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WRAPPER FOR PHOTO-SENSITIVE SHEET FILMS

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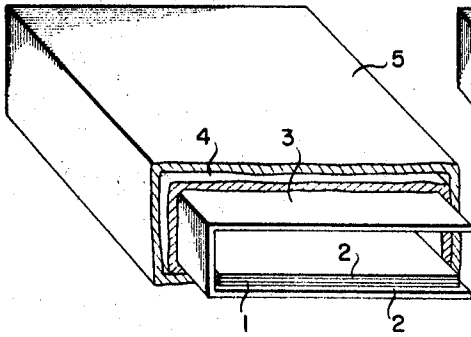


Fig. 1

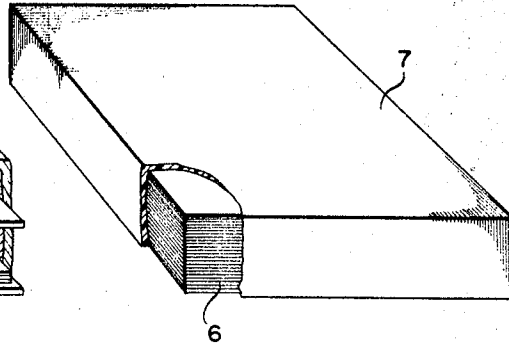


Fig. 2

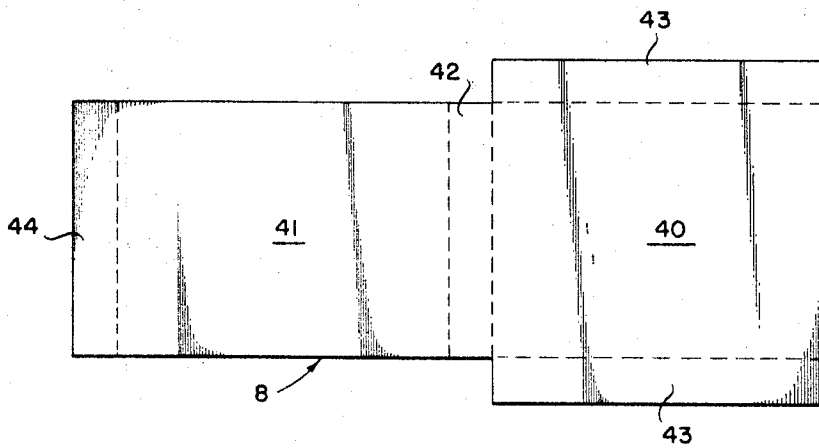


Fig. 3

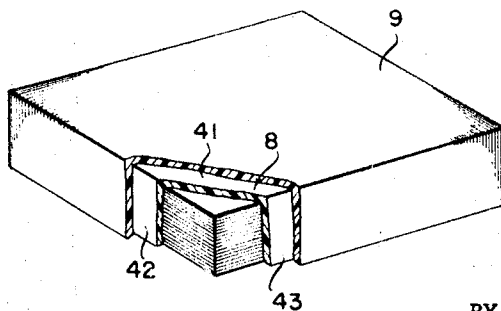


Fig. 4

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1

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WRAPPER FOR PHOTO-SENSITIVE SHEET FILMS

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4 Claims

ABSTRACT OF THE DISCLOSURE

A wrapper for tightly encasing photo-sensitive sheet film which comprises a heat shrinkable wrapping member which includes a material which imparts opaqueness to said heat-shrinkable film. The material which imparts opaqueness is preferably carbon or a photochromic compound. Preferably, a preliminary wrapping member is applied to the sheet film in order to provide a shock absorbent quality to the final unit. The preliminary wrapper may be provided with light-shielding properties, in which case it is not necessary that the heat-shrinkable film exhibiting light-shielding properties.

BACKGROUND OF THIS INVENTION

Field of the invention

The present invention relates to a wrapper for wrapping photo-sensitive sheet films.

Description of the prior art

In the prior art (as illustrated in FIGURE 1), photo-sensitive sheet films such as X-ray films (hereinafter called "sheet film") were wrapped one by one with an intermediate protective paper 2 for preventing scratches or static marks on the sheet film 1. The individual film units were accumulated and wrapped with a thick paper 3 as shown in FIGURE 1. The sheet films were then put into a moisture-proof bag 4, which was further wrapped with an outer box 5 for both light shielding and protection.

The principal object of the present invention is to provide a wrapper for photo-sensitive sheet films which is light, simple and inexpensive to fabricate by eliminating the protective paper 2 and the moisture-proof bag 4 which were required in the prior art.

SUMMARY OF THE INVENTION

Applicants have developed a wrapper for photo-sensitive sheet films which is light, simple and inexpensive to fabricate. The wrapper formulated in accordance with the present invention enables sheet film to be wrapped with the elimination of the protective paper inserts and moisture proofing bags which were formerly required.

This is accomplished by utilizing a heat-shrinkable film wrapping member which includes a material capable of imparting light-shielding properties to the heat-shrinkable film. If desired, a preliminary wrapping material may be applied to the sheet film prior to the application of the heat-shrinkable film. If a preliminary wrapping member is utilized, the preliminary wrapping member may exhibit light-shielding properties, thereby rendering it unnecessary to impart light-shielding properties to the heat-shrinkable exterior wrapping member. A wrapping member formulated in accordance with the present invention eliminates the danger of scratching or the formation of static marks on the film due to friction which

2

resulted between sheet films when utilizing packing methods described in the prior art.

DESCRIPTION OF THE DRAWINGS

FIGURE 1 is a partly broken perspective view showing a conventional wrapper for photo-sensitive sheet films.

FIGURE 2 is a partly broken perspective view showing an embodiment of a wrapper formed in accordance with the present invention being utilized to wrap photo-sensitive sheet films.

FIGURE 3 is a plan view of a preliminary wrapping member used in a second embodiment of a wrapper formed in accordance with the present invention.

FIGURE 4 is a partly broken perspective view of photo-sensitive sheet films wrapped with the embodiment of the wrapper shown in FIGURE 3.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring to FIGURE 2, which shows an embodiment of a wrapper formed in accordance with the present invention, accumulated sheets of film 6 are tightly wrapped with an opaque film 7. Opaque film 7, which is utilized to tightly wrap the sheet films, is made of a plastic heat-shrinkable film which includes carbon or a photochromic compound for the purpose of light shielding. It will be apparent to one skilled in the art that any form of carbon capable of being incorporated into the film of the present invention may be useable. In addition, the photochromic art is highly developed, and the literature and patent art shows many photochromic compounds, both organic and inorganic, which are compatible with the films of the instant invention.

One skilled in the art will also appreciate that any compatible material which imparts light-shielding properties to the films of the present invention may be utilized, carbon and photochromic compounds being merely representative of acceptable materials.

Sheet film 6 is initially loosely wrapped with heat-shrinkable opaque film 7 and then heat sealed at the marginal portions thereof. The unit is then passed through a heating tunnel in order to shrink the heat shrinkable film 7, which is preferably moisture proof.

Since the first embodiment of the wrapper described above has both light-shielding and moisture proofing properties, when the films 6 are tightly wrapped with this wrapper, friction between the films is reduced and there is little chance of forming scratches thereon. Thus, the conventional protecting paper and moisture proof envelope required in the prior art are eliminated, and the weight and cost of the wrapping is reduced. When the films are to be roughly handled during transport, extra protection may be needed, and it is preferred that the films be initially wrapped with a shock absorbing material, and then wrapped with a heat-shrinkable outer wrapping.

By wrapping the sheet films with a shock absorbing material and then with a heat shrinkable film 20-50 μ thick which has 5-20% of carbon therein, a wrapping having approximately the same light-shielding, moisture proofing, and shock resistance as a thick conventional wrapping is produced.

FIGURE 3 shows another embodiment of a wrapper produced in accordance with the present invention. A preliminary wrapping member 8 formed of paper, plastic and the like, comprises a bottom portion 40, of substantially the same shape and size as that of said sheet films 1, a cover portion 41, having substantially the same size and shape as said bottom portion 40, side wall portions 43 connected to one of the portions 40 or 41, a back wall portion 42 connecting said bottom portion 40 and said cover portion 41, and a front wall portion 44, connected to said

cover portion 41, which is adjacent thereto. Preliminary wrapping member 8 will provide light-shielding and shock absorbance when utilized to wrap the accumulated sheet films. A wrapper produced in accordance with the second embodiment of the present invention thus comprises a preliminary wrapping member 8 and a heat-shrinkable wrapping film 9, which need not be light-shielding. Wrapping tightly film 9 is utilized to wrap films 1 which have been preliminarily wrapped with the preliminary wrapping member 8.

As shown in FIGURE 4, sheet films 1, which have been wrapped with a wrapper produced in accordance with the present invention, are tightly wrapped with heat-shrinkable wrapping film 9 on said preliminary wrapping member 8 so that there is no danger of scratches or static marks being made on the films due to friction between the sheet films 1. Thus, the conventional intermediate protecting papers may be totally eliminated, and since the heat shrinkable wrapping film 9 is moisture proof, the conventional moisture proof bag is also eliminated.

It will be obvious that the preliminary wrapping member 8 need not have light-shielding properties if the shrinkable wrapping film 9 has light-shielding properties, however, it is necessary that at least one have light-shielding properties.

The side wall portion 43 of the preliminary wrapping member 8 may be eliminated, if desired, since experimentation has indicated that the side wall portion 43 is not always necessary to provide insulation and shock absorbance.

Heat-shrinkable wrapping film 9 may be any heat-shrinkable film, representative of which are vinyl chloride, polyethylene, polypropylene, vinylidene chloride and the like.

Thus, the wrapper described in the second embodiment of the present invention enables conventional intermediate protective papers and the moisture proof bag which were formerly required in wrapping photo-sensitive sheet films to be eliminated. In addition, the wrapping process is greatly simplified and the wrapped sheet films are easily handled.

Moreover, since the intermediate protecting paper is eliminated, the quality of the film is enhanced since intermediate paper formerly utilized quite often had some organic compounds present which could chemically affect the film.

It will be understood by one skilled in the art that light-shielding will generally mean opaque, but the exact extent of light-shielding may vary with the film encased. Generally, it will be necessary to exclude substantially all light.

While the invention has been particularly shown and described with reference to preferred embodiments thereof, it will be understood by those skilled in the art that various changes in form and details may be made therein without departing from the spirit and scope of the invention.

What is claimed is:

1. A photographic film package which comprises at least one sheet of photo-sensitive film, and a heat-shrinkable film wrapping member which exhibits light-shielding properties for tightly encompassing said photo-sensitive sheet film, said heat-shrinkable film wrapping member having been shrunk in situ about said photo-sensitive sheet film, being from about 20 to 50 microns in thickness, and containing from 5 to 20% by weight of carbon.

2. A photographic film package as in claim 1 which also includes a preliminary wrapping member between said sheet of photo-sensitive film and said heat-shrinkable film wrapping member.

3. A photographic film package as in claim 1 wherein said heat-shrinkable film wrapping member comprises at least one member selected from the group consisting of vinyl chloride, polyethylene, polypropylene and vinylidene chloride.

4. A wrapper as in claim 2 wherein said preliminary wrapping member comprises a bottom having first and second parallel edges, a wall portion having first and second edges, said first edge of the wall portion connected to said first edge of the bottom, a cover connected to the second edge of said wall portion and a front connected to said cover whereby said front is capable of contracting said second edge of the bottom.

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