May 23, 1944. N. PELOSI 2,349,303

COATING MACHINE

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Fig 1

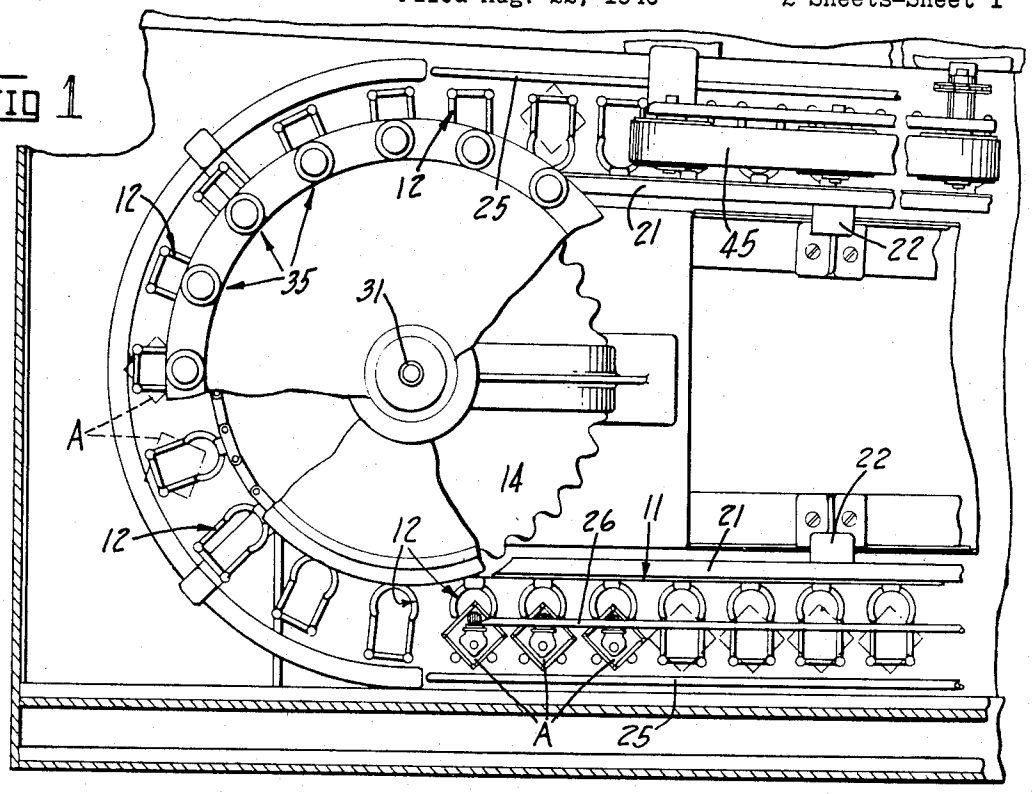
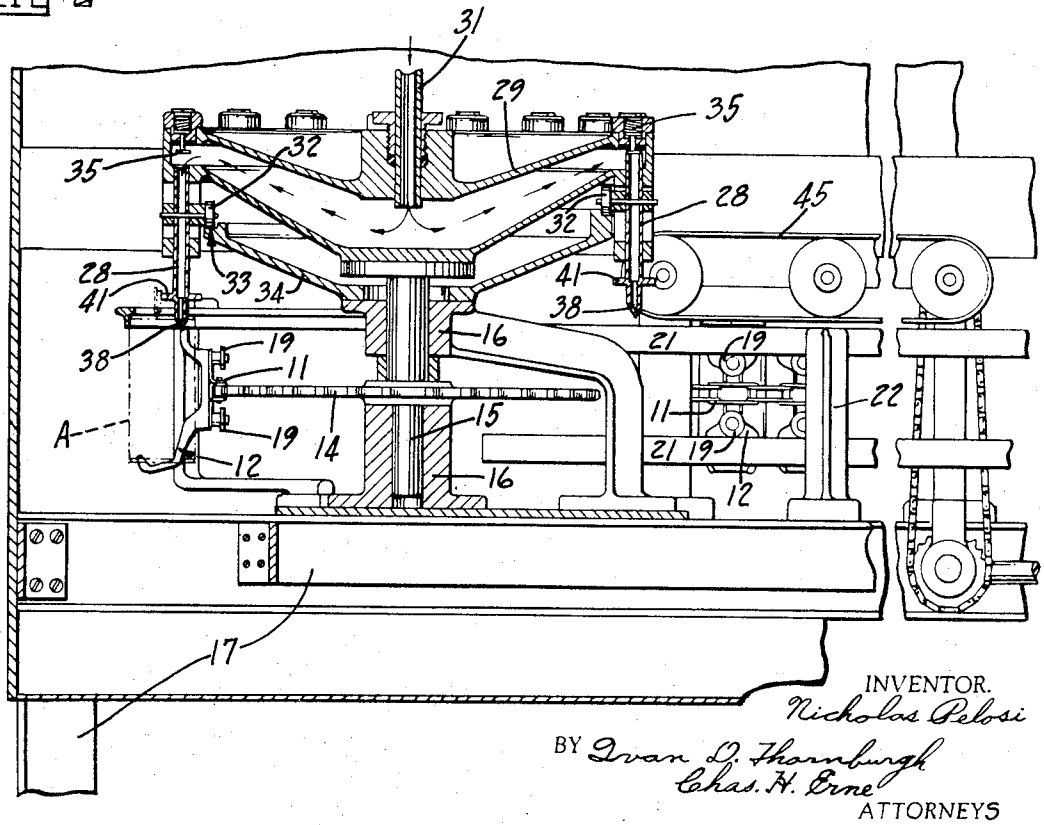


Fig 2



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Fig 3

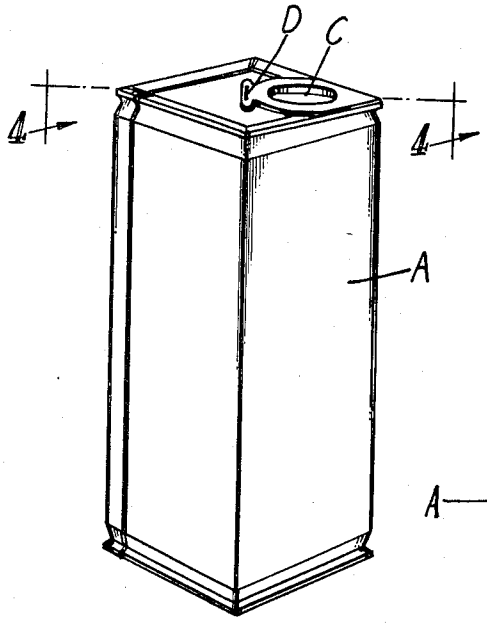


Fig 4

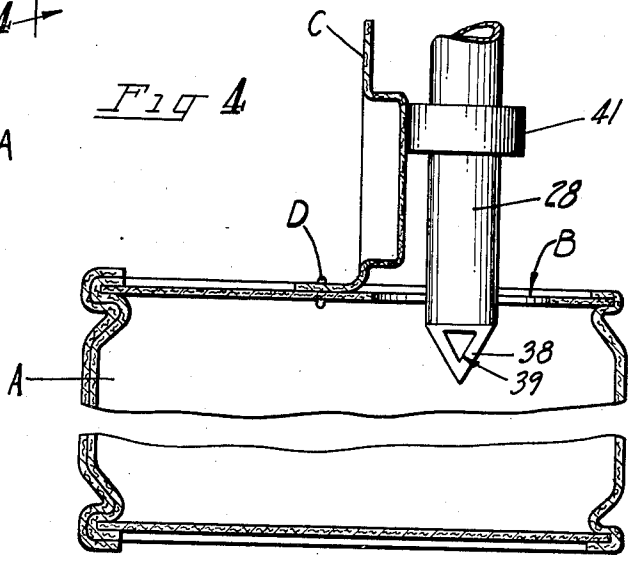
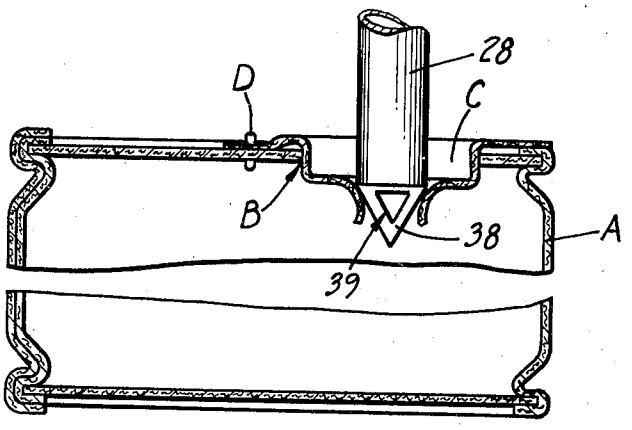


Fig 5



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UNITED STATES PATENT OFFICE

2,349,303

COATING MACHINE

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Application August 22, 1940, Serial No. 353,773

6 Claims. (Cl. 226—20)

The present invention relates to coating machines and the like for applying a coating such as paraffin wax to the interior surfaces of fibre containers having attached closure elements and has particular reference to mutilating the container closure element when it is prematurely closed prior to the coating operation so that defective containers may be readily detected upon inspection and discarded.

In the manufacture of coated fibre milk containers of the character disclosed in United States Patent 2,085,979, issued July 6, 1937, to J. M. Hothersall, the container is preferably immersed in a bath of molten paraffin wax so that the entire inside and outside surfaces of the container are thoroughly covered. During this coating operation the closure element is held open so that the wax will enter the container. Occasionally a closure element may be accidentally closed prior to immersion of the container into the bath and hence such a container will not be coated on its interior surfaces.

When a closure element once closes it remains closed throughout the remainder of the path of travel of the container through the machine and hence indicates that the container is defective and has not received its interior coating. Such a container must be discarded and the instant invention contemplates mutilation of the closed element so that the container may be readily detected upon inspection.

An object therefore of the invention is the provision in a machine for coating the interior surfaces of containers having an attached closure element, of devices which mutilate the closure element when it is closed and thereby indicate the lack of a coating on the interior of the container so that such a container may be readily discarded upon inspection.

Numerous other objects and advantages of the invention will be apparent as it is better understood from the following description, which, taken in connection with the accompanying drawings, discloses a preferred embodiment thereof.

Referring to the drawings:

Figure 1 is a top plan view of a portion of a coating machine embodying the instant invention, with parts broken away;

Fig. 2 is a longitudinal vertical sectional view taken through the machine shown in Fig. 1, with parts broken away;

Fig. 3 is a perspective view of a container suitable for coating in the machine shown in Fig. 1; and

Figs. 4 and 5 are enlarged sectional views of the container taken substantially along the line 4—4 in Fig. 3 the two views showing the closure element in different positions and also showing a mutilating tool in place in the container.

As a preferred embodiment of the invention the drawings illustrate principal parts of a coating machine in which empty fibre containers A (Fig. 3) are adapted to be interiorly and exteriorly coated with molten paraffin wax. The container is formed with a dispensing opening B (Fig. 4) which is adapted to be closed by means of a hingedly attached closure element C secured to the container top by means of a staple D. This closure element C is normally held open during the coating operations so that the interior as well as the exterior container surfaces will be thoroughly covered.

After the container is coated a charge of substantially sterile or filtered air is preferably filled into it and the closure element is then closed just prior to the discharge of the container from the machine. The container is shipped to the dairy in this closed condition to prevent contamination of its interior. Such is the type of container shown in the Hothersall patent referred to above, and generally illustrated in Fig. 3.

Mutilation of containers which have their closure elements C prematurely closed is preferably done at the station which charges the sterile air into the containers and hence only this portion of the machine is necessary for an understanding of the present invention and such is shown in the drawings.

In such a machine the containers are carried in an upright position along a predetermined path of travel through a chamber on an endless chain conveyor 11 (Figs. 1 and 2) which is disposed in a horizontal position. Container racks 12, holding one container each, are secured to the chain at spaced intervals along its length. The chain operates over a horizontal sprocket 14 carried on a vertical shaft 15 journaled in bearing brackets 16 secured to a frame 17 which constitutes the main frame of the machine. The shaft may be rotated in any suitable manner in time with the other moving parts of the machine.

The container racks 12 during their passage through the machine are guided to maintain them in a vertical position. For this purpose each rack 12 carries a pair of rollers 19 which ride in grooved upper and lower guide rails 21. These rails are secured to upright brackets 22 which are bolted to the main frame 17.

The containers are held in position within the moving racks 12 by a guide bar 25 which extends along the path of travel of the conveyor racks and against which the containers engage. A similar bar 26 extends along and over the tops of the containers and thus normally holds the closure elements C in an upright position as shown in Fig. 4 so that the dispensing opening B is uncovered and exposed. This bar terminates adjacent the sprocket 14 and other elements to be described come into play to hold the closure elements open.

The filtered air is introduced into the containers when they pass around the sprocket 14. This air for a container is introduced through a vertically movable tube 28 which depends or extends down from a hollow housing 29 carried on the upper end of the sprocket shaft 15 so that it rotates with the sprocket. The interior of the housing is in communication with an air inlet pipe 31 which leads from any suitable source of sterile air. There are a plurality of the tubes 28 spaced around the outside of the housing so that they will align with the containers passing around the sprocket.

Each tube 28 carries a cam roller 32 which rides on a cam surface 33 of a stationary cam 34 located below the housing 29 and the cam is bolted to the bearing 16. The upper ends of the tubes extend into the interior of the housing and normally engage against spring pressed valves 35 carried in the housing. The lower ends of the tubes are formed with sharp triangular points or piercing elements 38 having air outlet holes 39 (see also Figs. 4 and 5) in their side walls. Adjacent these points the tubes carry collars 41 which are adapted to hold the closure element C in an open position as shown in Fig. 4.

Hence as a container A is moved adjacent the sprocket 14 and commences to pass around it, the cam roller 32 of the aligning tube 28 moving along the cam 34 lowers the tube so that its pointed end extends down into the dispensing opening B of the container. The collar 41 fixed to the tube moves down with it to engage and hold the closure element open. This downward movement of the tube shifts its upper end away from its valve 35 and this uncovers the upper end of the tube and thus permits the sterile air in the housing to flow down through the tube and into the container.

The container is thus charged with the sterile air as it passes around the sprocket. As the container nears the opposite side of the sprocket the tube 28 is withdrawn by the cam 34 and is returned to its original position. This brings the upper end of the tube into engagement with its valve 35 and the flow of air through the tube is thus cut off. Thereafter the closure element C is closed to keep the sterile air into the container. This closing operation is preferably effected by an endless belt 45 which is disposed above the path of travel of the conveyors and against which the containers engage as they pass under it. The belt may be actuated in any suitable manner.

If for any reason the closure element C of the container is in a prematurely closed position as shown in Fig. 3 instead of in its normal upright open position as shown in Fig. 4 when the container moves into charging alignment with its tube 28, the pointed end 38 of the descending tube pierces and thereby punctures the closure element as shown in Fig. 5. This renders the container useless for its intended purpose and the punctured closure element serves as a distinguishing mark which is readily detected upon inspection. Thus when the container is discharged from the machine, the inspectors who inspect the containers before packing, throw out any punctured containers and in this way containers which have no interior coating are insured against distribution into the trade.

It is thought that the invention and many of its attendant advantages will be understood from the foregoing description, and it will be apparent that various changes may be made in the form, construction and arrangement of the parts without departing from the spirit and scope of the invention or sacrificing all of its material advantages, the form hereinbefore described being merely a preferred embodiment thereof.

I claim:

1. In a machine for coating containers with paraffin and the like, the combination of a conveyor for carrying coated containers having an attached closure element adjacent a pouring opening along a predetermined path of travel, means for holding the closure element in a normally open position, and piercing means disposed adjacent the path of travel of the container, adapted to enter the said pouring opening to visibly mutilate the closure element when it is in an abnormally closed position over the pouring opening so that the container may be readily detected upon inspection and may be discarded, said piercing means comprising a hollow tube designed for the free passage of air therethrough to be charged in the coated containers when the tube is inserted into said pouring opening.

2. In a machine for coating containers with paraffin and the like, the combination of a conveyor for carrying containers each having an attached closure element adjacent a pouring opening in the container, along a predetermined path of travel, air charging devices disposed adjacent the path of travel of the containers, adapted to enter the said pouring openings for charging air into said containers, and piercing means movable with each of said air charging devices for piercing and thereby mutilating the closure element when it is in a closed position over the pouring opening so that the container may be readily detected upon inspection and may be discarded.

3. In a machine for coating containers with paraffin and the like, the combination of a conveyor for carrying containers having an attached closure element adjacent a pouring opening in the container along a predetermined path of travel, a movable tube disposed adjacent the path of travel of the container and adapted to enter the pouring opening of the container for filling the container with a charge of filtered air, said tube being hollow for the free passage of air therethrough and terminating in a pointed end utilized for piercing and thereby mutilating the closure element when the element is in a closed position over the pouring opening, whereby the container may be readily detected upon inspection and discarded.

4. In a machine for coating containers and the like, the combination of a conveyor for carrying containers having attached closure elements, a reciprocatory member and means on said member adapted to hold said closure elements in an open position, said member being also provided with piercing means adapted to puncture said closure elements when such elements are in abnormally closed position.

5. In a machine for coating containers and the like, the combination of a conveyor for carrying

coated containers having attached closure elements along a predetermined path of travel, means disposed adjacent said path of travel for holding the closure elements in open position in a vertical plane, and vertically reciprocable air charging means also disposed adjacent the path of travel for charging said coated containers with air, said vertically reciprocable means having a piercing element thereon for puncturing a closure element in horizontal closed position, to visually indicate a container which has not been interiorly coated.

6. In a machine for coating containers and the like, the combination of a conveyor for carrying coated containers each having a dispensing opening and an attached closure element therefor, a reciprocatory member having means thereon for holding said closure element in open position, said reciprocatory member also having piercing means thereon for penetrating a closed container closure element, and means for moving said member into said dispensing opening of a said container to puncture the closure element in improper closed position, whereby to identify an incompletely coated container.

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