Feb. 12, 1952 T. H. DANIELS 2,585,538

DRAWOFF TAP FOR LIQUID-CONTAINING CARTONS

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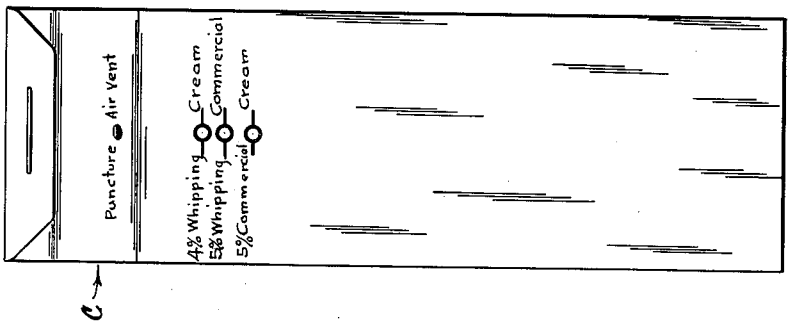


Fig. 5.

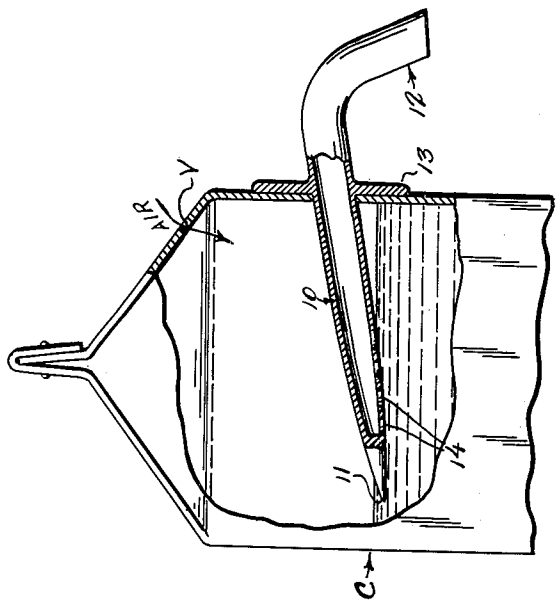


Fig. 2.

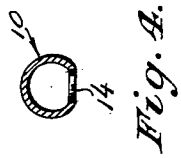


Fig. 4.

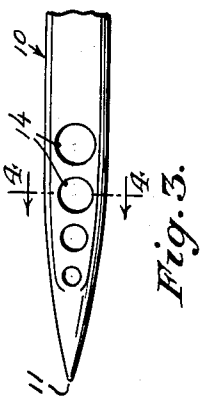


Fig. 3.

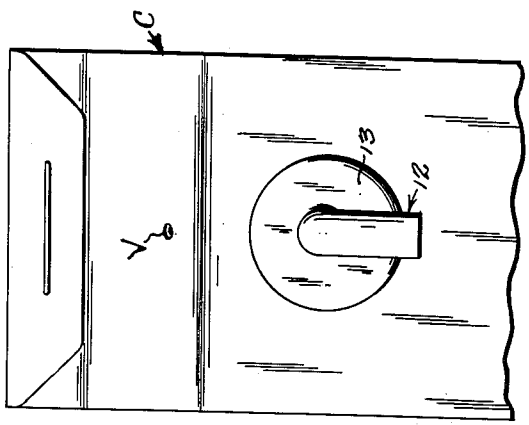


Fig. 1.

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DRAWOFF TAP FOR LIQUID-CONTAINING CARTONS

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7 Claims. (Cl. 222—81)

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This invention relates to a device for tapping liquid-containing cartons for the purpose of withdrawing selectively variable portions of the contained liquid, and finds perhaps its most obvious usage as a mean of separating cream from milk in a carton of whole milk.

The device of the present invention is in the nature of a hollow tap open at both ends and having the leading end sharpened or otherwise formed in a manner which will enable the tap to pierce the wall of the carton, the liquid then flowing from the carton through the tap to a suitable receptacle held below the discharge end of the tap.

Where, heretofore, efforts have been made to insert a tap through the side wall of a milk carton for the purpose of drawing off the cream content, there has been this objection, namely, the level to which the liquid drops within the carton has been even with or perhaps very slightly above the lower limit of the wall opening through which the top extends, and upon the removal of the tap it becomes necessary that the carton be handled with utmost care if additional liquid is not to be spilled through the opening. In such a case, even the slightest pressure upon the sides of the carton will cause the carton to simulate a bellows and pump a certain amount of liquid through the opening, and a certain amount of "bleeding" usually takes place even in the absence of any movement or disturbance of the carton.

The present invention aims to devise a tap which inherently lowers the liquid within the carton to a level appreciably below the point at which the tap pierces the wall, and hence permits the user to move the carton quite freely without liability of thereby raising the level in a degree sufficient to cause the liquid to spill through the opening. Further and more particular objects and advantages will, with the foregoing, appear and be understood in the course of the following description and claims, the invention consisting in the novel construction and in the adaptation of a carton-tapping device, as will be hereinafter described and claimed.

In the accompanying drawing:

Figure 1 is a fragmentary front elevational view of a conventional milk-containing carton and showing a device constructed in accordance with the now-preferred embodiment of the invention applied thereto.

Fig. 2 is a view thereof shown partly in vertical section and partly in side elevation.

Fig. 3 is a fragmentary underside plan view

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of the tap and employing a scale enlarged from that of the preceding views.

Fig. 4 is a transverse vertical sectional view on line 4—4 of Fig. 3; and

Fig. 5 is a front elevational view to a scale reduced from that of Figs. 1 and 2 to illustrate the manner in which a milk carton may be marked to expressly adapt the same to use with the present tap.

The tap of the present invention comprises a tube of an approximate L-shape having one leg 10 of the L tapering for the greater part of its length and terminating in a comparatively sharp point 11, while the other leg 12 of the L is or may be of a uniform diameter throughout and with the end open. The leg 12 is somewhat shorter than the leg 10, and at or about the mid-length of this latter leg there is provided a circumscribing flange 13 presenting a plane frontal face and having this face so disposed in relation to the axis of the related leg as to describe an acute angle between the underside of the leg and the pendant part of the flange. This angle preferably approximates 80°. While the flange is illustrated as being made an integral part of the tubular body, the flange might feasibly be comprised of a separate disc friction-fitted over the leg and relying, say, upon surface shoulders or the like formed on the leg to cock the disc to the proper angularity.

The leg 10 is desirably flattened upon its underside, or which is to say that part of the leg which lies between the flange and the spike tip, and cut through this flattened underside to occupy a position forwardly removed a material distance from the flange are one or more openings 14 giving access to the interior of the tube.

In using my tap, and assuming that it is desired to withdraw a part or all of the top cream contained in a carton C of whole milk, the operator first pierces the top of the carton to produce a vent hole V at a point above the liquid level, and the spike tip of the tap or, in fact, any sharp instrument may be used for this purpose. Having determined the level within the carton to which the liquid contents are to be dropped, the operator applies the point of the tap to a side wall of the carton at a point elevated, say, ¼" to ½" above this level and presses the tap inwardly to cause the same to pierce the wall, having theretofore placed a creamer or other suitable receptacle below the spout-forming leg 12 of the tap. The tap is forced inwardly until the flange 13 is brought against the wall, and the tap is then so placed as to cause the

flange to find a snug fit, which perforce locates the tap in substantially the position in which it is shown in Fig. 2, and which is to say with the leg 10 angling downwardly from the tap-hole. The top liquid within the carton will now enter the openings 14 and flow through the tap into the receiving receptacle, and as the level of the liquid ultimately reaches the level of the tap-hole a siphoning action will thereupon take place to drop the liquid level to the yet lower level defined by the upper limit of the admission openings 14, and as the tap is now withdrawn from the tap-hole this lowered level precludes the remaining liquid within the carton from being spilled through the tap-hole in consequence of casual handling of the carton. Should it be desired to later draw additional liquid from the carton, the described operation may be repeated at a lower level or, in the alternative, the liquid can be poured either through the tap-hole or through the conventional discharge orifice with which liquid-containing cartons of the described character are customarily provided. It is desirable, in order to permit this latter orifice to be used, that the tap-hole or holes be punched in the back-wall of the carton and the carton may then be freely tilted for use of the principal orifice without causing the contents to issue through the tap-hole.

It may be here pointed out that there are two purposes in mind in producing the leg 10 with a flattened underside. One such purpose is to hold the upper limit of the admission openings to the lowest possible level while still permitting the holes to be of large-diameter circular form, and the other is to permit the tap to better penetrate the wall of the carton without liability of tearing the latter. Were the admission openings to be of rectangular form, the sharp corners thereby produced would have a tendency to catch the material of the carton along the margins of the tap-hole as the tapering nose of the tap is forced inwardly through the wall.

Rather than to preliminarily employ the spike tip of my draw-off leg 10 as a vent-producing punch, it will be obvious that the tap could be so formed as to punch a vent hole simultaneously with the insertion of the tap. For this purpose a separate punching tool would or could be carried upon an arm extending upwardly from the flange.

The described draw-off tap and the manner of its usage will, it is believed, be clear from the foregoing. Various departures from the embodiment which I have here elected to illustrate may obviously be resorted to without departing from the spirit of the invention, and no limitations are to be implied by reason of having particularly described such illustrated embodiment. It is my intention that the hereto annexed claims be read with the broadest scope commensurate with the language used.

What I claim is:

1. A siphoning draw-off tap for liquid-containing cartons comprising a tubular body open at both ends and produced to an elbow shape to describe two legs placed in angular relation and arranged one said leg to be inserted through the wall of the carton and the other said leg to be exposed and project downwardly to serve as a discharge spout, said insertable leg being also arranged to project downwardly in use and being characterized in that the same presents a flat wall upon the underside and has the end opening formed in said flat wall, the relationship of parts being such that both of the two end openings of the applied tap lie well below the lower limit of the tap hole which is formed in the carton and with the end opening of the exposed leg occupying a level at least as low as that occupied by the inserted leg's opening.

2. A siphoning draw-off tap for liquid-containing cartons comprising a tubular body open at both ends and produced to an elbow shape to describe two legs placed in angular relation and arranged one said leg to be inserted through the wall of the carton and the other said leg to be exposed and project downwardly to serve as a discharge spout, said insertable leg being terminally sharpened, presenting a flat wall upon the underside, and having its end opening formed in said flat wall, the relationship of parts being such that both of the two end openings of the applied tap lie well below the lower limit of the tap hole which is formed in the carton and with the end opening of the exposed leg occupying a level at least as low as that occupied by the inserted leg's opening.

3. A siphoning draw-off tap for liquid-containing cartons comprising a tubular body open at both ends and produced to an elbow shape to describe two legs placed in angular relation and arranged one said leg to be inserted through the wall of the carton and the other said leg to be exposed and project downwardly to serve as a discharge spout, the insertable leg tapering toward the free end, being terminally sharpened to penetrate the wall of the carton, and having its end opening placed upon the underside in relatively close proximity to the sharpened terminus, said insertable leg being also arranged and adapted to project downwardly in use, the relationship of parts being such that both of the two end openings of the applied tap lie well below the lower limit of the tap hole which is formed in the carton and with the end opening of the exposed leg occupying a level at least as low as that occupied by the inserted leg's opening.

4. A siphoning draw-off tap for liquid-containing cartons comprising a tubular body open at both ends and produced to an elbow shape to describe two legs placed in angular relation and arranged one said leg to be inserted through the wall of the carton and the other said leg to be exposed and project downwardly to serve as a discharge spout, and a flange circumscribing said insertable leg adjacent its juncture with the spout and cocked to such an angle relative to the axial line of the leg as to cause the inserted leg to angle downwardly within the carton when the flange is brought snugly to bear against the wall of the carton, the relationship of parts being such that both of the two end openings of the applied tap lie well below the lower limit of the tap hole which is formed in the carton and with the end opening of the exposed leg occupying a level at least as low as that occupied by the inserted leg's opening.

5. The structure of claim 4 in which the end opening of the insertable leg is placed upon the underside and occupies a position adjacent the free extremity of the leg.

6. A siphoning draw-off tap for liquid-containing cartons comprising a tubular body open at both ends and produced to an elbow shape to describe two legs placed in angular relation and arranged one said leg to be inserted through the wall of the carton and the other said leg

to be exposed and project downwardly to serve as a discharge spout, and means carried by the insertable leg and arranged, when brought to bear against the external face of the wall through which said leg is inserted, to cause the inserted leg to angle downwardly within the carton, the relationship of parts being such that both of the two end openings of the applied tap lie well below the lower limit of the tap hole which is formed in the carton and with the end opening of the exposed leg occupying a level at least as low as that occupied by the inserted leg's opening.

7. A draw-off tap for liquid-containing cartons comprising a hollow body of general elbow shape arranged to be so applied through a side wall of the carton as to have one leg of said elbow project into the carton and the other leg lie to the outside thereof and with each said leg projecting downwardly from the tap hole which is formed in the carton, each of said legs having a respective opening so located as to lie, in each instance well below the lowermost limit of said tap hole and serving as respects the inner leg's opening to admit liquid to the hollow interior of the body and as respects the outer leg's opening to discharge said admitted liquid from the hollow interior of the body, and a flange integrated with the body to occupy a position at or about the mid-length of the latter and arranged

in the use of the tap to bear snugly against the outside face of the wall of a carton through which said insertable leg is inserted, the flange being so cocked relative to the axial line of said insertable leg that the act of bringing the same snugly against said carton wall causes both of said legs to be localized in their described operating positions, and namely such a localizing that both of the legs point downwardly and positions the opening of each on a horizontal level well below the lower limit of the tap hole.

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