April 5, 1938. L. L. GRIFFIN 2,112,838

PHOTOGRAPHIC PRINTING APPARATUS

Filed July 21, 1937 3 Sheets-Sheet 1

Fig. 1

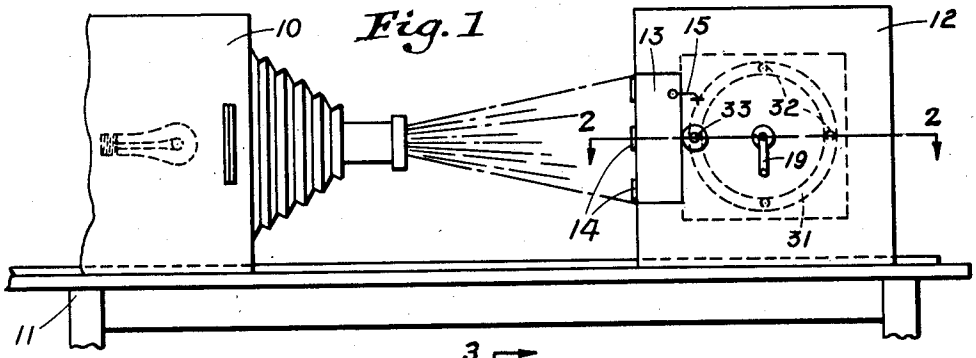
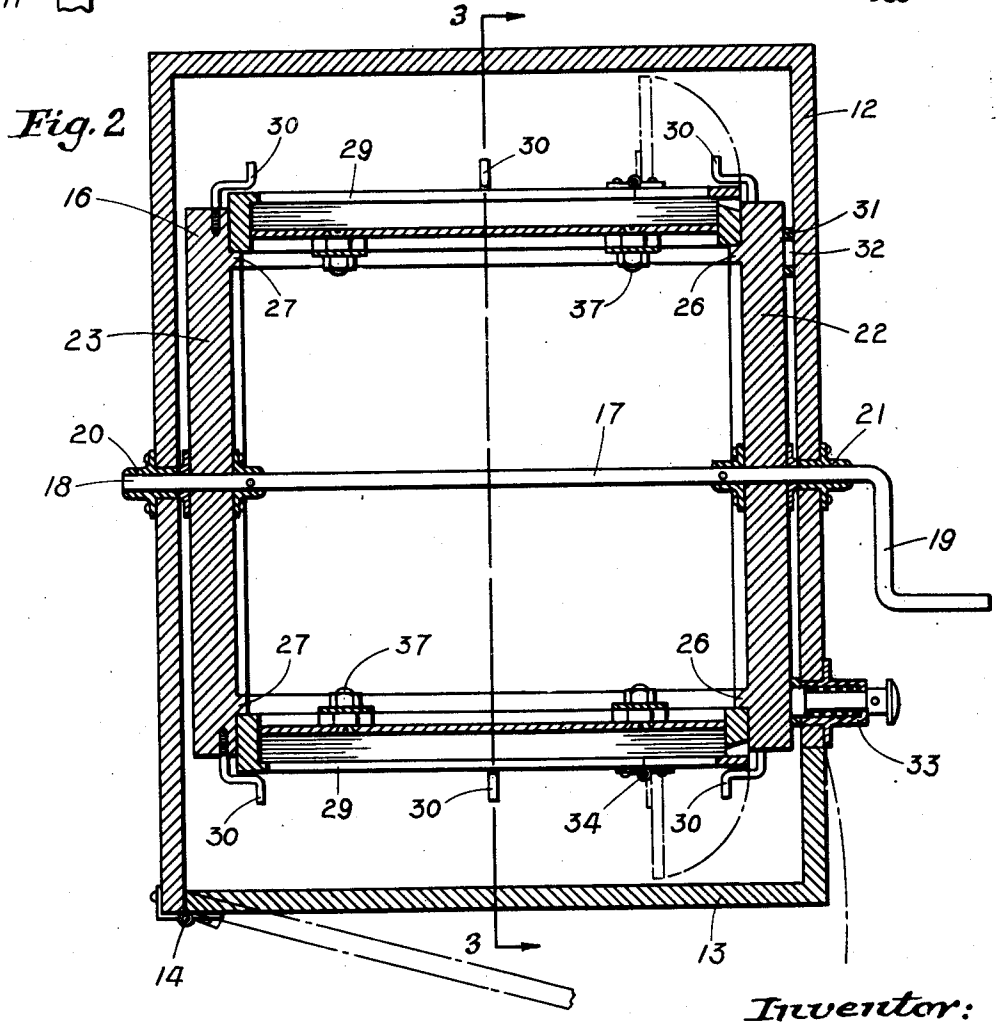


Fig. 2



Inventor:
I. L. Griffin
by Robert A. Lavender
Attorney

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PHOTOGRAPHIC PRINTING APPARATUS

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Fig. 3

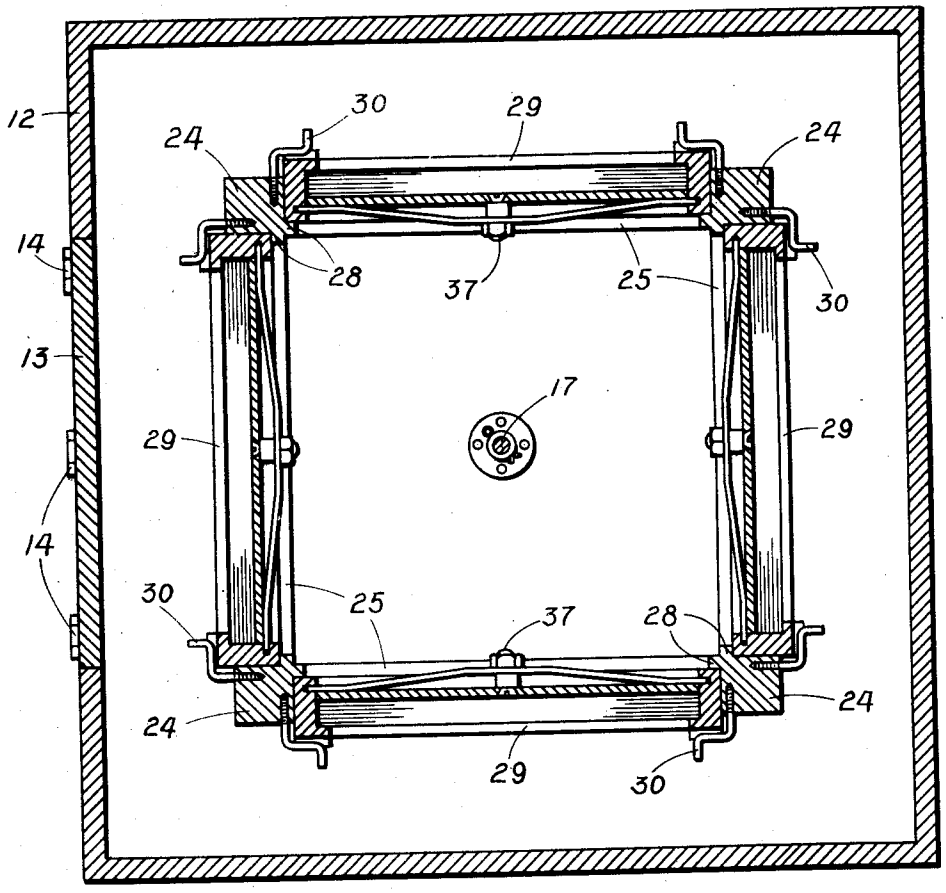
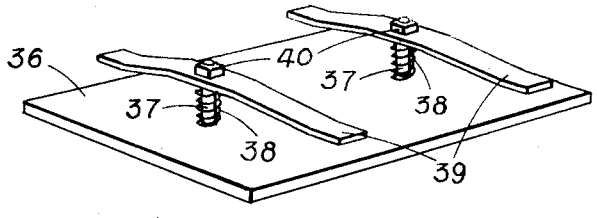


Fig. 6



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PHOTOGRAPHIC PRINTING APPARATUS

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Fig. 4

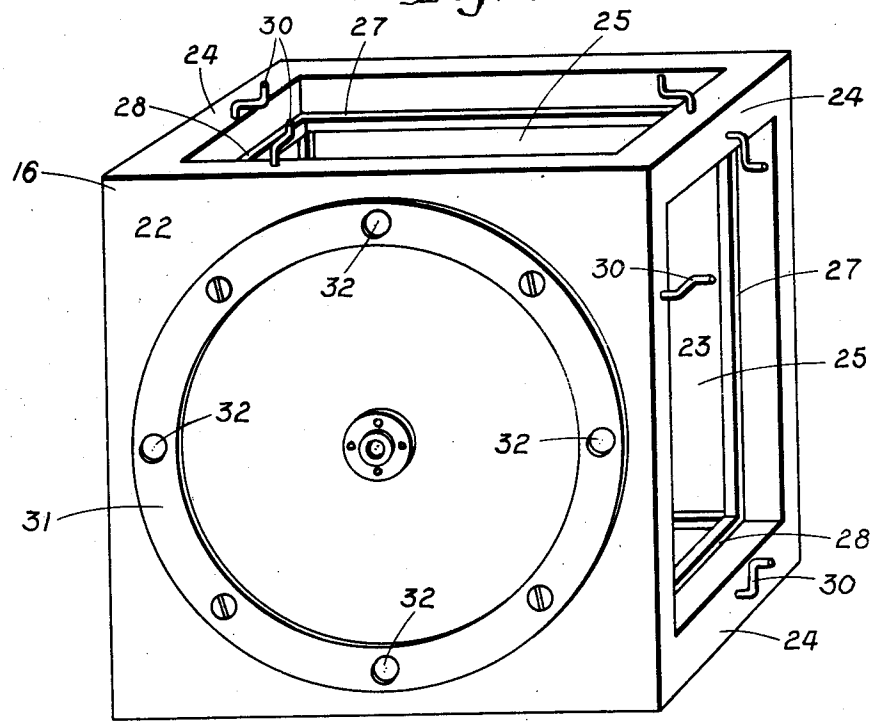
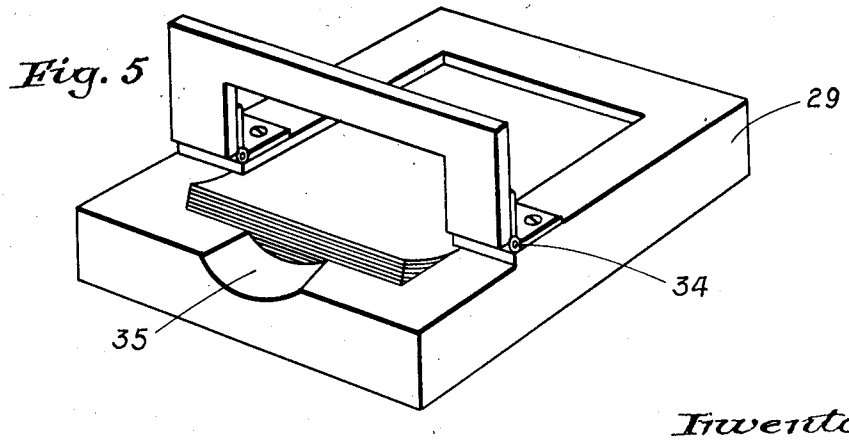


Fig. 5



Inventor:
L. L. Griffin

by Robert A. Fennuder
Attorney

Patented Apr. 5, 1938

2,112,838

UNITED STATES PATENT OFFICE

2,112,838

PHOTOGRAPHIC PRINTING APPARATUS

Leonard L. Griffin, Fredericksburg, Va.

Application July 21, 1937, Serial No. 154,733
3 Claims. (Cl. 88—24)

(Granted under the act of March 3, 1883, as amended April 30, 1928; 370 O. G. 757)

My invention relates to improvements in photographic printing apparatus and more particularly to improvements in apparatus for making enlarged positive prints directly from relatively small negatives.

An important object of my invention is to provide such an apparatus that may be used for the purpose of making positive prints from negatives in rapid succession.

Another object of my invention is to provide such an apparatus that may be used to make positive prints from such negatives that might require different grades of contrast paper.

Other objects and advantages of my invention will be apparent during the course of the following description.

In the drawings forming a part of this specification, and in which like numbers are employed to designate like parts throughout the same,

Fig. 1 shows my invention as adapted to be used with a projecting lantern in a horizontal plane;

Fig. 2 is a sectional view through 2—2;

Fig. 3 is a sectional view through 3—3;

Fig. 4 is a perspective view of a rotatable frame holder;

Fig. 5 is a perspective view of a frame; and

Fig. 6 is a perspective view of the back of a frame.

In the drawings, where for the purpose of illustration is shown a preferred embodiment of my invention, the numeral 10 indicates a projecting lantern slidably mounted on a table 11 and which is used in conjunction with my invention. Any conventional type projecting lantern and table may be used. Also mounted on the table 11 is a light-tight housing 12 containing an opening on one side closable by a door 13 which is attached to the housing 12 by hinges 14, and securable in a closed position by a latch 15. A multi-sided frame holder 16 is rotatably mounted within the housing 12 by means of an axle 17 that extends through the center of, and is rigidly secured to, the holder 16, and that terminates at one end 18 and at the other end in a handle 19. Light-tight fittings 20 and 21 are secured in the sides of the housing 12 for the purpose of supporting the axle 17. The frame holder 16 consists of ends 22 and 23 that are held apart by distance pieces 24. The ends 22 and 23, and the distance pieces 24, form the open sides 25. The number of sides that may thus be formed is unlimited. The inner edges of the ends 22 and 23 are formed into shoulders 26 and 27, and the inner edges of the distance pieces 24 are formed into shoulders 28. Into the open sides 25 are inserted paper-holder frames 29 which are caused to rest upon the shoulders 26, 27 and 28, and are secured in place by means of clips 30 mounted on ends 22 and 23 and on the distance pieces 24.

An annular ring 31 is secured on the end 22 of the frame holder 16, with the axle 17 as the center. This ring contains slots 32, the number of slots corresponding to the number of open sides 25. A spring loaded plunger stop 33 is so mounted on the handle side of the light-tight housing 12 as will allow the plunger stop 33 to coincide with the annular ring 31, and to fit into one of the slots 32 when the slot 32 is opposite the plunger stop 33. Any conventional type frame containing sensitized paper is placed in the open sides 25, but the one which I have adopted is shown in Figs. 5 and 6, and consists of the frame 29 which has its face partially cut away and hinged at 34. One end of the frame 29 is scalloped at 35 for easy removal of print paper from the frame. The back of the frame 29 is shown in Fig. 6 and consists of a flat piece 36, shaped to conform to the inner shape of the frame 29. Bolts 37 are secured to the back and form a core for coil springs 38. The back is secured to the frame proper by means of slats 39 which fit into grooves in the sides of the frame, and which are loosely attached to the bolts 37 by means of nuts 40.

The operation of my device is as follows:

Photographic print paper of different degrees of sensitiveness is arranged in the different frames. The frames are then secured in the open sides 25 of the frame holder 16. In one of these sides is placed a special frame similar to the others, but instead of being filled with light sensitive paper, it holds a sheet of clear white paper providing a screen, the purpose of which will be explained later.

With the machine thus loaded the negative to be printed is inserted in the projecting lantern 10 and is caused to be projected through the open door 13 of the light-tight housing 12 and onto the special frame where it is focused. From the intensity of the image formed on this special frame is determined what grade of paper is desired to be used for the printing. After determining the grade of paper to be used, the light beam coming from the projecting lantern 10 is prevented from entering the light-tight housing by shutting it off at its source, or by closing the door 13. With the light thus excluded from the housing 12, the frame holder 16 is rotated by means of the handle 19 until the paper of the proper degree of sensitiveness is opposite the door 13. The frame hold-

er is then secured in this position by means of the plunger stop 33 entering one of the slots 32. The paper of the desired sensitiveness is then exposed to the projected image from the lantern 10. After sufficient exposure the light is discontinued and the exposed paper is removed from the frame 29 and passed on to the developer. The apparatus is then ready for the next printing. The type of frame which I use is so constructed that a supply of sensitized paper may be placed in it and the back then placed into place. The action of the springs 38 will force the back of the frame forward and against the paper, thus insuring that the topmost sheet of paper will at all times be against the underneath edge of the front of the frame.

The invention described herein may be manufactured and used by or for the Government of the United States of America for governmental purposes without the payment of any royalties thereon or therefor.

Having thus described my invention, what I claim is:

1. A frame for photographic print paper comprising two side pieces, two end pieces, the upper portion of said side pieces being broken and hinged so as to form with the upper portion of one of said end pieces a door-like unit, and a flat back fittable in said frame, slats movably connected with said back for engagement with grooves contained in said side pieces, and means for forcing said flat back towards the face of said frame.

2. A frame for photographic print paper comprising two side pieces; two end pieces, the upper portion of said side pieces being broken and hinged so as to form with the upper portion of one of said end pieces a door-like unit, the remaining portion of said end piece containing a scalloped recess to allow easy access to the paper; a flat back fittable in said frame, slats movably connected with said back for engagement with grooves contained in said side pieces, and means for forcing said flat back towards the face of said frame.

3. A frame for photographic print paper comprising two side pieces, two end pieces, the upper portions of said side pieces being broken and hinged so as to form with the upper portion of one of said end pieces a door-like unit, and a flat back fittable in said frame, means for movably connecting said back to said frame, and means for forcing said flat back towards the face of said frame.

LEONARD L. GRIFFIN.