

[72] Inventor Ougljesa Jules Poupitch
Chicago, Ill.
[21] Appl. No. 831,013
[22] Filed June 6, 1969
[45] Patented Aug. 24, 1971
[73] Assignee Illinois Tool Works Inc.
Chicago, Ill.

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Primary Examiner—William T. Dixon, Jr.
Attorney—Olson, Trexler, Wolters & Bushnell

[54] CONTAINER-PACKAGING DEVICE AND METHOD
11 Claims, 26 Drawing Figs.

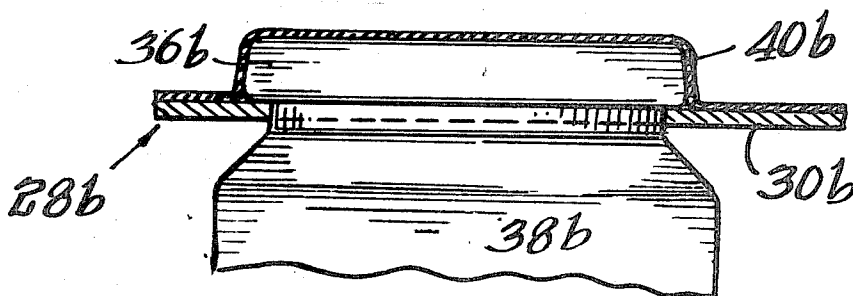
[52] U.S. Cl. 206/65 E,
294/87.2
[51] Int. Cl. B65d 71/00,
B65d 85/62
[50] Field of Search..... 206/65 C,
65 E, 65 S, 45.33; 215/100, 95; 294/87.2, 87.26;
229/29 F

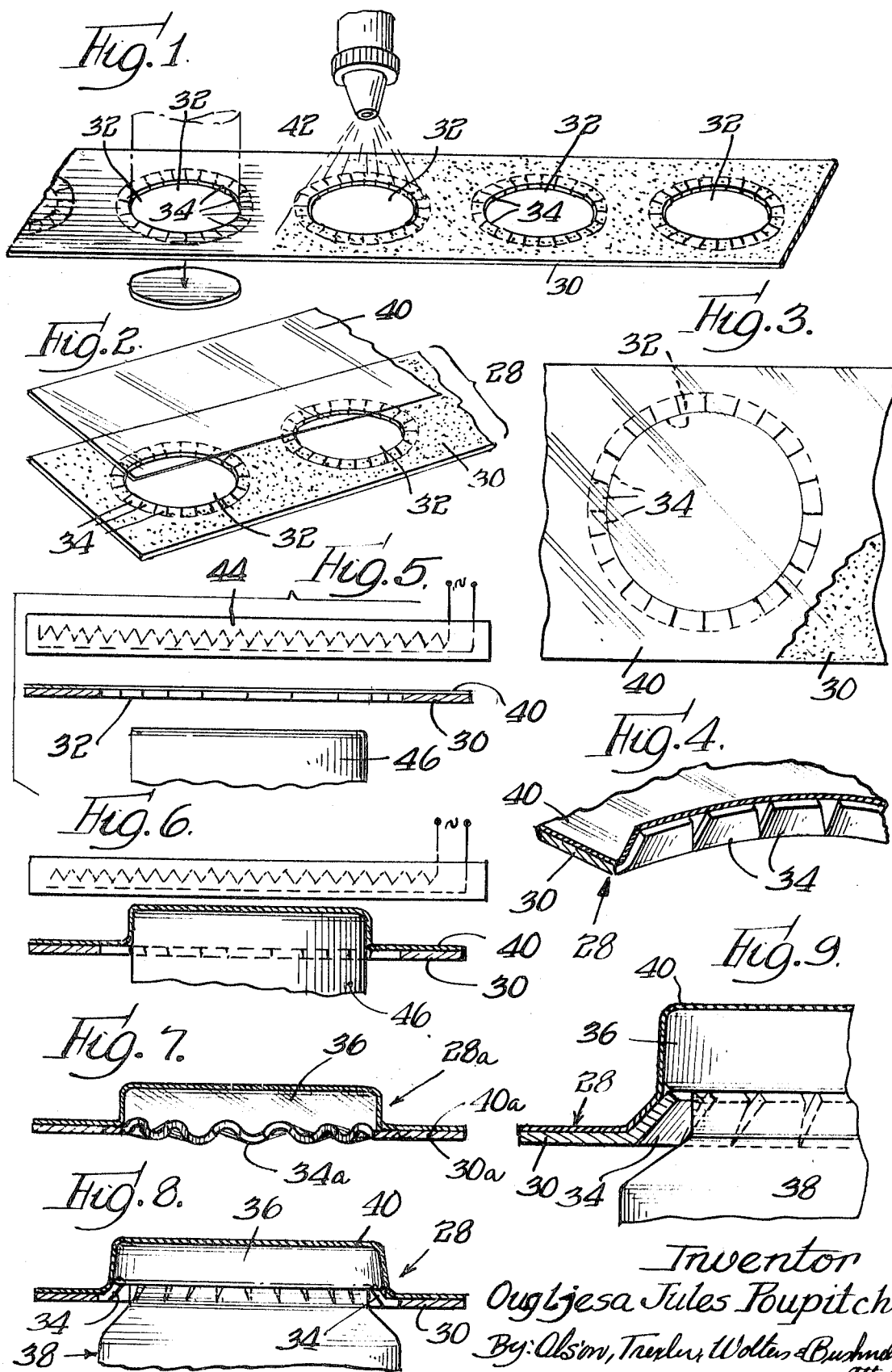
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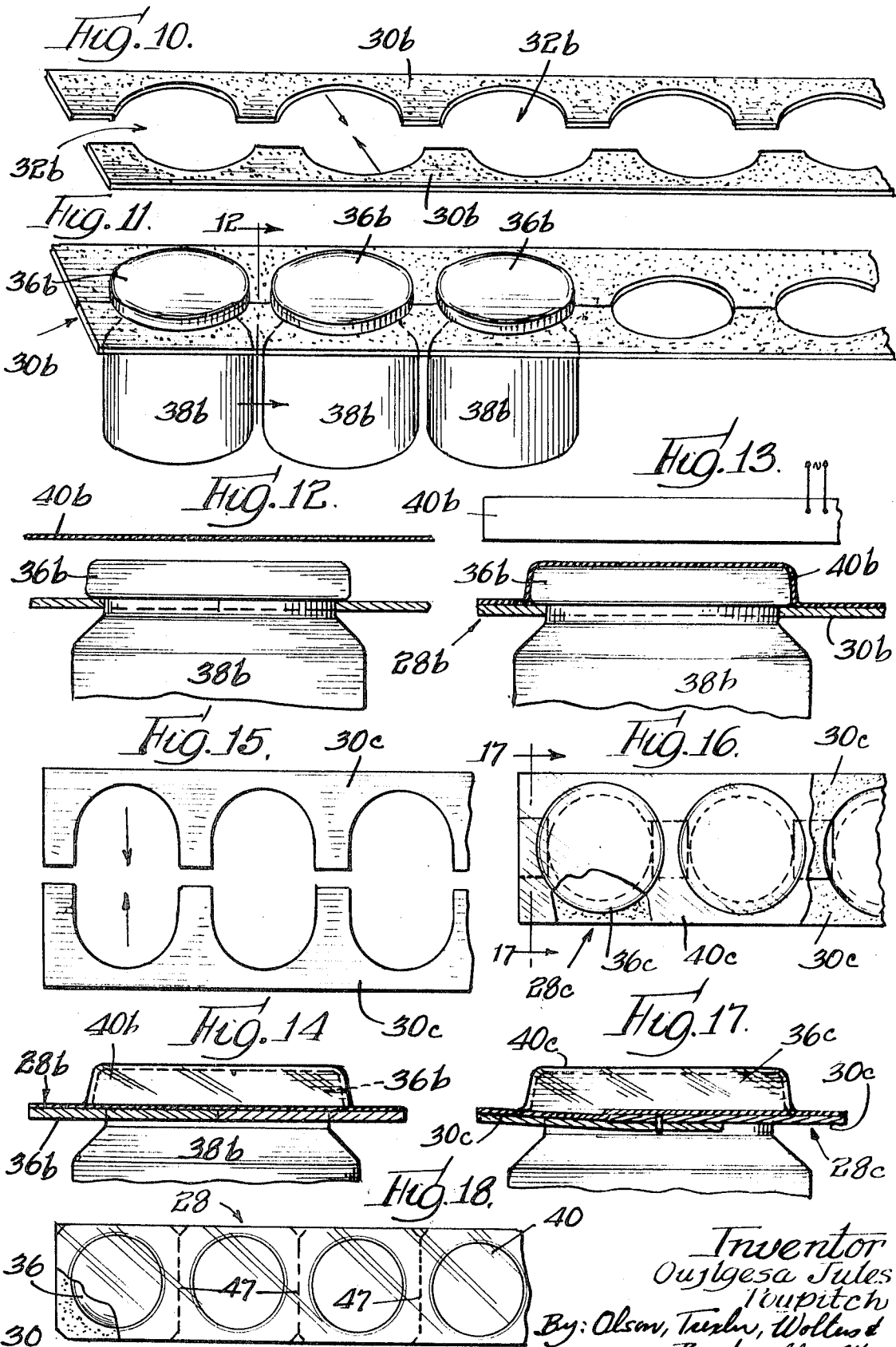
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ABSTRACT: This invention relates generally to means and methods for packaging containers, and more particularly to means and methods for packaging a plurality of containers having a circumferential shoulder or bead at the upper end thereof, as for example capped jars and conventional beaded cans. The embodiments of the invention disclosed in the present application include paperboard sheet material having container-accommodating apertures, the upper surfaces of such sheet material being treated as by spraying to condition said surface for subsequent attachment thereof to a flexible, elastic, plastic film or membrane. By subjecting the adjacently positioned film and previously treated paperboard to heat, these parts become firmly adhered to each other. The marginal edges defining each of the apertures in the paperboard underlie the shoulder of a bead or jar cap of a complementary container. The elastic film encapsulates the upper extremity of the container and thus the film serves both as a protective coating for the end surface of the container as well as means for maintaining the marginal edge of the paperboard or fiberboard in underlying contact with respect to the shoulder of an associated container.

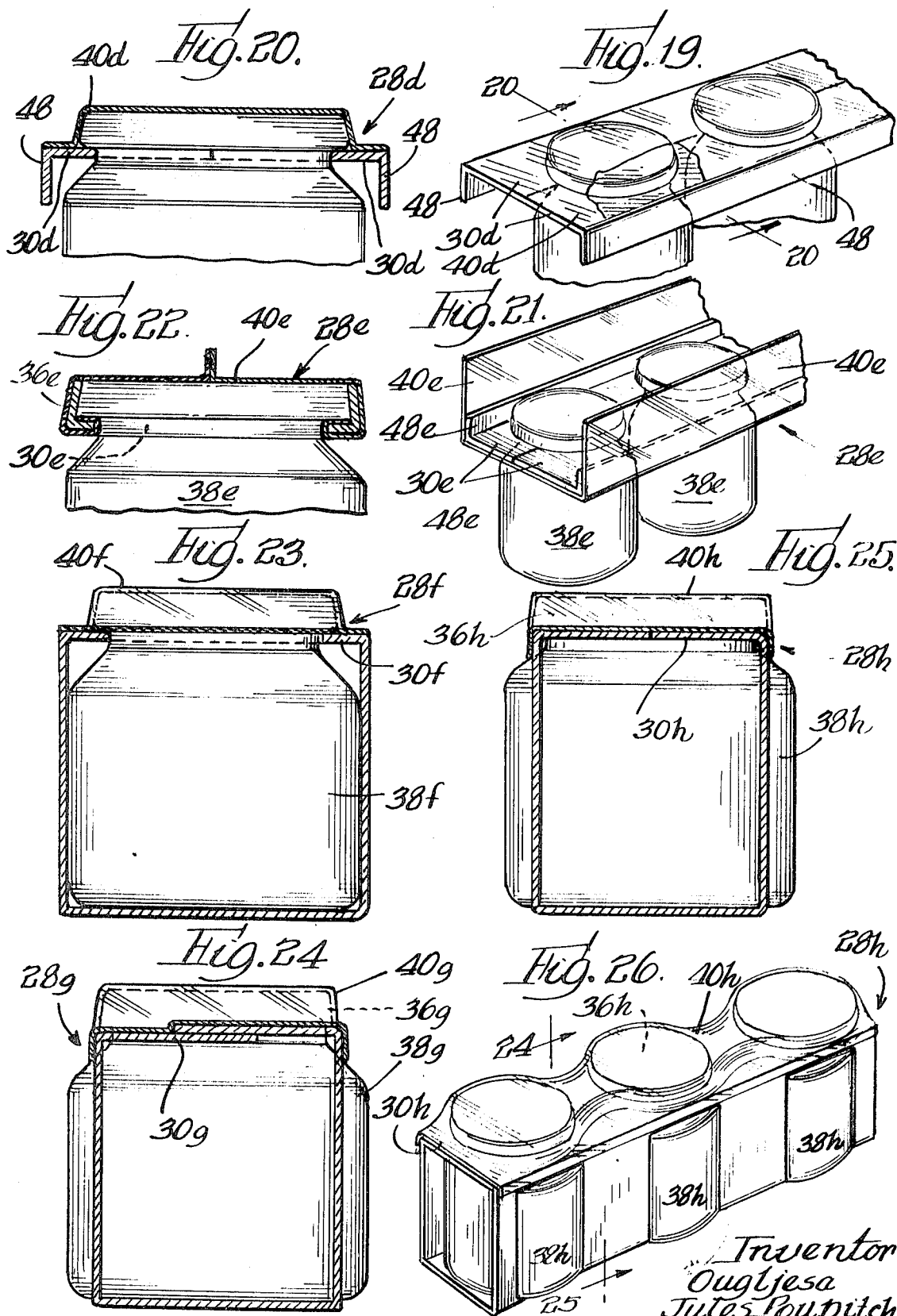




Inventor
Ougljesa Jules Poupitch
By: Olson, Trexler, Wollen & Bushnell
attys.



Inventor
Ouygesa Jules
Hupitch
By: Olson, Tuxley, Wollens &
Bushnell attys.



Inventor
Ougljesa
Jutes Poupitch
By Olson, Treplin, Wallen & Bucknall attys.

CONTAINER-PACKAGING DEVICE AND METHOD

It is recognized that paperboard, sometimes referred to as fiberboard, is capable of withstanding forces resulting from the weight of beverage containers and the like. However, fiberboard does lack one very basic and desirable characteristic and that is sufficient resiliency to resist deformation. In other words, material such as cardboard and the like may be deformed readily but once deformed it lacks the inherent capability or tendency to return its original undeformed state.

It is an object, therefore, of the present invention to render possible the use of paperboard or cardboard as a packaging element for containers by combining therewith material which will provide the desired degree of inherent resilient yieldability to resist deformation forces.

Another object of the present invention is provide a packaging device for containers as set forth above which is readily disposable by combustion.

The present invention also contemplates a new and improved method of assembling paperboard and plastic sheet material with the tops of containers such as cans, jars and the like, which containers incorporate shoulder means for interlocking with axially deflected marginal areas of such sheet material.

The following and other objects and advantages of the invention will be more apparent from the accompanying drawings, wherein:

FIG. 1 is a fragmentary perspective view of a strip of sheet material apertured to accommodate a complementary circumferentially shouldered container, the fingers or prongs surrounding each aperture being sprayed with plastic material so as to provide a flexible bond for the upper surface of the radially slit margin and a plastic coating for the free edge thereof;

FIG. 2 is a fragmentary perspective view showing the paperboard sheet of FIG. 1 in association with a plastic film or membrane positioned thereabove and about to be applied to the paperboard;

FIG. 3 is a fragmentary plan view of the packaging device or carrier as seen from above FIG. 2;

FIG. 4 is an enlarged fragmentary perspective view showing a section of the paperboard and film applied thereto, with the container engaging fingers shown in their axially deflected position;

FIG. 5 is a diagrammatic illustration of the combined film and paperboard in association with a heating element positioned thereabove, and a mandrel positioned therebeneath in readiness to engage the underside of the heated film sheet or membrane;

FIG. 6 is a diagrammatic view similar to FIG. 5 showing the mandrel after it has engaged the sheet of film so as to form an inverted cup for accommodating the upper extremity of a container as for example the disclosed baby food jar;

FIG. 7 is a view similar to FIG. 6 showing a modified marginal undulated area surrounding the container accommodating aperture, this undulated area serving to facilitate subsequent axial deflection of the paperboard into the inverted cup of the film;

FIG. 8 discloses a baby food jar after it has been moved into telescopic association with a companion aperture in the paperboard sheet, with the circumferentially distributed fingers or prongs shown in interlocking engagement with the shoulder provided by the underside of the cap of the jar;

FIG. 9 is an enlarged fragmentary sectional view of the left portion of the structure shown in FIG. 8, more clearly to illustrate the manner in which the sheet of plastic film material functions to maintain the fingers or prongs in operative interlocking association with the underside of the jar cap;

FIG. 10 is a fragmentary perspective view of a paperboard strip of modified form, said strip being formed of two complementary apertured sections adapted to be moved into locking association with the undersides of a series of capped jars;

FIG. 11 is a perspective view showing the paperboard of FIG. 10 moved into operative association with the underside of a plurality of jar caps;

FIG. 12 is a sectional view taken substantially along the line 12—12 of FIG. 11, showing the film sheet positioned above the jar in readiness to encapsulate the jar cover or cap;

FIG. 13 discloses diagrammatically the application of heat to the film, thereby facilitating the stretching of the film over a jar cap;

FIG. 14 is a view similar to FIG. 13 showing in elevation the film applied to the container cap thereby maintaining the circumferential marginal areas of the paperboard in underlying relation with respect to the shoulder provided by the cap;

FIG. 15 is a fragmentary plan view of a modified paperboard somewhat similar to the paperboard shown in FIGS. 10—14 inclusive, with the adjacent portions of the paperboard stock being elongated so as to require overlapping thereof in forming a circular opening or pocket for a container;

FIG. 16 is a plan view of a pair of containers secured from beneath the covers or caps thereof by the paperboard of FIG. 15;

FIG. 17 is a sectional view taken substantially along the line 17—17 of FIG. 16, more clearly to illustrate the overlapped sections of the paperboard stock stapled together;

FIG. 18 is a plan view showing a strip of jars supported by the combined plastic film and paperboard stock, said view showing transverse score lines to facilitate individual separation of one or more package containers;

FIG. 19 is a fragmentary perspective view showing a modified form of paperboard in association with a plurality of containers;

FIG. 20 is a transverse sectional view taken substantially along the line 20—20 of FIG. 19, the container being shown in elevation with the plastic film applied to the paperboard and container top;

FIG. 21 is a fragmentary perspective view of a still further modified form of paperboard and film associated therewith prior to joining the margins of the film section;

FIG. 22 is a transverse sectional view of the arrangement shown in FIG. 21, after the protective film has been folded over the container top and heat-sealed;

FIG. 23 illustrates a further embodiment wherein the fiberboard not only underlies the container top as previously described, but also extends along the side and bottom surfaces of a plurality of containers;

FIG. 24 is a view similar to FIG. 23 showing an arrangement wherein the adjacent margins of the fiberboard are overlapped as distinguished from the edge-to-edge arrangement shown in FIG. 23, peripheral portions of the container being exposed;

FIG. 25 is a transverse sectional view of a packaging device of the type shown in FIG. 24, with the upper sections of the fiberboard shown in abutting relation; and

FIG. 26 is a fragmentary perspective view of the packaging device shown in FIG. 25, more clearly to illustrate the manner in which the opposed peripheral surfaces of each container are exposed to view.

Referring now to the drawings more in detail, wherein like numerals have been employed to designate similar parts throughout the various views, it will be seen that one form of packaging device contemplated by the present invention is designated generally by the numeral 28 in FIGS. 8 and 9. The device 28 consists of a sheet of cardboard or fiberboard 30 having a plurality of container accommodating pockets or apertures 32. These apertures 32 are defined by the free edges of a plurality of circumferential marginal areas in the form of radial prongs or fingers 34. The diameter of each aperture 32 is less than the diameter of the cap 36 of the container 38. The underside of the container cap 36 provides a circumferential shoulder or bead against which the free edges of the prongs 34 may abut as clearly shown in FIGS. 8 and 9. Obviously the container 38 could be in the form of a conventional beaded can wherein the underside of the bead provides the shoulder for accommodating the free extremities of the fingers 34.

As previously set forth herein, paperboard or fiberboard is capable of withstanding forces resulting from the weight of a container supported by the fiberboard teeth 34 as shown in the drawing. However, fiberboard does not have the required inherent resilience properties necessary to continuously urge the free extremities of the fingers radially inwardly after the container 38 has been telescopically associated with a companion aperture. To provide means for maintaining the free extremities of the fingers 34 constantly in locking engagement with the underside of a container bead, a sheet of resilient elastic film 40 is attached to the upper surface of the sheet 30.

In fabricating the packaging device 28, the sheet of paperboard stock 30 is fed through a perforating station so as to form the pocket apertures 32. Also, the circumferential marginal areas surrounding the apertures 32 is either slit to form the plurality of prongs 34 or undulated as shown in FIG. 7. The upper surface of the sheet 30 is then passed through a plastic spray station 42 as indicated in FIG. 1. This sprayed plastic material serves to condition the upper surface of the sheet 30 for subsequently accommodating the previously mentioned film 40. The spraying also provides a plastic coat for interconnecting the slit area surrounding each aperture, and also provides a coating for the free extremities or edges of the prongs 34.

After the foregoing steps of punching, severing and preliminary spraying, the film 40 is now adhered to the upper surface of the sheet 30, including the aforesaid marginal area. To accomplish this, the fabricated strip may now be passed to a heating station or unit 44 in flat condition. Heating the flat central portion of the film or membrane 40 in the vicinity of a companion aperture 32 enhances the elasticity of the film. A die member or mandrel 46 may be moved into contact with the central heat-treated portion of the film 40 so as to form said film into an inverted cup as illustrated in FIG. 6. The cap 36 of the container 38 or the beaded end of a can type container may now be inserted within the inverted cup of the film 40. The container cap 36 forecloses the free extremities of the prongs 34 axially and after the cap has been completely inserted, the free edges of the prongs 34, under the influence of the film 40 will spring back into underlying relation with respect to the circumferential shoulder provided by the cap as clearly illustrated in FIGS. 8 and 9. The upper extremities of the containers 38 will thus be encapsulated by the film 40 providing a protective cover for the top surface and sidewall of the cap.

In FIG. 7, the container packaging device is designated generally by the numeral 28a and differs only from the previously described packaging device 28 by the presence of undulations 34a which function similarly to the previously mentioned prongs or fingers 34. The paperboard sheet in FIG. 7 is designated by the numeral 30a and the film sheet is designated by the numeral 40a.

In FIGS. 10-14 inclusive a modified structure and method of assembly are disclosed. In this modified arrangement the paperboard or fiberboard strip is designated by the numeral 30b and it will be noted that the strip is arranged in two parts. When the two parts of the sheet or strip 30b are moved toward each other into edge to edge abutment, the semicircular cutouts 32b will provide a circular pocket, the diameter of which is such as to closely approximate the diameter of the neck of a container 38b which is less than the external diameter of the cap 36, or less than the diameter of a bead if beaded containers are used. It will be seen from FIG. 12 than when the two parts of the paperboard sheet 30b are properly positioned, the innermost edges of the sheet will be in abutting relation with the marginal area located beneath the shoulder of the cap. A heating station or unit 44b is employed to impart sufficient heat to the film 40b to enhance the elasticity thereof. Thus the heated film may be stretched tightly over the cap and firmly adhered to the upper surface of the paperboard sheet 30b. As previously explained, it is preferable to treat the upper surface of the paperboard sheet 30b to assure firm adherence of the film 40b to the sheet 30b. The film 40b serves not only

to hold the two sections of the sheet 30b in abutting relation but also to completely encapsulate the upper extremity or cap portion of the container 38b. In FIG. 13 the film is shown in section whereas in FIG. 14 the film is shown in elevation, completely enclosing the cap 36b. The combined film and paperboard sheets comprise the packaging device or unit which is designated generally by the numeral 28b.

In FIGS. 15-17 inclusive a slightly modified form of container packaging or carrying device is disclosed, said device being generally designated by the numeral 28c. The device 28c, like the previously mentioned packaging devices, is comprised of a lower sheet of split paperboard material 30c and an upper sheet of plastic film 40c. The device 28c differs only from the device 28b previously described in that the device 28c is overlapped along its innermost margins as clearly shown in FIG. 17. These overlapped portions may be secured where necessary by stapling, as indicated in FIG. 17. It will be noted in FIG. 15 that the innermost portions of the sections of the paperboard sheet 30c are of such a length as to require them to be overlapped in order to provide the sheet 30c with circular container accommodating recesses or pockets 32c. In all other respects the method of assembling the packaging device 28c with a container 38c are similar.

With the view of facilitating separation of one packaged container from another, it is contemplated that the previously described packaging devices may be scored as shown by the transverse dotted lines 47 in FIG. 18. This arrangement serves to facilitate handling a plurality of containers as a unit and also to permit convenient separation of one or more container packages from the unit.

In FIGS. 19 and 20 a modified packaging device designated generally by the numeral 28d is illustrated. The only structural difference between the device 28d and the previously described 28b is in the provision of depending paperboard flanges 48. The device 28d consists of a paperboard portion 30d and a plastic film portion 40d stretched over the tops or caps of containers 38d. The provision of the flanges 48 lends considerable lateral or transverse strength to the cardboard or fiberboard stock. The plastic film 40d functions to maintain the abutting relationship of the sections of the paperboard 30d and to encapsulate the upper surface and sidewall of the container cap 36d.

FIGS. 21 and 22 disclose a still further modification wherein the sections of the paperboard 30e are provided with upwardly extending strengthening flanges 48e. It will also be noted that when these upwardly extending flanges 48e are employed the film 40e is stretched over the bottom surface of the paperboard stock and then over the flanges 48e, across the upper surface of the container cap 36e. The film 40e is held in proper encapsulating relation with the caps 36e by heat sealing the free margins of the film as shown in FIG. 22.

FIG. 23 discloses a further modified form of packaging device designated generally by the numeral 28f. The packaging device 28f, like the previously described devices, includes the encapsulating film 40f which cooperates with paperboard stock 30f which is in the form of a box or housing for the containers 38f. Thus the containers 38f are completely housed within a paperboard box, thereby permitting the use of advertising material on the outer surfaces of the box. The film 40f functions similarly with respect to the paperboard sheet or section 30f, as previously described in connection with the devices 28b and 28d.

FIG. 24 discloses an arrangement whereby a portion of the boxlike member shown in FIG. 23 is provided with apertures to permit oppositely disposed sections of the containers 38g to project beyond the outer walls of the boxlike structure. It will also be noted that the device in FIG. 24 incorporates the overlapping arrangement of the paperboard sheet 30g as described in connection with FIGS. 15-17 inclusive. In FIG. 24 numerals bearing the suffix g have been employed to designate parts which correspond with previously illustrated features. It will be noted that the film 40g is stretched down over the opposed walls or sides of the boxlike paperboard structure 30g. The ex-

posed peripheral surfaces of the container facilitate visual determination of the contents thereof.

In FIGS. 25 and 26 a packaging device designated generally by the numeral 28h is shown, which corresponds closely with the device just described in connection with FIG. 24. The only manner in which the device 28h of FIGS. 25 and 26 differs from the corresponding device 28g of FIG. 24 is in the abutting arrangement of the paperboard sections 30h.

From the foregoing it will be apparent that the present invention contemplates the provision of a very practical packaging device for containers having a circumferential shoulder beneath which the axially deflected marginal areas of the paperboard stock may be positioned. While for the purpose of disclosing one practical type of container to which the packaging device of the present invention may be applied, it should be understood that the device functions equally as well in association with the upper extremity of a beaded container such as a can type container. In such instances the underside of the upper bead provides the circumferential shoulder corresponding with the underside of the container caps previously described.

The foregoing novel method of assembly makes for a very economical packaging device and may be practiced without the necessity of employing expensive or complicated equipment. The resulting product, as described herein, is also combustible and therefore readily disposable after the containers have been removed therefrom. The present invention makes it possible to mount a plurality of containers beneath a single sheet of paperboard stock and film. This enables the shipment or transportation of a plurality of containers within a carton without the potential hazard of breakage. In such instances the novel packaging arrangement or device contemplated hereby retains the containers in proper separated relation for shipment and also facilitates the ease with which such containers may be removed from a carton and placed upon shelves for marketing. The prescored packaging devices as shown in FIG. 18 permit easy separation of individual jars or multiples thereof by a consumer, and each jar is supported and protected by the fiberboard and the plastic film.

The invention is claimed as follows:

1. A packaging device for containers having a circumferential shoulder in the vicinity of the upper extremity thereof including paperboard sheet means in the form of elongate strips having adjacent margins and having pairs of opposed apertures formed along said margins, which apertures, when the margins of the strips are brought into adjacent relationship provide a plurality of container accommodating apertures having a diameter less than the diameter of the outer diameter of the upper extremity of a container to be accom-

modated thereby, and a plastic sheet adjacently superimposing the top surface and sidewalls of the upper extremity of the container and adhered to the upper surface of the paperboard so as to maintain the circumferential marginal area of the paperboard which defines said apertures in underlying relation with respect to the circumferential shoulder of the container.

2. A packaging device as set forth in claim 1 wherein the facing edges of the paperboard strips are adapted for abutment with each other when the circumferential marginal area defining the apertures are in underlying relation with respect to the circumferential shoulder of an associated container.

3. A packaging device as set forth in claim 1 wherein the facing portions of the strip are adapted to overlap when the circumferential marginal area of the paperboard underlies the circumferential shoulder of an associated container.

4. A packaging device as set forth in claim 1 wherein the facing margins of the paperboard strips are adapted to be secured together when the circumferential marginal areas defining the apertures are in underlying relation with respect to the circumferential shoulder of an associated container.

5. A packaging device for containers as set forth in claim 1 wherein means in the form of scored areas are provided between the container accommodating apertures to facilitate separation of one packaged container from an adjoining packaged container.

6. A packaging device for containers as set forth in claim 1 wherein the paperboard strips are provided with lateral flanges to lend lateral strength to the paperboard stock.

7. A packaging device for accommodating containers as set forth in claim 1 wherein the paperboard strips are provided with flanges extending downwardly with respect to an associated container.

8. A packaging device for containers as set forth in claim 1 wherein flanges extending upwardly from the paperboard strips are provided to lend lateral strength thereto.

9. A packaging device for containers as set forth in claim 1 wherein the film sheet extends beneath the paperboard strips and the opposite margins thereof extend over the sidewalls and upper surface of the container, said opposite margins of the plastic film being sealed adjacent the upper surface of an associated container.

10. A packaging device for containers as set forth in claim 1 wherein the paperboard sheet includes sections for extending along the side and bottom of an associated container.

11. A packaging device for containers as set forth in claim 1 wherein the paperboard material includes side sections through which a portion of the periphery of associated containers may project.

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