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PROCESS OF FORMING CONTAINER CLOSURES

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2 Sheets-Sheet 2

Fig. 1

Fig. 2

Fig. 3

Fig. 4

Fig. 5

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ICE CREAM

Fig. 6

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The object of the invention is to provide improvements in closures for certain types of containers and particularly when their contents comprise ice cream, cottage cheese, butter and such products, or in fact any other articles of similar consistency, such improvements to relate especially to providing means whereby advertising and other matter of any kind may be printed by any suitable reproducing process on the under side of said closure in combination with means that will prevent contact between said printed surface and the contents of the container.

During the past few years it has become increasingly customary to handle large quantities of retail ice cream, for instance, in paper cups having an open upper end of substantially or entirely the full width of the top of the cup, said opening being spanned by a disc closure formed of cardboard or the like to protect the contents, and removable to expose the contents by merely gripping manually an integral tab extension, or other portion of, or device secured to, such disc.

These closure discs have heretofore carried advertising matter, or at least the name of the ice cream manufacturer, upon their upper surfaces, and an object is to similarly provide other matter such as additional advertising or the pictures of birds, animals, persons, places or things, lithographically or otherwise reproduced, upon the normal under side of such discs. However, it was realized from the first that it would be highly objectionable to permit ink, dye, paint, or the like, upon said discs to come into direct contact with the ice cream (which is herein referred to as representative of all such articles for which this invention is adapted), though it is largely the adhesion of the disc to the ice cream which retains the former in operative position as an effective closure.

Another object of the invention has therefore been to provide, as an article of manufacture, a compound closure disc which can be used for the purpose described, bearing various forms of pictorial or other reproductions upon its normal under side, and covered upon such under side with a suitable protective medium such as cellulose ester products, pyroxylin, cellophane, and other media with cellulose bases, or products which comprise some or all of the characteristics of flexibility, reasonable tensile strength, at least partial transparency and substantially complete liquid-proofness, which will effectively shield both the ice cream from the pictorial or other reproduction upon the adjacent side of the cap, and the cap surface itself from the ice cream while in use, and from being soiled prior to its application to the container.

A further object is to provide an improved form of adhesive for securing the protective medium to the cap, (when a separate adhesive is used), that is, an adhesive which will not cause a sheet of caps when it is applied thereunto during the manufacturing process to warp or buckle out of its original characteristic planar shape, and which will to all intents and purposes cause a positive adherence of said medium to said cap during handling until affixed to a container, but which medium will thereafter adhere more positively to the ice cream contents of said container than to the cap, thereby permitting the cap to be peeled or otherwise withdrawn from both container and protective medium without injury to either, after which said medium can be withdrawn from the contents of said container.

Still another object is to provide an improved method for forming, and for applying and removing the improved compound closure respectively to and from a container of ice cream, as representative of many substances adapted to be protected by such a device, said method involving the use of the improved adhesive above referred to.

With these and other objects in mind, the present invention comprises further details of construction and operation which will be fully brought out in the following description when read in conjunction with the accompanying drawings, in which Fig. 1 is a fragmentary portion of the obverse of a sheet upon which has been printed repetitions of representative indicia, in this case the name of a fanciful ice cream manufacturer; Fig. 2 is a similar view of the reverse side of the sheet, showing representative advertising.
pictorial reproductions, or other representations, which may differ to the extent of no two being alike upon a given sheet; Fig. 3 is a fragmentary cross section of the sheet after having been coated with paraffin upon its opposite sides; Fig. 4 is a schematic section through a representative form of machine which affixes to the reverse of the printed and paraffined sheet an auxiliary sheet of paraffin, or other desired type of paper, by means of an adhesive; Fig. 5 is a plan view of a fragmentary portion of the die-block which cuts the container closures from the finished sheet; Fig. 6 is an enlarged vertical section of same, showing one of the cutting dies in section; Fig. 7 is a plan view of a portion of the reverse side of a sheet from which the closures have been cut or severed but not yet removed; Fig. 8 is an enlarged perspective view of an individual compound closure removed from the printed sheet; Fig. 9 is a vertical section through a container filled with ice cream or the like and with the improved closure shown in exaggerated thickness; and Fig. 10 is a similar section through the upper fragmentary portion of the same container, showing the printed disc partly removed and the protective medium (in this instance paraffin paper) still in operative position with respect to the container contents.

Referring to the drawings, there is shown in Figs. 1 and 2, a fragmentary portion 1 of any suitable material of which container tops may be formed, having primarily in mind those containers which are adapted for use to receive ice cream, or other edibles of various sorts, and various other substances which may possess a similarly characteristic adhesive tendency towards container closures which may be affixed, not only to the container itself, but directly to and in contact with the otherwise exposed surface of such contents. It is to be understood that the printed or lithographic reproductions upon the cards or sheets illustrated merely represent one combination of an infinite number which may be employed in connection with the present invention.

Upon the obverse of the card 1, as shown in Fig. 1, there is printed the name or names of one or more manufacturers of the ice cream or other contents of containers to which the finally formed closure discs will be affixed, and it is apparent that no matter whether printed or otherwise reproduced, may relate to the same or different manufacturers. Likewise on the reverse side of the card 1, as shown in Fig. 2 there are illustrated by means of lithographing or otherwise the pictures of animals as illustrating any desired indicia which may be preferred, such for instance as portraits of persons, pictures of statues, prominent buildings, places, maps, or portions of the same, or in fact any other illustration according to one's desires or needs.

The card 1, thus provided with the desired impressions upon either or both sides, is coated upon either the reverse side or both sides with paraffin, as shown at 2 and 3 in Fig. 3. This paraffin surfaced member is then run through a machine of any suitable form, such for instance as is schematically illustrated in Fig. 4. The essential parts of such machine comprise a bed 4, a roll 5 over which the card 1 passes, said roll having a fixed axis, and a second roll 6 having a preferably movable axis and adapted to be forced towards said first roll by any suitable pressure-applying means, such as the adjustably tensioned spring 7.

Suitably positioned with respect to this machine is a roll of paper or a sheet of similar material 8, which is preferably at least partly transparent, the same generally comprising a flexible web, which if of fibrous nature may be either impregnated or coated with paraffin, or its equivalent, or may comprise a characteristically homogeneous structure, impervious to moisture and at least partly transparent. The paper web 9 passes from this roll 8 over a guide roll 10, where one of the surfaces of the paper comes into contact with an adhesive-applying roll or equivalent medium 11, which if a roll may enter or otherwise receive its supply of adhesive from the reservoir 12.

From said last-named roll 11 the paper with its newly received coating of adhesive passes towards the card 1 upon the bed 4 and is affixed to the adjacent paraffined surface of said card by means of an affixing roll 13, which serves to compress the paper upon the card in intimate adhesion to each other. Thereafter, the paper-covered card passes between the two rolls 5 and 6 which serve to further engage said card and paper covering. In carrying out this process, it is immaterial whether the card 1 is a card as such, or whether it also is printed and formed from a web, as illustrated in the case of the paraffin paper web 9.

Referring to Figs. 5 and 6, there is here illustrated a die block 14, upon and extending from the normal under surface of which is carried a series of cutting dies 15, preferably formed of steel ribbon, having a lower cutting edge 16 and formed into a figure which corresponds with the final shape of the container closures or discs, which are to be cut from the card 1. These dies are affixed to the die block in any suitable manner, but for convenience may extend through openings 17, as shown in Fig. 6, in order to receive pressure directly from the backing or holder of the die block. In the case at hand, the dies comprise a circular portion 18, from one point of the circumference of which there extends radially outwardly at 19 an offset, the purpose of which is to cut the radially extending manually engageable tab or ear.
20 with which each of the closure discs 21 is provided when its formation is finally completed.

At this point it should be noted that for convenience, as shown in Fig. 4, the paraffin paper may be applied to the upper surface of the card or web 1, and the compound structure thus formed is in the same position as shown in Fig. 6, when acted upon and cut by means of the die. It will also be noted that the die edges 16 are not only very sharp, but in cross section very narrow, in order that that portion of the card 1 bounding each closure disc will not be widely separated from the latter after the removal of the die therefrom. In fact the severance of the closure disc from said card takes place during such a small period of time and by means of a die which is sufficiently thin to permit the partially resilient material of said card to expand, and thus continue to hold the cut closure discs yieldingly in their original position with the plane of the card itself.

Fig. 7, therefore, represents the card after it has been cut, but with the several closure discs remaining in their original positions in such card. As a result, a great many of these cards may be stacked one upon another with the result that all of the discs in alignment may for convenience be pressed out of their respective cards in the form of a solid cylinder, having all of their tabs pointed in the same direction. This stack of discs may then be shipped to the ice cream manufacturer and placed in any well-known form of machine for automatically feeding and attaching them individually (Fig. 8) to the container previously filled with ice cream or the like. However, it should be noted that each disc 21 at this point is inverted so that the paraffin paper or other protective medium 22 is upon the lower side of the disc and therefore comes next and adheres directly to the contents 23 of the container 24, shown in Figs. 9 and 10. When applied to such containers, it will be noted that the tab 20 extends upwardly from the plane of the disc 21 and underlying protective medium 22.

It is in this form that the containers 24 and closure discs 21 are shipped with their contents 23. When finally sold to a consumer, the latter manually grips the disc tab 20 and pulls the adjacent edge portion of the disc 21 upwardly as shown in Fig. 10, thus peeling the paraffin coated disc freely from the protective medium 22 which remains upon and in intimate adhesion with the adjacent surface of the container contents 23. Finally, after having completely removed the disc from the container, the remaining standing tab 22* carried by the paraffin paper medium 22 is manually gripped and pulled upwardly, with the result that said medium is thereupon peeled freely from engagement with the container contents, thereby exposing them to the consumer for removal in any desired manner.

In providing for the independent removal of the closure disc and its protective medium from the contents of a container, it will be obvious that some particular kind of adhesive has had to be made use of, and such is the case, for as a result of many experiments over a long period of time, it has been found that the most satisfactory adhesive is formed of a good quality of paste with which is mixed approximately 20% of glycerin. This is not intended to imply that fairly or partially satisfactory results cannot be obtained with the addition of as little as 5% or 10% of glycerin or as much as 30% or 40%, but thus far the most uniformly perfect and economical results have been obtained by adhering to a 20% addition of glycerin.

With the affixing of a paraffin paper protective medium to a closure disc of relatively stiff paper or cardboard with such an adhesive and the union of said medium and board having been brought about by the use of suitable pressure (and moderate heat if desired to quicken the drying), there is provided a compound closure disc, the parts of which intimately adhere to each other during the period of handling, prior to being affixed to a container and its contents, and it will be found that the act of dieing out each disc operates to additionally unite the adjacent edge portions of the disc and its protective medium, so that no part of these edges will separate and interfere with the operation of the machinery or mechanism by which they are applied to a container. However, with the application of the composite disc to such container, it is obvious that the tab 22* of the protective medium is stretched and thereby separated from the adjacent tab 20, although said tabs remain closely adjacent to each other. The point is that the consumer is then free to lift upwardly upon the adjacent tab 20 to peel the disc from the medium 22, after which the medium tab 22* is accessible for manual engagement in order to peel the medium 22 from the container contents 23.

As a result of the perfection of this improved form of container closure, it has become possible to provide the under surface of such closure with in fact any desired form of lithographing, printing, or pictorial representation, or advertising matter of any sort, and to preserve the same in a satisfactory manner, for as the lithographed under surface of the closure is at all times protected from the container contents by the medium 22, it cannot become soiled by said contents, nor can said contents be contaminated or otherwise affected by anything which may be upon or carried by the under surface of the closure. It is therefore only as a result of this invention that it has become possible to
make use of the under surface of such container closures as the disc which is commonly employed as above stated to cover and protect ice cream and similar articles within their well-known forms of containers.

The invention also anticipates the use of a closure disc of any shape having upon its normal lower surface printing or the like, which is protected by a coating such as paraffin to protect it from the contents of a container without additional protective medium, as well as the use of a disc printed upon the under side and protected by a sheet or layer of any suitable originally separate medium, whether said medium is coated or impregnated with paraffin or other suitable substance, or comprises a homogeneous member such as a sheet of so-called cellophone, celluloid, or similar material.

Having thus described my invention, what I claim and desire to protect by Letters Patent of the United States is:

1. The process, which consists in coating a member with paraffin, and then affixing to a surface of said member a member having a paraffined surface, by means of an adhesive which secures said members together temporarily but permits them to be peeled apart without mutilating either.

2. The process, which consists in coating a fibrous member with paraffin, and then affixing to a surface of said member a second flexible member having a paraffined surface, by means of an adhesive which secures said members together temporarily but permits them to be peeled apart without mutilating either.

3. The process, which consists in coating a fibrous member with paraffin, and then affixing to a surface of said member a paraffin-impregnated member by means of an adhesive which secures said members together temporarily but permits them to be peeled apart without mutilating either.

4. The process, which consists in coating a fibrous member with paraffin, and then affixing to a surface of said member a paraffin-impregnated member by means of an adhesive which secures said members together temporarily but permits them to be peeled apart without mutilating either, said members being united under pressure.

5. The process, which consists in coating a fibrous member with paraffin, and then affixing to a surface of said member a paraffin-impregnated member by means of an adhesive which secures said members together temporarily but permits them to be peeled apart without mutilating either, said members being united under pressure, after which the united members are subjected to a heat sufficient to facilitate drying without softening the paraffin.

6. The method, which consists in printing upon one surface of a paper card, coating the printed surface with paraffin, then affixing to said surface a paper sheet having a paraffined surface by means of an adhesive, which secures said card and sheet together temporarily but permits them to be peeled apart without mutilating either.

7. The method, which consists in printing upon one surface of a paper card, coating the printed surface with paraffin, then affixing to said surface a paper sheet having a paraffined surface by means of an adhesive, which is of sufficient tenacity to secure said card and sheet together until the sheet covered side of said card is united by mere adhesion to a third article, so that said card can be peeled from said sheet while said sheet is held to said third article, by mere adhesion, after which said sheet can be peeled from said third article.

8. The method, which consists in printing upon the normal lower surface of a relatively stiff paper card, coating the printed surface with paraffin, then affixing to said surface a relatively flexible paper sheet impregnated with paraffin by means of an adhesive containing glycerin, which secures said card and sheet together until the composite structure is applied to a third article by mere adhesion of said sheet with said article, so that said card can be peeled from said sheet while said sheet is held to said article, after which said sheet can be peeled from said article.

9. The method, which consists in printing upon the normal lower surface of a relatively stiff paper card, coating the printed surface with paraffin, then affixing to said surface a relatively flexible paper sheet impregnated with paraffin by means of an adhesive containing glycerin, which secures said card and sheet together until the composite structure is applied to the ice cream contents of a container by mere adhesion of said sheet with the surface of said ice cream, so that said card can be peeled from said sheet while said sheet is held to the ice cream surface, after which said sheet can be peeled from said ice cream.

10. The process, which consists in printing upon a member, coating the printed surface with paraffin, affixing a second member substantially uniformly to said printed surface, and then peeling one member from the other without having to resort to an outside agency.

11. The process, which consists in printing upon a flexible member, coating the printed surface with paraffin, affixing a second flexible member substantially uniformly to said printed surface by means of an adhesive, and then peeling one member from the other without having to resort to an outside agency.

12. The process, which consists in printing upon a surface of relatively stiff paper board, covering the printed surface with a protective coating, then affixing a relatively flexible paper sheet to said surface by means of an adhesive, and from such composite structure dieing out a container closure disc, adapted
after being applied to a container to have one of its members removed independently.

13. The process, which consists in printing upon a surface of relatively stiff paper board, covering the printed surface with a protective coating of paraffin, then affixing a relatively flexible paper sheet also having a paraffin surface to said board surface by means of an adhesive, and from such composite structure dieing out a container closure disc, adapted after being applied to a container to have one of its members removed independently of the other.

14. The process, which consists in printing upon a surface of relatively stiff paper board, covering the printed surface with paraffin, then affixing a sheet of paraffin paper to said surface by means of an adhesive, from such composite structure dieing out a container closure disc, applying said disc to a container in proximity to its contents, peeling one member of said disc from the other without mutilating either, and then removing the second member from said container.

15. The process, which consists in printing upon a surface of a relatively stiff member, affixing a sheet of paraffin paper to said printed surface by means of an adhesive to form a compound container closure.

16. The process, which consists in printing upon a surface of a relative stiff member, affixing a sheet of paraffin paper to said printed surface by means of an adhesive to form a compound container closure, applying said compound closure to a container, and peeling one of the elements of said closure from the other element without mutilating either.

17. The process, which consists in printing upon a surface of a member, affixing a flexible sheet to said printed surface by means of an adhesive to form a compound container closure.

18. The process, which consists in printing upon a surface of a member, affixing a flexible sheet to said printed surface by means of an adhesive to form a compound container closure, and later peeling one element from the other without mutilating either or resorting to an outside agency.

In testimony whereof I have affixed my signature.

ELLIOTT BREWER.