Oct. 18, 1966 R. L. LARSON 3,279,144

METHOD OF PARTIALLY ENCAPSULATING AND MOUNTING MERCHANDISE FOR DISPLAY

Original Filed Nov. 14, 1963

Fig. 1.

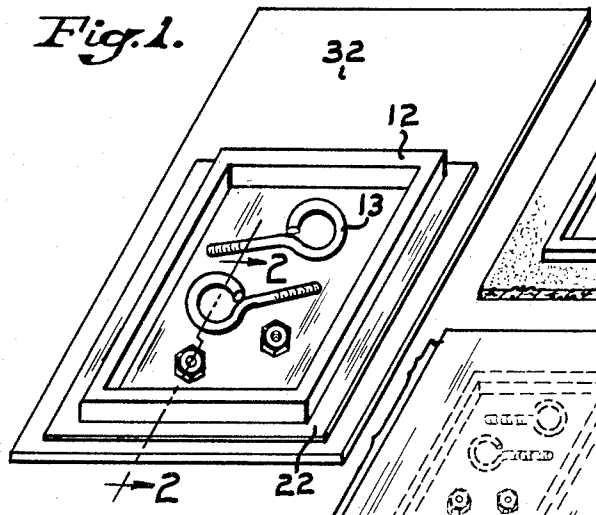


Fig. 3.

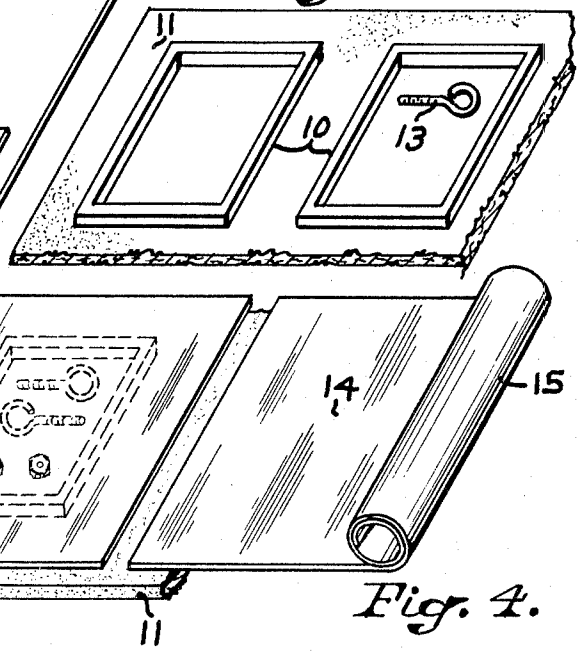


Fig. 4.

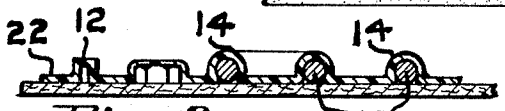


Fig. 2.

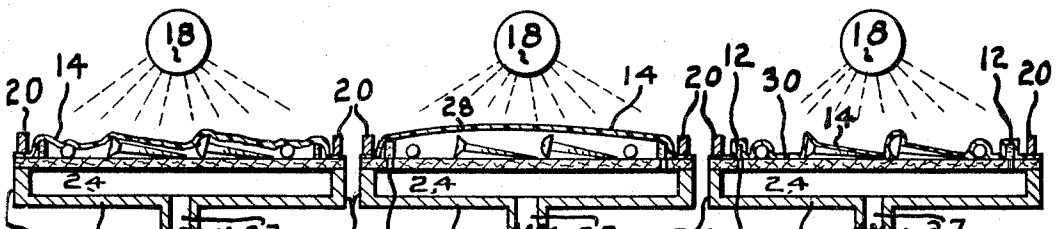


Fig. 5. Fig. 6. Fig. 7.

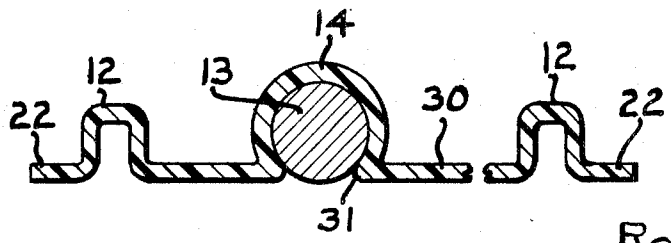


Fig. 8.

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METHOD OF PARTIALLY ENCAPSULATING AND MOUNTING MERCHANDISE FOR DISPLAY

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Original application Nov. 14, 1963, Ser. No. 323,661, now Patent No. 3,202,280, dated Aug. 24, 1965. Divided and this application July 7, 1965, Ser. No. 482,965

1 Claim. (Cl. 53—30)

This case is a division of my copending application Ser. No. 323,661, filed November 14, 1963, patented August 24, 1965, Patent No. 3,202,280.

This invention pertains to a method of providing a card mounted, visually displayed, packaged merchandise.

It has been found desirable to mount various types of merchandise, such as small hardware, on a display card under a transparent film which materially protects the goods from atmospheric or chemical action as well as hinders surreptitious removal of the goods from the card. The public wishes to see what is being purchased, and it is advantageous in many cases to package on a single card various related goods, such as an electrical antenna switch and screws or other fasteners for mounting the same.

It was at first proposed to mount the goods on a card by means of a transparent thermo-plastic film which is drawn down by a vacuum to envelop the goods and adhere directly to the card; but it has been found difficult to remove the goods from the card because of the close union between that film and the card. In many cases, the film ruptured badly in its application to the goods and card. For various reasons the percentage of rejects from the factory was very high. It was then proposed to mount such merchandise loosely within a transparent container, termed a blister, which is cemented marginally to the display card. In that case, the various shapes of the blister had to be premoulded by separate and expensive operations to provide compartments that substantially fitted the merchandise or which were of such size as to hold a number of small parts loosely therein. It has been found that such a package is subject to damage in transit or by rough handling in the factory or that often a pointed article might pierce the blister and cause damage or escape from its package. It is desirable that the goods be held firmly on the display card.

A primary object of this invention is to overcome such disadvantages and problems and to provide a method of packaging various types of goods or merchandise including foods, hardware and other articles, whether multiple or single in number, and to secure the goods on a display card in such a manner that the goods are held firmly in a fixed position on the card and yet are not directly attached thereto.

Another object is to mount the goods initially within a frame and to coat both with a transparent thermoplastic sheet or film and thus form a removable sheet having an intaglio impression of the frame and the goods, and thereafter removably attach the sheet marginally to a display card in such a manner that the goods are not directly attached to the card.

A further object is to provide a method by which a single piece of merchandise, or an assortment of related goods, is removably mounted on a display card by means of an elastic thermoplastic sheet molded as an intaglio onto the goods, but not onto the card, and wherein the sheet is attached marginally to the card and holds the goods therebetween. Further object will be apparent in the following disclosure:

In accordance with this invention, an article of merchandise or a group of goods, is mounted on a temporary backing and partially enveloped in a thermoplastic elastic sheet which forms an intaglio impression of the goods and exposed portions of the backing and removably interlocks sufficiently with under surfaces of the merchandise so that the two form a transportable unit. Thereafter, this unit is removed from the backing and mounted marginally on a display card or other suiable mount with the article located between the sheet and the mount, but not adhering materially to the latter, so that it may be readily removed by tearing away the card from the sheet and stripping the latter away from the article.

Referring to the drawings illustrating one embodiment of the invention and a method of making the same:

FIG. 1 is a perspective view of the completed article;

FIG. 2 is a section on the line 2—2 of FIG. 1;

FIGS. 3 to 7 are diagrammatic views of the steps involved in manufacturing that product, in which:

FIG. 3 is a fragmentary perspective view partly in section of two frame molds mounted on a temporary porous backing and used for locating the goods relative to their final display;

FIG. 4 is a similar fragmentary view of a single frame on its backing and showing a thermoplastic sheet applied over the frame and the goods therein;

FIG. 5 is a transverse diagrammatic sectional view showing the application of radiant heat to a thermoplastic sheet over the goods;

FIG. 6 is a similar view showing the application of a momentary air pressure to lift the sheet free from the goods;

FIG. 7 is a similar view showing the subsequent application of a partial vacuum to draw the heated sheet into close contact with the goods and backing; and

FIG. 8 is a fragmentary sectional view showing the transportable sheet enveloped goods stripped from the backing and indicating the partial envelopment of the goods by the sheet.

The preferred method of this invention comprises the steps of (a) providing a raised peripheral frame on a temporary porous flat backing and assembling merchandise thereon;

(b) Covering the merchandise with a sheet of thermoplastic material which is non-adherent to the backing;

(c) Subjecting the sheet to heat sufficient to render it plastic;

(d) Applying a vacuum to draw the sheet tightly into contact with the goods and forming the sheet as an intaglio impression of the goods and partially encapsulating the same while closely engaging contactable portions of the backing within the frame a flat margin around the frame but without adherence thereto;

(e) Stripping from the backing the sheet having the goods attached thereto; and

(f) Cementing only the margin of the sheet to a display card so as to cover and protect the goods without directly attaching the goods to the card.

Referring first to FIG. 3, a raised frame **10**, and preferably a multiplicity thereof, which has a suitable configuration is mounted on a temporary backing **11**. This frame is shown as rectangular and it is formed preferably of a suitable metal such as aluminum, or other material that is inert to the heating stage and sheet. This frame is sized preferably to form a low walled pocket about ¼ inch deep within which one or more of the articles of merchandise or goods are to be arranged. To avoid expense, the frame is preferably made in a standard size to locate and carry various types of goods and to provide an intaglio frame work adapted for mounting on various sized display cards. Hence, a multiplicity of frames of uniform size are mounted on the backing **11** and loaded as desired with a suitable arrangement of merchandise. This pocket frame **10** serves as a sump,

recess or container intended to locate the goods correctly relative to their final positions on the display mount. Hence, the goods locator may be formed as a depression or other shape in the backing **11**, or it may be indicated by a suitable marking on the backing **11**. However, the frame **10** is preferred, since it results in the sheet being formed as a strengthening frame work. For the sake of economy and expeditious procedure, a plurality of these frames **10** is mounted on a substantially rigid backing or board about 1 inch thick, which is made of porous material, such as a molded fibrous body or Masonite or other porous or a suitably preforated body from which the plastic sheet may be subsequently stripped. This merchandise locating frame **10** serves as a mold for forming a ridge or a hollow recessed frame work or molded bead **12** of suitable dimensions (FIGS. 1 and 3), such as one-quarter inch wide and high, which serves primarily for strengthening purposes and secondarily as a picture frame molding for displaying the goods **13** on their final mount. This ridge is a strengthening structure which aids in transportation and handling of the goods while they are still attached to the enveloping sheet, as will be described. The assembly of frames **10** are suitably attached to the backing **11**, as by means of screws, and they are suitably positioned for the subsequent molding operations and the cutting stage. The goods may project above the frame, since the frame **10** serves merely for positioning the merchandise on the board **11**.

Various types of apparatus are in use in the industry for making blisters and for skin packaging which are suitable for carrying out the procedure of this invention. Hence, the apparatus has been illustrated diagrammatically in the drawings and only sufficiently for illustrating the new procedure. As shown in FIG. 4, a suitable thermoplastic sheet **14** is drawn from a roll **15** and suitably held in place over the assembly of the frames **10** on the backing **11** and the goods **13** thereon. The merchandise **13** is shown as a pair of screw hooks and their associated nuts, but many other articles may be thus displayed. After this sheeting **14** has been cut from the roll, and is held in position, it is then subjected to radiant heat from a suitable heat source, such as a series of electric light bulbs or a radiant resistant coil **18**. The temperature and duration of application of heat are regulated to render the sheet soft and pliable and cause it to fall down onto the frame and the goods. A rectangular clamping frame **20** has been brought down into contact with the marginal portions of the sheet around the goods, and this provides a seal around the several frames **10** or each individual frame. Where the frame engages the sheet, it forms margins **22** which later serve for attaching the sheet to a display card. This frame **20** cooperates with the backing **11** to contain air under pressure or a partial vacuum around the goods, as will be described.

The plastic sheet, depending upon the temperature conditions, may make an improper contact with some of the goods, and to avoid that condition an air blast is introduced into the chambers **24** beneath the porous plate **11**, as is formed by a suitable bottom **25** and side walls **26**. The application of this air pressure through a pipe **27** for a few seconds serves to lift the sheet **14** while being heated and form an upward bulge **28** (FIG. 6) which frees the sheet **14** from contact with the goods. It is preferred to provide a series of holes **29** in the plate **11** beneath the frames **10** so that the application of air under pressure and of a subsequent partial vacuum will affect the film sheet **14** close to the frame **10** and so insure a close molding of the plastic sheet thereto, so that the intaglio frame work **12**, simulating a picture frame, is well formed.

Then, as shown in FIG. 7, while the goods are mounted on the porous plate **11**, and heat is still applied, a partial vacuum is applied through the pipe **27** to the space **24**. This serves to draw the sheet uniformly downwardly against the goods and the frame **10** and causes the formation of a hollow U-shaped or intaglio frame work **12** around the exposed top and sides of the rectangular frame **10**. At the same time, the film sheet **14** is wrapped partially around the goods and drawn somewhat beneath the same as shown at **31** (FIG. 8). Hence, the thermoplastic sheet **14** envelops the goods sufficiently to hold them connected temporarily thereto. The portions **30** of the sheet **14** (FIGS. 7 and 8) are molded to the top of the backing **11**.

After the vacuum stage, the assembled thermoplastic sheet and merchandise are removed from the heat and then quickly cooled. Then the sheet which partially encases the goods is stripped from the backing **11**, and the assembly may be transported to suitable apparatus where it is cut up into several units which are to be mounted on display boards. FIG. 8 may be considered as an enlarged section similar to FIG. 2 but minus the display card **32** on which the sheet and goods are finally mounted. The ridge portion **12** of the framework of the sheet has been molded neatly by the metal frame **10**. Since the plastic sheet, during the vacuum stage has been drawn downwardly around the article of merchandise **13** and locally into contact with the board **11**, as is caused by the reduced pressure through the porous or perforated mounting board **11**, the portions **29** of the film sheet envelop the undersides of the merchandise to a material extent and thus hold the parts together, so that the unit of FIG. 8 is transportable as such and the goods are held in place during the stage of slicing or cutting the sheet **14** into smaller units as well as while the assembly is mounted on a display cardboard **32**. However, the thermoplastic material is sufficiently flexible or elastic so that when desired it may be readily bent and stripped away from the goods or merchandise. It may also be noted that the ridge portions **12**, simulating a picture frame, are guides for the cutting knives or die so that the sheet may be cut properly to provide the outstanding marginal flange-like portions **22** which will serve later for applying the assembly on a cardboard.

This application of the sheet **14** to a display board **32** is readily effected by suitably cementing or otherwise attaching the rectangular margin **22** to the card. This is accomplished by a suitable procedure, which may involve coating a portion of the board **32** with a suitable adhesive such as a film formed of a solution of cellulose or acetate propionate. The board **32** may be made of suitable material such as paper, cardboard, wood, plastic or other strong material. Upon mounting the unit of FIG. 8 on the board **32**, the two parts may be stuck together by suitably heating the margin **22** to soften the plastic material. Although portions of the sheet **14** contact the board **11**, as drawn down by the partial vacuum and so will similarly contact the mount **32**, yet those portions are not cemented in place, but are free from the display mount **32** and thus are readily lifted away when the sealed margins **22** have been freed.

For this skin wrapping of the goods, a sheet of plastic or bendable thermoplastic substance is selected which is capable of being molded onto the goods under a low, nondeleterious heat and partially enveloping and forming an intaglio impression of both the goods and the positioning frame. Various thermoplastic sheet or film materials may be employed for the purpose, such as cellulose acetate, cellulose butyrate, cellulose acetate butyrate and polymerized resins. But cellulose propionate is preferred. This substance flows at a temperature of 145° to 183° C. It is formed as a sheet of desired thickness, such as 0.007 to 0.025 inch, and the thickness is selected according to the requirements. Primarily, such sheets should form an intaglio impression of the merchandise without adhering tenaciously thereto, and it should have sufficient elasticity so that it may be subsequently bent and stripped from the merchandise, as well as its mount, when required. The various sheet materials are standard articles of commerce, and the various conditions of the process

are to be controlled as required by the substance employed.

In the preferred procedure involving the use of a backing board **11** of about 30 inches square, an electric heating coil of 6000 units located about 2 inches from the thermoplastic cellulose propionate sheet provides sufficient heat to soften the sheet in about one second per 0.001 inch of sheet thickness. Of course, the temperature and the time of heating may be varied to modify the observed conditions. As an example, the heater may attain a temperature of 900° to 1100° F. and if located 3 to 4 inches from a thermoplastic sheet of cellulose acetate 0.01 inch thick will soften the latter sufficiently in about 5 seconds. Also, the air pressure (FIG. 6) and the partial vacuum (FIG. 7) as well as the duration of the application are regulated to prevent disrupting the film sheet and to insure a close wrapping of the goods but provide for the sheet to be subsequently stripped away. It will be understood that since the goods are not attached to the display card **32**, there will be no problem in removing the goods. This is done merely by tearing the display card away from the margin **22** of the sheet material and then bending the latter enough to strip it away from the goods which it has encased. Since the thermoplastic sheet is wrapped tightly around the top exposed surfaces of the merchandise and is preferably transparent, the appearance of the displayed article is such that the would-be purchaser thinks he can touch the goods without realizing there is an encasing film. Many advantages will be apparent in this construction.

It will be appreciated that the procedure involves assembling the article of merchandise on a temporary mount and then partially encasing the article in a thermoplastic sheet in such a manner that the two form a substantially single unit which may be stripped from the temporary mount and transported as such. The sheet is shaped to provide marginal or other portions substantially lying in a plane, which may be subsequently attached or otherwise applied to a display card on which the merchandise is to be mounted.

It will now be evident that many changes may be made in the procedure within the scope of this invention and

that the final article may be modified depending on the nature and configuration of the merchandise which is to be displayed.

It will now be understood that the above disclosure of a preferred embodiment of the invention is not to be interpreted as imposing limitations on the appended claim.

I claim:

The method of mounting articles of merchandise for display comprising the steps of providing a temporary porous, flat mount having low raised peripheral frames spaced from the edge of the mount and each other, locating said articles on the mount within the frames, applying a transparent, thermoplastic film over said frames and articles on the mount, heating all of the film thereover to soften it so that it contacts and partially encapsulates the frames and articles, supplying air under pressure to lift and hold the heat softened film free from the frames and articles, cutting off the air under pressure, subjecting the film to a vacuum applied through said porous mount and forming intaglio impressions of said frames as beads and partially encapsulating the exposed surfaces of the articles while forming flat film portions around the frames and between the articles which engage but are not adherent to said mount, thereafter removing as a single unit the film and said articles wholly supported thereby, slitting said portions around the beads to provide a flat margin around each bead, and thereafter attaching only the underside of each margin to the top surface of a flat mount which displays the article between the mount and the film which still encapsulates the article and leaving the film within the bead in contact with but unattached to the display mount.

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