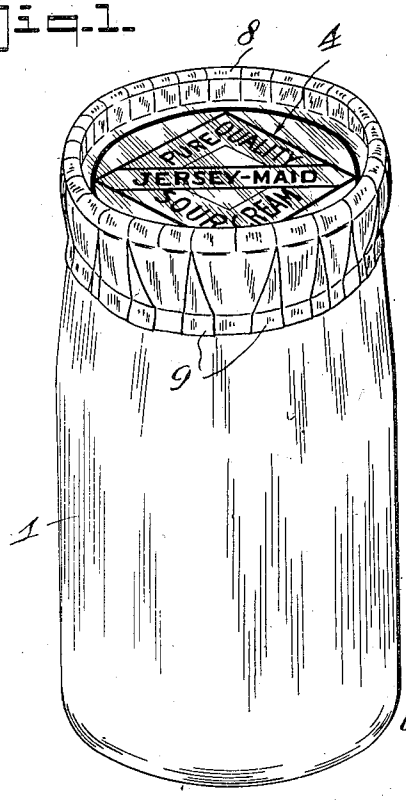
May 8, 1934. E. W. BRIDGE 1,957,441

METHOD OF SECURING HOOD CAPS ON VESSELS

Filed Jan. 27, 1932 2 Sheets-Sheet 1

Fig. 1.



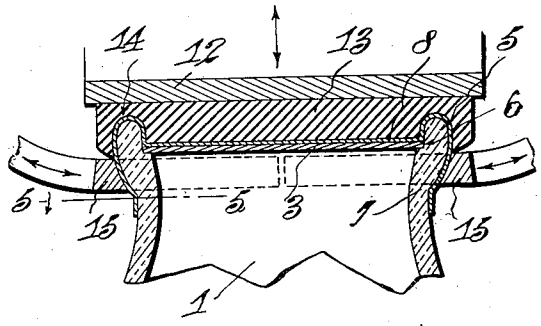
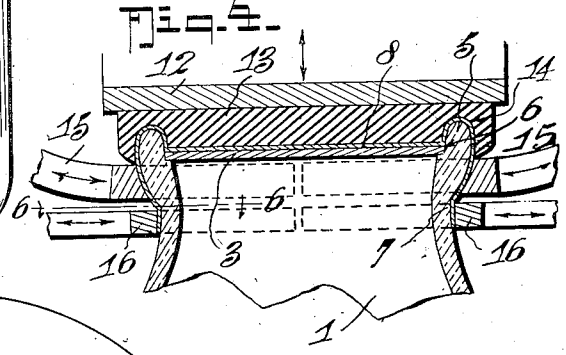


Fig. 3.

Fig. 4.



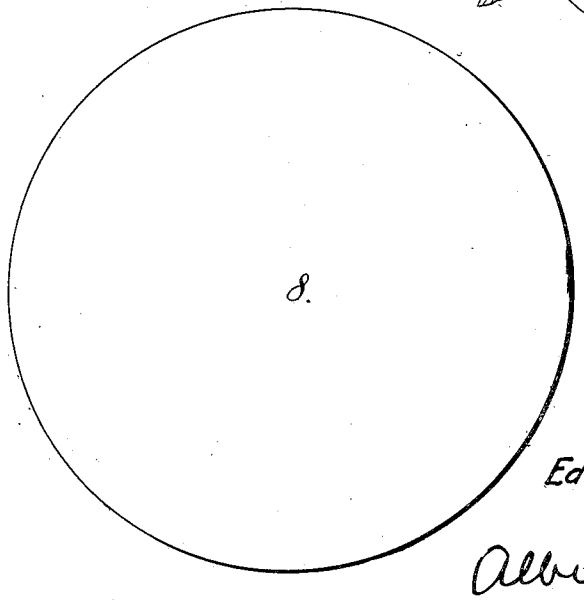


Fig. 2.

Inventor
Edward W. Bridge.

Albert B. Dieterich

Attorney

May 8, 1934. E. W. BRIDGE 1,957,441

METHOD OF SECURING HOOD CAPS ON VESSELS

Filed Jan. 27, 1932 2 Sheets-Sheet 2

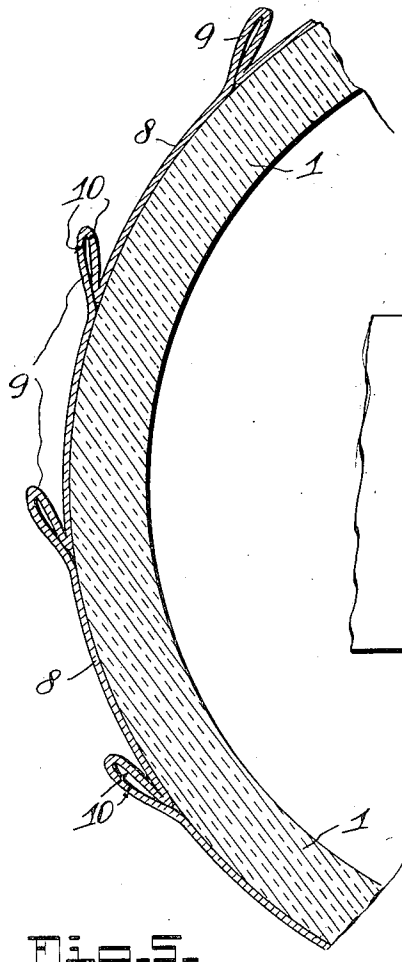


Fig. 5.

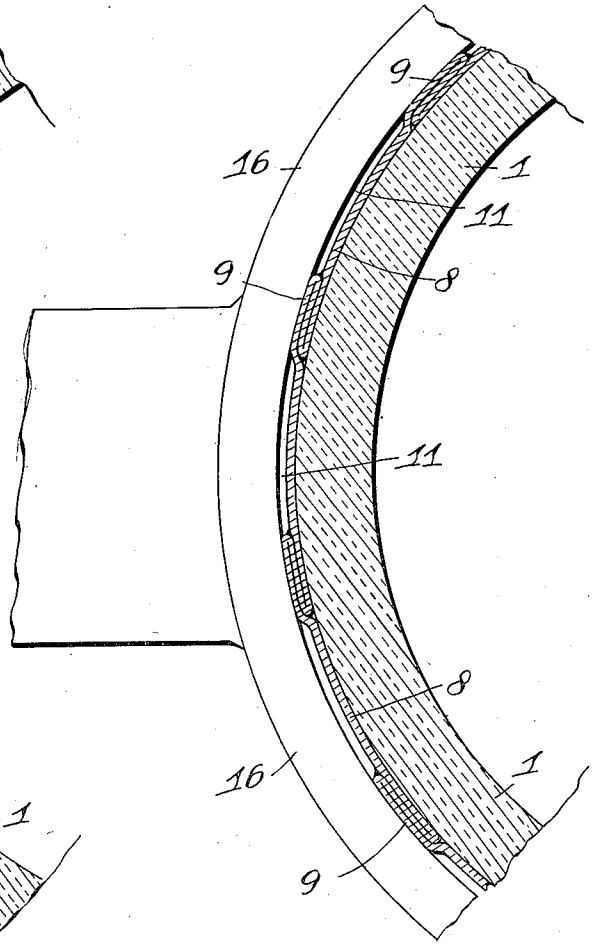


Fig. 6.

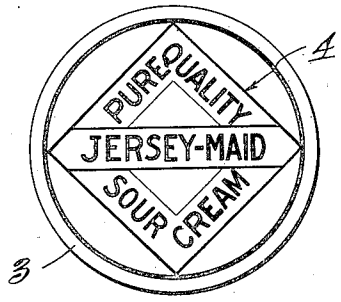


Fig. 7.

Inventor
Edward W. Bridge.

By Albert B. Dieterich

Attorney

Patented May 8, 1934 1,957,441

UNITED STATES PATENT OFFICE

1,957,441

METHOD OF SECURING HOOD CAPS ON VESSELS

Edward W. Bridge, Philadelphia, Pa.

Application January 27, 1932, Serial No. 589,229

3 Claims. (Cl. 226—83)

The invention relates to hood caps and to a method of securing the cap over the mouth of the vessel on which it is used.

Heretofore hood caps have been provided which have been made of more or less heavy opaque or translucent material, the skirt of the cap either being pleated and held snugly to the neck of the vessel by wire or other band-like ties and/or by having the skirt slit, the portions between the slits overlapped and adhesively held together and to the bottle neck by using a cap material (such as paper or light cardboard) impregnated with a suitable sizing which, while softening under the influence of heat, will, on cooling, become set and render the skirt rigid.

Attempts have also heretofore been made to provide a hood cap whose skirt is coated or impregnated with a binder of such character that, when heated to a temperature only slightly above the melting point of the binder, it will soften and after the cap is clamped on the vessel and the binder has cooled will hold the cap in place so as to be readily rotatable on the vessel; if, however, the cap is heated to a sufficient degree to effect a firm securing of the cap to the vessel then there will be an adhesion of the cap to the neck of the vessel that will prevent such rotation.

When hood caps are used on milk and cream bottles and the like, which are re-used daily or at frequent intervals, the presence of the wax or other binder on the glass bottle has been found to be a very objectionable feature, and it is one of the objects of my invention to provide a hood cap and method of applying it to the bottle or other vessel which, while effecting a dust-proof cover for the mouth of the bottle, will not leave any of the binder on the bottle when the hood shall have been removed therefrom.

Again, hood caps such as have heretofore been used have been made of a translucent or opaque material so that it has been found necessary to print the identifying label matter on the outside of the hood cap which, of course, makes for added expense. Another object of my invention, therefore, is to provide a hood cap of a transparent material and so place it on the bottle or other vessel that the primary sealing disk, which is located in the mouth ring of the vessel and which normally carries the label matter, may be readable through the hood cap.

Another object of the invention is to provide a transparent hood cap that can be made of thin paper, impregnated or coated with a suitable wax (such as paraffine for example) and so to apply the cap to the bottle that it will snugly fit not only the neck and mouth ring of the bottle but also the inner or countersunk portion of the mouth and lie in contact with the primary sealing disk so that all of the inner surface of the hood will be backed up by a rigid body, thereby preventing accidental puncturing or tearing of the hood while at the same time not causing the hood to adhere or stick to the bottle or to the primary sealing disk; yet the hood is so snugly held in place that it will effect a dust and germ-proof guard for the mouth of the bottle.

Other objects will in part be obvious and in part be pointed out hereinafter.

In practicing my invention on a commercial scale I take a light, transparent, suitably waxed paper such for example as that now commonly used for wrapping bread, and cut out disks of suitable size, form them by the use of suitable dies into skirted hood caps, and at the same time apply them while at normal room temperature to the vessels to be hooded, pressing the hood caps fully in place on the vessels over the mouth rings and into the recesses of the mouth rings over and in contact with the primary cap disk which seals the vessel. I then, while holding the hood cap in place by means of suitable grippers which tightly press the cap against the walls of the vessel at a place below the mouth ring as well as over the mouth and against the primary disk, apply heat to the outside only of the skirt of the hood for a time sufficient to soften the binder in the pleats of the skirt and the adjacent outer surface parts of the skirt. This application of heat may be made by the use of suitable heating irons which conform to the contour of the vessel and which are arranged to be brought into engagement with the skirt of the cap around the vessel's neck below the mouth ring.

On application of these heaters to the skirt sufficient pressure is given thereto to press the pleats together so that the softened binder will unite in the pleats and cement the pleats together as soon as the heaters are withdrawn. The application of the heaters is made only for a very short time, sufficient only to effect a seal before the wax on the inner surface of the skirt, which lies in contact with the wall of the vessel, can soften and adhere to the vessel. This may be done by means of suitable electric heating irons shaped to conform to the bottle neck, as heretofore intimated, and pressed inwardly against the pleats of the skirt for an instant, the same being quickly withdrawn, i. e. before the heat penetrates to the inner surface of the hood material, the inner surface being in contact with

the cold wall of the vessel (about 10° C. more or less).

Since the heat is applied after the hood has been mounted on the vessel and while the hood is held in contact with the cold walls thereof, and since the heat is applied only to the exposed surface of the skirt and is not applied for a time sufficient to penetrate to the inner surface of the skirt that lies against the walls of the vessel, it is obvious that, while the hood will be held tightly in place on the vessel after being thus sealed, none of the sealing substance will stick to the vessel and the hood will at no place be adhering or stuck to the vessel. Hence it is a simple matter, when the vessel is to be opened, to tear off the hood completely and leave the vessel free of wax or adhering parts of the hood cap.

In the drawings I have illustrated more or less diagrammatically the steps involved in my method of applying the hood caps to the vessel, and by reference to the drawings it will be seen that

Figure 1 is a perspective view of a cream bottle with my improved cap applied according to my invention.

Figure 2 is a plan of one of the disks from which the hood cap is made.

Figure 3 is a central vertical longitudinal section of a milk bottle showing the manner in which the disk is pressed to shape over the mouth and neck of the vessel.

Figure 4 is a view similar to Figure 3 showing the application of the heating irons to the outside of the skirt.

Figure 5 is a magnified detail horizontal section on the line 5—5 of Figure 3.

Figure 6 is a magnified detail horizontal section on the line 6—6 of Figure 4.

Figure 7 is a plan of a primary sealing disk showing the label printed thereon.

In the drawings, in which like numerals of reference designate like parts in all of the figures, 1 represents the milk bottle or other vessel to be protected by the hood cap. The vessel 1 has a mouth ring 5 that is provided with a countersunk seat 6 for the usual primary sealing disk 3 that is made of heavy paper, cardboard, or the like, and is opaque and carries the printed label 4. 7 designates the neck portion of the bottle 1 beneath the mouth ring 5, and 8 indicates the hood cap. The hood cap includes the skirt having pleats 9 formed during the process of manufacture, the pleats being in cross section somewhat in the form of loops, see Figure 5. These loops, when the hood cap is secured to the vessel, have their surfaces 10 pressed together and firmly united by the adhesive (wax or other suitable binder) with which the hood material is coated or impregnated.

12 designates the upper retaining die head which has a rubber presser 13 grooved at 14 to fit over the mouth ring 5 of the vessel and press the hood cap into conformity with the same as well as to hold a portion of the hood cap in contact with the primary sealing disk 2.

15 are suitable fingers shaped to conform to the mouth ring for holding the hood cap with its pleats approximately closed, in pressure contact with the outer surface of the neck ring adjacent the neck 7.

In forming the hood caps a die such as 12—13—14 and gripping fingers 15 are employed, thus shaping the hood cap and conforming it to the vessel in practically one operation. The vessel is then removed from the forming dies and fingers and placed in a second set of dies and fingers of the same construction as the parts 12—13—14—15, whereupon the hood cap is again clamped and held tightly in place on the bottle neck. Thereafter electric heating irons 16 are brought against the outer surface of the skirt of the hood cap beneath the fingers 15, which heating irons press the pleats 9 inwardly to bring the surfaces 10 into contact and at the same time apply sufficient heat thereto to soften the binder and cause it to cement the pleats in the compressed position shown in Figure 6. When the heater is moved inwardly to compress the pleats it will be seen that it engages with the pleats and by conduction supply heat to the pleat loops to soften the binder. In this action there is more or less of a space 11 left between the heater surface and that portion of the outer surface of the skirt of the hood cap which lies between adjacent pleats, thus concentrating, as it were, the principal heating effect at the pleats.

Milk bottles when being hood-capped are usually at a temperature around 10° C. more or less and as the hood cap is formed at room temperature and pressed into contact with the cold bottle before the heat is applied, the inner surface of the hood cap adjacent the wall of the vessel will be chilled and its temperature lowered in passing from the forming die to the securing die where the heater is applied. The application of the heater is only for an instant and as soon as sufficient heat has been transmitted to the pleats to effect the sealing act, which takes place before the inner surface of the hood cap skirt is warmed up to the melting point of the binder, the heater is withdrawn. Thus it is possible tightly to mechanically interlock a thin transparent paper hood cap to the bottle so that it will not become loose accidentally and will effectively serve to keep the mouth of the vessel and the primary sealing disk clean.

By employing my method it is not necessary to pre-heat the hood cap disk or to pre-heat the formed hood cap as has been heretofore suggested. By confining the heating act solely to the exterior surface of the skirt of the cap at the pleat area and by regulating the time of application so that the heat does not penetrate to the interior surface of the cap material to a sufficient time to melt the binder there, all danger of messing the vessel with objectionable binder material or other adhering matter is avoided.

Furthermore, by making the hood caps of thin transparent material the cost is so reduced that it is possible profitably to use these caps on containers for lower grades of milk where the use of ordinary hood caps now known is prohibited.

Again by making the caps of thin transparent material and shaping them tightly to conform to the vessel and to the primary sealing cap it becomes unnecessary to print the label matter on the hood cap since it will be clearly visible through the hood cap when printed on the primary sealing cap.

If desired, the paper need be waxed only on the outer surface, leaving that surface which lies next to the vessel entirely free of wax. When paper of this character is used the sealing of the loops is effected between that surface of the loop which is folded against the body of the skirt.

Other advantages of the invention will be clear to those skilled in the art and need not be dwelt on here.

What I claim is:

1. The method of sealing vessels having necks and mouth rings provided with primary sealing

disks, which consists in shaping out a blank of transparent waxed paper and applying it at ordinary temperature to the mouth of the vessel, bending down the edge of the blank to form a pleated skirt around the mouth of the vessel, holding the applied blank to the vessel around the mouth ring only and while it is so held applying heat to the pleats on the outside of the skirt below the mouth ring only and pressing the pleats together to the skirt proper, while maintaining the inner surface of the cap from adhering to the container.

2. The method of sealing vessels having necks and mouth rings which consists in simultaneously shaping out a blank of waxed paper and applying it to the mouth of the vessel at ordinary temperature, bending down the edge of the blank to form a pleated skirt around the mouth and the adjacent part of the neck of the vessel, holding the applied blank to the vessel around the mouth ring, and simultaneously applying heat to the outside of the skirt below the mouth ring and pressing the pleats together, while maintaining the temperature of the parts of the cap that are in contact with the vessel below the melting point of the wax.

3. The method of securing a thin transparent hood cap which has an adhesive binder and a pleated skirt in position on a container having a mouth ring and a neck; said method comprising the fitting of the cap while cold over the mouth of the container, holding the pleated skirt constricted around the mouth ring by pressure in the plane of the mouth ring above the neck of the container and applying heat around the outer face only of that portion of the skirt which is located below the mouth ring and for a time sufficient only to cause adhesion of the pleats to one another without allowing the heat to penetrate to the surface of the cap which is in contact with the surface of the container thereby maintaining the inner surface of the cap free from adhesion to the surface of the container.

EDWARD W. BRIDGE.