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PLATEN FOR USE IN PHOTOGRAPHIC PROCESSES

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Fig. 1.

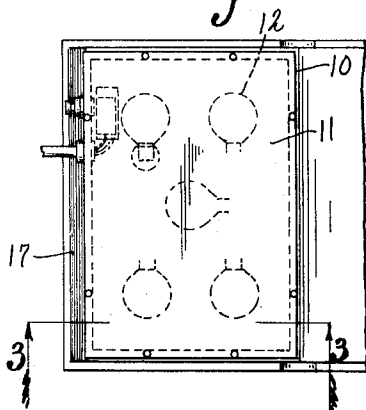


Fig. 2.

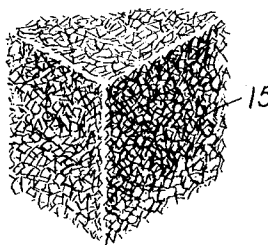


Fig. 3.

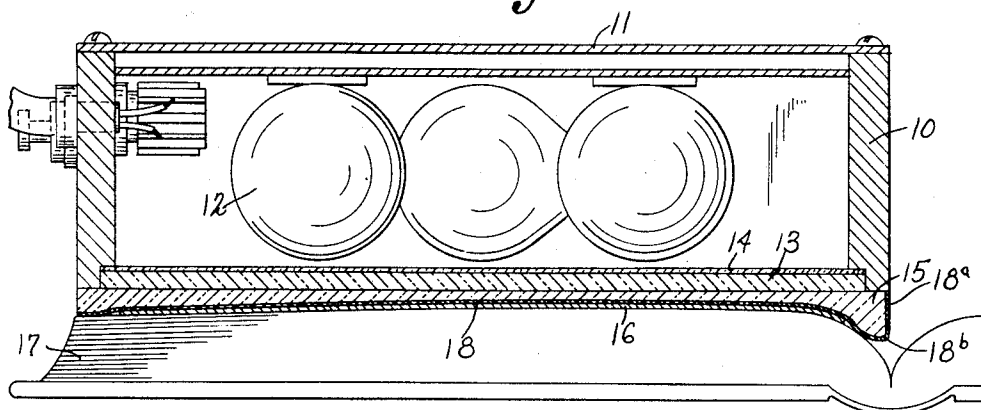
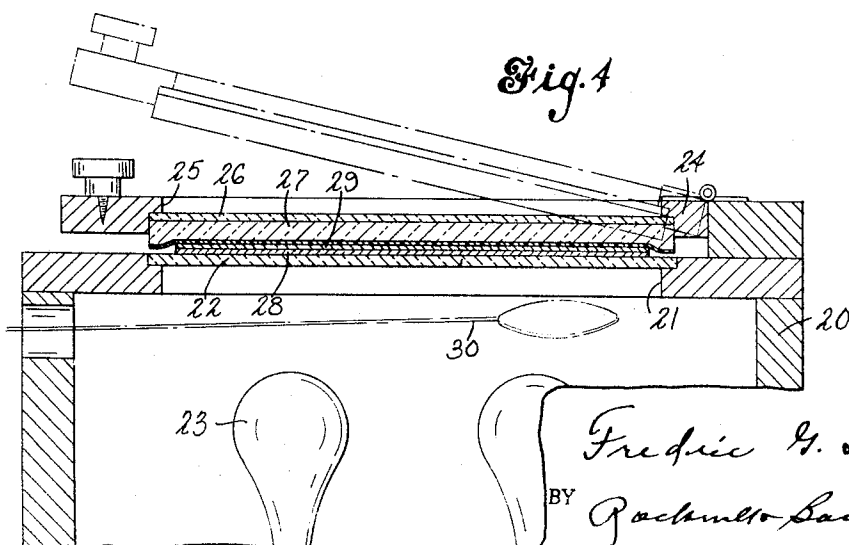


Fig. 4.



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PLATEN FOR USE IN PHOTOGRAPHIC PROCESSES

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9 Claims. (Cl. 95—73)

This invention relates to a platen for use in the photographic process of contact copying and in contact printing. In a contact copying or printing apparatus, such as shown in my prior Patent No. 2,591,449, a frame or cabinet is employed in which one or more sources of light are mounted. The bottom of the cabinet is a transparent member such as glass, for example, and below this member is a translucent or transparent pneumatic cushion adapted to be filled with fluid such as air.

This cushion is pressed downwardly upon a sheet of photocopy paper placed upon the page of a book, document or other material which is to be copied. Thus the photocopy paper is pressed firmly against and into conformity with the sheet which is to be copied, the fluid-filled cushion permitting the photocopy paper to be pressed into conformity with the sheet even though the latter may not be a plane surface as will be the case, for example, when the page of a book is to be copied.

It has been found in some instances that when copying a sheet with a non-planar surface, such as the page of a book, the pressure upon the frame or cabinet will cause the fluid or air in the cushion to be displaced to one side or edge of the cushion and, if this occurs to such a great extent that you have no cushion at all at one point, the sensitized sheet or photocopy paper would not follow the contour of the page of the book, particularly where it extends into the back or binding.

According to the present invention there is employed, instead of a fluid-filled cushion, a platen of transparent or translucent cellular material such, for example, as a foam material which will readily transmit light therethrough, which will be sufficiently flexible and compressible to follow the contour of the sheet to be copied and which will press the sensitized photocopy paper firmly upon this sheet.

Such a platen may be used with equal facility and with equally good results in copying from or photographing flat documents or pages of bound volumes having curved or non-planar surfaces. In copying pages of both types no adjustment needs to be made in connection with volumes of different size whereas an adjustment of the air volume was sometimes found to be necessary when the fluid-filled platen was employed. Moreover, the photocopy paper will be held in close contact with the page of a book to be copied even near the spine of the volume and even when the latter is closely bound. In addition, these confined areas will receive excellent illumination so that a good copy will result over the entire page.

One object of the present invention is to provide a photocopying device having a new and improved platen.

A further object of the invention is to provide a photocopying device having on its lower surface a platen of light-transmitting, highly flexible, cellular material which may be pressed upon the sensitized sheet to press the latter firmly upon the sheet or page to be copied.

Still another object of the invention is to provide a photocopying device with a platen of light-transmitting, flexible, cellular material such as urethane foam, vinyl

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foam or the like, through which the rays of light used in the photographic process may pass.

To these and other ends the invention consists in the novel features and combinations of parts to be herein-
5 after described and claimed.

In the accompanying drawing:

Fig. 1 is a top plan view of a photocopying device embodying my invention;

Fig. 2 is a fragmentary perspective view of a corner
10 of the platen of light-transmitting, cellular material;

Fig. 3 is a sectional view on line 3—3 of Fig. 1; and

Fig. 4 is a sectional view showing the use of my improved platen in a contact printing apparatus.

To illustrate a preferred embodiment of the invention there is shown in the drawing a copying apparatus
15 comprising a cabinet 10 having a cover 11 which may be a light-reflecting member such as a mirror, for example. Within this cabinet may be mounted a plurality of light bulbs 12 to furnish the light for the photographing operation.
20 tion.

At its lower side the cabinet 10 may be closed by a transparent plate 13 such as glass or transparent plastic, for example, and above this member may be employed a light-diffusing member 14, if desired, which member
25 may be of suitable translucent material and arranged to equalize the intensity of light which emerges from the cabinet.

Below the transparent plate 13 is secured the platen 15 so that it may be placed upon a sheet 16 of photocopy or sensitized paper which is in turn, as illustrated, placed
30 upon the surface of a page of a book 17 so that the printing upon the page may be copied.

As shown in Fig. 2, the material of which the platen is made is cellular and sufficiently transparent to permit
35 the light from the light sources 12 to reach the page of the book 17. It is also highly flexible and compressible so that it will conform to the contour of the page to be copied, as shown in Fig. 3 and press the sensitized sheet 16 firmly against the page even into the spine of the
40 volume. It has been found that urethane foam is highly desirable for this purpose and can be used with success. Other resilient plastic foams such as transparent or translucent vinyl foam, for example, may also be employed and under some circumstances a foam rubber
45 material could be used.

In some instances it may be that the impression or print received upon the copy paper is not as sharply defined as is desirable. It has been found, however, that, if a thin semi-rigid but flexible sheet of plastic is disposed
50 at the undersurface of the platen 15, between it and the copy paper 16, a sharp copy is secured, probably due to the fact that the hard surface of this transparent sheet presses the copy paper more firmly upon the surface of the copy to be reproduced than is true with the relatively
55 soft and easily deformable surface of the cellular platen 15.

To this end there is disposed a relatively thin transparent sheet 18 of a semi-rigid plastic material which will have a hard firm surface. When the platen is pressed
60 down upon the photocopy paper upon the page of a book or the like, the firm hard surface of this transparent sheet will keep the copy paper in close contact with the copy itself and the result is that a very sharp copy of the page or other material to be reproduced will be obtained.

One edge of this material may be bent upwardly as shown at 18^a to lie along one edge of the cellular platen 15 providing a relatively sharp corner 18^b. This sharp
65 corner or edge 18^b will enter the gutter or spine of a book and press the copy paper firmly against the page even though the spine may be relatively deep. Therefore, the combination of this semi-rigid transparent plastic

sheet with the resilient or compressible pad 15 improves the copy obtained.

If desired, the inner surface of the sheet 18^a may be covered with reflecting material so as to reflect the light inwardly toward the page of the book and thus secure better copying results at the edge of the material adjacent the spine of the book.

My improved platen is also useful in connection with conventional photographic printing where a print is made from a negative. Such use is illustrated in Fig. 4 of the drawing wherein is shown a cabinet 20 having an exposure opening 21 covered by a rigid transparent plate 22 of glass, plastic or the like. Within the cabinet may be a plurality of light sources 23.

The cabinet is provided with a hinged cover frame 24 having an opening 25 therein which is closed by a rigid plate 26 of transparent material. Secured to the lower surface of this plate is my improved platen 27 of light-transmitting, flexible, cellular material, similar to that described in connection with the platen 15 shown in Figs. 2 and 3.

A negative 28 may be placed upon the transparent plate 22 and a sheet of sensitized or photocopy paper 29 may be placed upon the negative when the cover is raised. The cover is then closed, causing the platen 27 to press the sensitized sheet 29 firmly upon the negative 28.

In this instance the user may view the negative which is in contact with the sensitized sheet 29 through the transparent plate 26 of the platen 27 as the latter is transparent. This will enable the user to manipulate a shield 30 between the negative and the source of illumination so as to lessen the exposure in certain areas as desired. By reason of the fact that the user has a direct view of the negative through the platen, the manipulation of the shield is greatly facilitated.

While I have shown and described some preferred embodiments of my invention, it will be understood that it is not to be limited to all of the details shown, but is capable of modification and variation within the spirit of the invention and within the scope of the claims.

What I claim is:

1. A printing mechanism for reproducing a copy upon a photosensitive sheet placed upon the copy to be reproduced, said mechanism comprising a frame, a platen supported by the frame and adapted to be pressed upon the photosensitive sheet, said platen comprising a pad of resilient compressible cellular light-transmitting material, a rigid plate of transparent material carried by the frame, to which plate said pad is flatly secured, and said platen pad projecting from the frame to extend into the spine of a book when reproducing a page of the book.

2. A printing mechanism for reproducing a copy upon a photosensitive sheet placed upon the copy to be reproduced, said mechanism comprising a frame, a platen supported by the frame and adapted to be pressed upon the photosensitive sheet, said platen comprising a pad of resilient compressible cellular light-transmitting material, a rigid plate of transparent material carried by the frame, to which plate said pad is flatly secured, said platen pad projecting from the frame to extend into the spine of a book when reproducing a page of the book, and a sheet of light-reflecting material at a side edge of said pad to reflect the light toward the copy.

3. A printing mechanism for reproducing a copy upon a photosensitive sheet placed upon the copy to be reproduced, said mechanism comprising a frame, a platen supported by the frame and adapted to be pressed upon the photosensitive sheet, said platen comprising a pad of resilient cellular light-transmitting compressible material, a rigid plate of transparent material supported by the frame, at one surface of which plate said pad is flatly secured, and a thin sheet of relatively stiff but flexible transparent material on the face of said pad toward the copy, said sheet having a smooth firm surface.

4. A printing mechanism for reproducing a copy upon

a photosensitive sheet placed upon the copy to be reproduced, said mechanism comprising a frame, a platen supported by the frame and adapted to be pressed upon the photosensitive sheet, said platen comprising a pad of resilient cellular light-transmitting compressible material, a rigid plate of transparent material supported by the frame, at one surface of which plate said pad is flatly secured, and a thin sheet of relatively stiff but flexible transparent material on the face of said pad toward the copy, said sheet having a smooth firm surface and being bent sharply upwardly at a side edge to cover the side of the pad.

5. A printing mechanism for reproducing a copy upon a photosensitive sheet placed upon the copy to be reproduced, said mechanism comprising a frame, a platen supported by the frame and adapted to be pressed upon the photosensitive sheet, said platen comprising a pad of resilient cellular light-transmitting compressible material, a rigid plate of transparent material supported by the frame, at one surface of which plate said pad is flatly secured, said frame comprising a cabinet having a light source therein, and said plate being secured to the lower face of the cabinet to close the same.

6. A printing mechanism for reproducing a copy upon a photosensitive sheet placed upon the copy to be reproduced, said mechanism comprising a frame, a platen supported by the frame and adapted to be pressed upon the photosensitive sheet, said platen comprising a pad of resilient cellular light-transmitting compressible material, a rigid plate of transparent material supported by the frame, at one surface of which plate said pad is flatly secured, said frame comprising a cabinet having a light source therein, said plate being secured to the lower face of the cabinet to close the same, and a sheet of translucent light-diffusing material covering said transparent plate and disposed between it and the light source.

7. A printing mechanism for reproducing a copy upon a photosensitive sheet placed upon the copy to be reproduced, said mechanism comprising a cabinet, a rigid transparent plate closing the bottom of the cabinet, a resilient compressible platen of light-transparent cellular material secured at the undersurface of said transparent plate to be pressed upon the photosensitive sheet and urge the latter into firm contact with the copy to be reproduced.

8. A printing mechanism for reproducing a copy upon a photosensitive sheet placed upon the copy to be reproduced, said mechanism comprising a cabinet, a rigid transparent plate closing the bottom of the cabinet, a resilient compressible platen of light-transparent cellular material secured at the undersurface of said transparent plate to be pressed upon the photosensitive sheet and urge the latter into firm contact with the copy to be reproduced, and a transparent sheet of firm semi-rigid flexible material disposed below the lower surface of the platen and bent sharply upwardly at one edge to present a sharp edge to enter the spine of a book when reproducing the page of a book.

9. A platen for reproducing a copy upon a photosensitive sheet placed upon the copy to be reproduced, said platen comprising a substantially rigid flat plate of transparent material, and a normally flat pad of resilient cellular light-transmitting compressible material flatly applied to one face of said plate and having a thin sheet of relatively stiff but flexible transparent material applied to the face of said pad on the side opposite the rigid plate.

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