Feb. 23, 1937. F. L. DARLING 2,071,504

APPARATUS FOR FILLING CANS AND THE LIKE

Original Filed May 17, 1935

Fig. 1.

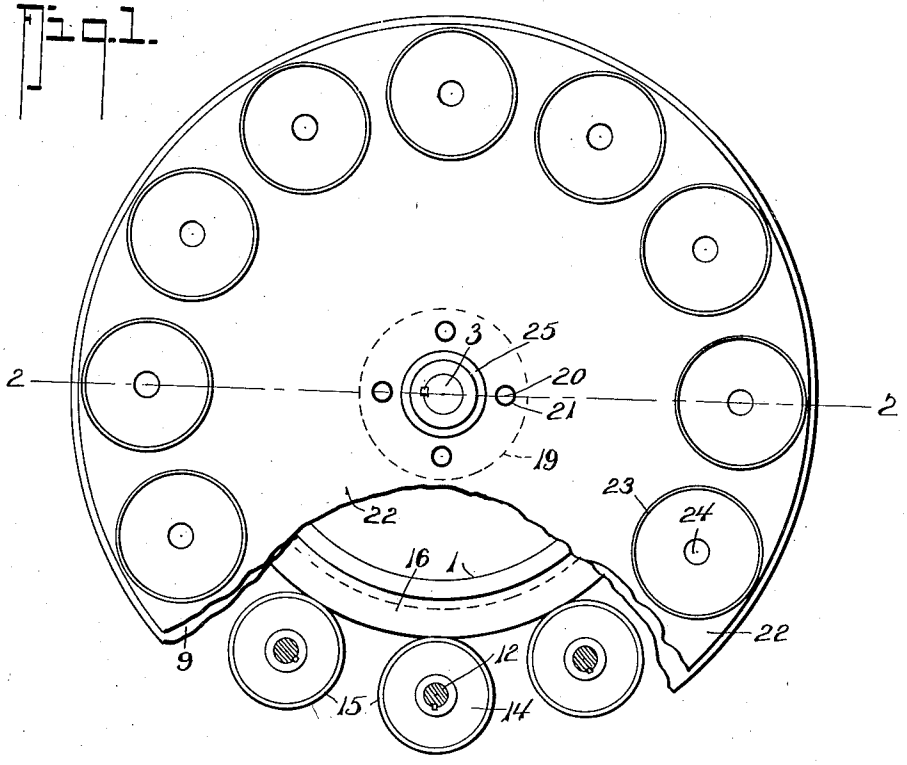
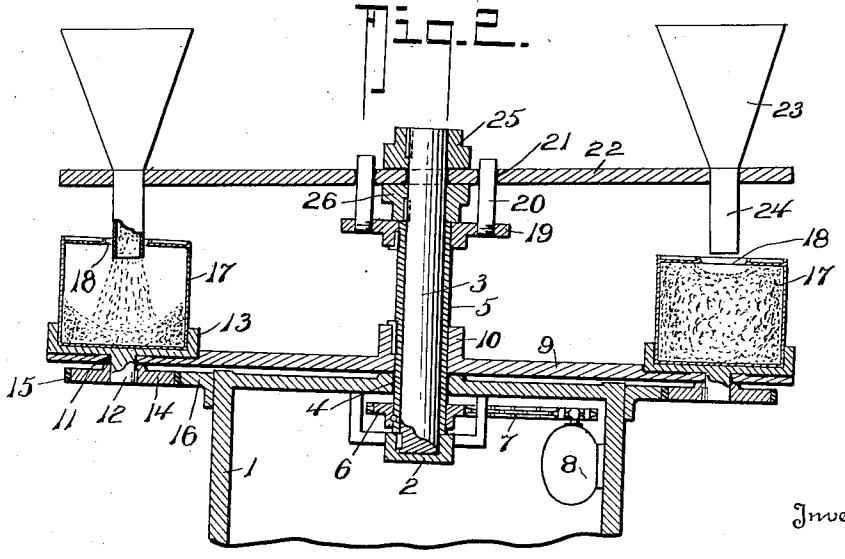


Fig. 2.



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APPARATUS FOR FILLING CANS AND THE LIKE

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Application May 17, 1935, Serial No. 22,049
Renewed July 16, 1936

6 Claims. (Cl. 226—71)

My invention relates to a novel method of and means for filling cans with coffee, malted milk and other similar finely ground or powdered substances. Heretofore in packing coffee it has been difficult to get the material into the cans in full measure without spilling some of the coffee. Attempts have heretofore been made to pack coffee and other similar granular or powdered substances into cans by vibrating the cans up and down, i. e., agitating them while the filling operation takes place, but this has not proven satisfactory.

My invention has been the result of considerable study of the methods and apparatus heretofore employed and it has been evolved to overcome the difficulties in and objections to the systems heretofore known.

My invention has for its object to fill cans whose heads are already secured in place to the body of the can and which have relatively small filling openings, such—for example—as the cans which constitute the subject matter of my application filed May 10, 1935, under Serial No. 20,838.

Generically, my new and improved method consists in depositing the material into the can through the filling opening or mouth of the can while rotating or spinning the can on its axis, thereby packing the material through centrifugal force around the side wall of the can and building up the material from the bottom of the can, a concaved upper surface being the result rather than a convex upper surface given to the material by mere gravity filling without rotation of the can on its axis.

I may carry out the method of filling the cans by providing a support on which is located a rotating chuck to hold the can, a filling funnel being positioned above the chuck to deliver the material through the can opening by gravity, a suitable means being provided to rotate the chuck as the material is being deposited by the funnel into the can; or a number of chucks and funnels may be mounted on a turntable and means may be provided to spin the chucks as the turntable rotates about its axis, provision being made for automatically introducing and removing the funnel spout into and from the cans.

Other objects will in part be obvious and in part be pointed out hereinafter.

To the attainment of the aforesaid objects and ends the invention still further resides in the novel details of construction, combination and arrangement of parts, all of which will be first fully described in the following detailed description, and then be particularly pointed out in the appended claims, reference being had to the accompanying drawing, in which:—

Figure 1 is a plan view, parts being broken away, illustrating the invention as applied to a machine for filling a number of cans at a time.

Figure 2 is a vertical section on the line 2—2 of Figure 1.

In the drawing, in which like numerals of reference indicate like parts in all the figures, 1 represents a supporting stand which is provided with a shaft-supporting bracket 2, and carries a stationary shaft 3. The supporting stand has a bearing aperture 4 through which passes a rotating sleeve 5 which is driven through a sprocket and chain connection 6—7 from a suitable motor 8.

9 designates the turntable whose hub 10 is keyed to the sleeve 5. The turntable is provided with a set of chuck bearings 11 for the stub shafts 12 of the can-holding chucks 13. These chucks 13 are rotated for the purpose of turning the cans rapidly about their axes by means of wheels 14, preferably rubber tired, as at 15, and engaging the chuck-rotating track 16. Of course, other suitable means of rotating the chucks while the turntable is turning may be provided, if desired.

17 designates the cans having filling openings 18 into which the spouts 24 of the funnels 23 are adapted to be introduced and withdrawn as the turntable rotates. The funnels are supported on a rotatable funnel-carrying disc 22 which is located between upper and lower cams 25 and 26, the cams being keyed to the stationary shaft 3 and do not rotate. The cams hold disc 22 with its plane always at an angle to the horizontal, so that as the disc 22 is turned it will bring a funnel from a lowered position to a raised position in one-half revolution, and back again to the lowered position in the other half revolution. The disc 22 is driven in unison with the turntable 9 by means of a driving plate 19 having pins 20 which project through the pinholes 21 in the disc 22.

Thus it will be seen, particularly by reference to Figure 2, that as the turntable is driven the cans on the chucks are conveyed around the circle from the position at the right in Figure 2 to the position at the left in Figure 2, during which time the funnels are lowered into the cans and the materials deposited from the funnels into the cams by gravity. The material entering a can by gravity is whirled as it strikes the bottom of the can and is thrown by centrifugal force toward the side wall of the can, gradually building up along the

wall and over the bottom of the can until the can has become filled by the time it again reaches the position at the right in Figure 2. In this way a concavity is left in the middle directly beneath the filling opening, which concavity is of sufficient depth to enable the insertion of the can closure plug (see my application aforesaid) without pressing it into the mass of material that is located within the can. The fact that the material is built up in the can in the form of a cylinder having its upper end concaved prevents the air which is rushing out of the can, due to displacement thereof by the material entering the can, from carrying with it any of the material which is being deposited in the can from the funnel spout.

While I have described my invention as especially applicable to the canning of coffee, malted milk or other granular products, it may also be employed for canning other materials.

From the foregoing description, taken in connection with the accompanying drawing, it is thought that the construction, operation and advantages of the invention will be clear to those skilled in the art to which it appertains.

What I claim is:

1. In apparatus for filling cans, a turntable, means to turn it, a can chuck rotatably mounted on said turntable, a funnel carrier rotating with the turntable, means to rotate said chuck as the turntable turns, and means to enter and withdraw the funnel's spout into and from the can.

2. In apparatus for filling cans, a turntable, means to turn it, a can chuck rotatably mounted on said turntable to turn on an axis generally parallel to that on which the turntable turns, a funnel carrier rotating with the turntable, means to rotate said chuck as the turntable turns, and means to enter and withdraw the funnel's spout into and from the can.

3. In apparatus for filling cans, a turntable, means to turn it, a can chuck rotatably mounted on said turntable, a funnel carrier rotating with the turntable, means to rotate said chuck as the turntable turns, and means to enter and withdraw the funnel's spout into and from the can as the turntable rotates.

4. In apparatus for filling cans, a turntable, means to turn it, a can chuck rotatably mounted on said turntable to turn on an axis generally parallel to that on which the turntable turns, a funnel carrier rotating with the turntable, means to rotate said chuck as the turntable turns, and means to enter and withdraw the funnel's spout into and from the can as the turntable rotates.

5. A support, an upstanding shaft carried thereby, a sleeve rotatable on said shaft, a turntable secured to and rotatable with said sleeve, a set of can chucks having stub shafts vertically mounted in bearings in said turntable, wheels on said tub shafts, a track on which said wheels roll for rotating the chucks on their axes, a pair of complementary cams fixed to said upstanding shaft, a funnel carrying disc rotatable on said upstanding shaft between said cams to cause said disc to rotate on an axis at an angle to the vertical, means to cause said disc to rotate in unicon with said turntable, and a funnel on said disc for each can chuck.

6. A support, a turntable, means to turn said turntable on a vertical axis on said support, can chucks rotatably mounted on said turntable, a funnel carrier, means to support said carrier above said turntable, means to cause said carrier to turn with said turntable about its axis, and means to hold said carrier and turn it in a plane at an angle to that containing the turntable as said turntable is turned.

FRANK L. DARLING.