Sept. 15, 1931. F. C. MARTIN 1,823,278

X-RAY FLUORESCENT SCREEN MOUNTING

Filed Sept. 21, 1927

FIG. 1.

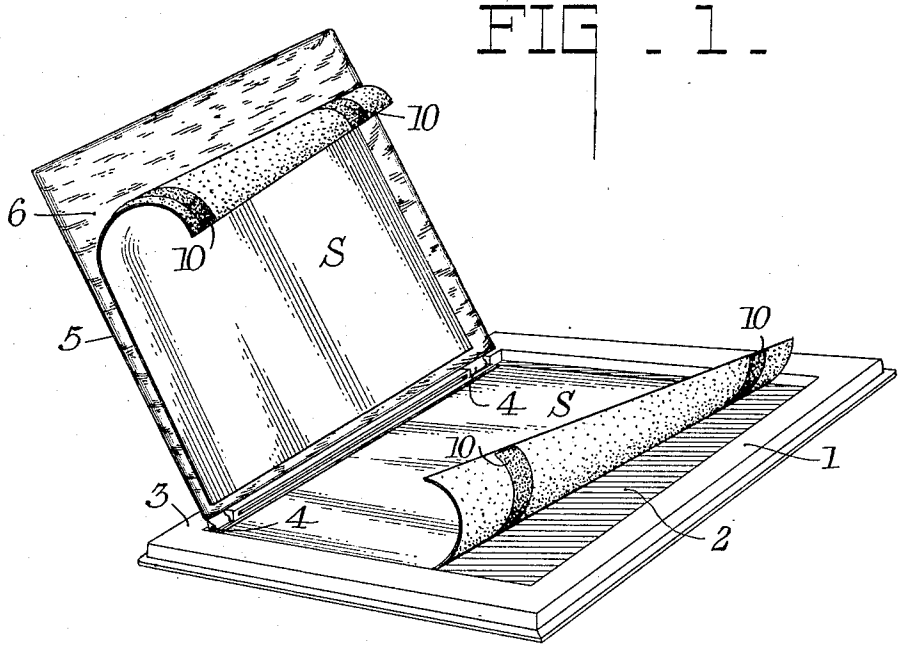


FIG. 2.

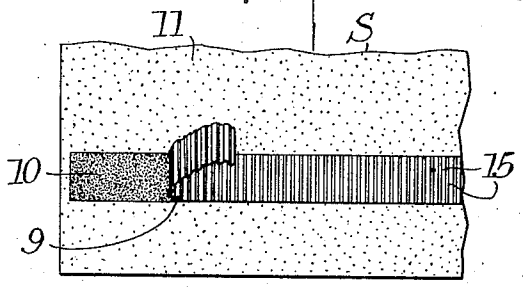


FIG. 5.

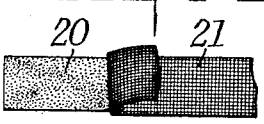


FIG. 3.

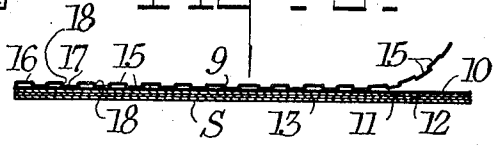
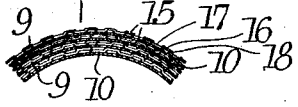


FIG. 4.



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Patented Sept. 15, 1931 1,823,278

UNITED STATES PATENT OFFICE

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X-RAY FLUORESCENT SCREEN MOUNTING

Application filed September 21, 1927. Serial No. 221,113.

This invention relates to photography and more particularly to a means for detachably fastening fluorescent screens used to intensify the image produced on sensitized material by X-rays in suitable holders or cassettes.

One object of my invention is to provide suitable attaching material on the fluorescent screens, and to provide means for protecting the attaching material until the screen is ready for mounting in a cassette. Another object is to provide an adhesive area on a fluorescent screen to which a protective covering adheres, the covering being readily removable. Another object is to provide a thin metal or metal foil protective covering for the adhesive areas. Another object is to form embossings or protuberances or otherwise roughen the protective covering so that only a portion of its surface will contact with the adhesive, while the entire area may be protected. Still another object is to provide suitably protected strips of double coated adhesive tape adapted for use in holding fluorescent screens in holders, and other objects will appear from the following specification, the novel features being particularly pointed out in the claims at the end thereof.

It has been common practice to put drops of glue on the back of fluorescent screens before placing them in the cassettes in which the film is used, it being also usual to place two of such screens in the holder so that one may lie on each side of and in contact with a sensitive film. This rendered it difficult to remove the fluorescent screens which are more or less fragile and brittle and sometimes the glue drops in drying out crack off. My present invention is designed to overcome these defects.

Coming now to the drawings wherein like reference characters denote like parts throughout:

Fig. 1 is a perspective view of a cassette with a pair of fluorescent screens, constructed in accordance with and illustrating one embodiment of my invention, mounted therein with one edge of each rolled over for purposes of illustration;

Fig. 2 is an enlarged fragmentary plan view of a fluorescent screen provided with an adhesive area and an adhesive protector in accordance with my invention;

Fig. 3 is an enlarged section through the screen provided with an adhesive and adhesive protector as in Fig. 2;

Fig. 4 is a fragmentary side elevation of a coil of adhesive material; and

Fig. 5 is a fragmentary plan view of a short length of tape with a tape protector of a different type from that shown in the preceding figures.

I have taken as a typical example of a fluorescent screen, the screen shown in Patent No. 1,532,782, Sheppard and Eberlin, April 7, 1925 although obviously my invention may be also applied to screens of other types when it may be necessary to hold a screen flat in a cassette.

In Fig. 1 I have shown a typical cassette which may consist of a main frame 1 having a bottom 2 forming a shallow box-like receptacle. To one edge 3 there is loosely hinged at 4 a back plate 5 preferably covered with a felt pad 6 and adapted to be resiliently positioned in frame 1 by suitable springs (not shown) carried by the back of plate 6. This cassette is of well known construction.

It is common practice to mount a fluorescent screen designated broadly as S in both the top 5 and the bottom 2 of the cassette. This, in accordance with my invention is done by providing waterless adhesive areas 10, usually along two edges of the screen, which areas are pressed against their supports to hold the screen in place.

As shown in Fig. 3 the fluorescent screen S may, for instance, comprise a backing layer 11 which may contain finely divided metallic aluminum or magnesium; an active layer 12 of calcium tungstate in suspension in a solution of cellulose nitrate in butyl acetate, amyl acetate or a mixture of these; and a thin protective layer 13 of any suitable cellulosic compound, as described in said patent.

To the backing layer 11 I provide one or more adhesive areas in the form of a

waterless adhesive such as is known as "surgeon's tape" which may be of any well known composition. For instance, it may consist of a composition of coal tar pitch with any suitable softener such as benzol, gasoline or chloroform. Such a composition is sufficiently adherent without heat although heat may be used if desired when pressing the adhesive area into position.

This adhesive may be readily applied in the form of a double coated tape which is preferably very thin and which may be sold either attached to the fluorescent screen S in strips or rolls adapted to be attached thereto, but in any case the adhesive area is protected by a covering 9.

I find thin sheet metal or metal foil such as aluminum, tin or lead may be used as a protective covering and preferably the metal should be formed with suitable protuberances 15 or offsets so that a portion of its surface only may contact with the adhesive. Thus the foil sticks to the adhesive sufficiently to remain in place until used and it may be readily stripped off or replaced at will. A screen may be used in a cassette, removed from the cassette again and the protector may be replaced in the original position.

As shown in the first four figures of the drawings, a satisfactory and easily made protuberance 15 may be in the form of corrugations in which alternate transverse areas 16 and 17, each of less than half the area of the protector are joined by offsets 18. This form has the additional function, as illustrated in Fig. 4, that when wound into a roll, the double coated adhesive contacts with both sides of the inner convolutions of the protectors, and as the contacting area is relatively small the tape may be readily unwound for use.

In Fig. 5 the adhesive tape 20 is provided with a fabric protector of scrim 21 or open mesh fabric. This is not quite as satisfactory as the metal because the fibers of the material adhere more readily to the adhesive making stripping more difficult, and, of course, the open mesh fabric does not form as efficient a protector for the tacky area as does the metal.

In use, with a fluorescent screen S equipped with an adhesive area 10 it is only necessary to strip off the protective covering 9, and the strip thus removed may be retained for reapplying if the screen is to be later removed, from the cassette.

With screens already in use not equipped with adhesive areas, the double coated tape may be purchased in strips or rolls (Fig. 4) unwound and placed on the screens by pressing on the protective covering 9 after which this covering may be stripped off so the other side of the adhesive may be made to adhere to a support, such as a cassette.

As will appear from the foregoing description certain features of my invention are useful in other embodiments than those used by way of illustration in the drawings, and I contemplate as within the scope of my invention all such embodiments as come within the scope of the appended claims.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is,—

1. An X-ray intensifying screen including a base, an adhesive area carried by the base, and an adhesive protective layer covering the adhesive area, said protective layer comprising a sheet of roughened metal foil adapted to be removed readily from said adhesive area.

2. An X-ray intensifying screen including a base, an adhesive area carried by the base, and an adhesive protective layer covering the adhesive area, said protective layer comprising a thin sheet metal member having protuberances formed therein contacting with the adhesive area, each adjacent pair of protuberances having a surface therebetween spaced from said adhesive area, whereby said protective layer may be readily stripped from said adhesive layer.

3. An X-ray intensifying screen including a base, an adhesive area carried by the base, and an adhesive protective layer covering the adhesive area, said protective layer comprising a thin sheet metal member having protuberances formed therein contacting with the adhesive area, adjacent pairs of protuberances having a surface therebetween spaced from said adhesive area, each of said areas contacting with the adhesive area being of less than half the total area of said protective layer.

Signed at Rochester, New York this 16th day of September, 1927.

FREDERICK C. MARTIN.