April 29, 1941. R. BECKER 2,239,691

MILK PACKAGE

Filed Jan. 15, 1938

FIG. 1.

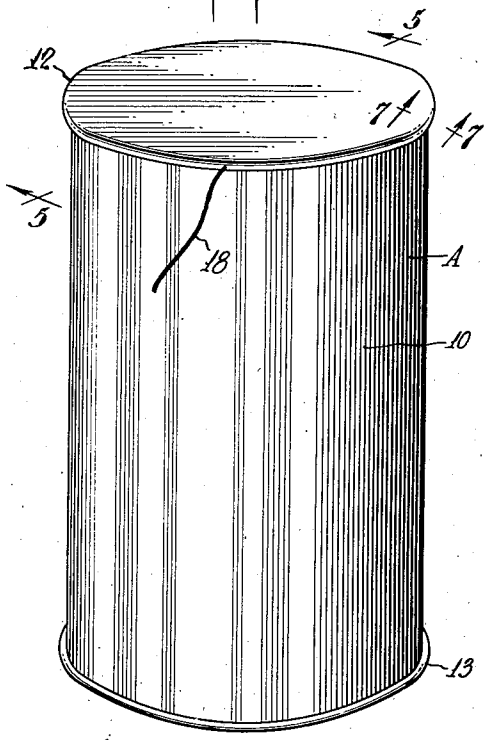


FIG. 2.

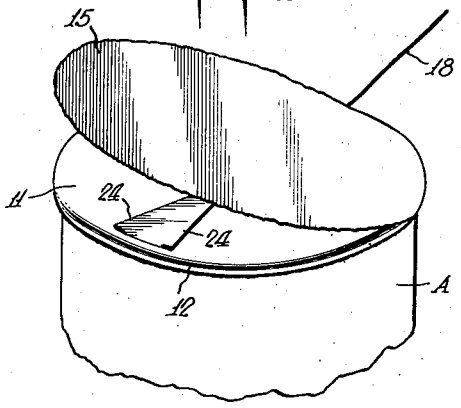


FIG. 3.

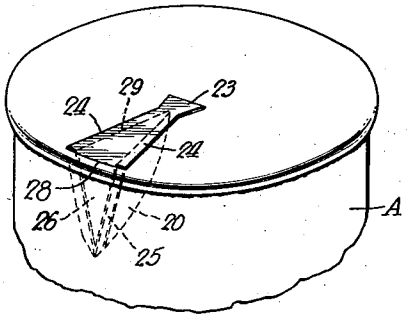


FIG. 5.

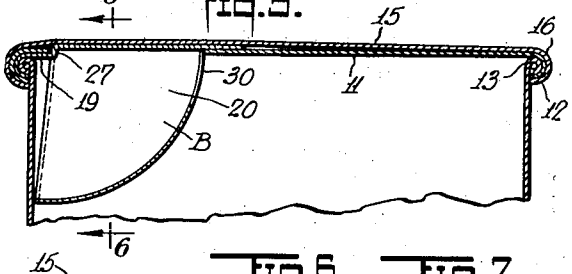


FIG. 4.

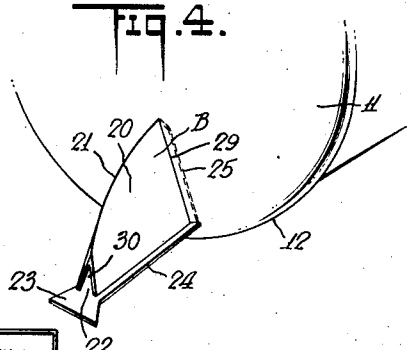


FIG. 6.

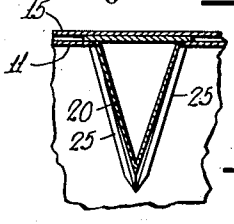


FIG. 7.

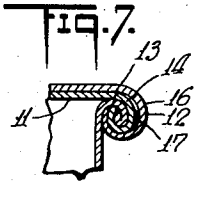
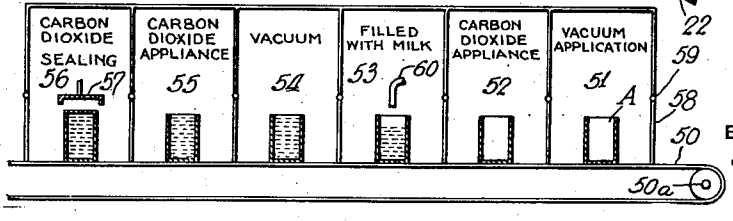


FIG. 8.



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MILK PACKAGE

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9 Claims. (Cl. 221—11)

The present invention relates to canning of whole milk and it particularly relates to a process of packaging the milk and to a can construction therefor.

In present milk distribution systems considerable difficulty has been experienced with the usual type of heavy glass containers which are not only quite weighty but also expensive and difficult to handle. The thickness of the walls of these containers makes it considerably difficult to cool milk in the containers to desired temperature. Because of the expense of these heavy glass bottles, they must be reused and considerable difficulty has been experienced in identifying the owners so that assurance will be had of return thereof. There is always considerable loss where no deposit is demanded, since the latter may often antagonize the prospective customer and decrease sales.

Furthermore the bottles after usage cannot be most readily scoured or cleansed. It is not readily possible to use water of proper temperature to sterilize the bottles, since such water may often tend to crack the bottles due to the thickness of the glass and the unequal expansion thereof.

Furthermore is not most readily possible to stopper the bottle with paper disks and at the same time prevent the accumulation of dirt or dust upon the mouth thereof. It is frequently necessary to go to considerable expense to provide multiple caps to be applied thereto, which not only require expensive machinery, but also involve considerable difficulty in the distribution of the milk.

Furthermore, since milk has to be delivered fairly promptly after it has been produced, heavy glass bottles, because of their relatively great weight and large volume are not most readily distributed with great economy and minimum space consumption.

In the retail store and home they occupy excessive space in ice boxes and when carried or distributed by employees of milk companies, they require considerable care and necessitate the handling of excessive weights.

It is among the objects of the present invention to provide an improved method of packaging and distributing whole milk which will eliminate the many difficulties above described, which will give most efficient distribution with maximum economy of expense and space consumption and which will greatly reduce the cost in containers.

A further object is to provide an improved milk distribution system according to which the milk may be promptly and efficiently packaged with proper control of temperature and with adequate treatment to assure desirable properties and which will lend itself to most convenient and inexpensive handling by distributors, dairy employees, housewives, retailers and so forth.

In accomplishing these objects it has been found most satisfactory to can the whole milk in such a manner as to provide a protected pouring device and which at the same time will not necessitate any special cutting devices which necessitate cutting into the metal of the can and which might give rise to metal particles or other undesirable effects.

In accomplishing the above objects it has been found most satisfactory in one embodiment to form the top of the can with a paper cover which will be rolled in upon the can after filling thereof together with the top of the can and which may be readily torn from the can by a suitable tearing attachment.

The preferred can, to which the present invention is by no means restricted, is provided with a tear string which will tear off the paper cover and is provided with horizontally extending beads which enable more rapid packaging and more satisfactory distribution of the milk. The paper cover and the sides of the can may carry the suitable advertising or instructions or dating of the milk.

Preferably the top of the can is united with a pouring lip or spout which may be turned down to close the can or lifted to permit pouring of the milk. The pouring lip serves as a cover during the time the contents of the can are dispensed or consumed.

In utilizing cans, it has been found most important that the milk be put in such a condition that there will be no catalytic action by metal of the can, tending to cause too rapid souring of the milk or undue growth of bacteria and it is among the objects of the present invention to provide an improved method of packaging milk which will eliminate undue oxidation and avoid any catalytic metallic action which might tend to cause too rapid deterioration of the milk or souring thereof.

In accomplishing this last mentioned object, it has been found most suitable to cause the canned whole milk to have a pH of between 5 and 7 and preferably between 6 and 7 and to be substantially devoid of atmospheric oxygen.

In the desired construction, the open space

above the milk in the upper part of the can is desirably filled with carbon dioxide under pressure slightly above atmospheric, say between 0 to 10% above atmospheric.

The atmosphere is above the milk in the can, should be substantially devoid of, or contain less than 5% of, oxygen. The milk at the same time should be substantially free of oxygen and should not contain any substantial quantity of carbon dioxide as would tend to cause it to bubble or fizz when poured.

Referring to the drawing which shows the can and packaging of the milk according to the present application, but to which the present application is by no means restricted, since many changes and variations thereof may be made, all within the scope of the present application,

Fig. 1 is a top perspective view of the completed can showing the paper cover and pull string in position,

Fig. 2 illustrates how the pull string may be utilized for the paper cover, prior to consumption or dispensing,

Fig. 3 is a top perspective view showing the top of the can after the paper cover has been removed,

Fig. 4 shows the top of the can inverted in perspective, indicating how the pouring spout may be employed,

Fig. 5 is a transverse sectional view upon the top of the can upon the line 5—5 of Fig. 1,

Fig. 6 is a fragmentary transverse sectional view upon the line 6—6 of Fig. 5,

Fig. 7 is a transverse sectional view upon the line 7—7 of Fig. 1 and showing the position of the tearing string upon an enlarged scale, as compared to Fig. 1,

Fig. 8 is a diagrammatic view illustrating the various stages in the packaging of whole milk.

Referring to Figs. 1 to 4, the can A has cylinder side wall or walls 10 and the top and bottom walls 11, which are joined together by the horizontally outstanding beads 12 and 13, instead of the usual vertical beads.

Referring to Figs. 5 and 7, it will be noted that the side walls 10 are provided with the beads 13, upon which is rolled inwardly the edge portion 14 of the metal cover 11. At the same time as the metal edge 14 is rolled into position the edges 16 of the paper cover 15 should also be rolled into position. This rolling operation takes place during the final sealing and after the milk has been inserted in the can and suitably processed.

The string 17 is preferably positioned between the rolled over portions 14 and 16 and it may be attached to the combined flat elements 11 and 15 before application to the top of the can in the operation as shown in Fig. 8.

The string 17 has a projecting end 18, as shown best in Figs. 1 and 2 and it acts as a tearing strip, enabling the paper top, as best shown in Fig. 2, to be removed from the top of the can, prior to consumption of the milk. At the same time as the edges of the metal cover 11 and paper cover 15 are rolled in position the extension 19 of the pouring spout B is also rolled into position inside of the metal edge portion 14 and outside of the bead 13, as best shown at the left of Fig. 5.

The pouring spout B has the side walls 20 of approximately triangular shape with the curved edges 21, the top wall 22 of gore shape having the finger engaging projection 23 and the side flanges 24. The backs of the walls are provided with the side flanges 25. The flanges 24 and 25 assist in sealing action. The entire spout B may be made of a relatively heavy waterproof paper.

The spacing or opening 26 between the inside edges of the walls 20 and the flanges 25 is normally pressed against the wall, as shown best in Fig. 5. The spout device B has a shoulder portion 27 which acts upon an edge 28 of the opening 29 in the can, said opening being of triangular shape. The edges of the opening may be rolled inwardly to form a smooth edge to contact with the walls 20.

Between the front edges of the walls 20 is the triangular opening 30 through which the milk may be poured when the spout B is moved to a position 90° away from closed position shown in Figs. 2, 3, 5 and 6. It is apparent that the paper cover 15 may be readily removed, as indicated in Fig. 2, and that the pouring spout B may be readily manipulated to permit emptying or pouring of the milk, as indicated in Fig. 4, or covering and keeping of the remainder of the milk which has not been consumed.

The can as illustrated in Figs. 1 to 7 is of inexpensive construction, of minimum space consumption and may be most readily handled by the housewife, milkman or retail merchant.

The process of packaging the milk is diagrammatically illustrated in Fig. 8 and the moving belt 50 is carried by the pulleys 50a and it carries the cans A through a series of chambers, 51 in which vacuum is applied, 52 in which carbon dioxide is applied, 53 in which the cans A are filled with milk, 54 in which vacuum is again applied to remove the air from the milk, 55 in which carbon dioxide is again applied to fill the can with a slight super-atmospheric pressure and 56 in which the double cover 11 and 15 is applied and rolled into position by the tool diagrammatically indicated at 57.

The doors 58 provided with the hinges 59 indicate that the milk is passed between the chambers without permitting communication between the various compartments 51 to 56. The doors may consist of revolving doors or of other suitable constructions.

By the processes indicated in Fig. 8 the milk is finally canned under a slight super-atmospheric carbon dioxide pressure varying from ½ to 5 or 10 lbs., insufficient to cause bubbling or fizzing when the milk is poured and insufficient to give any taste thereto. At the same time the milk will be given a pH of about 5 to 7 or preferably 6 to 7 which will prevent development of bacteria and eliminate catalytic action of the metal container.

It is thus apparent that the applicant has provided an inexpensive and efficient method of packaging and distributing milk of great value.

Many other changes could be effected in the particular features of process disclosed, and in methods of operation set forth, and in specific details thereof, without substantially departing from the invention intended to be defined in the claims, the specific description herein merely serving to illustrate certain elements by which, in one embodiment, the spirit of the invention may be effectuated.

What is claimed is:

1. A milk package comprising a can receiving milk having upper and lower covers with outwardly extending beads, the upper cover being provided with a paper enclosure and a pouring spout, said upper cover being provided with a

wedge-like recess pointing toward the center of the cover, with its widest portion closely adjacent the outside of the can and said spout taking the form of a wedge, with its side walls closely fitting the sides of said opening and with a pouring opening adjacent the upper outside corner of the wedge.

2. A milk package comprising a can receiving milk having upper and lower covers with outwardly extending beads, the upper cover being provided with a paper enclosure and a pouring spout, said paper enclosure and pouring spout being held in position by said bead.

3. A milk package comprising a can receiving milk having upper and lower covers with outwardly extending beads, the upper cover being provided with a paper enclosure and a pouring spout, said paper enclosure and pouring spout being held in position by said bead, said pouring spout being formed of a wedge of paper and said upper cover being provided with a triangular opening to receive said wedge.

4. A milk package comprising a can receiving milk having upper and lower covers with outwardly extending beads, the upper cover being provided with a paper enclosure and a pouring spout, said paper enclosure and pouring spout being held in position by said bead, said spout being provided with a paper extension held in said bead serving as a pivot mount for said spout.

5. A milk package comprising a can receiving milk having upper and lower covers with outwardly extending beads, the upper cover being provided with a paper enclosure and a pouring spout, said paper enclosure and pouring spout being held in position by said bead, and a tear string held in position below said paper enclosure and above said upper cover inside of said bead.

6. A cover unit for application to cylindrical milk cans having upper beads comprising a circular metal cover disk, a paper disk attached thereto having a peripheral portion to cover said upper beads, and a tear string positioned between the outer portions of said disks to be inserted between said disks at the point of maximum diameter of said upper beads.

7. A cover unit for application to cylindrical milk cans having upper beads comprising a circular metal cover disk, a paper disk attached thereto, and a tear string positioned between the outer portions of said disks, the outer edges of said disks being adapted to be rolled onto said beads.

8. A milk package comprising a can receiving milk having upper and lower covers with outwardly extending beads and a central cylindrical body connecting said covers, the upper cover being provided with a wedge-shaped recess and a wedge-shaped spout, said spout being rotatable in said recess and sealing said recess when in closed position and when in open position, said spout serving as a conduit when in open position.

9. A milk package comprising a can receiving milk having upper and lower covers with outwardly extending beads and a central cylindrical body connecting said covers, the upper cover being provided with a wedge-shaped recess and a wedge-shaped spout, said spout being rotatable in said recess and sealing said recess when in closed position and when in open position, said spout serving as a conduit when in open position, said recess having its widest portion closely adjacent the outer bead of the upper cover and having its converging side edges pointing toward the center of the upper cover and said spout being pivotally mounted at the portion of the recess adjacent said bead.

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