

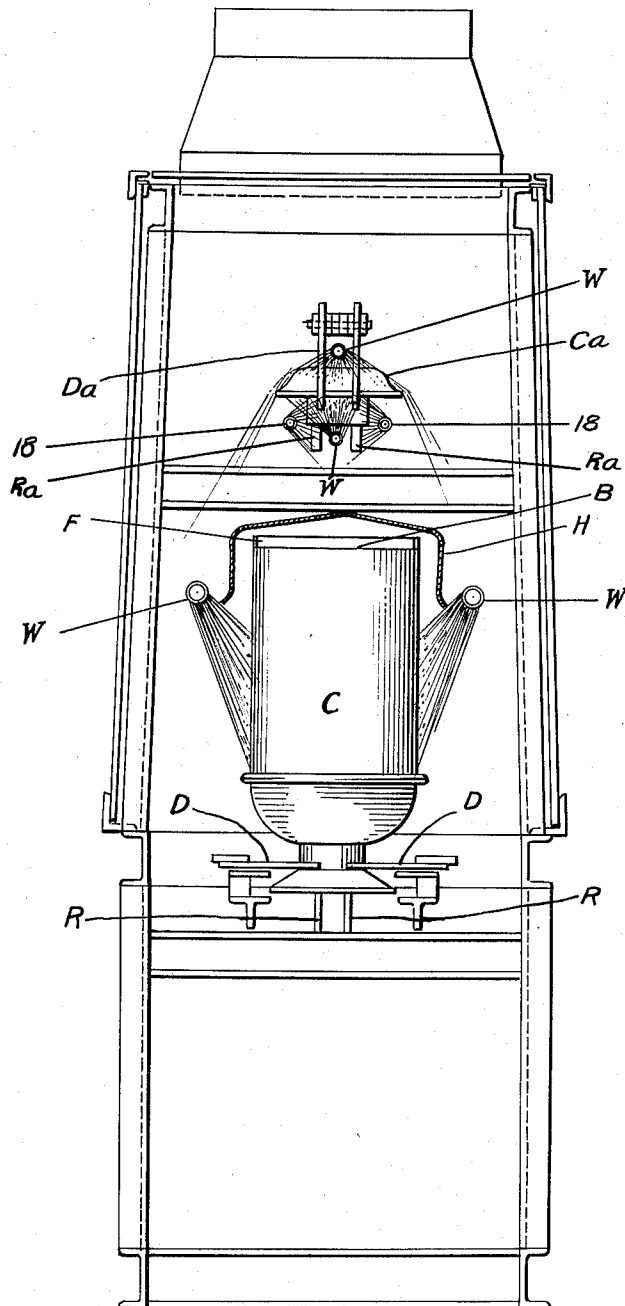
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MACHINE FOR WASHING MILK CANS

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MACHINE FOR WASHING MILK CANS

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2 Claims. (Cl. 141-7)

My invention relates to a new and improved machine for washing milk cans and covers.

One of the objects of the invention is to provide an improved machine of the type which has a series of successive washing stations for the cans, and a series of successive washing stations for the covers, the washing stations for the covers being located above the washing stations for the cans. In machines of this type, the inverted cans are moved successively over the can-washing stations, and the covers are moved over their respective washing-stations.

Another object of the invention is to provide a machine of this type which has nozzle means for washing the covers, and in which suitable means, such as a hood, are provided for preventing the water which is used for washing or rinsing the covers, from filling the depressions or recesses which the inverted cans have at the top surfaces of their bottom walls.

Another object of the invention is to prevent wash water from thus accumulating in the depressions of the bottom walls of the cans, so that it is easy to steam the can and to dry the can thoroughly.

Other objects of the invention will be stated in the following description and drawing which illustrate a preferred embodiment thereof, it being understood that the above statement of the objects of my invention is generally intended to explain the same without limiting it in any manner.

This application is a continuation in part of application Serial No. 21,176, filed by me in the United States Patent Office on May 13, 1935, which has been issued as U. S. Patent No. 2,129,137, dated September 6, 1938.

The drawing shows an end elevation of the improved machine, which diagrammatically illustrates the essential parts of the improved machine.

For many years it has been well known to wash milk cans, by feeding the cans, in inverted position, through a machine which has a series of stations. At the successive stations the inverted cans have been treated by means of rinsing water, wash water, steam, hot air, etc. The successive steps have been rinsing, washing, rinsing, steaming, and finally drying by means of an air current. Machines of this type have been fully described in numerous prior patents, and they are well known and standard in the trade, so that they require no detailed description. In such machines it has also been well known for many years to feed the covers through the machine

above the cans, and also to wash the cans at a series of stations which are located above the can-washing stations.

The outer surfaces of the bottom walls of said milk cans are provided with recesses or depressions. For example, the vertical wall of the milk can is usually provided with a flange at its bottom, which extends below the outer surface of the bottom wall of the can, in order to protect the bottom wall of the can. Heretofore, the wash water which was used for washing the outer walls of the cans and for washing the covers, accumulated in pools in the recesses or depressions which were thus provided at the bottoms of the cans.

The accumulation of the water in the recesses prevented the proper heating of the cans to a high temperature, in order to sterilize the cans. It has been common and well known practice to attempt to remove this accumulated water, by means of jets of steam. However this method did not efficiently remove all the water, and enough water remained in said recesses, seriously to interfere with the heating of the can to a high temperature, in order to sterilize the can. Likewise it was necessary to use hot air to dry the cans after the cans had been sterilized.

According to the improvement specified herein, a stationary hood, which is suitably connected to the frame of the machine, prevents the water from reaching the bottom of the can. This applies to the water which is used for washing the outside surfaces of the cans, as well as the water which is used for washing the covers. This makes it possible to heat the can readily to a high temperature during the sterilization and to dry the can after the steaming, by means of unheated air. Likewise the improvement greatly lessens the contamination of the wash water. The outer surface of the depression of the bottom wall of the can is undoubtedly the most unsanitary part thereof. Therefore when the wash water is allowed to contact with the outer surface of the bottom wall of the can and said wash water is then returned to the tank of the machine, said wash water is greatly contaminated by the loose dirt and filth which accumulates on the outer surface of the bottom wall of the can.

In washing machines of this type, the wash water which has removed the dirt from the inner and outer walls of the cans and from the covers is fed into a tank from which tank the wash water is pumped back to the washing nozzles and washing heads. In machines of this kind, means are provided for gradually allowing some of the dirty

water to flow out of the tank and to supply fresh and clean wash water to the tank. Nevertheless the wash water which is more or less dirty, is used again and again for washing covers and the cans, both inside and outside.

Therefore the use of the hood produces greatly improved sanitation, in addition to a great saving in power, since the dirt on the outer walls of the bottom of the cans does not enter the tank.

The annexed drawing diagrammatically shows a pair of rails R, upon which the end walls of the necks of the cans C rest slidably. The cans are moved slidably along the rails R by means of the usual feed dogs D. The covers Ca are also moved through the machine on rails Ra, along a line which is located directly above the line of movement of the cans in the machine. These covers are fed through the machine by means of dogs Da. The covers Ca are slidably supported on the rails Ra.

Washing heads W and 18 deliver wash water from the tank of the machine, so as to wash the covers and to wash the outer surfaces of the cans C. Nozzles for delivering the wash water to the interiors of the cans are not shown, since such nozzles are old and well known. The washing heads 18 can be omitted.

According to the improvement herein, the machine has a stationary hood H which is located above the inverted cans, and this hood is of sufficient length and width to prevent the water which has been used for washing the covers and the outside surfaces of the cans, from entering the recess which is formed by the flange F, at the outer surface of the bottom wall B. This hood H has vertical flanges which may be of any desired height, in order to prevent the water which is used for washing the outside surfaces of the cans from entering said recess.

The flanges of the head H may be of sufficient depth so as to permit the washing of cans of different heights and to make sure that the wash water will not contact with the dirt at the outer surface of the bottom of a relatively low can.

Wash water may therefore be freely used to wash the outside surfaces of the can and also the covers, and the hood H prevents said wash water from accumulating in a pool on the outer surface of bottom wall B. If the outer wall of the can is washed, the washing nozzles used for this purpose may be directed so that said wash water does not enter the aforesaid depression or recess. Therefore, when the can is delivered to the steaming station, it can be raised readily to a high sterilizing temperature by means of the steam which is introduced into the interior of the inverted can, since it is not necessary to evaporate water which has accumulated in the aforesaid recess or depression. The drying of the can by means of air, subsequent to the steaming is greatly facilitated. Indeed the invention makes it possible to raise the can to a very high temperature during the steaming, so that it is unnecessary to use hot air for drying the can, subsequent to the steaming.

While the invention is simple, it results in a great saving of the power which has heretofore been necessary for supplying a large quantity of steam at high pressure and temperature, and for supplying a large volume of air for drying the can, subsequent to the steaming.

In the ordinary machine which washes twelve cans per minute, the invention makes it possible to save at least one-third of the boiler horse-power.

The invention is not restricted to a machine in which the covers are moved through the machine directly above the cans. There are certain well-known machines in which the covers are located at a higher level than the cans, but said covers are also located laterally relatively to the cans. The invention covers this type of machine.

I have shown a preferred embodiment of my invention, but it is clear that numerous changes and omissions can be made without departing from its spirit.

I claim:

1. A machine for washing inverted milk cans and the covers of said cans, comprising first means adapted to support a line of inverted milk cans and to guide the movement of said inverted milk cans through the machine, second means located above said first means, said second means being adapted to support a line of said covers and to guide said covers above the inverted milk cans, a hood having a depending wall and located between said first means and said second means, first perforated washing means located above the top of said hood and adapted to project wash water upwardly against the covers which are located in said second means, said wash water being free to fall upon said hood, second perforated washing means located above the bottom edge of said depending wall and adapted to project wash water downwardly and laterally against the outer walls of said inverted cans, said depending wall being located laterally between said second perforated washing means and the vertical walls of said inverted cans, said second perforated washing means having a source of water other than the wash water which falls from said first perforated washing means upon the hood, said hood being of sufficient depth to prevent the wash water of the second perforated washing means from contacting with the outer surfaces of the bottom walls of the inverted cans.

2. A machine for washing inverted milk cans and the covers of said cans, comprising first means adapted to support a line of inverted milk cans and to guide the movement of said inverted milk cans through the machine, second means located above said first means, said second means being adapted to support a line of said covers and to guide said covers above the inverted milk cans, a hood having a depending wall and located between said first means and said second means, first perforated washing means located above the top of said hood and adapted to project wash water upwardly against the covers which are located in said second means, said wash water being free to fall upon said hood after said wash water has washed the covers, second perforated washing means located and adapted to project wash water downwardly and laterally against the outer walls of said inverted cans, said depending wall being located laterally intermediate said second perforated washing means and the vertical walls of said inverted cans, said second perforated washing means having a source of water other than the wash water which falls from said first perforated washing means upon the hood, the second perforated washing means being located sufficiently below the top of the hood to prevent the wash water of the second perforated washing means from contacting with the outer surfaces of the bottom walls of the inverted cans.