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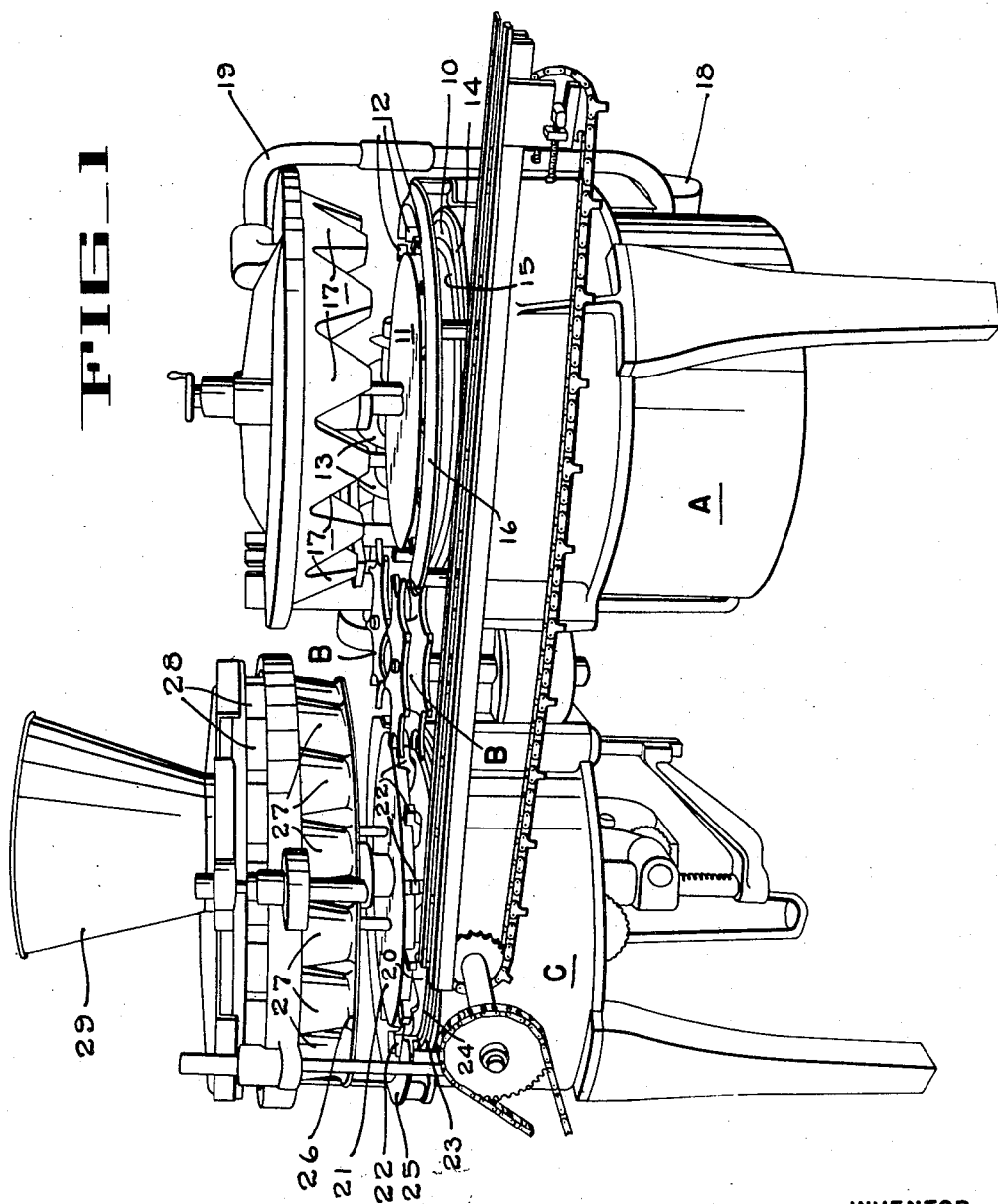
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SPLASH PREVENTION MEANS IN CONTAINER FILLING MACHINE

Filed Dec. 27, 1948

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

FIG. 2

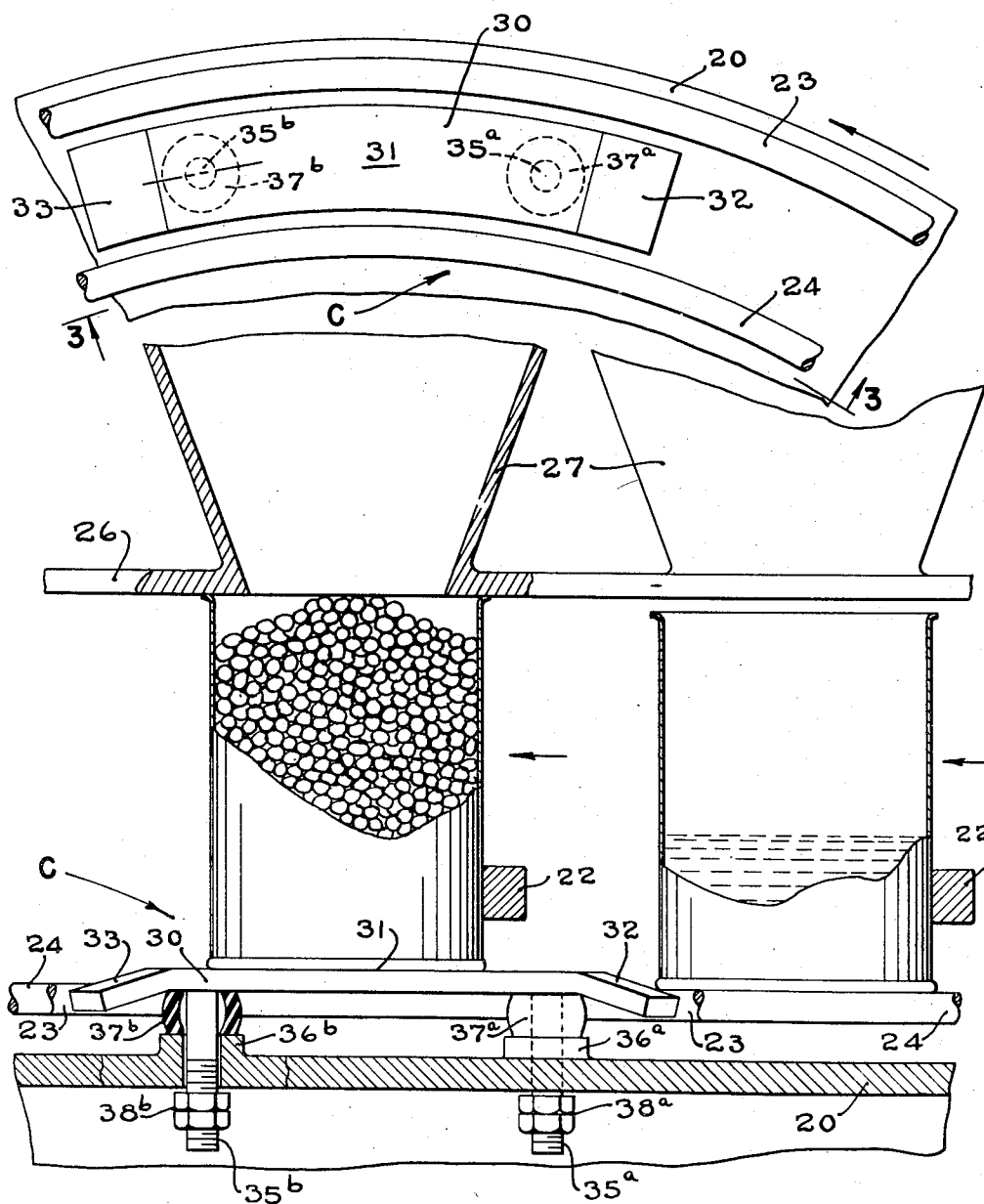


FIG. 3

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SPLASH PREVENTION MEANS IN CONTAINER FILLING MACHINE

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1

The present invention relates to container filling machines of the type which comprise usually a first section adapted to fill measured quantities of a preserving liquid, such as brine or syrup, into the containers, and a second section adapted to deposit measured quantities of the food product to be preserved, into said containers. In operating machines of this type, it has been found that, when the solid or semi-solid food product is dropped into the containers, some of the liquid previously delivered thereto may be splashed over the rim of the containers. The amount of liquid thus wasted is usually small but may, in time, add up to an appreciable loss of material, and it is generally large enough to run down the outside of the containers and drop onto the machine parts underneath, where it creates unsanitary conditions that require special cleaning operations.

An object of the present invention is to provide a container filling machine which is arranged to prevent splashing of the preserving liquid over the sides of the containers as it discharges solid or semi-solid food products into said containers.

Another object of this invention is to provide means, in container filling machines of the type referred to, adapted to place the open end of the containers so closely to the discharge end of the food-product-dispensing means during the filling operation, that there is no possibility for liquid to splash out of and spill over the walls of the containers as the food product is discharged into their interiors.

Machines of the type discussed hereinbefore may be arranged to vibrate the containers, as they travel through the machine, in order that air occluded under the food product may have a chance to escape and that said food product may properly settle in the containers.

It is another object of this invention to provide a splash-preventing arrangement, of the type referred to, that is applicable to container filling machines, whether they employ stationary or vibratory container tracks.

Furthermore, it is an object of my invention to provide means, of the type referred to, which combine extreme simplicity of construction with effectiveness in performance and dependability of operation.

These and other objects of my invention will be apparent from the following description of the accompanying drawings which illustrate a preferred embodiment thereof, and wherein:

Fig. 1 is a perspective of a container filling machine comprising a brine-dispensing section and a

2

food-product-dispensing section, both of the turret type.

Fig. 2 is a fragmentary plan view of the container track of the food-product-dispensing machine section.

Fig. 3 is an elevation, partly in section, of the track sector shown in Fig. 2 and the food-product-dispensing funnels above said track sector, viewed from the center of the turret, as indicated by the arrows 3—3 in Fig. 2.

Referring first to Fig. 1, A denotes a filling station adapted to deliver measured quantities of a preserving liquid, such as brine, into each of a continuous procession of containers passed through said station. Such filling stations are usually termed "briners" and are well known in the art so that it is unnecessary to describe them in detail. Suffice it to say, that they usually comprise a stationary table 10 of circular shape which supports concentrically a rotary wheel 11 provided with a plurality of radially extending impeller arms 12 spaced equal angular intervals apart. Said arms are adapted to engage behind the individual containers delivered to the station from suitable supply means, such as a worm feed 13; and when the wheel 11 is in rotation, they propel said containers in upright condition upon a circular track formed by a pair of concentrically disposed annular rods 14 and 15 and along an outer arcuate guide rail 16 which is arranged to confine the containers to movement along the circular track. Disposed above said track for rotation in unison with the wheel 11 is a circular row of filling funnels 17. A supply pump 18 is arranged to deliver with each stroke a predetermined quantity of brine through a conduit 19 into the successively passing funnels 17 which guide the liquid into the containers carried along by the impeller wheel 11. Star wheels B—B are arranged to transfer the containers from the table of the briner onto the table 20 of a filling station C which is adapted to deliver measured amounts of the food product to be preserved into said containers. Said station C comprises a rotary wheel 21 mounted concentrically upon the table 20 and provided with a plurality of radially extending impeller arms 22. Said arms 22 engage behind the individual containers in a manner similar to the impeller arms 12 of station A and are arranged to propel the containers upon a pair of concentrically disposed annular rods 23 and 24 along an exteriorly positioned arcuate guide rail 25. Said rods 23, 24, may be rigidly attached to the table 20 to form a stationary track, or they may be hinged supported from said table at

3

a selected point of its circumference and rest at a diametrically opposite point loosely upon the upper end of a pitman (not shown) which is slidably mounted within the table 20 and is continuously actuated by an eccentric during operation of the machine to vibrate the container track.

Disposed concentrically above the table 20 and the wheel 21 is an annular flange or ring 26 containing the contracted lower openings of a circular row of downwardly directed filling funnels 27. Said flange and said row of funnels are arranged to rotate in unison with the impeller wheel 21, with each of the funnels in vertical alignment with one of the pockets formed by consecutive ones of the impeller arms 22. Disposed above the upper ends of the funnels 27 for rotation in unison therewith, but separated from said funnels by an annular plate forming a stationary partitioning wall (not visible in the drawings), is a row of adjustable measuring pockets 28, one for each of said funnels. A feed hopper 29 is mounted above the rotary path of said measuring pockets, the arrangement being such that each of said pockets draws a pre-adjusted amount of the food product from said hopper as it passes underneath its discharge opening. A certain distance beyond the food hopper 29 in the direction of movement of the measuring pockets 28 and their associated funnels 27, the above mentioned stationary partitioning wall is apertured over a limited sector so that the food product contained in the measuring pockets 28 will drop into respective ones of the funnels 27 as said pockets negotiate said sector, and the funnels in turn will conduct said food into the containers traveling underneath. Means are usually provided to prevent the described discharge of the food product from a measuring pocket into its associated filling funnel unless a container travels below said funnel.

The flange or ring 26, within which the lower contracted ends of the filling funnels 27 are situated, has a flat horizontal bottom surface which is parallel to the track 23, 24 and which is positioned a greater distance above said track than the height of the containers for which the machine is designed. Hence, when the containers glide along the track 23, 24, their open upper ends travel a limited distance below the bottom surface of the ring 26 as illustrated by the container at the right side of Fig. 3. Thus, the containers may unobstructedly follow their circular course around the center of the station C, whether they are vibrated in the manner described above or remain at a fixed vertical level.

In accordance with the invention, means are provided at the food discharge sector of the machine to raise each of the containers momentarily in such a manner that its open upper end is placed tightly against the flange 26 around the discharge opening of its associated filling funnel 27. For this purpose, an arcuate shoe 30 is arranged intermediately of the rods 23, 24 of the container track and has a central horizontal portion 31 which extends at a level above said rods, with its opposite ends bent downwardly, as shown in Fig. 3, to form a pair of gently inclined ramps 32 and 33 that descend to points below the upper level of the rods 23 and 24. Thus, any containers sliding along the track 23, 24, in the direction of the arrows shown in Fig. 3, will leave the track and smoothly ascend the shoe 30 on the ramp 32, and after having negotiated the horizontal center portion 31 of said shoe, will return to the track on the downwardly inclined ramp 33.

4

The shoe 30 is mounted upon a pair of studs 35a and 35b that are slidably received in and protrude through apertured bosses 36a and 36b, respectively, which rise from the machine table 20. Rubber collars 37a and 37b are interposed between the plate 30 and the upper ends of the bosses 36a, 36b to resiliently urge said shoe in upward direction, but check nuts 38a and 38b engaging the protruding ends of the studs 35a and 35b below the table 20 establish a positive limit for the uppermost level to which the shoe 30 may rise, so that the edge of the ascending ramp 32 is always maintained safely below the upper level of the track and thus may never obstruct the progress of the containers. With the shoe 30 in its uppermost position, the level of its horizontal center portion 31 is arranged to be such that its distance from the annular flange 26 is slightly less than the height of the containers for which the machine is designed. Thus, as a container ascends the ramp 32 under the force of an impeller arm 22, its open upper end moves against the unyielding flange 26. As a result thereof the shoe 30 is forced downwardly and compresses the rubber collars 37a and b (Figure 3) so that their resiliency will hold the container tightly against the flange 26 with its upper edge placed concentrically around the discharge opening of its associated funnel 27.

With the traveling container thus temporarily wedged between the revolving flange 26 and the stationary shoe 30, the contents of a measuring pocket drop through the funnel into the interior of said container under conditions that preclude any splashing or spillage of either the preserving liquid or the food product; and since the shoe 30 holds the container above and out of contact with the track 23, 24, the tight contact between the upper end of the container and the funnel flange 26 can be maintained, even though the container track may be of the vibratory type. The horizontal portion 31 of resilient shoe 30 is so dimensioned as to maintain the described relation between container and filling funnel over the time required to properly complete the filling operation, whereupon the container will descend the downwardly inclined ramp 33 and resume its position upon the circular track 23, 24.

Hence, in a container filling machine arranged in accordance with the present invention, as above described, splashing and resultant spillage of the can contents during the food-product-filling operation are effectively prevented in an exceedingly simple manner that may be depended upon whether the container tracks are of the stationary or vibratory type. Thus, there is no waste of material, nor is there any necessity to frequently interrupt the operation of the machine for cleaning purposes since the main cause for unsanitary conditions has been effectively eliminated.

While I have explained my invention with the aid of an exemplary embodiment thereof, it will be understood that I do not wish to be limited to the particular constructional details illustrated and described, which may be departed from without departing from the scope and spirit of my invention. Thus, instead of mounting all the filling funnels upon a common annular plate, as above described, the converging lower ends of the individual filling funnels may each be provided with an outwardly directed annular flange for the upper ends of the containers to bear against during the filling operation. Also, it will be readily apparent to those skilled in the art

5

that the necessary resiliency of the pad may be established in ways other than those specifically illustrated and described. Furthermore, my invention is not confined to container-filling machines of the turret type, but may be employed with equal advantage in arrangements, wherein the containers pass through the filling station in a rectilinear procession.

Having thus described my invention and the manner in which it is to be performed, what I claim is:

1. A container filling machine comprising a track, a filling funnel disposed above said track at a distance larger than the height of the containers for which the machine is designed, means for moving containers along said track, and downwardly yieldable means independent of said track and movable with relation to said track disposed at a predetermined point of said track to temporarily elevate each container above said track.

2. A container filling machine comprising a filling funnel arranged to advance along a predetermined path, a track disposed below said funnel at a distance greater than the height of the containers for which the machine is designed, means for moving a container along said track in vertical alignment with said advancing filling funnel, and downwardly yieldable means independent of said track and movable with relation to said track provided at a predetermined point of said track to momentarily elevate said moving container above said track to place its upper end against the lower end of the filling funnel.

3. A container filling machine comprising a circular row of filling funnels, an annular plate containing the lower ends of said filling funnels, said plate and said funnels being arranged to rotate about a center point, a circular track disposed concentrically below said annular plate at a distance greater than the height of the containers for which the machine is designed, means for moving containers along said track, each in vertical alignment with one of said rotating funnels, and downwardly yieldable means independent of said track and movable with relation to said track provided at a predetermined point of said track for momentarily elevating said containers in succession above said track and place their open upper ends into contact with said plate around the open lower ends of their respective funnels.

4. A container filling machine comprising a circular row of filling funnels, a horizontal plate containing the lower ends of said funnels, said plate and said funnels being arranged to rotate about their common center point, a track comprising a pair of radially spaced annular rods disposed concentrically below said plate at a distance greater than the height of the containers for which the machine is designed, means for moving containers along said track each in vertical alignment with one of said funnels, a shoe disposed between said annular rods at a predetermined sector of said track, and means for

6

yieldably maintaining said shoe in a position above the level of said annular rods.

5. A container filling machine comprising a circular row of filling funnels, an annular flange containing the lower ends of said funnels, said flange and said funnels being arranged to rotate about the center point of said funnel row, a track comprising a pair of radially spaced circular rods disposed concentrically below said flange at a distance greater than the height of the containers for which the machine is designed, means for moving containers in a procession upon and along said track each in vertical alignment with one of said funnels, a horizontal plate of limited circumferential length disposed intermediately of said rods at a predetermined sector of said track, and means for yieldably urging said plate upwardly in a position wherein its upper surface is spaced a distance from said flange which is shorter than the height of the said containers for which the machine is designed.

6. In a container filling machine in combination a container track comprising a pair of horizontally spaced rods, means for moving containers in a procession upon and along said rods, a shoe placed between said rods at a selected point of said track, and means for yieldably maintaining said shoe above the level of said rods.

7. A container filling machine comprising a row of filling funnels arranged to advance along a predetermined path and provided with a horizontal flange at their lower ends, a track including a pair of horizontally spaced parallel rods disposed below said flange at a distance greater than the height of the container for which the machine is designed, means for moving a procession of containers along said track in vertical alignment with said filling funnels, a shoe disposed adjacent to said rods at a predetermined point of said track, and means adapted to yieldably maintain said shoe in a position above the level of said rods.

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