Aug. 16, 1938. W. O. McHUGH 2,127,365

PACKAGE OF DENTAL X-RAY FILMS

Filed April 6, 1936

Fig. 1.

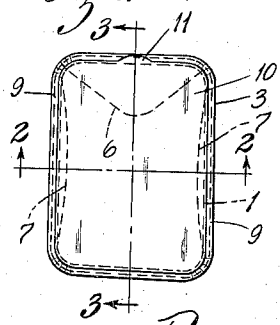


Fig. 2.

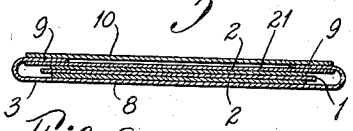


Fig. 3.

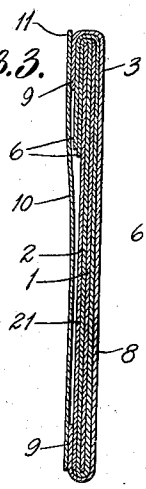


Fig. 4.

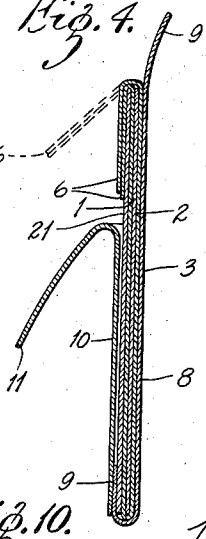


Fig. 5.

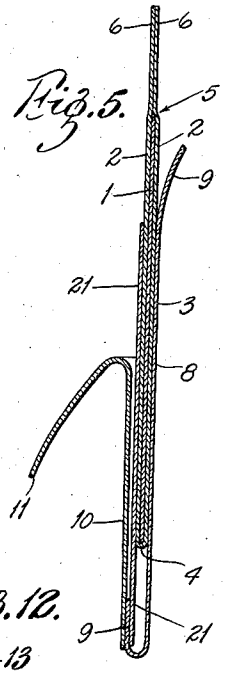


Fig. 6.

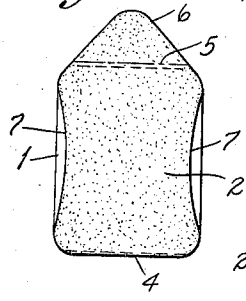


Fig. 7.

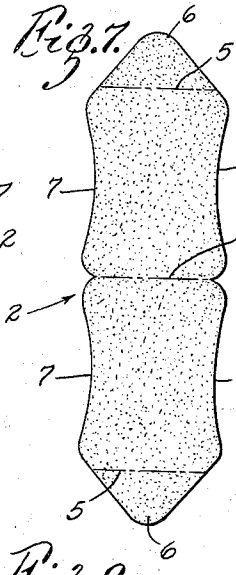


Fig. 10.

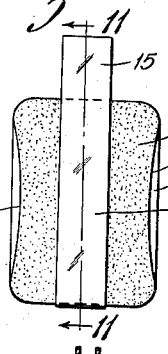


Fig. 12.

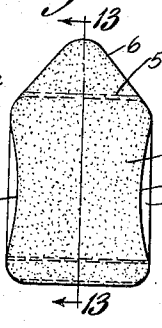


Fig. 13.

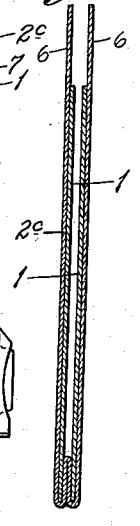


Fig. 9.

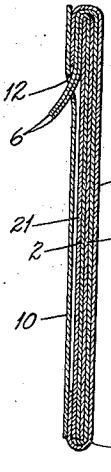


Fig. 8.

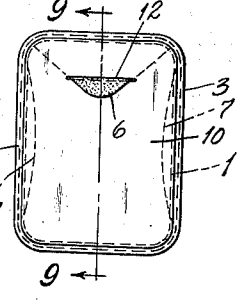


Fig. 11.



Fig. 14.

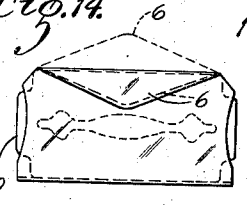


Fig. 15.



William O. McHugh INVENTOR.

by Cameron Cameron & Frank

HIS ATTORNEYS.

Patented Aug. 16, 1938 2,127,365

UNITED STATES PATENT OFFICE

2,127,365

PACKAGE OF DENTAL X-RAY FILMS

William O. McHugh, St. Louis, Mo.

Application April 6, 1936, Serial No. 72,846

3 Claims. (Cl. 250—34)

My invention relates to light sensitive film packages, especially X-ray dental film packages. The ordinary X-ray dental film package comprises a flexible film that is coated with a light sensitive emulsion, one or more layers of black paper on each side of the film to protect it against ordinary light, and a cover enveloping the film and the protective paper. It is common practice to pack one or two films in a package, in which they are exposed individually to the action of X-rays, and to open the package in a dark room. Heretofore, the opening of the package has not been as simple as desirable and occasionally such accidents would happen as the film falling onto the floor, or being soiled by the fingers of the operator, especially when wet with some chemical solution, or the operator mistaking a protective sheet for the film.

The principal objects of the present invention are to facilitate the opening of the package and the handling of the film or other article to avoid danger of soiling the film, and to avoid the liability of mistaking a protective sheet for the film. The invention consists principally in a band or sling that extends around two faces and an edge of the film or article and has tabs adjacent the opposite edge thereof, whereby said band or sling together with the film or article therein can be easily removed from the package. The invention also consists in folding the protective sheet so as to protect both faces of the film and providing it with a tab or tabs by which the protective sheet, together with the film therein, can be removed from the package. The invention also consists in recessing free margins of both plies of the folded protective sheet to leave uncovered slight marginal portions of the enclosed film so that the operator can grip the edges of the film therein between the thumb and one or more fingers of his hand substantially without touching the sensitive coating thereof. It also consists in the parts and in the combinations and arrangements of parts hereinafter described and claimed.

In the accompanying drawing, wherein like reference numerals refer to like parts wherever they occur,

Fig. 1 is a face view of a package embodying my invention;

Fig. 2 is an enlarged cross-sectional view on the line 2—2 of Fig. 1;

Fig. 3 is an enlarged longitudinal section of said package on the line 3—3 of Fig. 1;

Fig. 4 is a view similar to Fig. 3 with the face piece of the cover loosened and pulled back, with the end portion of the back piece straightened out and with the tabs shown by full lines in their position in the package and by dotted lines in the position they assume when the face piece is torn back;

Fig. 5 is a view similar to Fig. 4 showing the tabs straightened out and the protective sheet or sling, together with the film therein, partially withdrawn from the cover;

Fig. 6 illustrates the protective sheet or sling with the film therein;

Fig. 7 illustrates the protective sheet or sling in the flat with the lines of folding indicated by broken lines;

Fig. 8 is a face view of a modified form of package wherein the tabs of the protective sheet or sling extend through a slit in the face piece;

Fig. 9 is a longitudinal sectional view of said modification on the line 9—9 of Fig. 8;

Fig. 10 is a view of a modified form of sling with a film therein, and Fig. 11 is a longitudinal sectional view thereof on the line 11—11 of Fig. 10;

Fig. 12 is a view of another modification of the sling designed to accommodate two films, and Fig. 13 is a longitudinal section thereof on the line 13—13 of Fig. 12;

Fig. 14 is a view of a sling with a razor blade therein; and Fig. 15 is a cross-section thereof together with the outer cover or envelope.

The package illustrated in Figs. 1, 2 and 3 comprises a suitable light sensitive film 1, a folded light protective sheet 2 with plies on opposite faces of said film and an outer cover or envelope 3. The film 1 is a flexible sheet with a light sensitive coating such as the ordinary dental X-ray film.

The light protective sheet 2, which is preferably made of black paper, is folded about midway of its length and constitutes a sling for lifting or handling the film therein as indicated by the line 4. Each ply of the protective sheet or sling is folded along a line 5 parallel with the main fold line 4 and at a distance therefrom about equal to or slightly greater than the dimension of the film herein called its length, thereby forming marginal flaps 6 along the free margins of said plies. Preferably the end corner portions of the flaps are cut away, leaving enough to constitute tabs of convenient size to be readily gripped between the thumb and index finger of the hand. In the complete package, said tabs are doubled back flatwise on the same side of the film but their inherent resiliency causes them to

stand out at an angle when not restrained by the cover, as shown in broken lines in Fig. 4.

The plies of the protective sheet or sling 2 have shallow recesses 7 in their free margins, which recesses extend inwardly beyond the adjacent edges of the film but not so far as to leave any considerable portion of the film unprotected. The purpose of said marginal recesses is to enable the operator, while the film is between the plies of the protective sheet, to grip opposite edges of the film between his thumb and one or more fingers without touching the sensitive coating except at the extreme edges thereof. It is preferable to make the protective sheet or sling of an overall width equal to or slightly greater than the width of the film and to have the free marginal portions of said sheet or sling fit snugly in the cover to prevent any considerable shifting of the protective sheet with relation to the film. However, said recesses may be dispensed with by cutting the plies slightly shorter than the width of the film.

The outside cover or envelope may be of any suitable type, but is preferably made of material that will exclude ordinary light. In the construction shown, said cover comprises a back 8 of relatively strong light-excluding paper, with its margin 9 folded back, and a face or front piece 10 of relatively light light-excluding paper adhesively secured to said folded margin of the back along three sides thereof. One or more additional plies 21 of light-excluding paper or other material may be used to more thoroughly shield the film. The top margin or fourth side of the face piece is preferably left free and provided with a small tab 11 by which it may be seized to tear or strip it off. Preferably the adhesive is of the type which yields readily to a pull on the tab.

In the modification illustrated in Figs. 10 and 11, the protective sheet 2*a* on one face of the film is made in a separate piece from the sheet 2*b* on the opposite face. In this case, a band or strip 14, preferably of Cellophane or like material, supplements the protective sheets to constitute a sling. This band is folded transversely near the middle of its length opposite one edge of the film while its ends extend beyond the opposite edge of the film and constitute gripping tabs 15, as in the case of the protective sheet first described. The band may be adhesively secured to the sheets, as shown at 16, or left loose. In either case, the protective sheets, together with the band, constitute a sling for removing or lifting the film from the package.

The modification illustrated in Figs. 12 and 13 is intended to accommodate two films in the same package and facilitate the separation thereof. In this modification, the protective sheet or sling 2*c* has a bellows fold instead of a single fold, and the edges of the two films 1, 1 are placed in the respective pockets of the bellows fold. In this case, the sling not merely removes the two films simultaneously from the package, but enables them to be separated easily. This purpose is effected by pulling on one of the tabs, whereby the adjacent pocket of the bellows fold displaces the film therein edgewise with respect to the other film.

Assuming that the package is made up as hereinbefore described and exposed to the action of X-rays in accordance with common practice, the device is manipulated in the dark room as follows: While the operator holds the package in one hand, he grasps the tab 11 of the face piece 10 with his other hand and tears or strips off all or part of said face piece, thereby exposing the tabs 6 of the protective sheet or sling 2. On account of the inherent resiliency of the material, these tabs stand out and the same hand that stripped off the face plate grasps said tabs 6 and withdraws the protective sheet or sling from the cover 3. In this operation, the protective sheet or sling carries the film with it, with only small portions of its margins exposed opposite the recesses 7 in the margins of the protective sheet or sling. The operator then drops or lays aside the remaining portion of the cover and thereby makes the hand, that originally held the package, available to grip the edges of the film between the thumb and one or more fingers of said hand. Thus the film remains in the sling or folded protective sheet until immediately before transfer into the developing solution, and there is practically no danger of dropping or soiling the film or mistaking any other part of the package for the film. Besides, the operation is very simple and expeditious.

The package hereinbefore described admits of considerable modification without departing from my invention. For instance, Fig. 8 shows a modification wherein the face piece 10 of the package has a slot or slit 12 of suitable size and position to receive the tabs at the ends of the protective sheet or sling, and said tabs are made of suitable size and shape to extend a slight distance through said slot or slit. In such case, the exposed portion of the tabs may be long enough to be gripped between the thumb and finger or far enough to be raised by the thumb nail for the purpose. In such case, a pull on the tabs will tear the cover and a continuance of the pull will release the protective sheet or sling together with the film from the package.

The ordinary commercial form of package for dental X-ray films is a rectangle with rounded corners, as shown in Figs. 1 and 8, in which the film fits. In my construction, the ends of the sling 2 are extended beyond the ends of the film in the form of triangular tabs whose side edges substantially merge with the side edges of the sling at the rounding corners thereof, as shown in Figs. 6 and 12. By this arrangement the tabs protect the corners of the film and keep them from being curled back by the bent margins of the cover while the film is being lifted or slid endwise therefrom.

What I claim is:

1. The combination of a light protective sheet having a bellows fold therein, light sensitive films between the plies of said sheet, with their adjacent margins in the respective pockets of said bellows fold, and an enclosing cover, the free ends of said plies terminating in tabs opposite the bellows fold, and the ends of the films projecting somewhat beyond the adjacent portions of said plies.

2. The combination of a light protective sheet folded on itself about midway of its length, both plies thereof being folded in the same direction along transverse lines equidistant from the middle line of folding and thereby forming end tabs, a light sensitive film between the plies of said sheet, and a cover enveloping said sheet, said cover having a relatively light face piece with a slit therein and the tips of both tabs extending through said slit with the entire body portion of the outer tab lying flatwise next to said face piece, whereby a pull on the projecting ends of said tabs

will tear open said cover and lift the film out of said cover.

3. The combination of a light protective sheet folded on itself about midway of its length, both plies thereof being folded in the same direction along transverse lines equidistant from the middle line of folding and thereby forming end tabs, a light sensitive film between the plies of said sheet and a cover enveloping said sheet, said plies being substantially as wide as said film and having shallow recesses in their side margins, said cover having a relatively light face piece with a slit therein and the tips of both tabs extending through said slit with the entire body portion of the outer tab lying flatwise next to said face piece, whereby a pull on the projecting ends of said tabs will tear open said cover, lift the film out of said cover and expose its side edges to be gripped while the film is still enclosed in said protective sheet.

WILLIAM O. McHUGH.