

Jan. 21, 1930.

A. L. MAYER

1,744,323

PHOTOGRAPHIC PRINTING APPARATUS

Filed Oct. 12, 1926

2 Sheets-Sheet 1

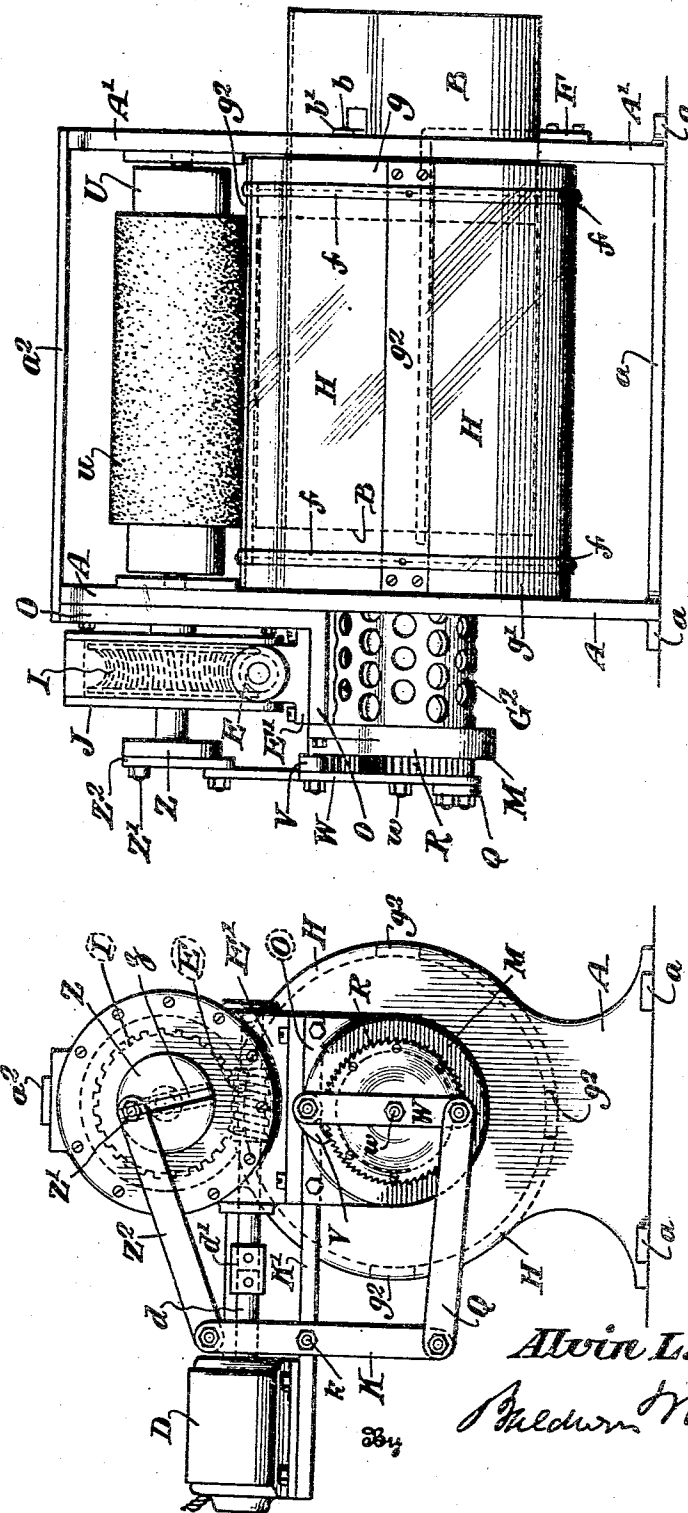


Fig. 2.

Fig. 1.

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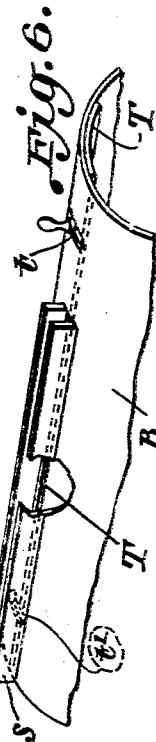
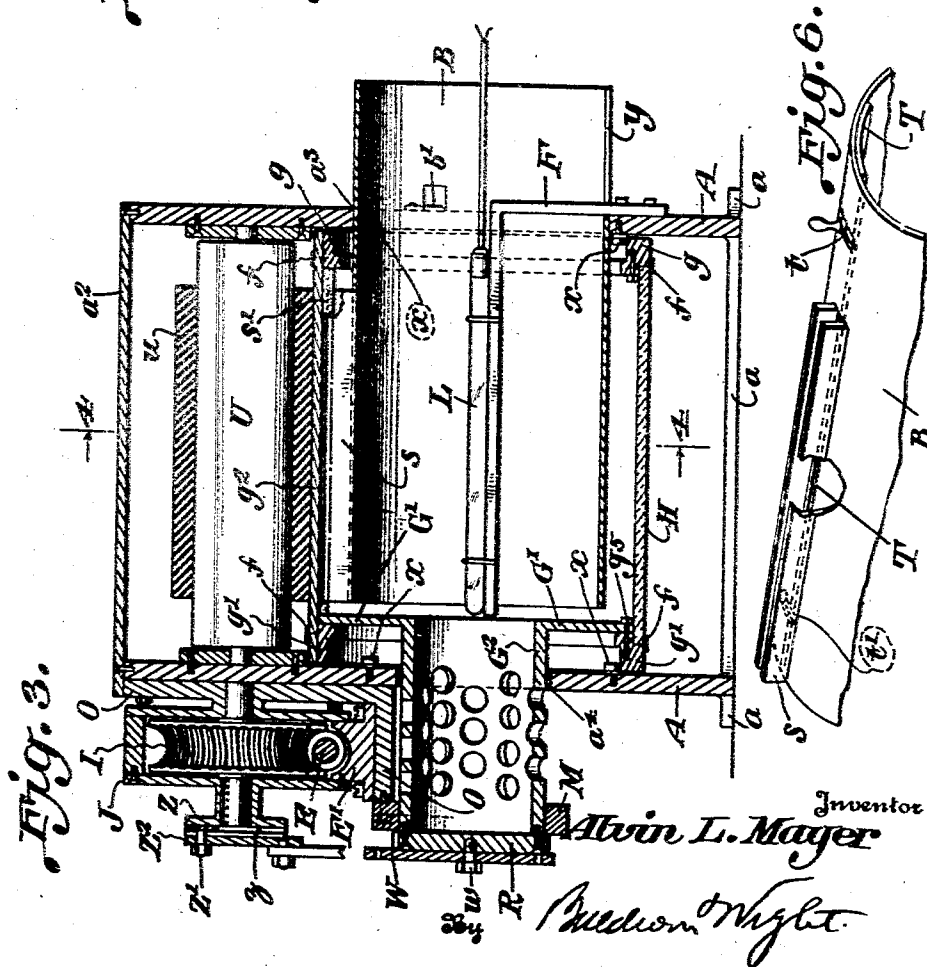
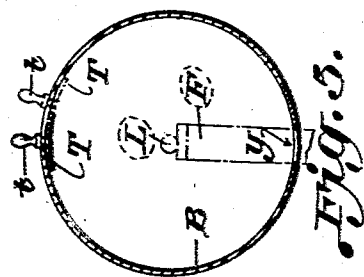
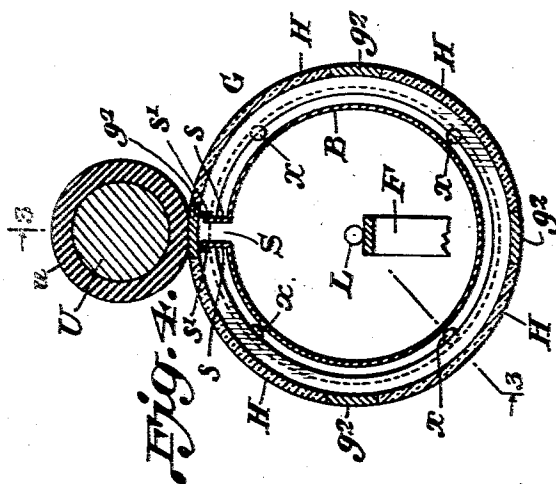
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UNITED STATES PATENT OFFICE

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PHOTOGRAPHIC-PRINTING APPARATUS

Application filed October 12, 1926. Serial No. 141,223.

This invention relates to apparatus for printing photographs in which negatives and sensitized paper are together passed across a narrow light emitting area which supplies the necessary amount of light to the negative and paper as they are passed by said opening. My invention particularly relates to apparatus of the kind in which negatives and paper are supplied in pairs to the apparatus in contra-distinction to apparatus in which a continuous series of negatives and a sensitized strip or ribbon of paper is thus supplied.

A photographic printing apparatus embodying my invention comprises a suitable frame which supports a casing within which is arranged a source of light and which is formed with a slot through which the light passes to the negatives and to the paper to be printed. The light casing is surrounded by a cylinder comprising a frame and a series of glass panels separated from each other by horizontally arranged strips or cross pieces. In the upper part of the frame is mounted a pressure roller having a soft covering which bears on the paper and presses it into close contact with the negative and also presses the negative and paper firmly against the glazed cylinder. The glazed cylinder is divided into sections by the horizontally arranged strips and the glazed cylinder is slowly and intermittently turned by gearing connecting it with a motor.

My improvements are illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of a photographic printing apparatus embodying my improvements.

Figure 2 is a front elevation thereof.

Figure 3 is a longitudinal section of part of the apparatus on the line 3—3 of Figure 4.

Figure 4 is a transverse section of part of the apparatus on the line 4—4 of Figure 3.

Figure 5 shows a transverse section of a light casing, indicating how it may be equipped with an adjustable shutter.

Figure 6 is a detail view in perspective, illustrating how the adjustable shutter may be operated.

The frame of the machine may be of any

form suitable to support the working parts of the apparatus. As shown, the end plates A, A' of the frame are connected at their lower ends by cross pieces a , a and at the top the end plates are connected by a removable cross piece a^2 . The end plate A' is formed with a circular opening a^3 and the plate A is formed with a circular opening a^4 . The light casing B is cylindrical in form and extends through the opening a^3 . It is secured to the plate A' by screws b which extend through lugs b' cut from the casing and bent to assume positions at right angles to the axis of the casing. Any other suitable way may be used for securing the casing to the frame, but that shown is suitable and sufficient. The casing B is formed at the top with a slot S through which light is transmitted and the casing is provided with parallel flanges s which extend upwardly from the casing on opposite sides of the slot and carry strips s' of soft material, such as rubber or felt.

In order to vary the width of the light slot I may employ an adjustable shutter T, shown in Figures 5 and 6. This shutter consists of a metallic strip connected with the casing B by pins extending through slots t' . One of the pins may be provided with a handle t , as shown.

A source of light such as a light tube L is supported in the casing by a bracket F secured to the frame piece A'. This bracket extends through a slot y in the casing.

Surrounding the casing B is a glazed cylinder G of somewhat larger diameter than the casing B. This cylinder consists of a skeleton frame comprising frame rings g , g' and cross pieces g^2 which connect the rings g , g' . The cross pieces g^2 are arranged regular distances apart so as to divide the cylinder into sections of equal area and between the sections are inserted segments H of glass or other suitable transparent material. The glass may be held in place by strips f of thin metal applied to the cylinder in the manner clearly indicated.

The cylinder G is supported in the main frame by rollers x which are carried by the end plates A, A' and contact with the in-

terior of the rings g, g' . At one end the ring g' of the cylinder is secured at g^5 to spokes G' , extending radially from the inner end of the hub G^2 which extends through the ring g' . This hub may be perforated as 5 shown to reduce its weight, although this is not essential. The outer end of the hub G^2 is supported in bearings in a hanger M attached to the lower end of an arm of the bracket O which latter is secured to the upper 10 part of the frame A . To the outer end of the hub G^2 is secured a ratchet wheel R which is engaged by a pawl V carried by the upper end of a lever W pivoted intermediate its ends at w to the ratchet wheel R . The lower 15 end of the lever W is pivotally connected with one end of a link Q , the opposite end of which is pivotally connected to a lever K , pivoted at k to an arm K' extending from the main frame and supporting a motor D , the 20 shaft d of which is coupled at d' with a horizontally arranged screw E , having bearings in a housing E' supported on the bracket O . The screw E meshes with a worm wheel I mounted in a casing J and the outer end of 25 the shaft of the worm wheel carries a disk Z provided with a diagonal slot z into which extends a crank pin Z' carried by one end of a link Z^2 pivotally connected at its opposite end to the upper end of the vertical lever K . 30 The pin Z' may be adjusted in the slot z to regulate the movement of the link Z^2 .

The motor is run at comparatively high speed, but by the worm gearing shown the speed of rotation of the disk Z is reduced and 35 a further reduction of the speed of rotation is given to the cylinder G by means of the links and levers interposed between the disk and the ratchet wheel R .

The disk Z is rotated continuously in one 40 direction but the lever W is oscillated about its pivot w in such manner as to give an intermittent rotary movement to the glazed cylinder.

In the construction shown a quarter turn 45 is given to the cylinder G by each forward movement of the pawl V so as to bring the glass panels H one at a time successively over the slot S .

A pressure roller U covered with some soft 50 material such as rubber or felt u is mounted in bearings in the upper ends of the frame plates A, A' and bears on the top of the cylinder G in the manner shown in Figure 4. The roller U is not positively turned but is 55 operated by frictional contact with the cylinder G .

The operator takes from adjacent piles negatives and sensitized paper and feeds them 60 to the glazed cylinder below the pressure roller. A single negative and a single piece of sensitized paper is placed on a glass panel H at each step of the operation when the cylinder is at rest. Then the cylinder is moved forward by the motor mechanism before de- 65 scribed and the negative and paper pass by

the light slot and are delivered at the opposite side of the machine. The operator then takes another negative and another piece of paper and places them on the next glass panel H while the cylinder is at rest and then the 70 cylinder moves forward again and the negative and paper pass over the slot S and are delivered at the back of the machine in the manner before described. These operations are repeated until the supply of negatives 75 and paper is exhausted or until a sufficient supply of printed pictures is obtained.

This apparatus as shown has been placed into service and operates efficiently in the manner above described.

I claim as my invention:

1. In a photographic printing apparatus, the combination with a stationary opaque casing having a single light-emitting slot, a lamp within the casing for transmitting 80 light rays outwardly through said single slot, a rotary transparent cylinder surrounding the casing for directing superposed sensitized and non-sensitized papers past the 85 said slot of the cylinder, said cylinder comprising a frame including end rings, bars connecting the rings and spaced equi-distance apart, transparent panels disposed between and supported by adjacent bars and 90 respectively adapted to support in succession said superposed sensitized and non-sensitized papers, and actuating means for 95 intermittently rotating the cylinder whereby the bars of the cylinder during the respective periods of rest will be positioned in registration with the light-emitting slot of the 100 casing.

2. In a photographic printing apparatus, the combination with a stationary opaque casing having a single light-emitting slot, a 105 lamp within the casing for transmitting light rays outwardly through said single slot, a rotary transparent cylinder surrounding the casing for directing superposed sensitized and non-sensitized papers past the said slot 110 of the cylinder, said cylinder comprising a frame including end rings, bars connecting the rings and spaced equi-distance apart, transparent panels disposed between and supported by adjacent bars and respectively 115 adapted to support in succession said superposed sensitized and non-sensitized papers, a shutter for adjusting the area of said slot, and actuating means for intermittently rotating the cylinder whereby the bars of the 120 cylinder during the respective periods of rest will be positioned in registration with the light-emitting slot of the casing.

In testimony whereof, I have hereunto subscribed my name.

ALVIN L. MAYER.