

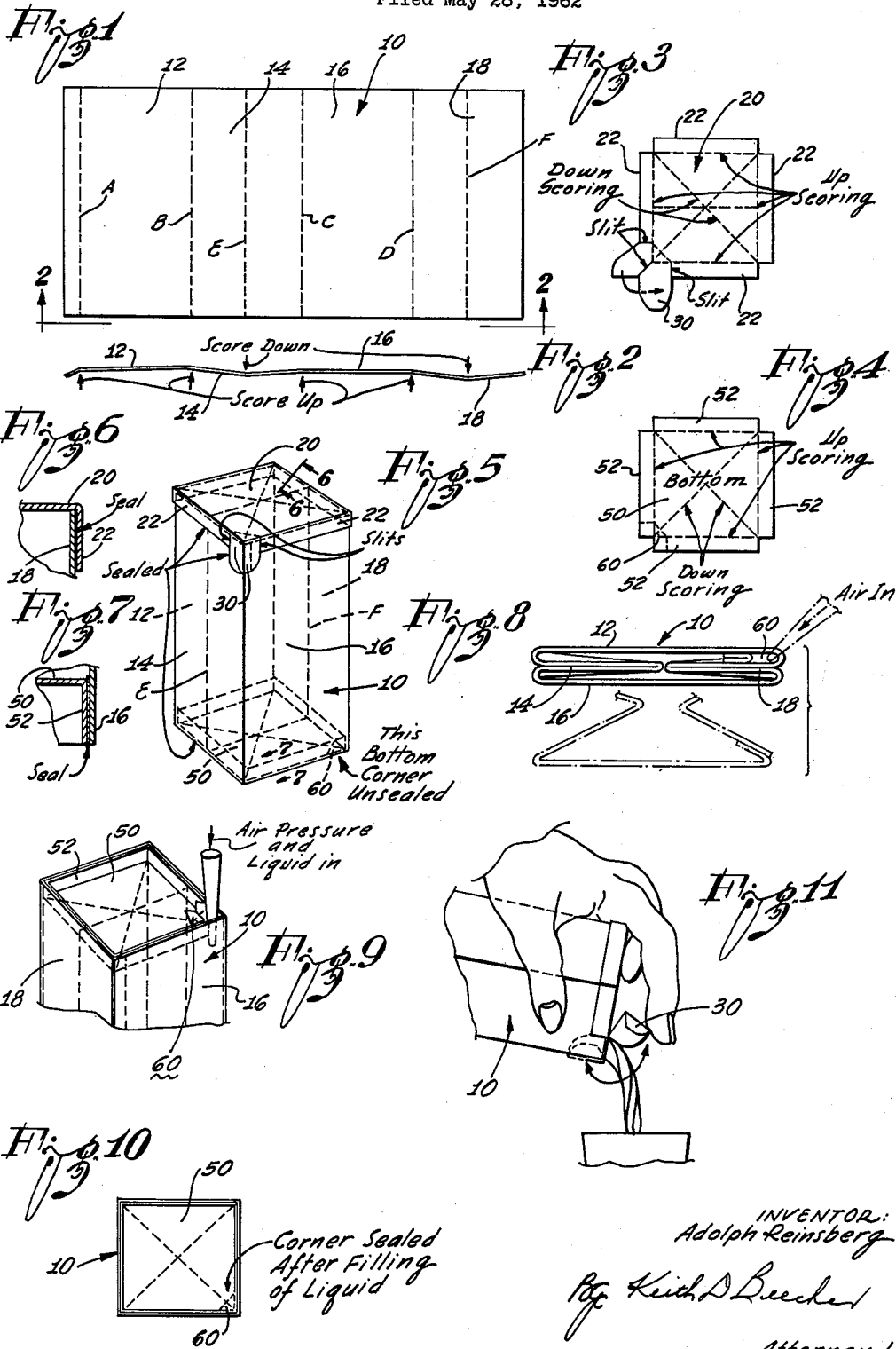
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RIGID PAPER CONTAINER

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RIGID PAPER CONTAINER

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The present invention relates to rigid paper cartons or containers of the general type presently used by the dairy industry for packaging milk. However, the improved paper carton of the invention, as will become evident as the description proceeds, is suitable for packaging a wide variety of materials, either liquid or granular, which may be poured from a pouring aperture formed at the top corner of the carton.

The present invention is particularly concerned with the rigid-type of carton, or container, which is preferably formed of stiff paper, coated with polyethylene to make it water proof; the container being used for the packaging of fluids, such as milk.

Rigid paper cartons for liquids, especially for the packaging and dispensing of milk, are in widespread use and demand at the present time. It has been the practice in the past to provide a wax coating for these cartons to make them leak proof. However, recently the wax coatings are being replaced to a large extent by polyethylene coatings which do not have the tendency to flake or leak, as was the tendency of the wax coated cartons. Although the present invention is not limited to the polyethylene type of coated carton, the application of the concepts of the invention to that type of carton is presently preferred.

There are, in general, three types of rigid paper cartons in present-day widespread use by the dairy industry. However, each of these prior art types is subject to certain inherent limitations and disadvantages which the rigid paper container, or carton, of the present invention seeks to overcome.

Probably one of the most troublesome problems surrounding the use of rigid paper cartons by the dairy industry is that of the shipment of the ready made empty cartons in some instances, or of the unformed cartons in other instances, to the dairies to be filled with liquid milk, or to be formed and filled with milk.

The aforementioned ready made type of prior art rigid paper carton is shipped to the dairy in its fully set-up three-dimensional form, so that all that is required at the dairy is to fill the cartons with milk. However, the use of such a carton involves excessively high requirements in shipping space, and corresponding high shipping costs, for the shipment of the empty cartons from the manufacturer to the dairies. Also, because of the lack of warehousing facilities at most dairies, the tremendous space requirements of the empty cartons of this particular prior art type requires that they be shipped to the dairies on a daily and complicated delivery schedule. It is apparent that the dairies cannot economically warehouse such set-up three-dimensional empty cartons on the premises until and as they are needed.

In an attempt to overcome the difficulties mentioned in the preceding paragraph, the aforementioned unformed type of carton has been devised in the prior art. This latter type of carton may be shipped flat, in a blank or two-dimensional form. This, of course, solves to a large extent the problem of excessive requirements and costs in shipping and warehousing space. However the use of this latter type of prior art carton has created its own problems. One of these problems is that the usual prior art carton of this latter type requires complicated machinery at the dairies to set up the cartons into their three-dimension form in which they are in condition to be filled with milk.

Therefore, to set up the latter type of prior art cartons,

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the dairy must rent or buy appropriate machinery, which in itself is relatively complicated and expensive, and which involves the requirement of different machines for the different sizes of carton. These machines, as noted, are complicated and expensive, and they additionally require skilled persons to operate and maintain them. Thus, instead of confining its operation to the processing and sale of milk, the dairy is compelled in effect also to enter the paper carton manufacturing business.

The above factors place a burden on the dairy industry, and this burden adds to the strain of meeting rigid time schedules for the delivery of their milk, especially in the event that any of the machines happen to break down. It is apparent, therefore, that the entire operation required to set up the second type of prior art carton under consideration represents a troublesome, unwanted and relatively high capital expenditure on the part of the dairies.

An important object of the present invention is to provide an improved rigid paper type of container which is completely fabricated prior to shipment to the dairies, and yet which can be shipped in a flattened condition so as to reduce shipping charges to a minimum and to permit the containers to be warehoused in a reasonable space until needed.

Another object is to provide such an improved rigid paper container or carton which is capable of being set up and filled at the dairy by means of a simple operation and without the requirement for skilled personnel or complicated machinery.

Yet another object is to provide such an improved rigid paper container which has a flat top formed flush with the upper edges of the sides of the container, rather than being recessed as is the case in some prior art containers of this general type.

The flush construction of the top of the container of the embodiment of the invention to be described obviates any tendency for dirt or spilled fluid to collect on the top surface and become contaminated. The flat top of the carton of this embodiment of the present invention is also advantageous in that it permits the cartons to be conveniently stacked on top of one another, thereby to conserve refrigerator space in the dairy and distribution centers when the carton is filled, stored and marketed.

Another object of the invention is to provide such an improved carton which requires less paper than the prior art cartons of the same general size, which is simple to construct, and which can be manufactured at a relatively low cost to be sold at a relatively low price.

A feature of the invention is the provision of such an improved rigid paper container which has an improved pouring aperture formed in the corner of its top member, the aperture being surrounded by a cover member which is shaped to limit the flow of the liquid therethrough so as to prevent surges and spilling of the liquid, especially when the container is full.

The above-described cover is configured to overlap the pouring edge of the aperture so as to protect the edge from fingers or other unsanitary handling. In addition, the cover is capable of being pressed shut when the carton is not in use to keep odors or the like from the milk. Moreover, the cover is formed to be flush with the top of the carton so that no recessed area is presented thereby for the collection of dirt and fluid.

Another feature of the invention is the provision of a closable aperture in the bottom of the carton which permits the pouring aperture at the top to be sealed shut at the carton manufacturing facility. This bottom aperture enables the carton to be filled upside down, and when the carton is so filled, the bottom aperture is closed and sealed by means of a simple operation, as will be described.

Certain features of the rigid paper carton to be described have been previously described in my patent application Serial No. 555,011, filed December 23, 1955, now abandoned.

The improved rigid paper container of the present invention is preferably formed of polyethylene coated rigid paper, as mentioned above. The carton of the illustrated embodiment of the invention, as will be described, is formed of three pieces. These pieces include a top member, a bottom member, and a barrel member which is

formed into the sides of the container. As mentioned above, the improved rigid paper container of the present invention is completely formed at the factory and prior to shipment to the various dairies. The container of the invention is constructed to be appropriately scored so that it may be pressed flat into an accordion-pleated shape for shipping purposes.

As noted, the top pouring aperture of the container of the embodiment of the invention to be described is sealed shut when the carton is shipped. However, the bottom filling aperture is open, so that the flattened container may be quickly set up into its three-dimensional form, and in condition for filling. This three-dimensional set-up is achieved, for example, by introducing a "shot" of air pressure through the open bottom filling aperture. The air pressure may be, for example, of the order of 25 pounds per square inch, such pressures being readily available at most dairies. The air pressure line, of course, should contain filters or other means to assure that clean and sanitary air only will enter the carton.

The introduction of air pressure into the carton of the invention causes it immediately to assume its three-dimensional set up permanent shape. While a carton is still upside down, the liquid is introduced into the carton through the aperture in the bottom until the carton is full. The aperture is then sealed closed by a simple application of heat and pressing together, for example, when the carton is formed of polyethylene coated paper.

The features of the invention which are believed to be new are set forth in the claims. The invention itself, however, may best be understood by a consideration of the following description, when taken in conjunction with the accompanying drawing, in which:

FIGURE 1 is a developed view, on a reduced scale, of the barrel member which forms the side walls of the container of the embodiment to be described;

FIGURE 2 is an end view of the barrel member of FIGURE 1, taken along the line 2—2 of FIGURE 1;

FIGURE 3 is a top plan view of a top member for the container of the embodiment to be described;

FIGURE 4 is a bottom view of a bottom member for the container of the embodiment to be described;

FIGURE 5 is a perspective view, on a reduced scale, of the container of the embodiment to be described, illustrated in its set-up three-dimensional form;

FIGURE 6 is a fragmentary sectional view of the container, taken along the line 6—6 of FIGURE 5, and illustrating the manner in which the top member is sealed to the upper edges of the side walls;

FIGURE 7 is a fragmentary sectional view of the container, taken along the line 7—7 of FIGURE 5, and illustrating the manner in which the bottom member is sealed to the lower edges of the side walls;

FIGURE 8 is an end view of the container of FIGURE 5, when the container is in its flattened two-dimensional configuration, with its side walls in a folded accordion-pleated condition;

FIGURE 9 is a fragmentary perspective view of the container inverted with its bottom side up, illustrating the manner in which the container is formed into its three-dimensional set-up configuration by the introduction of air pressure, and how liquid is thereafter introduced into the container;

FIGURE 10 is a bottom view of the bottom member of the container, illustrating the manner in which a corner

aperture is sealed after the container has been filled with fluid, such as milk, or other material; and

FIGURE 11 illustrates the manner in which the pouring spout at the top of the container may be opened to permit the fluid in the container to be poured out.

As illustrated in FIGURE 1, the container of the embodiment to be described includes a barrel member 10. The barrel member may, for example, be formed of rigid paper. The paper is preferably coated with a suitable plastic, such as polyethylene, to render the container leak-proof and water-tight.

The barrel member 10 of FIGURE 1 has a rectangular configuration, as shown, and it is scored along the dotted lines A, B, C and D to permit the barrel member to be folded so that it can form four side walls for the container. These side walls are designated 12, 14, 16 and 18.

When the barrel member 10 is formed into the configuration of FIGURE 5, it has a solid rectangular shape. The upper edges of the side walls lie substantially in a first common plane, and the lower edges of the side walls lie in a second common plane spaced from and parallel to the first plane.

The side walls 14 and 18 are scored, as represented by the dotted lines E and F so as to permit the receptacle to be flattened, as will be described, with the side walls 14 and 18 bent inwardly along the scorelines E and F.

The container of the present invention, in the embodiment illustrated herein, includes a top member 20 (FIGURE 3) which, like the barrel member 10, is formed of a stiff paper which may be treated with a plastic coating, such as polyethylene. The top member 20 has a square configuration, and it includes integral flaps 22.

The top member 20 is attached to the barrel member 10 at the upper edges of the side walls in the manner shown in FIGURES 5 and 6. The top member 20 is positioned on the upper edges of the side walls with the flaps 22 overlying the edges, as shown in FIGURES 5 and 6. The top member 20 may be sealed to the barrel member 10, when the plastic-coated paper is used by the simple application of heat and a slight pressing action.

It will be appreciated that the top member 20 is sealed to the barrel member 10 in a position to lie in the common plane of the top edges of the side walls and flush with these edges. The flat, flush configuration of the top member permits other like containers to be stacked over the container of the invention, and also precludes any possibility of fluid or dirt gathering at the top of the container with the resulting contaminating action.

A pouring spout or aperture is provided at one corner of the top member 20, and this aperture is covered by a cover 30. The cover 30 is formed integral with the top member 20, and it includes a pair of flaps which extend outwardly, as best shown in FIGURE 3. When the top member 20 is mounted on the barrel member 10, and sealed thereto as shown in FIGURE 5, the cover 30 is folded down over the corresponding corner of the side walls 14 and 16, and its two flaps are folded over one another to form an enclosing structure. This structure is best shown, for example, in FIGURE 5.

In order that the cover 30 of the pouring spout will not be too tightly bonded when it is sealed shut, and in order that the cover may be opened to the position shown in FIGURE 11 without destructive tearing, the ink forming the advertising message on the carton can be continued up to extend under part of the area covered by the cover 30.

The cover member 30 may be sealed to the closed condition of FIGURE 5 by the application of heat, and a slight pressure, when the material of the receptacle is plastic-coated, as suggested above.

It will be appreciated that slits are formed in the cover member 30, as indicated in FIGURES 3 and 5, to permit the cover member to assume its illustrated shape, and also to permit the cover member to be unsealed and

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hinged up from its closed position of FIGURE 5 to its open position of FIGURE 11, so as to permit pouring.

When the cover member 30 is moved down to its closed position of FIGURE 5, it completely covers and protects the pouring edge, so that fingers or other contaminating agents cannot normally come in contact with that edge. It will also be appreciated that when the cover member 30 is in the closed condition shown in FIGURE 5, its top surface is flush with the top surface of the top member 20, so that the cover member, like the top member, does not provide any recessed surface for the accumulation of liquid or dirt.

The assembly of the invention, as illustrated in FIGURES 4 and 9, includes a bottom member 50. This bottom member may also be formed of plastic-coated paper, and it has a square configuration, as shown in FIGURE 4. The bottom member includes a plurality of flaps 52. These flaps are folded up from the plane of the bottom 50 and are sealed to the lower edges of the side walls, as shown in FIGURES 7 and 9. The bottom member 50 is sealed to the barrel member in position such that it is recessed up from the common plane of the lower edges of the side walls, as best shown in FIGURE 9.

An aperture 60 is formed in the bottom member 50 at one corner. This latter aperture enables the containers of the invention to be set up into their three-dimensional form at the dairies with ease and facility by the introduction of a burst of pressurized air, and it also permits the liquid to be introduced into the container, as mentioned above.

The barrel member 10 is scored, as indicated by the dotted lines E and F in FIGURE 1; and the top and bottom members are also scored as indicated by the dotted lines in FIGURES 3, 4, 5 and 9, so that the container may be pressed to a flattened configuration, as shown in FIGURE 8.

It should be stressed that prior to the above-mentioned flattening of the container, the container is fully formed and the top member and bottom member are sealed thereto, and the cover 30 is sealed down over the pouring aperture at the top of the container, all these operations being carried out at the manufacturing facility, and prior to shipment to the dairies.

Then, the container is flattened to the configuration of FIGURE 8 to facilitate shipment, this flattening being achieved by causing the various portions of the container to fold about the corresponding score lines. The folded container of FIGURE 8 has the flap 60 folded to an open condition, so that its corresponding lower aperture is open.

When the container arrives at the dairy, it is placed on a suitable conveyor in inverted manner. Then, and as indicated schematically in FIGURE 9, a blast of air pressure is introduced through the filling aperture 60 in the bottom member 50, and this blast immediately causes the container to assume its set-up three-dimensional shape. Then, the liquid is filled into the container through the same aperture, and the aperture is later sealed closed, as shown in FIGURE 10. This sealed closure is accomplished by the simple application of heat and a slight pressure.

The invention provides, therefore, an improved container, or carton, of the rigid paper type. As noted above, the improved container of the present invention is preferably composed of stiff paper coated with a suitable plastic, such as polyethylene. The container of the invention is particularly advantageous, in that it can be completely formed at the manufacturing center, and prior to shipment to the dairies. However, the container of the invention is capable of being shipped flat to the dairies to con-

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serve shipping and warehousing space. When the flattened containers arrive at the dairies, no particular machinery or skilled personnel are required to set the container up to its three-dimensional form. Instead, a simple conveyor and a suitable source of air pressure are all that are required.

The containers of the invention also are advantageous in that they may be filled with milk or other fluid through the same aperture through which they were inflated, and when the containers are in the original inverted position. After filling, the lower apertures may be sealed by a simple manual or automatic operation, and the containers are then filled and ready for delivery.

The actual configuration of the improved container of the invention is advantageous in that the container has a solid rectangular configuration to permit ease of stacking. In addition, the cover and spout configuration are such that there is no tendency for dirt or other contaminants to gather at any portion of the container.

While a particular embodiment of the container of the invention has been shown and described, modifications may be made, and it is intended in the claims to cover all such modifications as fall within the scope of the invention.

What is claimed is:

1. A paper container including: a barrel member for forming side walls having their upper edges lying in substantially a first common plane and having lower edges lying in substantially a second common plane spaced from and parallel to said first common plane; a top member sealed to said barrel member at the upper edges of the side walls to lie in said first common plane flush with said upper edges when the container is set up for use, and said top member having a pouring aperture formed in one corner thereof; a cover for the pouring aperture formed integral with said top member as extensions of the side edges of said top member at said corner of said barrel member, and said cover having a top surface flush with the top surface of said top member, said cover being shaped to be pressed closed down over the upper edges of said barrel member at said corner thereof so as to cover aperture; a bottom member sealed to said barrel member at the lower edges of said side walls and recessed up from said second common plane, said bottom member having an aperture formed at a corner thereof; a flap member on said bottom member extending around the aperture therein and adapted to be sealed to the inner face of the portion of at least one of said side walls extending beyond said bottom member to close the aperture; and two opposing ones of said side walls and said top and bottom member being scored to permit the container to be folded into a flattened condition with said opposing side walls and said top and bottom members having an accordion-pleated configuration.

2. The paper container of claim 1 in which said barrel member and said top and bottom members are formed of rigid paper coated with polyethylene.

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