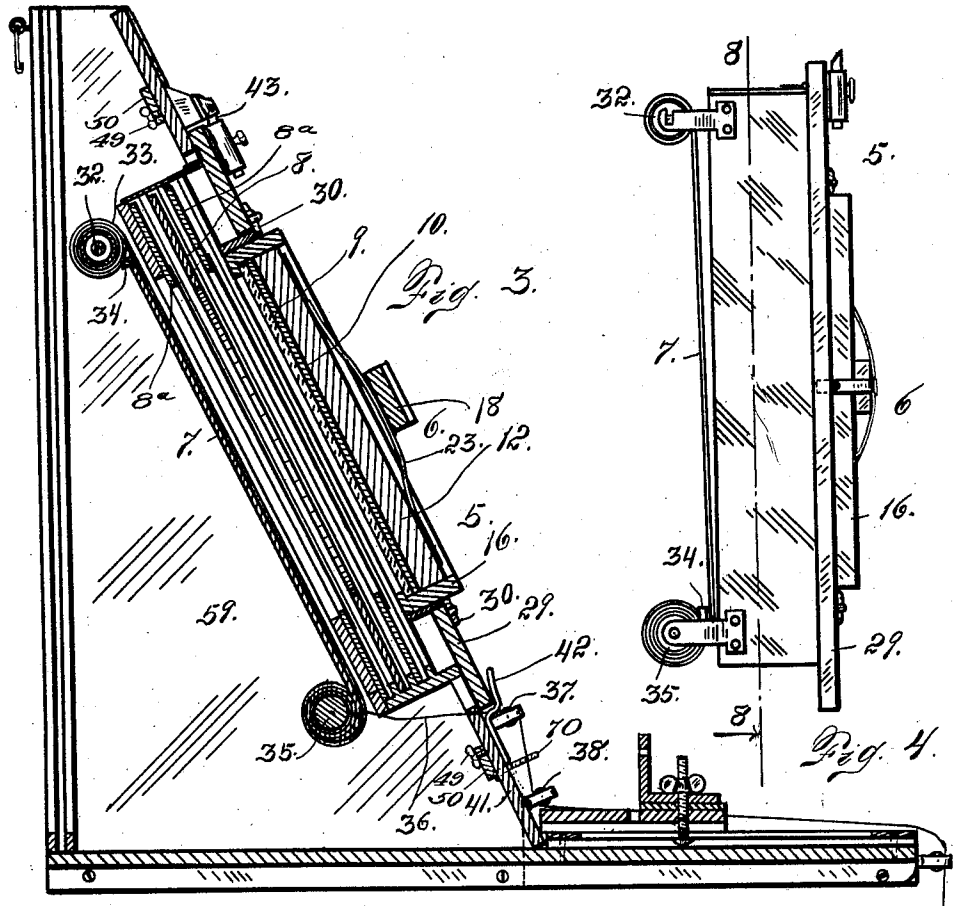


Fig. 3.

Fig. 4.

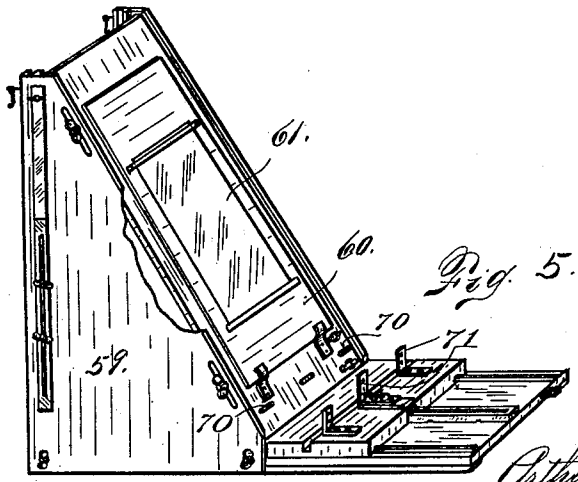


Fig. 5.

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3 SHEETS—SHEET 3.

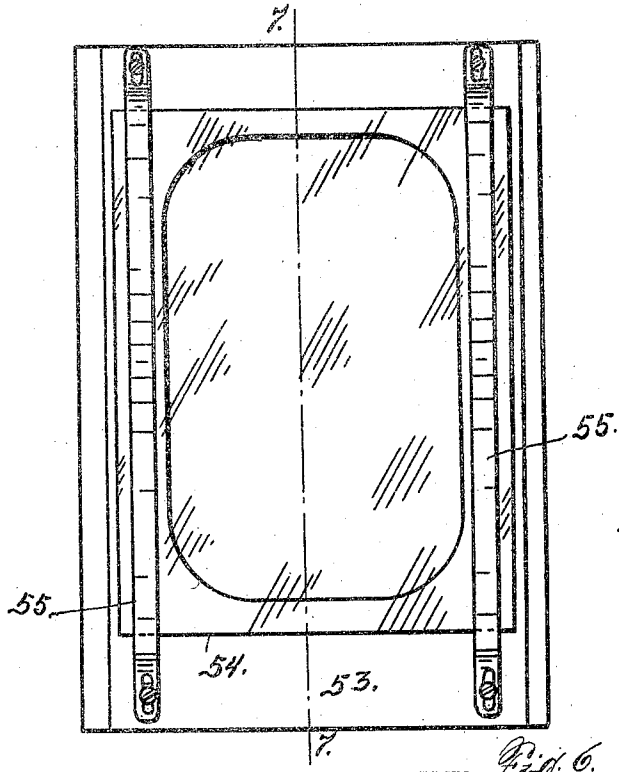


Fig. 6.

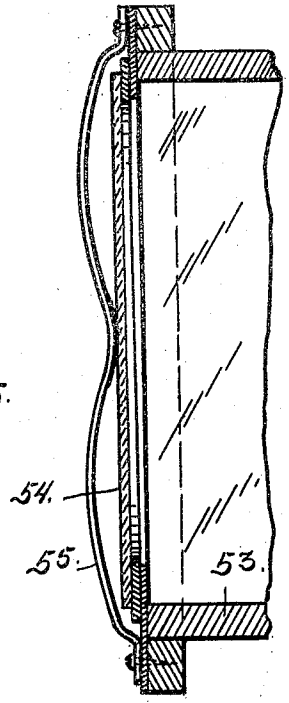


Fig. 7.

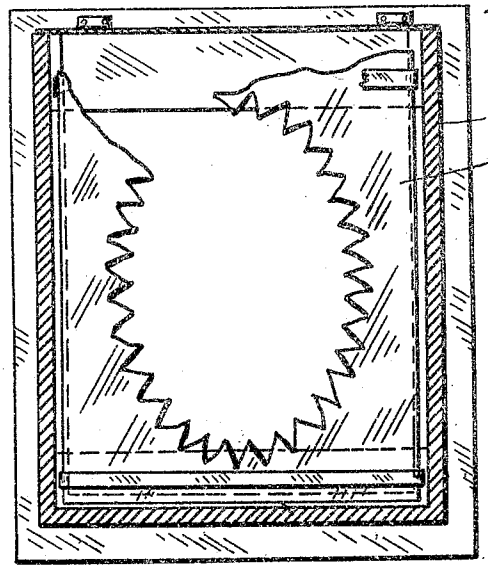


Fig. 8.

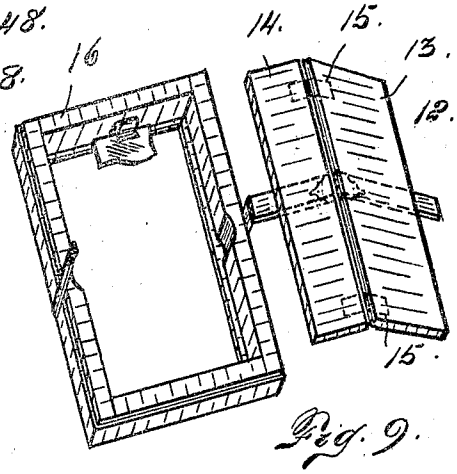


Fig. 9.

Witnesses
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UNITED STATES PATENT OFFICE.

ARTHUR KAISER, OF DENVER, COLORADO.

COMBINED PRINTING-MACHINE AND ENLARGING-CAMERA.

No. 894,154. Specification of Letters Patent. Patented July 21, 1908.

Application filed February 23, 1907. Serial No. 358,773.

To all whom it may concern:

Be it known that I, ARTHUR KAISER, a citizen of the United States, residing in the city and county of Denver and State of Colorado, have invented certain new and useful Improvements in a Combined Printing-Machine and Enlarging-Camera; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in apparatus adapted for use by photographers.

My object is to provide a single apparatus which may be so modified by adjustment that it shall be adapted for use by the photographer for all purposes after the negative has been taken.

The invention is therefore a sort of combination apparatus which may be employed as an enlarging camera, and printing machine, a retouching stand and a copying camera.

The invention will now be described in detail reference being made to the accompanying drawing in which is illustrated an embodiment thereof.

In this drawing, Figure 1 is a sectional view illustrating the combined apparatus shown as an enlarging camera. Fig. 2 is a front view of the apparatus or a view looking in the direction of the arrow in Fig. 1. Fig. 3 is a section taken through the printing apparatus or machine shown in position for use with the bellows removed. Fig. 4 is a side elevation of the printing apparatus detached from the frame. Fig. 5 is a perspective view of the retouching frame. Fig. 6 is a front view of the frame for holding the negative located at the end of the casing in which the lens holder slides when the device is used as an enlarging camera. Fig. 7 is a section taken on the line 7—7 Fig. 6. Fig. 8 is a section taken through the printing apparatus on the line 8—8 Fig. 4, illustrating the vignetter, the latter being partly broken away. Fig. 9 is a perspective view of the printing frame showing the same open at the back.

The same reference characters indicate the same parts in all the views.

Let the numeral 5 designate the printing apparatus in its entirety, which consists of a printing frame 6; a red curtain 7; and an interposed vignetting frame 8 and apertured plates 8^A on opposite sides of the frame 8 for the purpose of diffusing the light.

As shown in Fig. 3 the printing apparatus is arranged for contact printing or printing directly from a negative which is designated by the numeral 9. Back of this negative is the sensitized paper 10 upon which the picture is printed; while 12 is the back or cover for the paper during the printing operation. This cover is composed of two members 13 and 14 divided in a longitudinal direction and connected by hinges 15.

The printing frame proper is designated 16. A transverse bar 17 is composed of two members 18 and 19 hinged together as shown at 20. The member 19 is hinged to the frame at 21 while its opposite extremity is adapted to engage a spring-actuated keeper 22. Connected with the member 18 of the bar is a bow-shaped spring 23 while a similar spring 24 is connected by means of screws 25 with the member 14 of the hinged cover. These screws pass through slots 26. The member 18 of the cross bar is connected with the member 13 of the cover by wire or small rod 27 passing through a loop 28 of the bar and connected at its extremities with the cover member on opposite sides of the bar. This printing frame is connected with an auxiliary frame 29, by means of pivoted catches 30 at the top and bottom. The curtain 7 is connected at the top with a spring roller 32 by means of pieces of tape 33, one being connected at each side of the curtain. The upper extremity of the curtain is provided with a transversely disposed solid strip 34 which forms a stop to prevent the curtain from winding upon the roller. This curtain is connected at its lower extremity with a roll 35. A cord 36 is connected with the lower roller and adapted to wind upon one extremity thereof. By pulling this cord which passes over guide pulleys 37 and 38, the operator may pull down the curtain and allow the light to pass to the negative 9 for printing purposes. By means of this curtain arrangement the printing of pictures from negatives may be very rapidly accomplished. By employing a rock shaft 39, a foot lever arm 39^A and a rod 40 adapted to be operated by the foot as shown in Fig. 1, the printing may be carried on with great rapidity since only a short exposure is necessary in order to print the picture; and by

virtue of the special construction of printing frame heretofore described, the work of printing is greatly facilitated.

During the operation of printing negatives from actual contact, the printing apparatus heretofore described is preferably placed in the position shown in Fig. 3 in which it is inclined to such an angle as to allow the negative to maintain its position within the printing frame proper by gravity. In order to so mount the printing apparatus, the auxiliary frame 29, is mounted upon an outer frame 41 by means of spring catches 42 at the bottom and a spring-actuated bolt 43 at the top.

When it is desired to produce an enlarging camera, my improved printing apparatus connected with the frame 41 as heretofore explained, is slidably mounted upon the base plate 44, the mechanism occupying a vertical position and being slidable in ways 45 formed upon the said base. Between the frame plate 41 and an opposing back plate 46, is interposed the bellows 47 connected with a frame 48 which is secured to the frame plate 41 by means of pivotally mounted latches 49 fastened to the bars 50. These members 49 overlap the flanges 48^{A} of the bellows frame thereby locking said frame in the position shown in Fig. 1. The bars 50 act as stops to prevent the frame 48 from having a vertical movement. The opposite extremity of the bellows, is connected with the back plate 46; while the lens holder 51 is mounted on a telescoping frame 52 located in an outer casing 53. At the rear extremity of the casing 53 is located a negative 54 adjustably held in place by springs 55.

The size of the picture is obtained by the adjustment of the lens holder which telescopes in the casing 53 as heretofore described. After the size has been determined, the proper focus is obtained by moving the printing apparatus by sliding the plate 41 upon the base 44. As soon as the proper focus is obtained, the ground glass plate is removed and a plain glass plate 56 is placed in its stead (see Fig. 1). In this case the glass plate 56 takes the place of the negative when printing from direct contact as illustrated in Fig. 3. It must then be understood that in Fig. 1 the part 56 designates a plain glass plate while the negative 54 is located at the rear extremity with the casing 53 in which the lens holder telescopes. The apparatus disclosed in Fig. 1 then becomes an enlarging and printing camera. The proper enlargement having been obtained in the manner just explained, the printing then goes on in the same manner as heretofore described when printing from direct contact with the negative. That is to say the cover of the printing frame is opened, and the sensitized paper placed upon the glass plate 56. The curtain 7 is then drawn down in the manner heretofore explained and held in this position during the short time taken for printing. The curtain is then allowed to return to its normal position automatically. The printed picture is then taken out and another piece of paper put in place and thus the work goes on with exceeding rapidity as heretofore explained. While adjusting the printing apparatus upon the base 44 in order to get the proper focus, a thumb nut 57 and a bolt 58 are employed. By loosening the thumb nut the printing apparatus may be moved in the one direction or the other upon the base 44 until the proper focus is obtained, after which the thumb nut is tightened and the work of printing goes on.

The plate 41 is provided with screw bolts 70, which enter apertured angle plates 71. When it is desired that the printing frame be held in the vertical position the bolts 70 after passing through the apertured angle plate 71 receive thumb nuts 72 whereby the frame is locked in the desired position. The frame after being adjusted to the vertical position as above described may also be secured in place by the locking members 73 passing through slots 74 formed in the telescoping parts 75 as shown in Fig. 1.

When printing from direct contact, the printing apparatus is held in the inclined position by approximately triangular side members 59.

For retouching purposes, the entire printing apparatus is removed and a board 60 put in the place of the member 29. The negative 61 is then mounted upon this board for retouching purposes.

The mechanism shown in Fig. 2 of the drawing is for the purpose of determining the condition of the work in the machine which is done by merely opening the portion 13. This avoids the necessity of removing the entire frame 29 and other parts of the camera as is necessary in old devices.

Having thus described my invention, what I claim is:

1. In a structure of the class described, the combination of a printing frame, two rollers occupying a position in the rear of the printing frame, one in a plane above the other, a red curtain connected with one roller and adapted to be wound thereon when the latter is rotated, the other roller being a spring roller and being connected with one extremity of the curtain, flexible devices adapted to wind on the spring roller, the upper end of the red curtain being provided with a stop to limit the winding movement of the spring roller as soon as the stop on the curtain has reached said roller, substantially as described.

2. In a photographic printing apparatus, the combination of a printing frame, two rollers located in the rear of the printing frame one in a plane above the other, a red

curtain connected with one roller and adapted to be wound thereon as the last named roller is rotated, the other roller being spring-actuated and connected with the red curtain to hold the latter in position between the light and the printing frame, one extremity of the curtain being provided with a stop to limit the winding movement of the spring roller, and means connected with the other roller for rotating the same whereby the red curtain may be wound on the last named roller, permitting the light to pass to the printing frame, substantially as described.

3. An enlarging and printing camera comprising a main frame work, a printing apparatus slidably mounted thereon and provided with a red curtain located in the rear of the printing frame, the said curtain being normally interposed between the light and the printing frame, means for moving the curtain to allow the light to pass to the printing frame, means for restoring the red curtain to its normal position automatically, a stop connected to the upper extremity of the curtain to limit the return movement thereof a casing connected with the rear of the main frame and adapted to hold a negative, a lens holder slidable in said casing, and a bellows connected with the printing apparatus at one extremity and with the stationary rear part of the frame at the other extremity.

4. In a structure of the class described, the combination of a printing frame, consisting of two hinged members, a cross bar composed of two members respectively connected with the hinged members of the cover, and springs connected with the cross bar members and adapted to engage the members of the hinged cover, one of the last named members being considerably larger than the other, the cross bar being hinged at one extremity to the printing frame, and a spring catch adapted to engage the other extremity when the cover is closed, two rolls occupying a position in the rear of the printing frame, one in a plane above the other, a red curtain connected with one roller and adapted to be wound thereon when the latter is rotated, the other roller being a spring roller and being connected with one extremity of the curtain, flexible devices adapted to wind on the spring roller, the upper end of the red curtain being provided with a stop to limit the winding movement of the spring roller as soon as the stod on the curtain has reached said roller, substantially as described.

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

ARTHUR KAISER.

Witnesses:
A. J. O'BRIEN,
EDWARD N. CLEMENT.

Hutchings, 695,713, Mar. 18, 1902 (95-43)
Conteiglas-et-al, 815,267, Mar. 13, 1906 (95-73)