April 7, 1936. J. J. CANTOR 2,036,682

PHOTOGRAPHIC PRINTING DEVICE AND METHOD OF PRINTING

Filed June 28, 1935

Fig. 1.

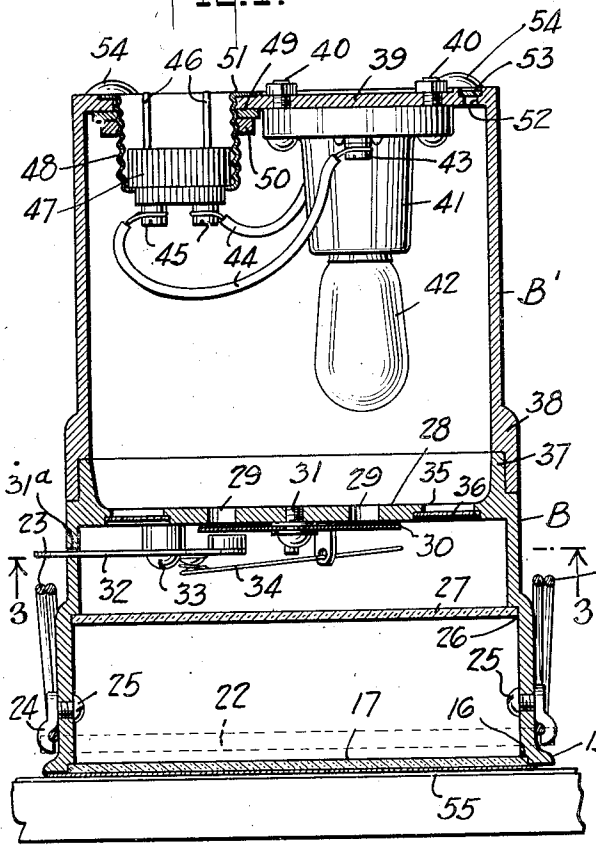


Fig. 2.

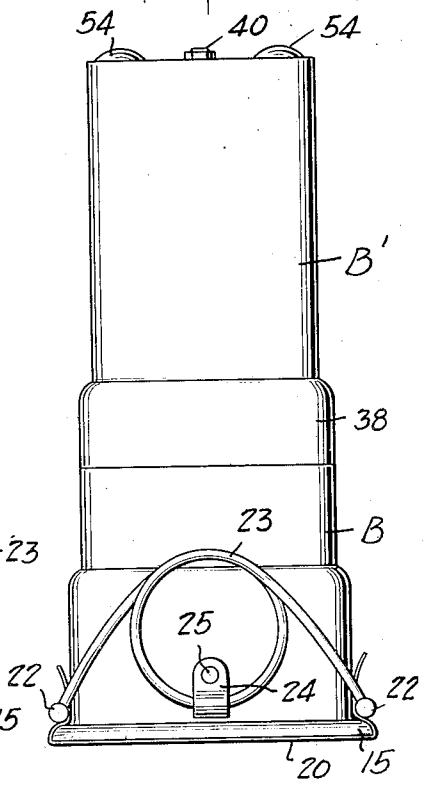


Fig. 3.

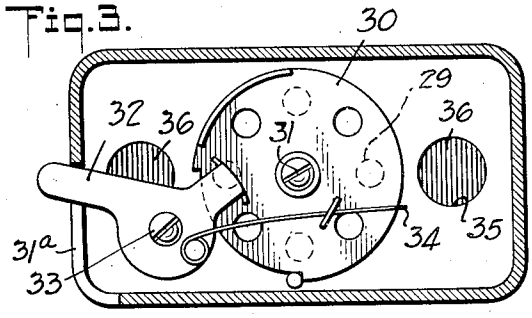


Fig. 5.

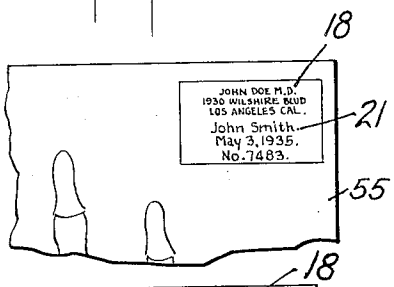


Fig. 4.

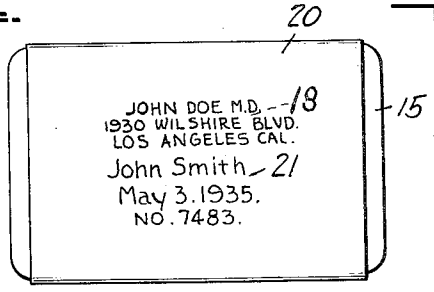
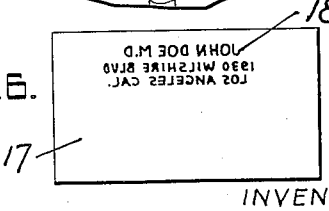


Fig. 6.



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PHOTOGRAPHIC PRINTING DEVICE AND METHOD OF PRINTING

Jacob J. Cantor, Los Angeles, Calif.

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10 Claims. (Cl. 95—1.1)

My invention relates to photographic printing devices and it has for a purpose the provision of such a device for printing a sensitized surface of a film or plate to produce thereon a permanent image of printed or written matter relating to or descriptive of the subject photographed on the film or plate, for the purpose of subsequently identifying the photographed subject.

In the present embodiment of my invention it has specific application, although not necessarily, to X-ray film used for photographing the human or animal anatomy or any part thereof, and the matter printed on the X-ray film is for identifying the subject of the film as well as the physician or veterinarian who photographed it.

It is also a purpose of my invention to provide a method of photographically printing on a sensitized film identifying matter relating to an image photographically produced on the film so that when the film is developed such identifying matter is made a permanent part of the film.

I will describe only one form of photographic printing device and one method of photographically printing identifying matter on a film, each embodying my invention, and will then point out the novel features thereof in claims.

In the accompanying drawing:

Fig. 1 is a view showing in vertical section one form of photographic printing device embodying my invention.

Fig. 2 is a view showing the device in end elevation.

Fig. 3 is a transverse sectional view taken on the line 3—3 of Fig. 1.

Fig. 4 is a view showing on a reduced scale the device in bottom plan.

Fig. 5 is a fragmentary view showing on a reduced scale a film printing by my device.

Fig. 6 is a detail view showing on a reduced scale one printing negative embodied in my device.

Referring specifically to the drawing, my printing device in its present embodiment, comprises a box made of any suitable opaque material such as "Bakelite", and of a size to permit of its ready handling. This box is constructed of two sections B and B^1, and although I shall refer to the section B^1 as the upper section and the section B as the lower section as they appear in the drawing, the box as a whole is adapted to be inverted when applying or removing a sheet negative, to reverse the position of the sections.

The lower end of the lower box section B is normally open and its edge is formed with a continuous bead or flange which constitutes a rectangular frame 15 shouldered, as indicated at 16 to receive a printing negative 17 which is secured therein by cement or by any other suitable means. This negative is in the form of a plate of transparent material, such as celluloid or glass, and it carries printed matter 18 thereon, as best shown in Fig. 6. The size of this plate negative is such that it completely spans the frame, while its thickness is such that its lower surface projects slightly beyond the bottom surface of the frame, as shown in Fig. 1, for the purpose of forming a light-sealing joint at its edges when placed on a film.

The identifying matter 18 comprises usually the name and address of the physician attending the patient whose anatomical photograph is being made, and, hence, the plate negative bearing such matter can be permanently secured in the frame. However, other identifying matter relating to the patient, such as his name, date when the photograph was made, and the number of the photograph as catalogued by the physician, is adapted to be printed on the film, and as such matter must of necessity be changed with each photograph, it is necessary that another printing negative bearing the required identifying matter, be provided.

The negative for this purpose is a sheet of transparent paper 20 upon which is typewritten or otherwise printed identifying matter 21 (Fig. 4) relating to the patient. This sheet negative 20 is of such length that when extended beneath the plate negative 17, as shown in Figs. 1 and 2, its ends project around and above the frame 15 to permit a pair of rods or arms 22 to clamp the sheet ends to the frame under the action of two springs 23. Each spring 23 comprises a coil of wire secured to the lower box section B by a bracket 24, secured to the box section by a screw 25 with the ends of the wire extended tangentially and welded or otherwise secured permanently to the rods. Thus the rods serve to detachably secure the sheet negative in fully extended position against the underside of the plate negative.

As best shown in Fig. 1, the interior of the lower box section B is constructed to form a continuous shoulder 26 to which is secured permanently by cement or the like, a light diffusing member 27. This member is in the form of a plate of celluloid or other suitable material, one or both surfaces of which are frosted to render it translucent, thus obtaining the requisite light diffusion.

Above the shoulder 26 the box section is formed with a spanning and opaque partition 28 having a circular series of light openings 29 therein con-

trolled by a perforated shutter 30 rotatable on a screw 31 secured in the partition. By means of a lever 32 fulcrumed on a screw 33 secured in the partition 28, and extending exteriorly of the box through a slot 31*a*, the shutter can be rotated in either direction. This lever is operatively connected to the shutter by a spring arm 34 in such manner that according as the lever is rocked in one direction or the other the shutter is rotated in one direction or the other to momentarily uncover the light openings, all in a manner well understood in the art.

The partition 28 is formed also with a pair of openings 35 spanned by screens 36 which are preferably red to allow passage from a light source in the upper box section of rays sufficient to discern the identifying matters on the negatives 17 and 20 and to thus aid an operator when in a dark room, in positioning the two matters out of registration with each other so that both can be printed on the film 19.

At its upper end the box section B is formed with a continuous collar 37 which frictionally engages within a similar collar 38 on the lower end of the upper box section B^1. Both of these collars are shouldered as shown so as to form a light sealed joint and limit movement of the collars inward.

The upper box section B^1 has an upper end wall 39 to the under or inner side of which is secured by screw-bolts 40, a lamp socket 41 in which a lamp 42 is received. By means of binding posts 43 and wires 44 the socket 41 is electrically connected to binding posts 45. The posts 45 are directly connected to a pair of blade contacts 46, both the posts and the contacts being fixed in a body 47 of insulating material. The body 47 is fixed in the bottom of a sleeve 48 threaded to receive nuts 49 and 50 which coact with a flange 51 on the upper end of the sleeve to secure the sleeve within a suitable opening in the wall 39.

From the arrangement of elements just described, it will be clear that the sleeve 48 provides a socket into which a conventional cord-carrying plug (not shown) is adapted to receive, to provide an electrical contact with the blades 46 and thus conduct current to the socket 41 for illumination of the lamp 42. The wall 39 is formed with a relatively small opening 52 spanned by a light screen 53 which permits the operator to observe if the lamp is illuminated.

As the box is adapted to be inverted from the position shown in Fig. 2 while applying the sheet negative 20, it is desirable that the wall 39 be such as to permit the box when inverted to rest vertically on a flat support. Hence, the outer surface of the wall 39 is formed with four projections 54 which extend beyond the bolts 40 to support the box in upright position on a flat surface.

I shall now describe the manner of use of my printing device in relation to an X-ray film, although it is to be understood that my invention is not limited to such use, but can be employed for printing on a film or plate any matter by which the photographer and the subject photographed can be identified and permanently recorded on the film or plate when developed.

To prepare my device for printing the identifying matters on a sensitized X-ray film 55 (Fig. 1), the sheet negative 20 is secured in firm contact with the plate negative 17 and so that the matter thereon is to one side of the matter on the plate negative. This may be readily accomplished by inverting the box and then inserting the ends of the sheet beneath the rods 22. By reason of the slight projection of the plate negative beyond the frame 15, the sheet negative when superposed thereon, will have light-sealing contact with the plate negative and with the sensitized film 55, and thus the resultant compound negative can be placed in proper contact with the film for printing.

Prior to photographing any part of the anatomy upon the film 55, a portion of the sensitized surface of the film is masked by a small plate of lead (not shown) in order to preserve the sensitivity of such portion during the photographing operation, for printing of the identifying matters.

Assuming that photographing of the anatomical subject upon the film has been completed, the printing device is now positioned on the film as shown in Fig. 1, so that the compound negative overlies and is in contact with the unexposed portion of the film. With the lamp 42 illuminated by insertion into the socket 48 of a plug connected to a source of current, operation of the shutter 30 will cause light to pass through the compound negative onto the sensitized film portion and thus print thereon the matter born by the negatives. Thus by developing the entire film in the usual manner, the identifying matter becomes a permanent part thereof to positively identify the subject of the photograph as well as the photographer.

From the foregoing mode of use of my printing device, it becomes apparent that my invention also involves a method of photographically printing on a sensitized film identifying matter relating to an image photographically produced on the film, which comprises masking a part of the sensitized surface of the film during exposure of the remainder thereof in the production of an image thereon; removing the mask; superposing on the unmasked film part a negative bearing the identifying matter; and then passing light onto the film part.

I claim:

1. A photographic printing device, comprising a box having an upper section and a lower section detachable from the upper section; a lamp socket within the upper section for receiving a lamp therein; an electrical socket in the top of said upper section for receiving a plug and electrically connected to the lamp socket; a partition in the top of the lower section having light openings and screened openings therein; a shutter mounted on said partition to control the passage of light from said lamp through said light openings; means for operating said shutter from a point exteriorly of said box; a light diffusing member in said lower section beneath said shutter; a frame at the lower end of said lower section; a negative plate secured within said frame; a sheet negative beneath said plate; and means carried by said lower section for detachably securing said sheet negative in contact with said plate negative.

2. A photographic printing device comprising; a box having an upper section and a lower section detachably connected to the upper section; a light source in the upper section; a partition in the lower section having light openings and screened light openings therein; a shutter mounted on said partition to control the passage of light from said source through said light openings; a light diffusing member in said lower section beneath said partition; a frame at the lower end of said lower section; a plate negative secured within said frame; a sheet negative be-

neath said plate negative; and means carried by said lower section for securing said sheet negative in contact with said plate negative.

3. A photographic printing device comprising; a box having an upper section and a lower section detachably connected to the upper section; a light source in the upper section; a partition in the lower section having light openings and screened light openings therein; a shutter mounted on said partition to control the passage of light from said source through said light openings; a light diffusing member in said lower section beneath said partition; a frame at the lower end of said lower section; a plate negative secured within said frame; a sheet negative beneath said plate negative; and a pair of spring-pressed arms carried by said lower section for detachably securing said sheet negative in contact with said plate negative.

4. A photographic printing device, comprising a box having a frame; superposed negatives secured in the frame; a source of light in said box; means in said box between said light source and said negatives for diffusing the light from said source; and a shutter in said box for controlling the passage of light to said light diffusing means.

5. A photographic printing device, comprising a box with its lower end open to form a frame; a plate negative secured in said frame; a sheet negative beneath said plate negative; means carried by said box for detachably securing said sheet negative in contact with said plate negative; a light source in said box above said plate negative; light diffusing means between said light source and said plate negative; and a shutter between said light source and said light diffusing means.

6. A photographic printing device, comprising a box having a frame in its lower end; a negative secured in said frame; means on the box for securing a second negative detachably to the frame and in underlying relation to the first mentioned negative; a light source in said box above the first mentioned negative; and means in the box for controlling the passage of light to said negatives from said source.

7. A photographic printing device, comprising a box having means for holding a pair of negatives in superposed relation on said box so that said negatives can be placed in overlying relation and the lower negative in contact with a sensitized surface; and a light source in said box for passing light through said negatives onto the sensitized surface.

8. A portable device for photographically printing on a predetermined sensitized surface area of an X-ray film indicial matter relating thereto, comprising; a box having a bottom open to form a frame; means for securing a negative bearing the indicial matter to said frame so that the box can be positioned in overlying and light sealing relation to said film area and the negative in contact with the film; and a controllable light source in said box for passing light through the negative onto said film area.

9. A method of photographically printing on a sensitized film identifying matter relating to an image photographically produced on the film, which comprises masking a part of the sensitized surface of the film during exposure of the remainder thereof in the production of an image thereon; removing the mask; superposing on the unmasked film part a negative bearing the identifying matter; and then passing light onto the film part.

10. A method of photographically printing on a sensitized X-ray film identifying matter, which comprises masking a part of the sensitized surface of the film during exposure of the remainder of the film in the production thereon of an image of a portion of the patient's anatomy; removing the mask; superposing on each other and on the unmasked film part two negatives one bearing identifying matter relating to the image and the other to the patient's physician; and then passing light through the two negatives onto the film part.

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