ST. VRAIN LE SIEUR.

VACUUM JACKETED MILK CAN.

APPLICATION FILED SEPT. 5, 1911. RENEWED MAY 13, 1913.

Patented Jan. 13, 1914.

1,084,453.

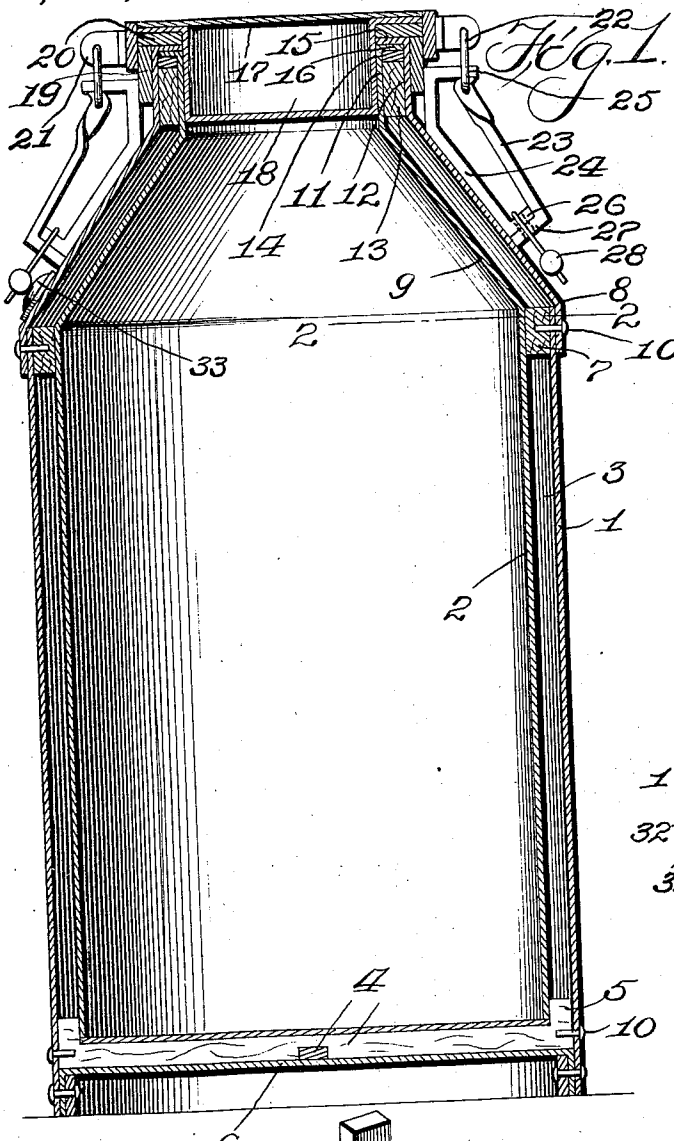


Fig. 1.

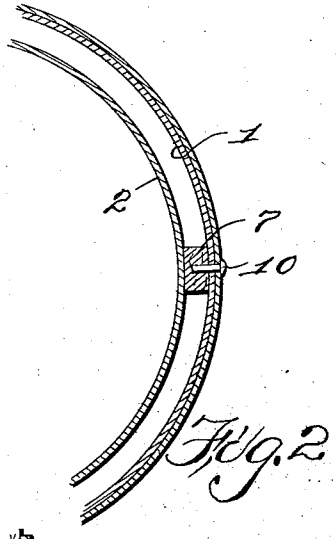


Fig. 2.

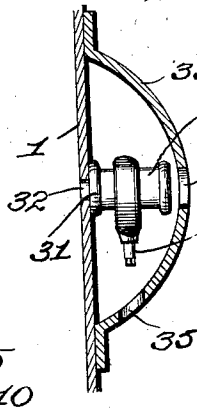


Fig. 3.

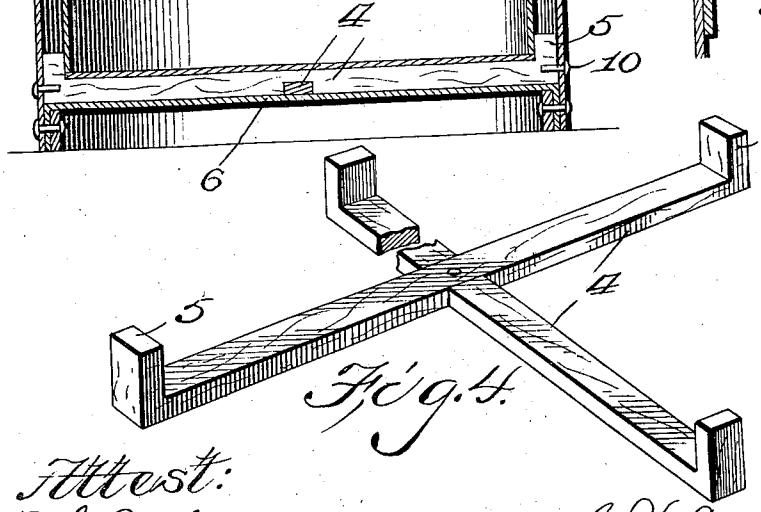


Fig. 4.

Attest:
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UNITED STATES PATENT OFFICE.

ST. VRAIN LE SIEUR, OF EAST ST. LOUIS, ILLINOIS, ASSIGNOR TO THE LE SIEUR VACUUM CAN MANUFACTURING COMPANY, OF EAST ST. LOUIS, ILLINOIS, A CORPORATION OF ILLINOIS.

VACUUM-JACKETED MILK-CAN.

1,084,453. Specification of Letters Patent. Patented Jan. 13, 1914.

Application filed September 5, 1911, Serial No. 647,719. Renewed May 13, 1913. Serial No. 767,435.

To all whom it may concern:

Be it known that I, ST. VRAIN LE SIEUR, a citizen of the United States, and resident of East St. Louis, Illinois, have invented certain new and useful Improvements in Vacuum-Jacketed Milk-Cans, of which the following is a specification containing a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to improvements in vacuum milk-cans, and it consists in the novel construction and combination of parts hereinafter set forth and pointed out in the appended claims.

The object of my invention is to provide an improved vacuum milk-can for use in shipping and storing milk and cream and preserving the contents against fermentation and other deleterious effects caused by heat.

A further object is to provide a vacuum milk-can which will be strong, durable, and cheap in construction, and which will be highly efficient and convenient in operation.

In the drawings: Figure 1 is a sectional elevation of the milk-can having my invention applied thereto; Fig. 2 is a sectional detail plan view of the parts of the can, the section being taken on the line 2—2 of Fig. 1; Fig. 3 is an enlarged sectional elevation of the needle valve and its protecting cover, used in exhausting and sealing the vacuum space of the can; and Fig. 4 is an enlarged perspective view of the crossed wooden brace which forms a portion of the base of the can.

The numeral 1 indicates the outer can, and 2 the inner can, the two cans being separated by a space 3 from which the air is exhausted.

It is very important, in a vacuum milk-can, that the inner can be insulated from the outer can, to prevent the conduction and radiation of heat from the external can to the internal can, and in carrying out my invention I have carefully insulated the inner can, so that it will have no metallic connection whatever with the external can, except at the upper end of the can-necks. The outer can 1 is made of strong sheet metal, of which shipping milk-cans are commonly constructed. The bottom of the inner can 2 rests directly upon and is supported by the crossed wooden bars 4, the outer ends of which are each provided with an upturned integral block 5, which projects upwardly into the space between the cans 1 and 2. The crossed bars 4 in turn rest directly upon the bottom 6 of the outer can. Said bars 4 act to prevent the bottoms of the two cans from being forced together by the external air pressure when the air is exhausted from the said space 3 between the cans. Spacing blocks of wood or other non-conducting material 7, are located in the vacuum space 3 at the junction of the breasts 8 and 9 with their respective can-bodies, and said spacing blocks are secured to the outer can 1 by means of rivets 10 which are passed through the outer can into said blocks, the heads of said rivets being sealed by means of solder in the usual manner, to prevent entrance of air to the vacuum space between the cans. All the joints and seams of the outer and inner cans are, of course, soldered or sweated together as usual. Rivets 10 are also passed through the walls of the outer can into the ends of the crossed wooden bars 4. The upper ends of the necks 11 and 12 of the inner and outer cans are held apart by a ring 13 of wood or similar non-conducting material, and upon the upper edge of said ring is placed a body of cement or common sealing wax 14, and then the upper ends of said neck are bent into a horizontal position, one above the other, and the overlapping horizontal metallic parts 15 and 16 are soldered together, to make a very tight joint, as well as a strong joint at the upper end of said necks.

The can may be provided with any of the common forms of handles now in general use.

The can is provided with a lid or cover 17, which preferably has a hollow cylindrical body 18, which projects downwardly within the neck of the inner can to a point approximately even with the plane of the lower edge of the said wood ring 13. A flange 17′ depending from the outer edge of the cover 17 engages a strengthening ring 19, which extends downwardly a considerable distance upon the neck of the outer can, and a gasket or packing ring 20 of suitable material is interposed between the cover 17 and the overlapping metallic parts 15 and 16 at the upper end of the can-

necks. The said strengthening ring 19 is, by means of solder or the like, fixed upon the neck of the outer can.

The means for clamping the cover in position I will now proceed to describe, as follows: 21 indicates opposite perforated ears projecting from the outer periphery of the cover 17, and depending from the perforations in said ears are common links 22, the lower ends of which carry the clamping levers 23. Fixed on the outer surface of the breast of the outer can, by means of solder or any other suitable fastening means, are the clamping brackets 24, the opposite ends of which are provided with out-turned portions 25 and 26. The out-turned portion 25 of said brackets 24 lie in a horizontal plane so that the inner ends of the locking levers 23 may engage beneath said horizontal out-turned portion 25 and forcibly clamp the cover in position upon the can when the said locking levers 23 are thrown downwardly. The lower ends of said locking levers 23 are provided with an inturned right angled portion 27 which is perforated for the reception of a common sealing device 28, which latter is to be passed through the perforation in said inturned portion 27 of said levers, and also through a registering aperture formed in the adjacent out-turned portion of the clamping brackets, for the purpose of sealing the can whenever required, or for the purpose of locking the can by means of common pad-locks.

29 indicates a common needle-valve casing which is provided with the usual needle-valve 30, the outer end of which is adapted to be engaged by a common wrench or key, for the purpose of opening or closing said needle-valve, in the operation of exhausting the air from the vacuum chamber 3. Said needle valve casing 29 is fixed upon the breast of the outer can 1, preferably at a point just below one of the clamping brackets 24, and one end of said needle-valve casing 29 is adapted to have connected to it in the usual way a hose, (not shown) leading from any suitable vacuum pump or exhauster, to exhaust the air from the said space 3, between the inner and outer cans. The said needle-valve casing 29 is secured by means of a body of solder 31, or of any other known fastening means to the outer can 1, so that the air passage of said needle-valve casing is in communication with a perforation 32 formed in the breast of the outer can.

33 indicates a cup of metal which is soldered over and incloses the needle-valve casing, for the purpose of protecting the same from injury. Said protecting cup 33 is preferably imperforate so that the said needle-valve will be sealed thereunder to prevent tampering with the said needle-valve; but if desired, and as shown in Fig. 3, the said protecting cup may be provided with an aperture 34 for the passage of the hose to the needle-valve casing, and said cup may likewise be provided with another aperture 35 for the insertion of a suitable wrench or key in opening or closing the needle-valve 30.

The operation of my invention is obvious and need not be described further in detail, except to say that milk placed within the inner can, at a lower temperature than the external atmosphere, will retain its temperature with but slight variation for a considerable period, since the space 3 presents a guard or protecting medium of an indifferent heat conducting quality.

Milk cans constructed as described will be specially valuable in transportation, as they will serve to keep the milk in a fresh and cool condition throughout and after the period of transit. The wood ring 13 greatly strengthens the neck of the can, while the wood blocks 7 strengthen the can at the shoulder, which latter is the point most liable to damage in transportation. The crossed wood bars 4 and their end blocks 5 greatly strengthen the lower end of the can. The said clamping brackets 24 act as braces for the neck and breast of the outer can, extending as they do downwardly a considerable distance upon the breast of the can. This manner of bracing the breast is a very important feature, as statistics show that the destruction of ninety per cent. of the milk cans during use has been caused by forcing the neck of the can down through the breast of the can. By the present mode of shipping milk cans they are stacked one upon another until the weight of several cans rests upon the neck and breast of the lowermost can.

The herein described needle-valve casing 29 has no check valve therein, and there is nothing upon the interior of said casing to obstruct the free passage of air therethrough, except the needle-valve 30 itself. In this manner I provide a direct-opening valve devoid of anything in the nature of an automatic check valve.

The air valve for vacuum milk cans, constructed and used as shown and described herein, has never before been used upon vacuum milk cans, all previous attempts to produce a vacuum upon any vessel made of metal having been a failure, owing to the fact that a check valve has been used, instead of a direct-opening needle-valve. With a check valve it is impossible to produce 30 inches of vacuum, owing to the fact that the check valve greatly obstructs the passage of air being drawn out of the vessel.

What I claim is:

1. The improved milk can, comprising the outer and inner cans separated by a space from which the air is to be exhausted, the said cans each having necks, a wood ring fixed in the space between said necks, a body

of cement also in said space on the upper face of the said wood ring, and a metallic portion located over said body of cement and soldered to the underlying neck, in combination with crossed wood bars in the space between the bottoms of the inner and outer cans.

2. The improved vacuum milk can, comprising outer and inner cans separated by a space from which the air is to be exhausted, crossed bracing bars located in the space between the bottoms of the inner and outer cans, and spacing blocks at the outer ends of said crossed bars, said blocks being formed integral with said crossed bars.

In testimony whereof, I have signed my name to this specification, in presence of two subscribing witnesses.

ST. VRAIN LE SIEUR.

Witnesses:

J. R. FRAME,

JOHN C. HIGDON.