

Oct. 10, 1950

A. B. CLUNAN
PACKAGING

2,525,651

Filed July 2, 1948

2 Sheets-Sheet 1

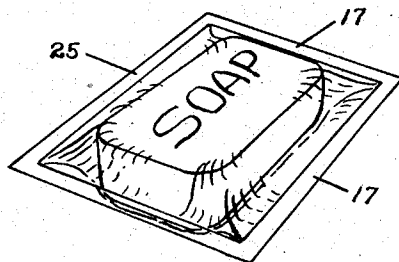
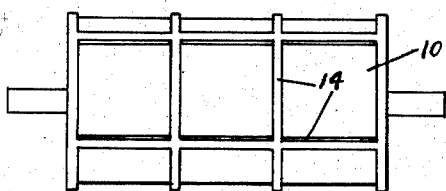
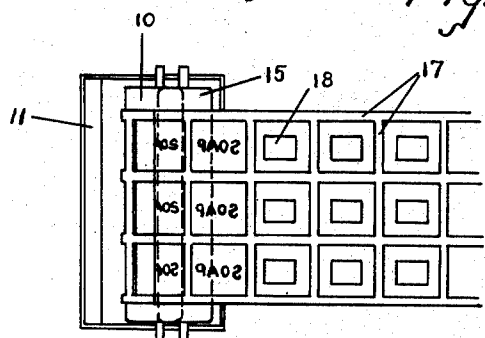
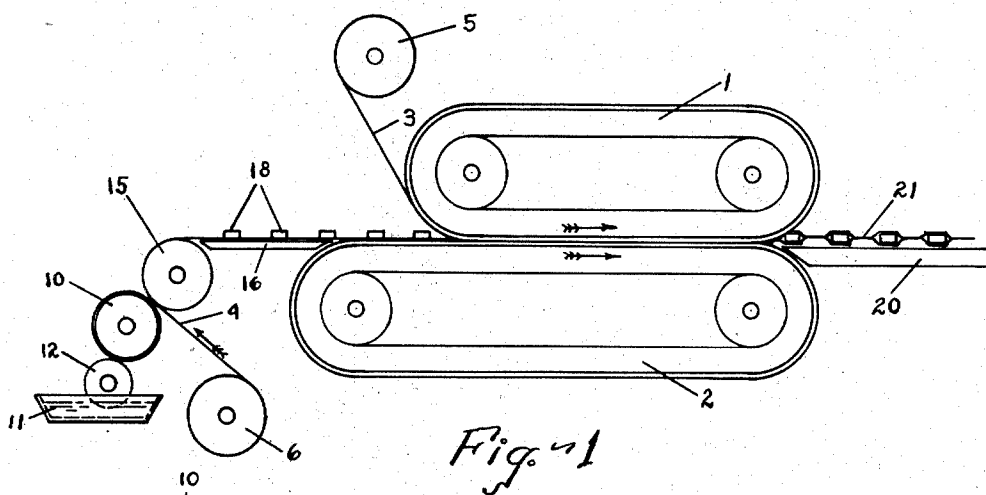
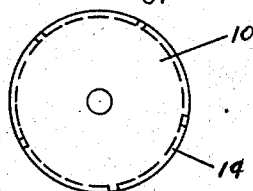


Fig. 5



INVENTOR.
ALBERT B. CLUNAN
BY
R. H. Waters

Oct. 10, 1950

A. B. CLUNAN
PACKAGING

2,525,651

Filed July 2, 1948

2 Sheets-Sheet 2

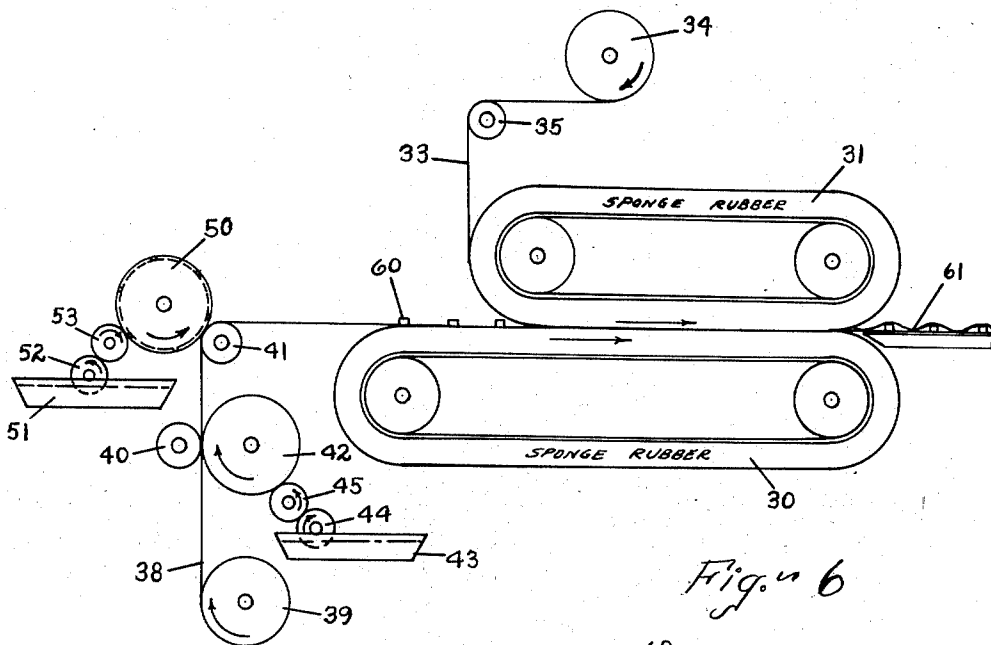


Fig. 6

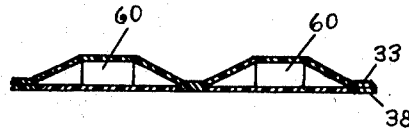


Fig. 8

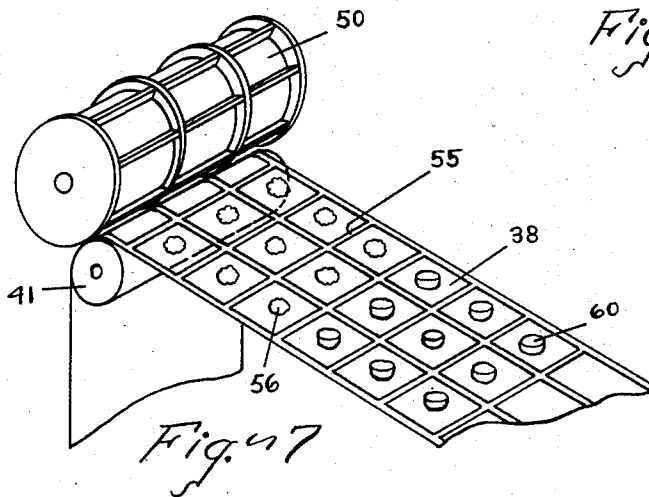


Fig. 7

INVENTOR.
ALBERT B. CLUNAN
BY

R. H. Waters

UNITED STATES PATENT OFFICE

2,525,651

PACKAGING

Albert B. Clunan, Akron, Ohio, assignor to Wing-foot Corporation, Akron, Ohio, a corporation of Delaware

Application July 2, 1948, Serial No. 36,575

2 Claims. (Cl. 18—56)

1

This invention relates to packaging, and particularly, the use of solvent in forming packages from two sheets of plastic film material.

It has been proposed to place articles to be packaged between two sheets of heated plastic wrapping materials and pass the whole between resilient pressure means such as brushes, sponge-rubber rolls, sponge-rubber belts, etc., thereby causing the sheets to become united around the articles. If either wrapping material is stretched or shrunk during this packaging operation, any label printed on it is distorted.

To overcome such distortion it is here proposed that the printed sheet be unheated and solvent be used to unite the two sheets. The other sheet may be heated or not, as desired. The solvent may be a low-boiling solvent which is evaporated from the film during storage or before, or a high-boiling solvent such as a plasticizer which will be dissolved into the film and remain there perhaps indefinitely.

The invention is particularly adapted for the packaging of objects which are about the same size because then the solvent may be applied in a predetermined manner, as by printing by an embossed roller.

The invention is further described in connection with the accompanying drawings which are all more or less diagrammatic and in which—

Fig. 1 is an elevation of packaging means;

Fig. 2 is a plan view of the left-hand portion of Fig. 1;

Fig. 3 is an elevation of the engraved roller of Figs. 1 and 2;

Fig. 4 is a section through the same;

Fig. 5 is a view in perspective of the finished package;

Fig. 6 is an elevation of modified packaging equipment;

Fig. 7 is a view in perspective of a part of the equipment shown at the left in Fig. 6; and

Fig. 8 is a section through the packaged articles as delivered at the right from the equipment shown in Fig. 6.

In Figs. 1 and 6 the resilient means for pressing the wrapping films together around the articles to be packaged is illustrated as two sponge-rubber belts. Other resilient means may be employed. In Fig. 1 the sponge-rubber belts 1 and 2 are arranged horizontally and are driven (by means not shown) in the direction of the arrows. The films 3 and 4 which are of the same width are fed from the supply rolls 5 and 6, so that their edges are brought into substantial alignment as the films are passed between the two

2

belts. The film on the roller 6 is printed with the word "Soap." Any suitable solvent or swelling agent is printed onto the film 4 by the embossed roller 10. The solvent is supplied from the reservoir 11 by the feed roller 12. Figs. 3 and 4 show the construction of the roller 10. It is provided with the raised grid bars 14 and, therefore, applies the solvent to the film 4 in connected rectangles. The printing of these rectangles on the film is coordinated with the location of the printed label by an electric eye or other suitable means known in the art.

After printing the solvent on the film it passes over the roller 15 onto the table 16. Here the bars of soap 18 are placed manually or mechanically within the rectangles of printed solvent 17. This is illustrated in Fig. 2.

As the two films pass between the belts 1 and 2 they are pressed together around the bars of soap. The lapse of time between the application of solvent to the film and the pressure of the two films together has been sufficient to render the solvent-treated surface of the film tacky. By pressing the film 3 against the solvent-treated areas 17 the two films are united. The united films are delivered from the belts onto the table 20 as a continuous chain 21, with the bars of soap pocketed between them. Ordinarily the strip will be cut through the solvent-sealed areas to form unit packages. Fig. 5 shows the finished unit package 25 with the word "soap" printed on the exposed film which during the packaging operation was the under film 4.

Any films which become tacky on the application of solvent or swelling agent may be used. Rubber hydrochloride film is preferred and the tackifier employed may be chloroform, trichloroethane, butyl stearate, dibutyl phthalate, etc., and will be selected with a view to preventing contamination or damage to the article being wrapped. If plasticizers which require an appreciable time to be dissolved into the film are used as solvent, the roller 15 or table 16 may include a heater which raises the temperature of the film somewhat but not sufficiently to cause distortion. Such raising of the temperature will hasten the absorption of the plasticizer into the film.

Fig. 6 illustrates a modified form of equipment in which the upper film is thermostretchable and heated to the stretching temperature. The sponge-rubber belts 30 and 31 may be of the same construction as shown in Fig. 1, and may be similarly driven in the direction indicated by the arrows. The upper film 33 is fed from the stock roll 34 over the heated roller 35. The lower

film 38 is fed from the stock roll 39 past the guide rollers 40 and 41. The guide roller 40 serves as a pressure or backing roll for the printing roll 42 which has any suitable design embossed on its surface. A quick-drying ink is supplied from the reservoir 43 by the rollers 44 and 45. The solvent of the ink may be dissolved into the film or dried with hot air, as by directing a blast of hot air against the film as it passes from the roll 42 to the roll 41. From the printed roller 42 the film passes over the roller 41 where solvent for sealing is applied. The solvent is applied by the roller 50, being supplied from the reservoir 51 by the rollers 52 and 53. The embossed grids on the roller 50 produce criss-cross solvent-treated areas on the film 38. Fig. 7 shows these areas 55 and the printed designs 56 located within these areas. The film then passes toward the sponge-rubber belts and the articles 60 which are to be wrapped are properly placed within the solvent-treated areas and on top of the printed designs.

The lower film 33 is not heated. It carries the articles 60 between the sponge-rubber belts. Here the heated film 33 is pressed by the upper belt down around the individual articles and the two films are sealed around the articles. The solvent facilitates the production of a firm bond between the films, even though the lower film is not heated. The upper film is stretched as it is pressed over the articles, but the lower film is not stretched because it is not heated. It is the unheated film on which the design is printed, so there is no distortion of the design. Applying the solvent in wider strips which closely approach the articles being packaged, the sponge rubber belts will bring the film surfaces into sealing contact right up to the edges of the articles to form wrappers which fit the articles more or less snugly, rather than loosely, as illustrated in Fig. 8.

The invention is not limited to the details disclosed. Any solvent-sealable wrapping film may be used in carrying out the process illustrated in connection with Fig. 1, and in Fig. 6, although heat is used, solvent-sealing is a pre-requisite. The process illustrated in connection with Fig. 6 presumes that the upper film is heat-stretchable. However, stretchability is not an essential property of the films employed in carrying out

the process illustrated in Fig. 1. Films of rubber hydrochloride, cellulose acetate, vinyl chloride-vinylidene chloride copolymer, etc., may be used with suitable solvents. The sheets used may be of the same or different compositions.

What I claim is:

1. The method of packaging articles between two flat sheets of wrapping material, one of which sheets is printed and solvent-tackifiable and the other of which is heat-stretchable, which comprises outlining areas on the solvent-tackifiable sheet with solvent which renders the sheet tacky, placing articles between the two sheets in outlined areas of the first-mentioned sheet, heating the other sheet to render it stretchable, and while it is thus in stretchable condition resiliently pressing the sheets toward one another, over and around the articles, thereby stretching the heat-stretchable sheet by contact with the articles and forming a firm bond between it and the solvent-treated areas of the other sheet.

2. The method of packaging which comprises outlining with solvent on a flat, printed, solvent-tackifiable, heat-stretchable wrapping material herein referred to as the first sheet, and placing articles to be packaged within the outlined areas, heating a flat sheet of heat-stretchable material which is referred to herein as the second sheet, resiliently pressing the second sheet over the articles to be packaged while it is in stretchable condition and bringing the two sheets together around the articles thereby stretching the second sheet and uniting it around the articles with the solvent-treated areas of the first sheet.

ALBERT B. CLUNAN.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,895,899	Schaub	Jan. 31, 1933
2,037,825	Salfisberg	Apr. 21, 1936
2,103,386	Salfisberg	Dec. 28, 1937
2,438,089	Carson	Mar. 16, 1948