Jan. 8, 1929. 1,698,058

F. C. MARTIN

PACKAGE OF SENSITIZED MATERIAL FOR X-RAY PURPOSES

Filed Dec. 23, 1926

FIG. 1.

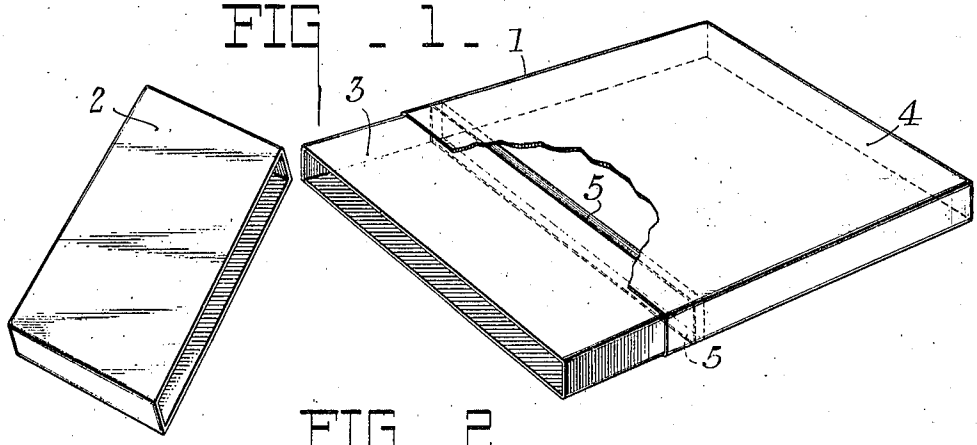


FIG. 2.

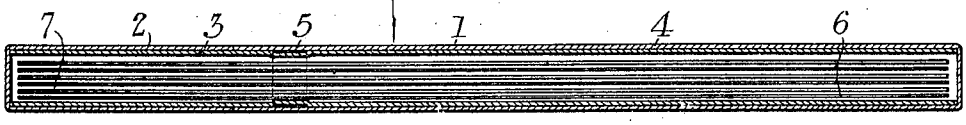


FIG. 3.

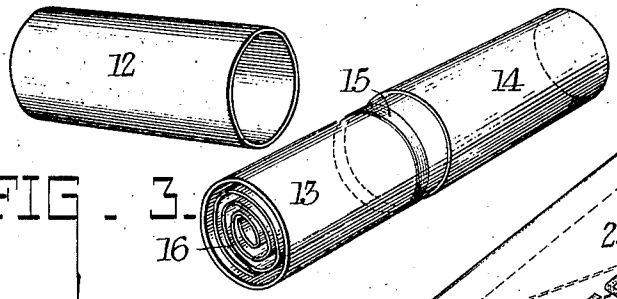


FIG. 4.

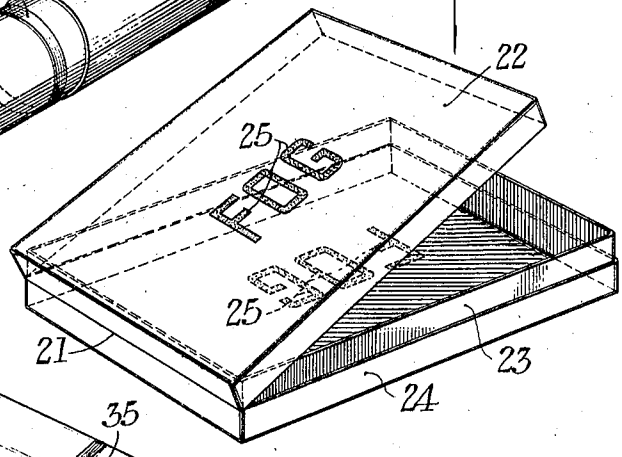
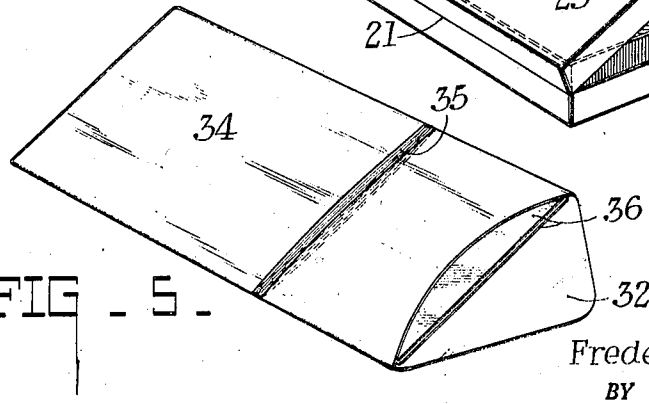


FIG. 5.



INVENTOR,
Frederick C. Martin,
BY R. L. Stinchfield
N. M. Perrine
ATTORNEYS.

Patented Jan. 8, 1929. 1,698,058

UNITED STATES PATENT OFFICE.

FREDERICK C. MARTIN, OF ROCHESTER, NEW YORK, ASSIGNOR TO EASTMAN KODAK COMPANY, OF ROCHESTER, NEW YORK, A CORPORATION OF NEW YORK.

PACKAGE OF SENSITIZED MATERIAL FOR X-RAY PURPOSES.

Application filed December 23, 1926. Serial No. 156,724.

This invention relates to packages of sensitized material for X-ray purposes and more particularly to packages containing a considerable number of sheets of such material as furnished and shipped by the manufacturer.

In practice, it is necessary for the X-ray operator to protect such packages carefully from the effects of X-rays, as by storing them in special metal cabinets or at a very considerable distance from the X-ray machine. Some operators do not fully realize the necessary extent of such precautions and inadvertently permit the packages to remain where they become fogged. Such films, even if the fog is but partial, yield poor images and the operator, not realizing that he is at fault, attributes this to poor materials. The manufacturer, having no means of proving the contrary, gets the blame and may in addition replace the goods.

The object of the present invention is to provide a package of such sensitive goods which will, in case of such accidental exposure, cause to be imprinted on the sensitive material a distinguishing image quite distinct from any that would result in the regular use of the material. This and other objects are accomplished by the use of a package for shipment and storage only, made of cardboard or other material opaque to light but pervious to X-rays having a strip or piece of heavy metal foil opposite the image bearing portions of the sensitive material. If the package is then exposed to X-rays an image of the design of this foil will be imprinted on the material. This will protect the manufacturer from unjust demands and warn the operator that his technique is faulty.

Reference will now be made to the accompanying drawing wherein the same reference characters indicate the same parts throughout.

Fig. 1 shows the container with the two portions thereof separated, one element being partly broken away.

Fig. 2 is a longitudinal section of a package including the container shown in Fig. 1.

Fig. 3 is a perspective view of an opened package of another form.

Fig. 4 is a perspective view of another form of container.

Fig. 5 is a perspective view of still another package in open condition.

In my preferred embodiment illustrated in Figs. 1 and 2, the container consists of a box 1 and cover 2, the box consisting of an inner rectangular tube 3 and an outer casing 4, extending partway along the tube. The cover 2 fits over the tube and forms with the casing 4 a smooth light tight package. At a point, here shown as within the casing 4, a band 5 of lead foil or of other material impervious to X-rays is applied around the rectangular tube 3 so as to completely encircle the same. The sensitive material, such as the usual glass plates or cut film sheets are placed within the container. In practice, one or two dozen plates or films of a size to fit the container will be placed in each package, though a smaller number is shown for the sake of clearness. In general there will be alternate sensitized sheets 6 and spacing papers 7.

In applying the term "tubular" to the part 3, I use the word in its correct geometrical meaning, not limiting it to any particular cross-sectional form. As shown, the container is a flat shallow rectangular box having upper and lower walls parallel to the plates between them. The sheets can, however, be furnished in rolled condition as in a continuous strip in a container of circular cross section, this being shown in Fig. 3, where the box member 14 has the circular tubular extension 13 adapted to fit within the cover member 12, and containing a coiled strip of sensitized film 16. The container and the coil of film will be of corresponding size. A band 15 of metal foil or equivalent material encircles the tube 13.

It is not necessary that the impervious material completely surround the package, though I consider this preferable. If desired, the foil may be in the form of a trademark, design or warning word. In Fig. 4 is shown a form embodying a box member 24 having the upwardly extending inner flange 23, about which fits the cover member 22 hinged to the box member at 21. On the bottom of the box and the upper surface of the cover are placed pieces 25 of lead foil or equivalent material in the form of a warning word.

In Fig. 5, a stack of cut films 36 is shown as packed in an envelope 34 around which passes a band 35 of metal foil or equivalent material. The envelope has on one end a closure tab 32.

The foil may or may not be visible to the user. In the form shown in Fig. 1, it is at all times invisible; in Fig. 3 it is visible when the box is open and in Fig. 4 it is on the outside of the package.

In general the packages are opened and such plate holders or cassettes filled as may be needed, the unused sensitized sheets being left in the orignal container which should be light tight when closed. The containers and the filled cassettes usually remain in the dark room where the loading takes place until used.

It is to be noticed that in order for this indication to be of use, it must be on a part of the package that is not used during the exposure of the film so that the appearance of the warning image on the developed film will necesarily indicate that the package as a whole was exposed to rays independently of the purposeful exposure of the individual film.

It is further to be noted that I preferably place the impervious material in a position where the image will appear squarely on the medial portion of the film where the intended image usually appears. It cannot then be mistaken for an image of the rim or border of the film or plate holder or cassette. This will be such an unmistakable warning that it cannot be ignored and the operator will at once correct his practice to overcome the fault.

By "medial" I do not necessarily mean the central part of the film as it can be considerably off center, as in Fig. 1, but I mean the large area occupying all the middle part of the film.

In order to produce such an image, moreover, the design must cover the area of the sensitive sheet only partially. If it completely covers it, the entire material will, of course, be protected, but this will make an expensive package and the operator will not be warned, so that plates in other packages or loaded cassettes which are not protected and which may be in the same exposed location, may be fogged.

While I preferably use lead or tin foil, other material such as a coating of rubber with particles of heavy metal or salts of heavy metal incorporated therein may be used.

It is obvious that numerous other embodiments are possible and I contemplate as included within my invention all such modification and equivalents as fall within the scope of the appended claims.

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

1. An article of manufacture comprising a light tight container of opaque material pervious to X-rays, sensitized sheet material within said container, and material impervious to X-rays on each side of said sheet material and opposite a part only of the medial portion of said sheet material.

2. An article of manufacture and commerce comprising a container of material pervious to X-rays and impervious to light, and including a movable cover, sensitized material in sheet form within said container, and metal foil impervious to X-rays carried by the container on both sides of the sensitive material and on each side opposite a part only of the medial portion of the sensitized material.

3. As an article of manufacture a box for the shipment and storage of sensitized sheet material for X-rays purposes and comprising a movable cover whereby the box may be opened without destruction and may be closed to render the box again light tight, said box being made of opaque material pervious to X-rays, a band of material impervious to X-rays encircling the box and sheet film sufficient for a plurality of X-rays exposures within the box and opposite the band of material.

4. An article of manufacture and commerce comprising a light tight flat container having upper and lower parallel walls pervious to X-rays, a stack of flat sensitized sheets within said container and between and parallel to the walls, the container including a movable cover portion whereby the container may be opened without destruction for the removal of the plates, and a strip of metal foil impervious to X-rays extending across the medial portion of each of said walls, whereby upon exposure of the package to X-rays the image of the strip will be recorded upon the medial portions of the sensitized sheets.

Signed at Rochester, New York, this 18th day of December, 1926.

FREDERICK C. MARTIN.