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SIPHON

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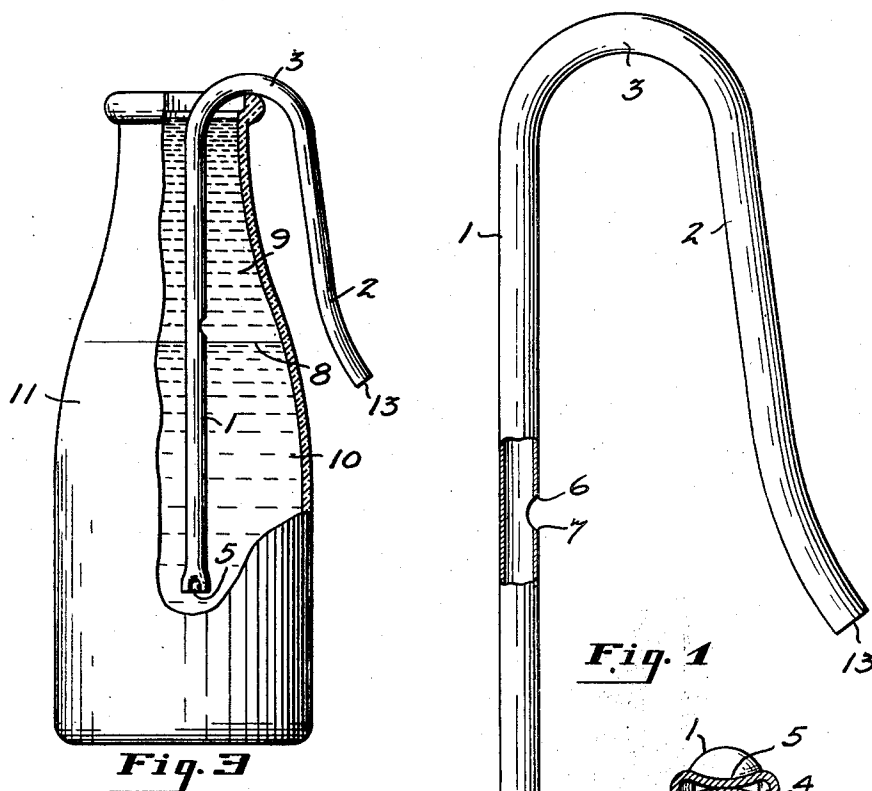


Fig. 1



Fig. 2

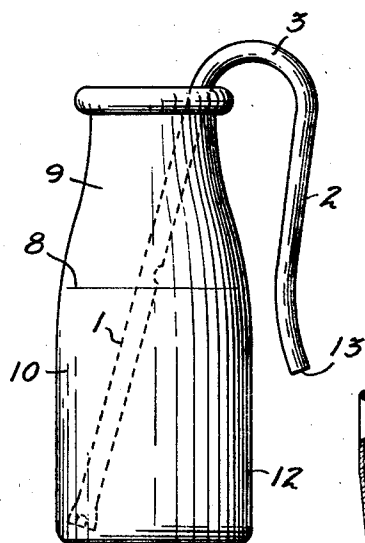


Fig. 4

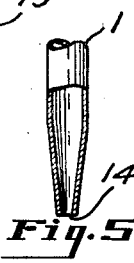


Fig. 5

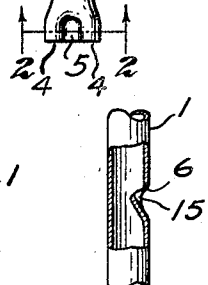


Fig. 6

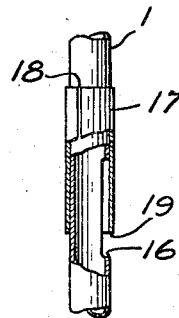


Fig. 7

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SIPHON

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This invention concerns siphons and more particularly a self starting siphon that is of simple and inseparable construction.

In the past various types of self starting siphons for transferring fluids from one vessel to another have been produced. Some of these siphons comprise a closed bottom end. Others have fluid retaining pockets in their construction that cannot be freely drained nor completely cleaned out and in which, particularly when the siphon is used for the separation of fermentable or perishable fluids such as cream from milk, dried cream accumulates and sours and when the siphon is next used this sour fluid starts the souring of fresh supplies of cream and milk in which the siphon is used. Other siphons consist of a plurality of parts, some of which become lost in use or on being improperly assembled cause the irregular operation of the siphon; require different siphons when used in a quart milk bottle from that used in a pint milk bottle; and have other objectionable properties and limitations that the present siphon is designed to overcome.

An object of the present invention is to provide a sanitary siphon of preferably inseparable construction for general use in separating fluids.

Another object is to provide a siphon with drain surfaces that are substantially all more or less parallel with the longitudinal direction of the particular part of the siphon where such surfaces occur to provide a maximum tendency to drain freely and over which a stream of cleansing solution may have a straight flow so that the siphon may be completely and thoroughly drained and cleaned out and that has no fluid retaining pockets in which a fermentable fluid may become entrapped and become sour.

Another object is to provide a siphon of such construction that it has no parts that can be easily separated or that may become lost in use or that may fail to operate properly from faulty assembly.

Another object is to provide a cream separating siphon that may be used interchangeably in either quart or pint milk bottles.

A further object is to provide a siphon that is of simple and inexpensive construction, that is automatic and dependable in operation and that is relatively simple of manufacture.

Another object is to provide a siphon that is adjustable for different levels of fluid separation.

With the above and other objects in view, which will be readily apparent from the following detailed description, the present invention consists in a simple construction which will be readily

understood by those skilled in the art to which the invention appertains.

In the accompanying drawing which illustrates suitable embodiments of the present invention,

Fig. 1 is an elevational view, partly in section, of the preferred form of the siphon as adapted for use in milk bottles;

Fig. 2 is a sectional view taken along the line 2—2 of Fig. 1;

Fig. 3 is an elevational view of the siphon shown in Fig. 1 on a small scale and as used in a quart milk bottle;

Fig. 4 is an elevational view of the siphon shown in Fig. 1 on a small scale and as used in a pint milk bottle;

Fig. 5 is a fragmentary elevational view, partly in section, of a modified form of restricted orifice in the lower end of the intake leg of the siphon shown in Fig. 1;

Fig. 6 is a fragmentary elevational view, partly in section, of a modified form of intake orifice in the intake leg of the siphon shown in Fig. 1; and

Fig. 7 is a fragmentary elevational view, partly in section, of a modified form of intake orifice in the intake leg of the siphon with a sliding collar for adjusting the level of the liquid to be siphoned off.

The preferred form of siphon, that is shown in Figs. 1-4 inclusive of the accompanying drawing as adapted for use with milk bottles, comprises an intake leg 1 and a discharge leg 2 that are joined together to provide a continuous internal channel by the gooseneck 3.

Restricted orifices 4 are positioned in the lower end of the intake leg 1 and are disposed on either side of the opposed compressed areas 5. The internal side walls that connect the restricted orifices 4 with the interior of the intake leg extend from the restricted orifices into the interior of the intake leg in directions that are substantially longitudinal of the inner surface of the intake leg, thereby providing streamlined drain surfaces that extend inwardly from the restricted orifices into the interior of the intake leg and that provide for the free and unimpeded draining of the fluid in which the siphon is used from such internal surfaces and the complete absence of fluid retaining pockets and permit the straight flow of cleaning fluid thru the lower end of the intake leg.

An intake orifice is spaced upwardly from the restricted orifices in the intake leg and has an upper lip 6 that is level with the position at which it is desired that the siphoning action cease.

Both the upper lip 6 and the lower lip 7 of the intake orifice are preferably positioned above the interface 8 between the cream 9 and the milk 10 that are contained in the quart bottle 11 and in the pint bottle 12, in order that undiluted cream will flow into the intake leg thru the intake orifice and access will not be had to the milk 10.

In operation the intake leg of the siphon is plunged into the fluid from which the upper layer is to be siphoned and the siphon is brought to rest in any suitable manner with the upper lip 6 of the intake orifice at the level where it is desired that the siphoning action be broken. As used with the quart bottle the preferred form of siphon is brought to rest by the under side of the gooseneck that rests on the top rim of the bottle. As used with the pint bottle the same siphon is brought to rest with the lower end of the intake leg at rest against the inner surface of the bottom of the bottle and the upper end of the intake leg at rest against the radially inner side of the top rim of the bottle. When used with other forms of container the siphon may be supported in any suitable manner.

The siphoning action begins substantially immediately after the siphon comes to rest. The cream enters the intake leg between the lips 6 and 7 of the intake orifice, passes up the intake leg, thru the gooseneck and down the discharge leg of the siphon from which it flows thru the discharge orifice 13. The siphoning action continues until air instead of liquid enters the interior of the intake leg around the upper lip 6 of the intake orifice.

On the completion of the siphon action the siphon is withdrawn from the fluid remaining in the vessel and allowed to drain. All of the surfaces of the siphon are positioned to permit the free draining of the fluid in which the siphon has been used from the interior thereof.

The cleaning of the siphon is accomplished simply, quickly and easily in any suitable manner such as by directing a stream of water or other cleaning fluid, preferably under pressure as from the conventional kitchen tap, into the discharge orifice 13 in the discharge leg of the siphon. The water has a substantially clean sweep thru the siphon and passes out of the siphon thru the intake orifice and the restricted orifices under ample pressure and straight direction flow to thoroughly clean out the interior of the siphon.

The absence of fluid retaining pockets, and the stream lining of the internal surfaces leading from the restricted orifices into the interior of the intake leg of the siphon provide surfaces that are continuous with the inner walls of the intake leg of the siphon, that drain clean and completely and that provide a straight drainage flow for both the fluid in which the siphon is used and for the cleaning solvent that is used for the removal of such fluid.

The siphon has been found to operate successfully with cream and milk combinations repeatedly without tainting the new supplies of the fluids in which it was successively used.

The theory of operation of the siphon, as applied to the separation of surface cream from milk, is that on plunging the intake leg of the siphon into the fluid, limited quantities of cream then milk enter thru the restricted orifices 4 into the interior of the intake leg of the siphon and progressively displace upwardly the air column in the interior of the intake leg. On the entrance of the intake orifice into the surface fluid, cream enters the intake orifice and seals over the inte-

rior of the intake leg above the upwardly moving column of air which exerts a buoyant effect on the cream so positioned and carries a broken column of cream over the gooseneck at a sufficient velocity to start the siphoning action.

During the cream flow substantially all fluid flowing from the discharge orifice 13 in the discharge leg comes from above the level of the lower lip 7 of the intake orifice in the intake leg since less energy is required to draw fluid into the intake leg from above the level of the lower lip 7 of the intake leg than is required to lift fluid into the intake leg from the level of the restricted orifices 4 at the lower end of the intake leg.

The modified form of restricted orifice 14 that is shown in Fig. 5 of the accompanying drawing is substantially frustro-conical in shape, contains no fluid retaining pockets and permits a clean drain from this end of the siphon intake leg and a substantially straight flow of cleaning fluid therethru.

The modified form of intake orifice shown in Fig. 6 of the accompanying drawing comprises an inwardly pressed lower lip 15 that decreases the resistance to flow of cream into the intake leg over the lower lip 15 of the intake orifice by presenting a streamlined or inclined surface over which the cream flows with less resistance than is presented by the abrupt angular line of flow necessary around the upper lip 6 and the lower lip 7 of the intake orifice in the preferred form of siphon. The inwardly pressed lower lip 15 also increases the resistance to flow of fluid upwardly of the interior of the intake leg below the intake orifice without interfering with the passage of air therearound and thereby minimizes any tendency toward dilution of the cream that flows from the discharge orifice 13.

The modified form of elongated intake orifice 16 that is shown in Fig. 7 of the accompanying drawing extends longitudinally of the intake leg and is adapted for being progressively closed by the collar 17 that is mounted externally of the intake leg of the siphon.

The collar 17 is formed of a suitable material such as spring metal and is preferably separated longitudinally as by the slit 18 that extends longitudinally of the collar to provide a close spring fit between the collar and the intake leg of the siphon. The spring metal imparts sufficient resilience to the collar so that it makes a tight binding contact with the intake leg of the siphon and yet is sufficiently loose so that it may be moved longitudinally of the intake leg for purposes of adjusting the level of the fluid withdrawn. The lower edge 19 of the collar forms an adjustable upper lip for the intake orifice 16 and the collar may be moved up or down to alter the level at which the siphon action will be broken.

This modification adapts the siphon for special uses such as adjustment for the cream level in conformity with the legal requirements in the different States for different cream content in milk and for other uses where such adjustment is found to be desirable.

The preferred form of siphon embodies but a single piece with no parts that may become separated or be lost in use. The siphon with the sliding sleeve is substantially inseparable in any ordinary use and both types of siphon operate automatically and efficiently and require no care nor attention not given other devices used in similar materials.

The contour and the design of the siphon dis-

closed herein may be altered to fit it for the use to which it is to be put. As so altered the siphon may be used in a variety of ways such as to separate good oil from metal residues in the reclamation of oils: as an emergency siphon to withdraw gasoline from a tank; to siphon off exhausted water from fish aquariums in the home; to siphon off clear good wine from the dregs in wine barrels; or to separate other liquors such as whiskey, beer and the like.

It is to be understood that the particular embodiments of the invention shown and described are shown for purposes of illustration and explanation and that various modifications in the construction and uses shown and described may be made without departing from the invention as defined in the appended claims.

What I claim is:

1. An air trap inciting siphon, comprising a tubular intake leg having a restricted orifice end spaced from an intake orifice opening thru a side of said intake leg, a siphoning action breaking level determining upper lip forming a part of the periphery of said intake orifice and positioned at the level the siphoning action of said siphon

is broken, an intake orifice lower lip forming a part of the periphery of said intake orifice and projecting radially inwardly of said intake leg and assisting in the deflection of air trap air rising in said intake leg substantially away from contact with said upper lip of said intake leg intake orifice, a restricted orifice opening facing away from the lowermost extremity of said intake leg, and tubular discharge means having a discharge orifice opening facing away from the lowermost extremity of said discharge means and positioned at a level below said intake orifice in said intake leg.

2. A siphoning device comprising a tube of generally uniform diameter having a gooseneck provided with intake and discharge legs, said intake leg having an intake orifice opening through the wall thereof intermediate its free end and said gooseneck, said intake leg at its free end having opposed portions of its wall abutting each other and forming a pair of spaced parallel longitudinally extending passageways communicating with the bore of said intake leg and opening through the free end thereof.

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