

- [54] **PACKAGING FOR FLAT OBJECTS**
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- [22] Filed: **Oct. 27, 1970**
- [21] Appl. No.: **84,443**

Related U.S. Application Data

- [62] Division of Ser. No. 843,526, July 22, 1969, Pat. No. 3,597,894.
- [52] U.S. Cl. **206/84, 206/459, 206/484**
229/83, 229/92.9
- [51] Int. Cl. ... **B65d 85/30, B65d 85/58, B65d 27/30**
- [58] Field of Search..... 206/46 R, 46 FR, 0.82;
229/92.9, 83

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[57] **ABSTRACT**

Coins or other generally flat objects are packaged by being sandwiched between plastic layers at least one of which has an embossed surface juxtaposed to the coin or object to prevent tracing the surface contour thereof through said one layer. The plastic layer is of stiff plastic material such as styrene so that it cannot be opened by heat or will rupture or crack if tampered with. Indicia on a paper layer joined to the plastic layer is printed with ink which is soluble in aromatic hydrocarbon solvents such as toluol.

4 Claims, 6 Drawing Figures

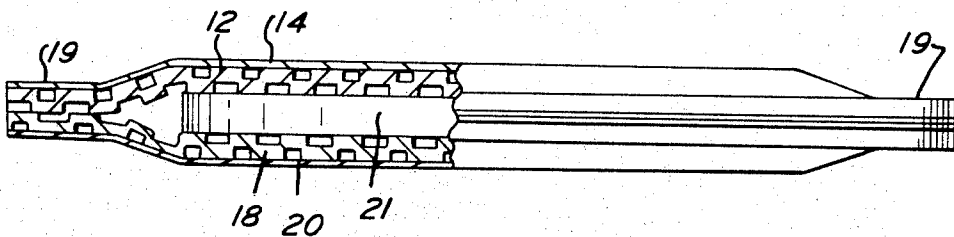


FIG. 1

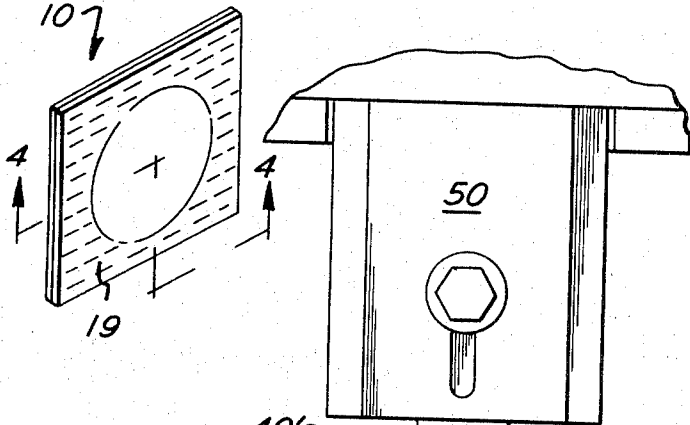
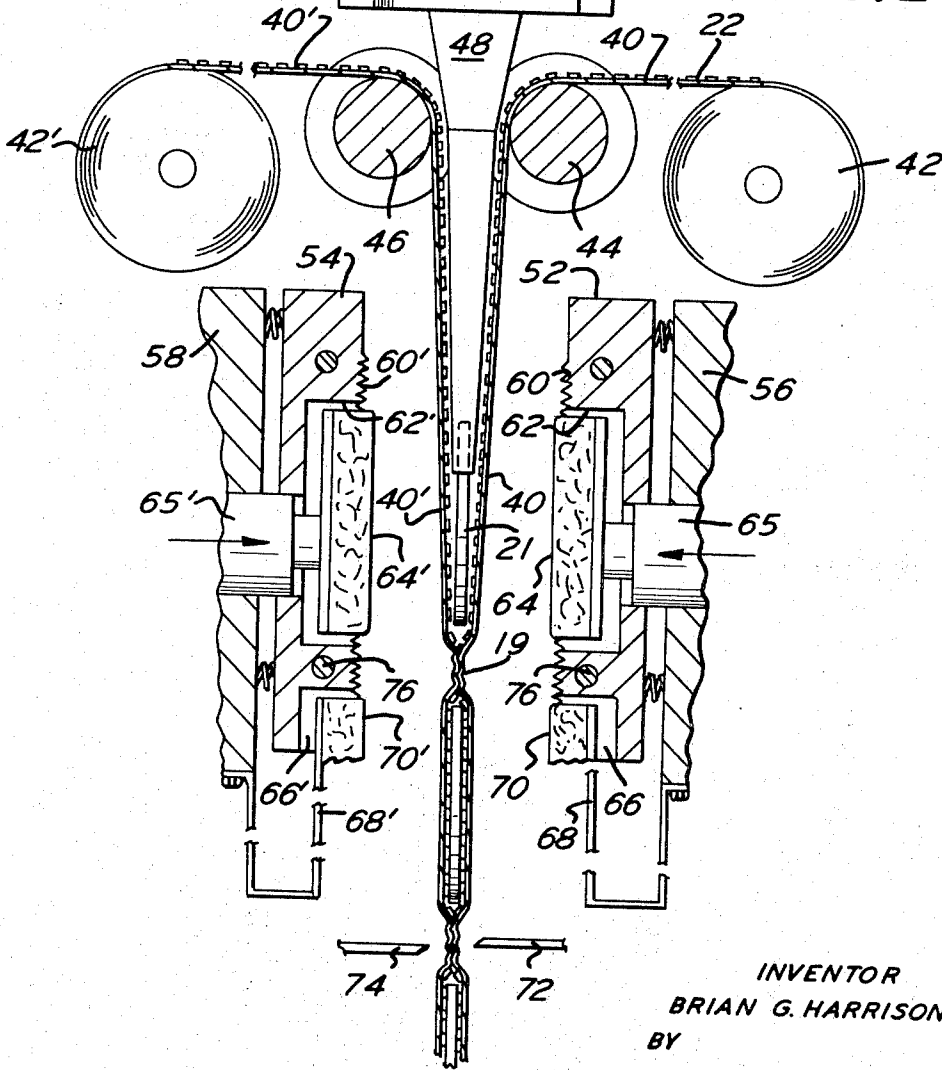


FIG. 2



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FIG. 3

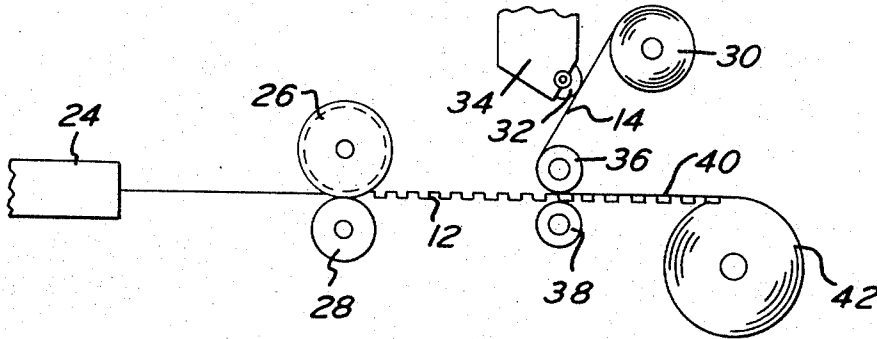


FIG. 4

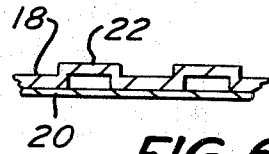
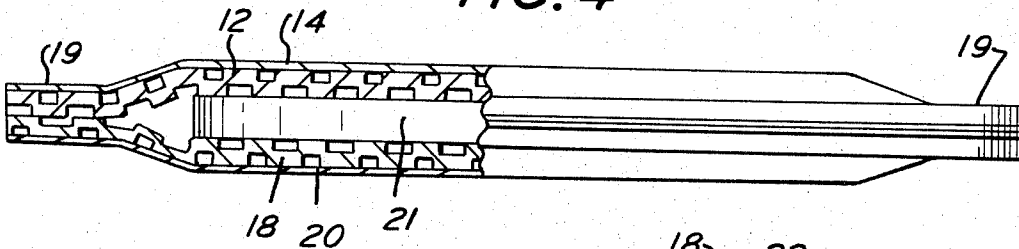


FIG. 6

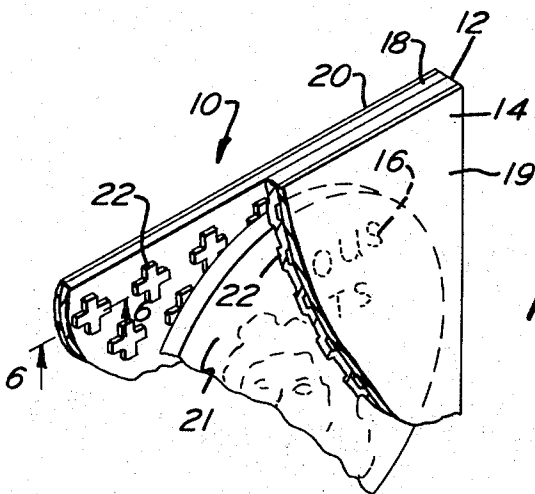


FIG. 5

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PACKAGING FOR FLAT OBJECTS

This application is a division of copending application Ser. No. 843,526 filed July 22, 1969, now U.S. Pat. No. 3,597,894 and entitled: METHOD FOR PACKAGING FLAT OBJECTS AND PRODUCT THEREOF.

This invention relates to a method for packaging objects, and more particularly, to a method for packaging generally flat objects such as coins or the like and the product thereof. Still more particularly, the present invention is directed to a method of packaging coins or the like wherein tracing through the packaging material to determine the surface contour of the packaged coin is precluded, and an article which may be made by such method.

It has been proposed to employ packaged coins, tokens or the like having indicia in relief thereon in games intended to promote the sale of merchandise. In such games, a buyer of merchandise would be given a sealed package containing a coin bearing unknown indicia. Upon opening the package, the coin's indicia would become apparent. The nature of the indicia would determine whether the recipient received a prize, and if so, in what amount. It is, of course, absolutely essential to the purpose of such a game that the indicia not be ascertainable until the package is opened.

The present packaging method and article insure that this general purpose is attained. The article produced is comprised of layers of tough generally rigid plastic material having very little ability for elongation such as polystyrene. The package cannot be opened by application of heat. Any attempt to separate the layers ruptures the layers. At least one of said plastic layers is joined to a layer of paper or the like which is preprinted with indicia. The ink used for said indicia and said one plastic layer is soluble in the same solvent. Hence, the article is tamperproof which at the same time can be made inexpensively on high speed machinery.

Thus, it is one object of the present invention to provide a method of packaging coins, tokens or the like so that the surface contour of the packaged article is not ascertainable by tracing through the package.

Another object of the present invention is to provide a package for objects wherein the surface contour of objects within the package is not ascertainable.

Another object of the present invention is to provide a package for objects wherein means which preclude determination of the surface contours of the packaged object also provide an adhesive for making the package.

Other objects will appear hereinafter.

The foregoing and other objects of this invention are realized by a method wherein juxtaposed layers of package-forming material are provided, at least one of the layers having integral raised embossments thereon; an object having surface contours thereon is placed between the layers with a major face juxtaposed to a plurality of said embossments; and the layers are heat-sealed around the periphery of the object by providing sufficient heat and pressure.

For the purpose of illustrating the invention, there are shown in the drawings forms which are presently preferred; it being understood, however, that this invention is not limited to the precise arrangements and instrumentalities shown.

FIG. 1 is a perspective view showing an article in accordance with the present invention.

FIGS. 2 and 3 are cross-sectional and side elevation views respectively showing an example of an apparatus for performing the present method.

FIG. 4 is a sectional view taken along the line 4—4 in FIG. 1.

FIG. 5 is a partial perspective view showing the details of the article on an enlarged scale.

FIG. 6 is a cross-sectional view, on an enlarged scale, taken along the line 6—6 in FIG. 5.

Referring now to the drawing in detail, wherein like numerals indicate like elements, there is seen in FIG. 1 a package designated generally by the reference numeral 10. The package 10 includes first and second layers 12 and 14. Layer 14 is preferably a layer of film or paper having indicia 16 printed thereon with ink or other medium. The periphery of the first layer 12 is juxtaposed and heat-sealed to the periphery of a third layer 18. A fourth layer 20 of paper or plastic film is joined to the outer face of the third layer 18. The heat-sealed periphery of layers 12 and 18 is designated by the numeral 19. A coin or other flat object 21 is sandwiched between the layers 12 and 18 radially inwardly from the heat-sealed peripheral portion 19.

The layers 18 and 20 are preferably made from a generally rigid tough plastic material such as polystyrene having a thickness of between 0.007 and 0.010 inches. Polystyrene has a low percentage of elongation such as 3 to 10 percent as compared with elastomers such as rubber which have a percentage of elongation between 85 and 400 percent. Polystyrene has a high tensile strength of between 7,000 and 12,000 psi.

A heat-sealed package made from layers 12 and 18 having the above characteristics of polystyrene will be tamperproof. Attempts to mechanically separate the layers 12 and 18 to ascertain the nature of coin 21 will result in rupturing the layers 12 and 18. The heat-sealed peripheral portion 19 on a package of polystyrene material cannot be opened and resealed by application of heat without destroying the package.

The indicia 16 are preferably applied using ink or some other comparable medium which is soluble in the same solvents in which the layers 12 and 18 are soluble. When layers 12 and 18 are made from polystyrene, the ink used to apply the indicia 16 on layer 14 is preferably a T-type ink comprised of a pigment and a chlorinated rubber solvent commercially available from the American Lacquer Solvents Company of Phoenixville, Pennsylvania. Hence, any attempt to immerse the package 10 in an aromatic hydrocarbon solvent such as toluol will dissolve the ink used to apply the indicia 16 and thereby indicate that an attempt was made to tamper with the package 10.

As shown more clearly in FIGS. 5 and 6, the layers 12 and 18 are provided with integral embossments 22. The height of the embossments 22 corresponds generally to the thickness of the layers 12 and 18. The distance between adjacent embossments is substantially less than the transverse dimensions of coin 21 so that a plurality of the embossments engage at least one of the major faces of the coin 21. The embossments 22 are provided on at least one of the layers 12 and 18 and preferably on both layers. The layer 14 is joined to the layer 12 on the surface of layer 12 containing the cavities formed as a result of the embossments 22. While the embossments 22 are indicated as being in the con-

figuration of an X, other configurations may be utilized as desired.

In FIG. 3, there is illustrated an elevation view of apparatus which may be utilized to produce layers 12 and 14 or layers 18 and 20. Plastic material such as styrene is extruded from an extruder 24 into a wide sheet such as a sheet having 48 inches across. The sheet is then passed between embossing rollers 26 and 28 which provide the embossments 22 in the layer 12. The layer 14 is unwound from a roll 30. While layer 14 may be joined to layer 12 by application of heat to layer 12 to render the same tacky, layer 14 is preferably joined to layer 12 by an adhesive. An adhesive applicator 34 having a roller 32 engages the layer 14 and applies adhesive thereto.

The layers 12 and 14 are then passed through pressing rollers 36 and 38 with the resultant strip designated as 40 then being wound into a roll 42.

Rolls similar to roll 42 but comprised of layers 18 and 20 in the form of a strip 40' are wound into a roll 42'. As shown in FIG. 2, the strips 40 and 40' may be joined together with a coin therebetween by means of known packaging apparatus such as the apparatus shown in U. S. Pat. No. 2,180,966. After the rolls 42 and 42' are produced as shown in FIG. 3, or before the strips are wound into the rolls, they are preferably slit into narrow widths such as will be apparent from FIG. 1.

The rolls 42 and 42' previously slit to the desired width will be mounted on shafts as illustrated in FIG. 2. The strips 40 and 40' are unwound and extend around feeding rollers 44 and 46, respectively. The strips are fed by said rollers downwardly on opposite sides of the spout 48 mounted on a vertically movable slide 50. The coins 21 are adapted to be fed from a hopper downwardly through the spout 48 between the strips 40 and 40'.

Sealing blocks 52 and 54 are resiliently mounted by means of springs on respective body portions 56 and 58.

The sealing blocks 52 and 54 have on their respective faces complementary patterns of tapered projections 60 and 60'. Sealing block 52 is provided with a central recess 62 while block 54 is provided with a central recess 62'. A soft pad 64 is mounted on one end of a spring-urged guide rod 65 and disposed within the recess 62. Pad 64' is similarly disposed within recess 62' and mounted on a similar rod 65'.

The respective blocks 52 and 54 may be provided with additional recesses 66 and 66' which receive soft pads 70 and 70', respectively. Pad 70 is mounted on leaf spring 68 while pad 70' is mounted on leaf spring 68'. Cutter blades 72 and 74 cooperate with one another to separate the interconnected packages along the heat-sealed portion 19 and thereby produce packages as illustrated in FIG. 1.

In practicing the present method, it is believed that the steps involved in forming the strips 40 and 40' are sufficiently clear from the above description so as not warranting a detailed explanation. In forming the packages 10, the sealing blocks are moved to the positions shown in FIG. 2. When the sealing blocks 52 and 54 move toward each other, the projections 64 and 64' press the layers 12 and 18 together to form an enclosure for the coin 21. Heaters 76 are provided in each of the sealing blocks 52 and 54.

The heaters 76 heat and fuse the layers 12 and 18 so

as to form a heat-sealed joint between the projections 22 on said layers. Thereafter, the heat-sealing blocks 52 and 54 are parted, the slide 50 and spout 48 lowered to the position shown in FIG. 3. Thereafter, the strips 40 and 40' are indexed downwardly by a distance equal to the intended height of the package 10. A coin is deposited from the spout 48 between the strips. The sealing blocks 52 and 54 are again brought together. The projections 60 and 60' on the jaws form the heat-sealed joint.

The pads 64 and 64' contact the packages when the sealing blocks 52 and 54 are brought together. The pads stabilize the package during the sealing operation and press the layers together to minimize entrapment of air within the package. Finished packages may be removed in a continuous strip and later cut into individual discrete packages. Preferably, the continuous strip of finished packages is immediately cut into individual discrete packages such as illustrated in FIG. 1 by means of the blades 72 and 74 whose movement is synchronized with the operation of the sealing blocks 52 and 54.

In place of reciprocating sealing blocks 52 and 54, it is possible, and often desirable where high speed is important, to use mating rollers. The rollers rotate continuously and have pockets on their periphery for receiving the packages as portion 19 is sealed. Thus, the use of rollers enables the process to be continuous rather than intermittent. It will be obvious to those skilled in the art that the strips 40 and 40' may be wide enough so that two or more packages may be formed side-by-side at the same time. In that event, a slitting wheel may be used to cut the strips to the width of a single package before the strips are cut into unit lengths corresponding to the length of a single package.

The present invention may be embodied in other specific forms without departing from the spirit or essential attributes thereof.

I claim:

1. A package for objects having surface contours thereon comprising a first layer of generally rigid plastic material having embossments thereon, a second layer of material overlying the depressions in said first layer and said second layer being joined to said first layer, a third layer of generally rigid tough plastic material having embossments thereon, said first and third layers having a tensile strength of between 7,000 and 12,000 psi and a percentage elongation of between 3 and 10 percent, said first and third layers being heat-sealed together around the periphery of said object, and indicia on the exposed surface of said second layer, said indicia being made from an ink soluble in aromatic hydrocarbon solvents.

2. A package in accordance with claim 1 wherein said first and third layers are polystyrene, said second layer being paper.

3. A package in accordance with claim 1 including a fourth layer joined to the third layer and overlying the depressions formed by the embossments in the third layer.

4. A package in accordance with claim 1 wherein said first layer has a thickness between 0.007 and 0.010 inches, said embossments projecting from said first layer for a distance between 0.007 and 0.010 inches.

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