

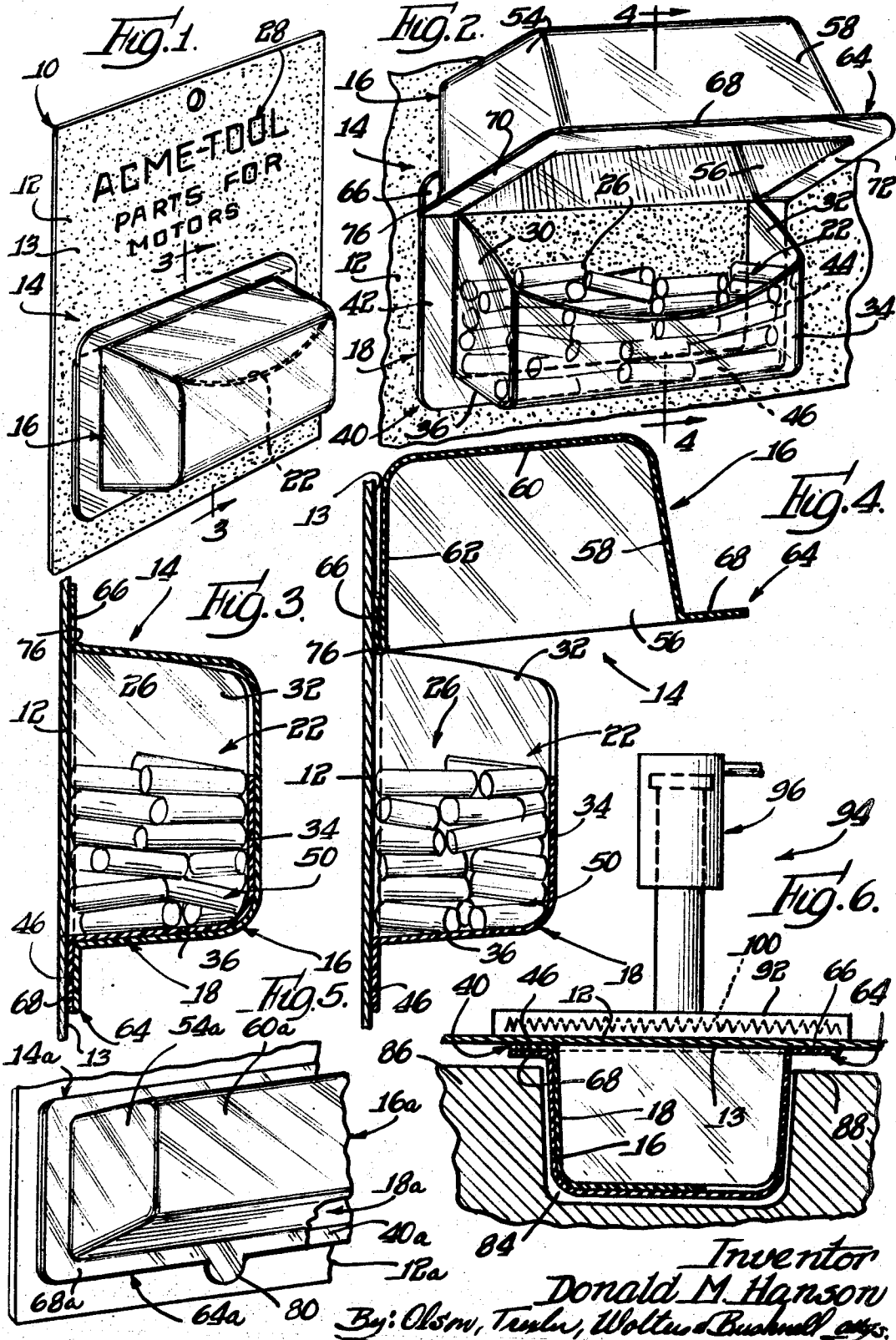
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D. M. HANSON

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PACKAGE ASSEMBLY

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Inventor
Donald M. Hanson
By: Olson, Trench, Wolter & Bushnell, Inc.

1

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PACKAGE ASSEMBLY

Donald M. Hanson, Des Plaines, Ill., assignor to O.E.M. Products Co., Des Plaines, Ill., a corporation of Delaware

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ABSTRACT OF THE DISCLOSURE

This invention relates to a package assembly including a receptacle member fixedly secured to a base sheet for holding articles and a cover member pivotally secured to the base sheet for movement from a closed position blocking an opening in the receptacle member to an open position in which the opening is substantially unobstructed.

Package assemblies, commonly called "bubble packs," are widely used for encasing articles of merchandise. These "bubble packs" include a base sheet of cardboard covered with a polymeric coating and a bubble or transparent plastic member fused at its outer edge portion to the base sheet. A central portion of the bubble extends outwardly from the base sheet to form a storage chamber or cavity between the base sheet and central portion of the bubble for holding articles of merchandise. When an article of merchandise is to be used, the base sheet is torn and the bubble ruptured to remove the merchandise from the storage chamber.

These prior art "bubble packs" are relatively inexpensive to fabricate and protect the merchandise while enabling a potential customer to inspect the merchandise through the transparent bubble. Due to these advantages, and other commercial factors, "bubble packs" are widely used for packaging articles of merchandise. However, these prior art "bubble packs" have at least two serious shortcomings or disadvantages. The first disadvantage is encountered upon trying to open the "bubble pack" to remove an article of merchandise. The base sheet and bubble usually have a relatively high tear or rupture strength to protect the article of merchandise. This relatively high strength, while being desirable for protecting the article of merchandise, makes the "bubble pack" quite difficult to open.

A second disadvantage of prior art "bubble packs" results from the necessity of substantially destroying the package to obtain the article of merchandise within the package. Thus, prior art "bubble packs" cannot be reused for storing an article of merchandise once the package has been opened. This inability to reuse the package is particularly onerous when a plurality of articles which are not all used at one time, such as screws, are encased in a single "bubble pack." The articles which are not used immediately after opening a prior art "bubble pack" must be stored in a second package or container.

Therefore, it is a general object of this invention to provide a package assembly which overcomes the aforementioned disadvantages and shortcomings of prior art constructions. Specifically, it is an object of this invention to provide a package assembly including a substantially transparent receptacle and cover mounted on a base sheet, the cover being movable relative to the receptacle and base sheet to enable the package to be readily opened and subsequently closed.

Another object of this invention is to provide an inexpensive, reusable package assembly.

Another object of this invention is to provide an inexpensive method of fabricating a package assembly in-

2

cluding a receptacle and movable cover mounted on a base sheet.

These and other objects and features of the invention will become more apparent upon a consideration of the following detailed description, taken in connection with the accompanying drawings wherein:

FIG. 1 is a perspective view of a package assembly including a base sheet upon which a container assembly is mounted, the container assembly being shown with a cover member in a closed position blocking an aperture or opening in a receptacle member;

FIG. 2 is an enlarged fragmentary perspective view of the container assembly of FIG. 1, the cover member being shown in an open position in which the opening in the receptacle member is substantially unobstructed;

FIG. 3 is an enlarged sectional view, taken along the line 3-3 of FIG. 1, further illustrating the relationship of the receptacle member and cover member to the base sheet when the cover member is in the closed position;

FIG. 4 is an enlarged sectional view, taken along the line 4-4 of FIG. 2, illustrating the relationship of the cover member and receptacle member to the base sheet when the cover member is in the open position;

FIG. 5 is an enlarged fragmentary perspective view of a container assembly of a second embodiment of the invention wherein a closure or locking tab is provided for holding the cover member in the closed position; and

FIG. 6 is a schematic illustration showing the positioning of the cover and receptacle members relative to the base sheet and a press assembly during fabrication of the package assembly.

Referring now to the drawings in greater detail, a package assembly 10 forming a preferred embodiment of the invention is shown in FIG. 1. The package assembly 10 includes a rear or base card or sheet 12 upon which a container assembly or structure 14 is mounted. As is perhaps best seen in FIG. 2, the container assembly 14 includes the cover member 16 which is pivotally secured to the base sheet 12 and a receptacle member 18 which is fixedly secured to the base sheet 12. The cover member 16 is pivotal from the closed position shown in FIG. 1 blocking an aperture or opening 22 forming a mouth of the receptacle to an open position shown in FIG. 2 in which the cover member is swung upwardly so that the aperture or opening 22 is substantially unobstructed. When the cover member 16 is in the open position of FIG. 2, articles 26 can be readily removed from the receptacle member 18.

The base sheet 12 is formed of cardboard having a front or forward surface, as viewed in FIG. 1, covered with a coating 13 of a polymeric material, such as polyvinyl butyral. The receptacle member 18 and cover member 16 are both formed of a transparent polymeric material, such as polyvinyl acetate or polyvinyl butyral. The transparent cover and receptacle members 16 and 18 enable the articles 26 to be visually inspected when the container assembly 14 is in the closed position of FIG. 1. Indicia 28 (see FIG. 1) is provided on the front surface of the base sheet 12 to further facilitate identification of the articles 26.

Turning now to a more detailed consideration of the container assembly 14, the receptacle member 18 is vacuum formed in a known manner as an integral structure having a pair of parallel side walls or sections 30 and 32 (see FIG. 2) which extend in a generally perpendicular relationship with the base sheet 12. The side sections 30 and 32 are interconnected by a front wall or section 34 and a base wall or section 36 (see FIG. 4 also). As is perhaps best seen in FIG. 2, a generally U-shaped flange or rim section 40 is secured to the base sheet 12 to fixedly mount the receptacle member 18 on the base sheet 12.

The rim section 40 includes a pair of spaced apart up-standing leg sections 42 and 44 which are interconnected by a generally horizontally extending base section 46. As will be apparent from an inspection of FIGS. 2 through 4, the flange section 40 is positioned with an inner face surface in engagement with the front of the base sheet 12. The receptacle member 18 is advantageously secured to the base sheet by fusing or welding the flange section 40 to the base sheet. This fusing or welding results from heating the polymeric coating 13 on the flat front surface of the base sheet and the inner surface of the flange 40 to a plastic or fluid state so that the front surface of the base sheet and the inner surface of the flange section 40 are joined by a merging of the two surfaces. Of course, the receptacle member 18 can be mounted on the base sheet 12 by other means, such as pressure sensitive adhesive or mechanical connectors.

The receptacle member 18 and the base sheet 12 cooperate to define a storage cavity 50 (see FIG. 4) for holding the articles 26. The storage cavity 50 has an upper opening or aperture 22 through which the articles 26 can be inserted into and removed from the storage chamber 50. This opening is defined by upper edge portions of the side sections 30 and 32, the front section 34, and the base sheet 12. When the cover member 16 is in the closed position of FIG. 3, the cover member blocks the aperture 22. However, when the cover member is pivoted upwardly to the open position of FIG. 4, the aperture 22 is substantially unobstructed or open to provide ready access to the articles 26 in the storage chamber 50.

The cover member 16 is fabricated as an integral structure by a well known vacuum forming process. The cover member 16 includes a pair of spaced apart, substantially parallel side walls or sections 54 and 56 (see FIG. 2), a transversely extending bottom or lower side wall or section 58, a transversely extending outer end wall or section 60 (see FIG. 4), and a top or upper side wall or section 62. A flange or rim section 64 circumscribes inner edge portions of the side sections 54 through 62. The flange or rim section 64 includes a transversely extending base or mounting portion 66 which is fused to the base sheet 12 in much the same manner as in which the receptacle 18 is fused to the base sheet 12. As is perhaps best seen in FIG. 2, the rim section 64 also includes a handle portion 68 which extends in a generally parallel relationship with the mounting portion 66. The handle portion 68 and mounting portion 66 are interconnected by a pair of side sections 70, 72.

The cover member 16 can be pivoted, relative to the base sheet 12 and receptacle member 18 about a hinge or fold joint 76 between the closed and open positions of FIGS. 3 and 4.

The cover member 16 and receptacle member 18 are advantageously made from transparent vacuum formed structures which are substantially identical as initially fabricated. One of the substantially identical members is cut away to form the opening 22 of the receptacle 18. The second member is used in a substantially unmodified form as the cover 16. When the cover member 16 and receptacle member 18 are formed in this manner, here is an interference fit between the cover member 16 and receptacle member 18 when the cover member is in the closed position of FIG. 3. This interference fit results in frictional engagement between the side sections 30 and 32 and base section 36 of the receptacle member 18 and the side sections 54, 56 and 58, respectively, of the cover member 16 to hold the cover member in the closed position shown in FIG. 3. Of course, the side and base sections of the cover member 16 and receptacle member 18 are sufficiently flexible so that the cover member 16 can be moved between the open position of FIG. 4 and the closed position of FIG. 3 with a minimum of effort.

In order to enhance the understanding of the invention, a modified form of the invention is set forth in FIG. 5.

In the modified form of the invention, like numerals have been used to designate like parts with the suffix letter *a* being employed to distinguish the elements associated with FIG. 5 from those of FIGS. 1 through 4. A container assembly 14a is mounted on a base sheet 12a as shown in FIG. 5. The container assembly 14a includes a cover member 16a having a rim section 64a. The rim section 64a includes a handle portion 68a from which a closure or locking tab or tongue 80 projects.

The closure tab 80 extends outwardly past a flange section 40a of a receptacle member 18a. The closure tab 80 is advantageously fused to a coating of polymeric material, such as polyvinyl butyral, on a front surface of the base sheet 12a. The closure tab 80 can be torn or severed from the base sheet 12a to enable the cover member 16a to be pivoted from the closed position shown to an open position similar to the position shown in FIG. 4. The closure tab 80 insures that the container assembly 14a is not accidentally opened by rough handling during shipment or other use.

A preferred method of manufacturing the package assembly 10 is best explained in connection with FIG. 6. The package assembly 10 is fabricated by placing the cover member 16 in a cavity 84 of a die 86 with an outer surface of the flange section 64 of the cover member 16 in abutting engagement with a rim portion 88 of the die. The receptacle member 18 is then positioned within the cover member 16 with an outer surface of the receptacle flange section 40 in abutting engagement with an inner surface of the cover flange section 64. The base sheet 12 is positioned on the flange sections 40 and 64 of the cover and receptacle members, as shown in FIG. 6, with the front surface in abutting engagement with the flange sections.

After the components of the package assembly 10 have been located in this orientation, a platen or pressure plate 92 of a press assembly 94 is moved into abutting engagement with a rear surface of the base sheet 12. A hydraulic piston and cylinder assembly 96 presses or forces the platen 92 downwardly, from the position shown in FIG. 6, to press the flange sections 40 and 64 against the rim portion 88 of the die 86. A heating element 100 is energized contemporaneously with the downward pressure of the platen 92 to heat the base sheet 12. The heat is conducted through the base sheet 12 to the polymeric coating 13 on the front surface of the base sheet and to the flange sections 40 and 64 of the receptacle member 18 and cover member 16 to fuse the flange sections of the receptacle member and cover member to the base sheet 12. By experimentation, it has been determined that the desired fusion occurs when the base sheet 12 is heated to between 250 and 400 degrees F. and a pressure of from 40 to 60 pounds per square inch is exerted by the platen on the base sheet for approximately five to eleven seconds.

From a consideration of FIGS. 2, 3 and 6, it is apparent that only the mounting portion 66 of the flange section 64 of the cover member 16 engages the front surface of the base sheet 12 and is fused to the base sheet. The side portions 70 and 72 and handle portion 68 of the flange section 64 are positioned in abutting engagement with the leg sections 42 and 44 and base section 46, respectively, of the flange section 40 of the receptacle member 18. Therefore, only the mounting section 66 of the cover member 16 is fused to the base sheet 12. The flange section 64 of the cover element 16 is not fused to the flange section 40 of the receptacle member 18 due to the relatively short period of time during which pressure and heat are applied against the base sheet 12. Of course, the leg portions 42 and 44 and base portion 46 of the flange section 40 of the receptacle member 18 are fused to the base sheet 12 since they are in abutting juxtaposition with the base sheet.

Once the receptacle member 18 has been fixedly fused to the base sheet 12 and the mounting portion 66 of the cover member 16 fused to the base sheet 12, the cover

5

member can be pivoted from the closed position of FIG. 3 to the open position of FIG. 4 by bending the cover member 16 to form the hinge joint 76 between the mounting portion 66 of the flange section 64 and the side section 62. Since only the mounting portion 66 of the flange section 64 is fused to the base sheet 12, the cover member 16 can be pivoted from the closed position to the open position without tearing or otherwise damaging the package assembly 10. The package assembly can be closed by merely pivoting the cover member, about the hinge fold 78, back to the closed position. The cover member 16 is held in the closed position by frictional forces resulting from the previously explained interference fit between the cover member 16 and receptacle member 18.

The method of using and fabricating the package assembly 10, constructed as illustrated in FIGS. 1 through 5, will be largely apparent from the foregoing description. However, it should be noted that the package assembly 10 is formed by a single operation of the press assembly 94 and is relatively inexpensive to fabricate. This single operation of the press assembly 94 fixedly secures the receptacle member 18 to the base sheet 12 by interfusing the flange section 40 of the receptacle member 18 and a polymeric coating 13 on the base sheet 12. The receptacle member 18 and base sheet 12 then defines a storage chamber 50 for receiving articles 26 which are to be stored or retained in the package assembly 10. Only the mounting portion 66 of the flange section 64 of the cover 16 is interfused with the base sheet 12 to connect the cover member 16 to the base sheet. Therefore, the cover member 16 is readily pivotable at a hinge joint 76 for movement from the closed position of FIG. 3 to the open position of FIG. 4 and back again to the closed position of FIG. 3. The cover member is advantageously held in the closed position by friction resulting from an interference fit between the cover member 16 and the receptacle member 18. However, a closure tab 80 extending from the cover member can be fused to the base sheet to provide an initial locking action to securely hold the cover member in the closed position. Since the cover member 16 and base member 18 are formed of a transparent material, the articles 26 can be readily viewed through the receptacle member and cover member when they are in the closed position of FIG. 3.

While particular embodiments of the invention have been shown, it should be understood, of course, that the invention is not limited thereto, since many modifications may be made; and it is, therefore, contemplated to cover by the appended claims any such modifications that fall within the true spirit and scope of the invention.

What is claimed is:

1. A package assembly comprising: a base sheet; an integrally formed receptacle member including a pair of side wall sections and a base wall section extending outwardly from said base sheet and a front wall section interconnecting said base wall and side wall sections, said receptacle member further including flange sections secured to said base sheet to connect said receptacle member to said base sheet, said base sheet and said receptacle

6

member at least partially defining a chamber for holding articles; and a cover member integrally formed of a plurality of wall sections including first and second side wall sections interconnected by an end wall section, said cover member further including a flange section integrally formed with and extending outwardly from said first side wall section and secured to said base sheet to connect said cover member to said base sheet, said cover member being pivotal at an intersection between said flange section and said first side wall for movement relative to said base sheet from a first position blocking an aperture to the chamber wherein said second sidewall section of said cover member is positioned in abutting frictional engagement with said base wall section of said receptacle member to a second position in which the aperture is substantially unobstructed by said cover member to provide access to the chamber.

2. An assembly as set forth in claim 1 wherein: said first side wall section of said cover member is positioned adjacent to and extends generally parallel with said base sheet when said cover member is in said second position.

3. An assembly as set forth in claim 2 further including: locking means integrally formed with said second side wall section for holding said cover member in said first position, said locking means extending outwardly from said second side wall section beyond the flange section of said receptacle member to enable a portion of said locking means to be fused to said base sheet to hold said cover member in said first position.

4. A method of forming a package assembly having a base sheet, a receptacle member, and a cover, said method comprising the steps of: positioning the receptacle member within the cover member; positioning the base sheet in engagement with edge portions of both the cover member and the receptacle member; and fusing the edge portions of the cover member and receptacle members to the base sheet to mount the cover and receptacle members on the base sheet.

5. A method of forming a package assembly according to claim 4 wherein the step of fusing the edge portions of the cover member and receptacle members to the base sheet includes the heating of said base sheet to between 250 and 400 degrees F., and applying a pressure to said base sheet of from 40 to 60 pounds per square inch for approximately five to eleven seconds.

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JAMES B. MARBERT, *Primary Examiner.*