

Dec. 26, 1950

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2,535,145

CONTACT PRINTING MACHINE

Filed April 29, 1948

2 Sheets-Sheet 1

Fig. 1

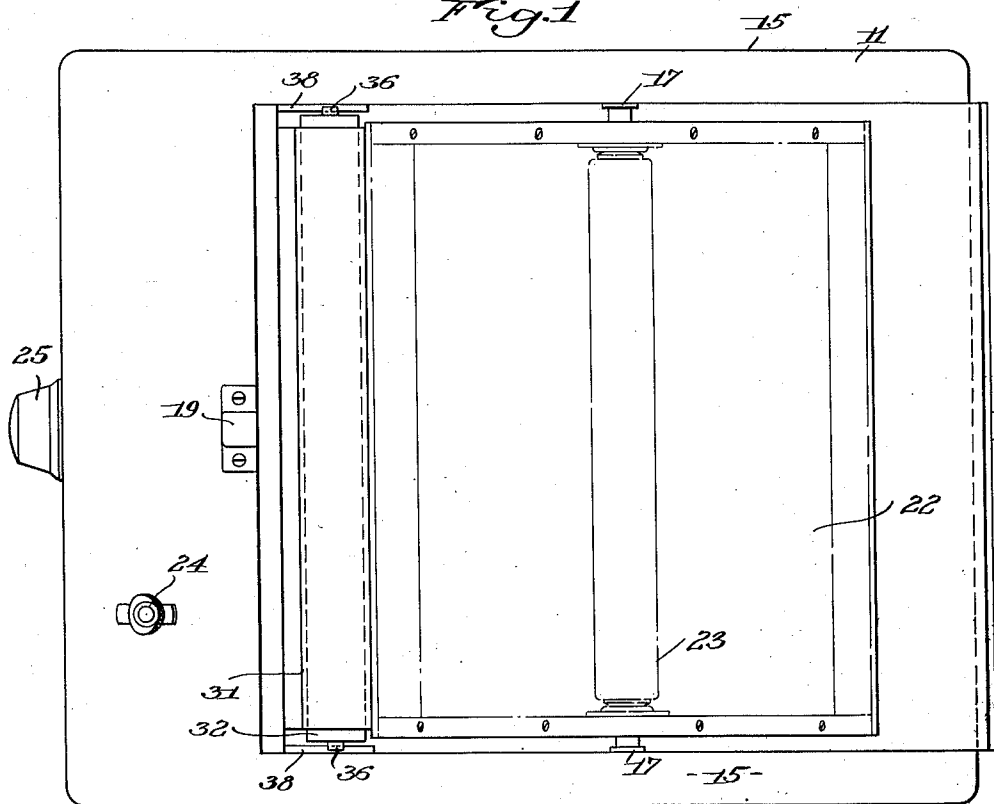
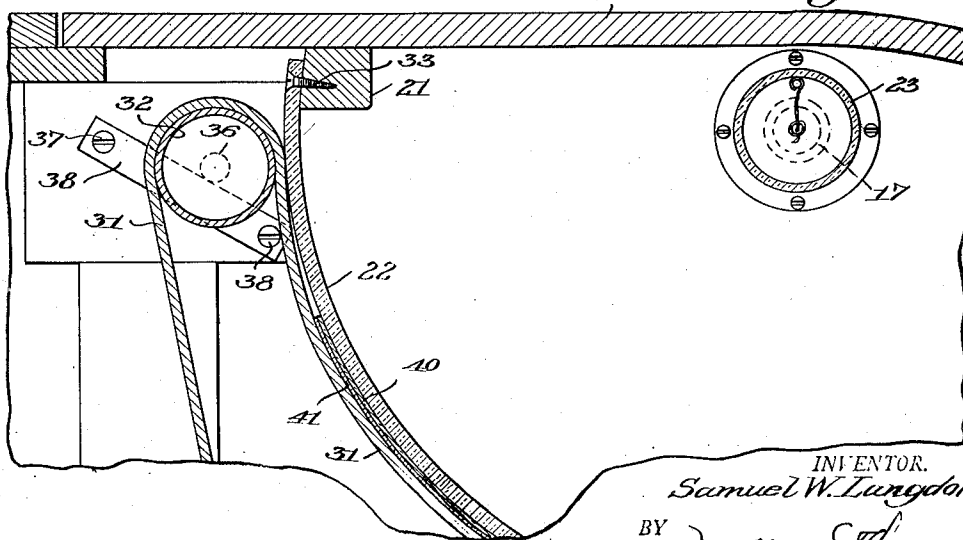


Fig. 2



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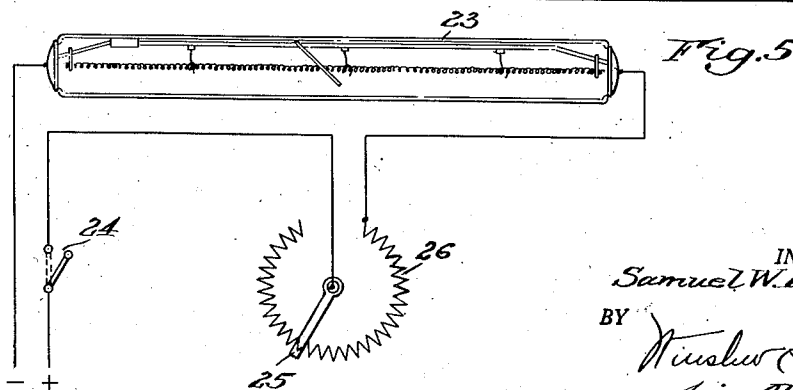
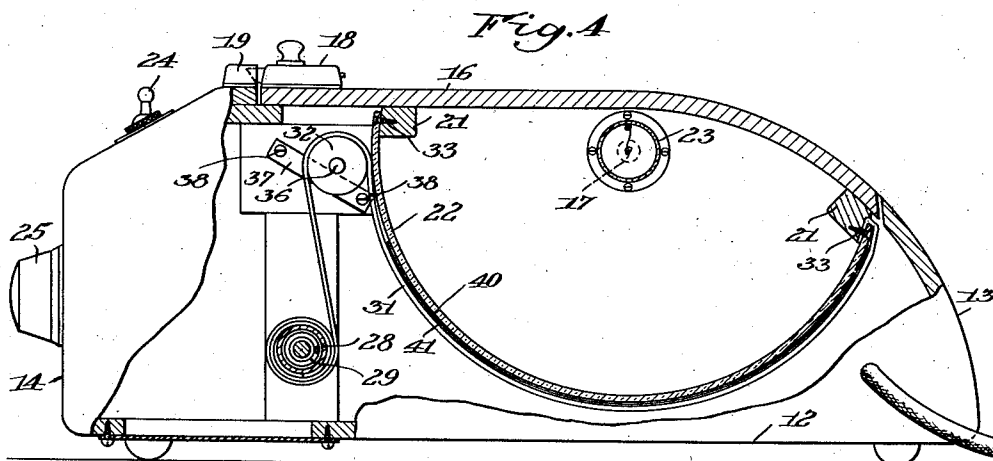
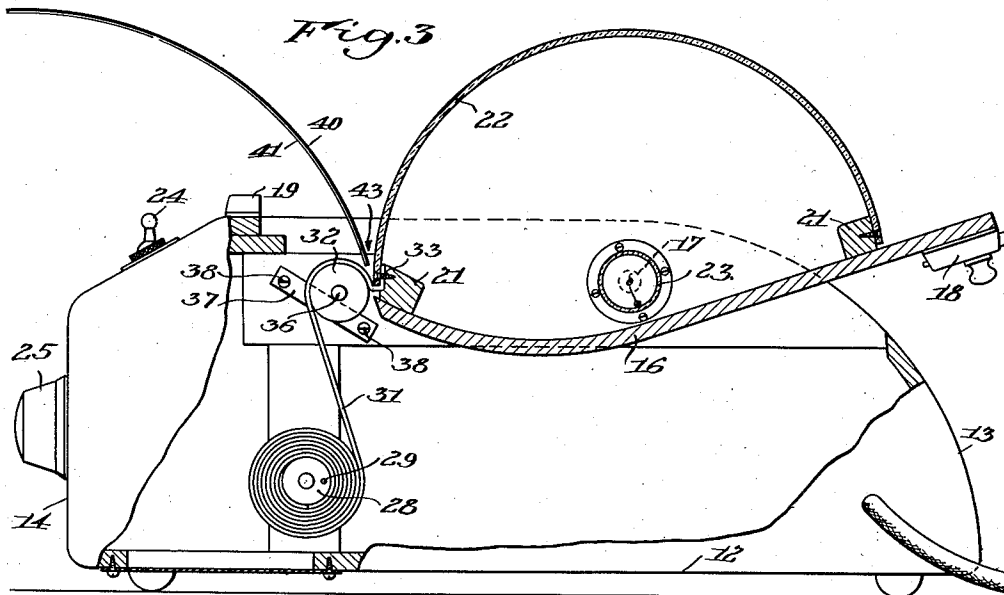
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2 Sheets-Sheet 2



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CONTACT PRINTING MACHINE

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Application April 29, 1948, Serial No. 23,922

3-Claims. (Cl. 95-73)

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My invention relates to machines for making photographic prints and more particularly to a machine for making prints or copies of drawings and documents.

An object of my invention is to provide a simple, inexpensive photographic printing machine in which uniform contact over all areas of the print may be had and which is suitable for economically making prints of various sizes.

Another object of my invention is to provide a photographic printing machine in which the subject to be printed or original is fed together with the sensitized sheet over the work receiver or surface in such manner that wrinkles or folds in the original or sensitized sheet are smoothed out and a more perfect copy obtained.

My invention further contemplates a photocopying machine in which the original and the sensitized material are placed adjacent the work surface and then fed into the machine by means which exert a continuous wedge like ironing action on the two sheets of material whereby to secure perfect contact throughout the area of the sensitized material with the work surface to the end that wrinkles or creases either in the original or in the sensitized material are ironed and smoothed out.

Other objects and advantages of my invention will be set forth in the claims and will be apparent from the following description, when taken in connection with the accompanying drawings, in which:

Fig. 1 is a top plan view of the photocopying machine of my invention with the cover open;

Fig. 2 is a vertical sectional view of the photocopying machine of my invention with the cover closed;

Fig. 3 is a vertical sectional view of the photocopying machine of my invention showing the manner in which the original or subject is fed, together with the sensitized material, into the machine;

Fig. 4 is a view showing the subject or original, together with the sensitized material, in position with the cover closed for making a print; and

Fig. 5 is a view showing a suitable circuit for the printing light source.

Referring more particularly to the drawings, the photocopying machine of my invention comprises a box or frame generally indicated by the numeral 11, which includes a bottom wall 12, a rear wall 13, a front wall 14, side walls 15 and a top wall or cover 16.

As shown most clearly in Figs. 1 and 4, the top wall 16 forms a complete enclosure so that the box or printing compartment is light tight when the cover 16 is closed. The cover, however, is pivoted at 17 (Figs. 1 and 3) to the side walls 15 of the light tight box so that the cover may be shifted from the position shown in Figs. 1 and 3 to the position shown in Fig. 4.

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Mounted on the cover is a finger controlled spring actuated latch, generally indicated by the numeral 18, which when the cover is in a closed position, latches with a keeper 19 mounted on the box proper. Carried by the cover through suitable screws extending into blocks 21, is a semi-cylindrical work receiving member 22. The work receiving member 22 is preferably formed of a relatively rigid sheet of transparent plastic material, although if desired, it may be made of glass.

Mounted within the transparent work receiver is a light source 23 which may be of elongated tubular form, as shown in Fig. 5, and which is preferably mounted concentric with the axis of the work receiving member 22 and concentric with the pivots 17 upon which the cover 16 swings. With the light source located at the axis of curvature of the transparent work receiving member 22, the light is distributed evenly over the work receiving surface so as to produce prints equally exposed in all areas thereof.

Preferably the light source 23 is arranged with a switch 24, as shown most clearly in Fig. 5, and a resistance 26 whereby the intensity of light may be controlled to provide prints of the desired exposure and quality. The switch 24 may be conveniently mounted on the front of the light-tight box and the resistance 26 may be varied by a finger controlled knob 25 also located on the front of the box.

Rotatably carried by the side walls of the box is a cylindrical member 28 which may be rotated under the restraint of a spring 29; that is, the spring tends to wind a preferably felt or canvas sheet 31 thereon, as illustrated in Fig. 3. The spring not only serves the purpose of winding the felt or canvas sheet on to the roll 28 when the cover 16 is shifted from the position shown in Fig. 4 to that shown in Fig. 3 but also serves to maintain the sheet of material taut and smoothly against the transparent work surface 22. The sheet of felt canvas or other material 31 is carried upward over a roller 32 and the end thereof is confined between the block 21 and the edge of the transparent member, as indicated at 33.

The roller 28 has extended ends 36 which are preferably of metal, the roller 28 preferably comprising a metal rod core with the roll proper preferably being made of wood. The extended metal ends 36 are free to ride on brackets 37 which are carried by the side walls 15, as indicated at 38. The brackets 37 are placed at an angle of any desired amount but preferably about 45° to the horizontal so that there is a tendency for the roller 32 to ride by gravity, but more particularly due to the action of the spring 29, downward from an upper position with respect to the bracket to a lower position. It will be particularly noted that the brackets are located so as to maintain the upper surface of the roller

32 above the lower edge of the work receiving surface 22, when the cover is open, to provide a transversely extending crevice 43.

To feed the material into the machine for the purpose of making a print, the subject 40 and the sensitized material 41 are placed in overlying relation, as shown in Fig. 3. With the cover in the open position, as shown in Fig. 3, the forward edges of the subject and the sensitized material are inserted in the transversely extending crevice 43 existing between the roller 32 and the transparent work receiving surface 22. While manually feeding the material inward, the cover 16 is then shifted from the position shown in Fig. 3 to that shown in Fig. 4. During the initial portion of the movement of the cover the crevice or gap 43 is closed so as to pinch the edges of the subject and the sensitized material between the roll and the adjacent part of the work receiver 22. This pinching action resists any tendency for the subject and the sensitized material to shift with respect to the work receiving surface. The original drawing or manuscript to be copied, when the cover is closed, lies against the transparent work receiving surface with the felt or canvas 31 holding the sensitized material 41 against the work.

It will be appreciated that the roller 32, because of its mounting on the inclined brackets 37, and the action of the spring 29, tends continuously to wedge itself against the transparent work receiving surface during movement of the cover. This wedging action continuously wedges the subject or drawing 40 against the work receiving surface 22 and the sensitized material against the subject. The result is to iron or smooth out any wrinkles or creases which may exist either in the subject 40 or the sensitized material 41.

Thus, as the cover is moved from the position shown in Fig. 3 to that shown in Fig. 4, the work or drawing to be copied and the sensitized material are smoothly applied to the work receiving surface 22 with the work in intimate contact therewith, after which the light source may be lighted by the switch 24 to produce the desired exposure. Upon opening the cover 16 the work and the finished print may be removed from the machine.

While I have shown and described the preferred form of my invention, it will be appreciated that various changes and modifications may be made, particularly in the form and relation of parts, without departing from the spirit of my invention as set forth in the appended claims.

I claim:

1. A photographic printer comprising, in combination, a supporting structure forming a substantially complete enclosure, a cover pivoted to the supporting structure and forming with the supporting structure a light tight enclosure when the cover is closed, a curved light transmitting work receiver secured to said member approximately concentric with said pivots and forming with the cover a movable assembly, a light source within the work receiver, a flexible sheet of material having one end attached to the movable assembly, a roll having spring winding means normally retaining said flexible material wound thereon when the cover is open, and means exerting a wedging action when the cover is shifted to a closed position and the subject and the sensitized material are applied to said work receiver,

said wedge action being applied to said flexible material so as to smooth out the subject and the sensitized material and apply them in intimate relation with each other and the work receiver.

2. A photographic printer comprising, in combination, a supporting structure forming a substantially complete enclosure, a cover pivoted to the supporting structure and forming with the supporting structure a light tight enclosure when the cover is closed, a curved light transmitting work receiver secured to said member approximately concentric with said pivots and forming with the cover a movable assembly, a light source within the work receiver, a flexible sheet of material having one end attached to the movable assembly, a roll having spring winding means normally retaining said flexible material wound thereon when the cover is open, a roller over which the flexible material passes to its point of attachment to the movable assembly, the upper surface of said roller being above the line of attachment of said sheet material to the movable assembly to form an elongated crevice between the work receiver and said sheet material for the reception of the subject and the sensitized material, means for mounting said roll so that it is constantly urged toward engagement with the work receiver by the tension on the flexible material, said roller constantly applying pressure on the subject and the sensitized material to smooth them out in overlying relation with the work receiver when the cover is moved to a closed position.

3. A photographic printer comprising, in combination, a curved light transmitting member having a light source therein, a flexible work holder between which and the light transmitting member the work and sensitized material are fed, a roller arranged with respect to the work holder and said light transmitting member so that the work holder passes part way around the roller and forms an elongated crevice between the work holder and the light transmitting member for the reception of the work and the sensitized material, means for moving the work holder and the light transmitting member relative to each other to wrap the work holder together with the work and the sensitized material around the light transmitting member, a pair of stationary members inclined toward said light transmitting member upon which said roller may ride in a direction such that the roller presses with a wedging action on the work holder during the movement of the work holder and the light transmitting member relative to each other.

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