Oct. 20, 1931. E. MALLINCKRODT, JR 1,828,117

FILLER MECHANISM

Original Filed June 25, 1926 2 Sheets-Sheet 1

Fig. 1.

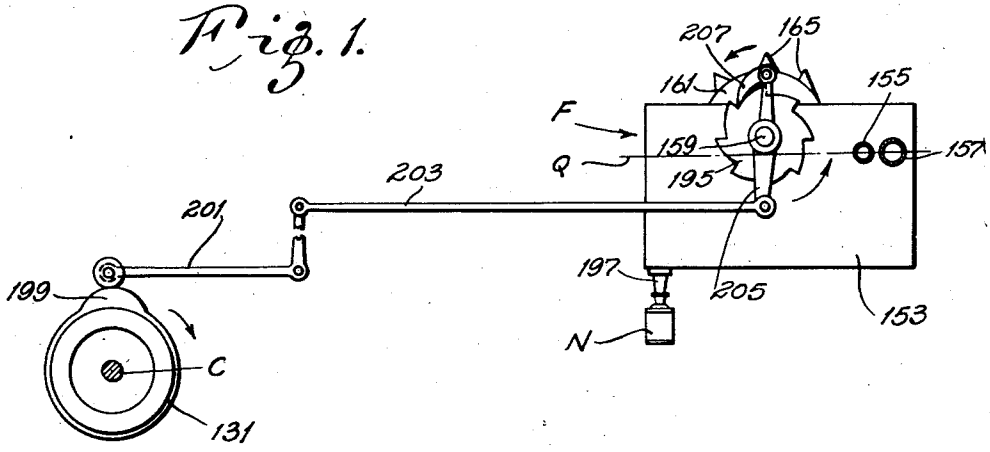
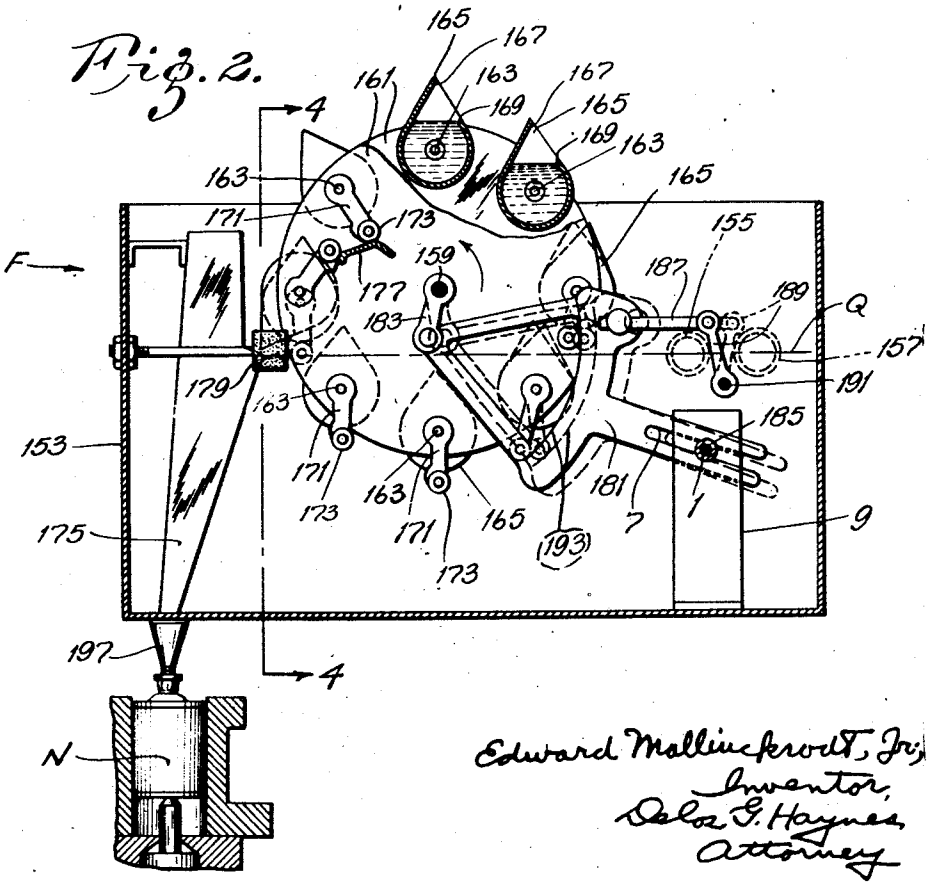


Fig. 2.



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Fig. 3.

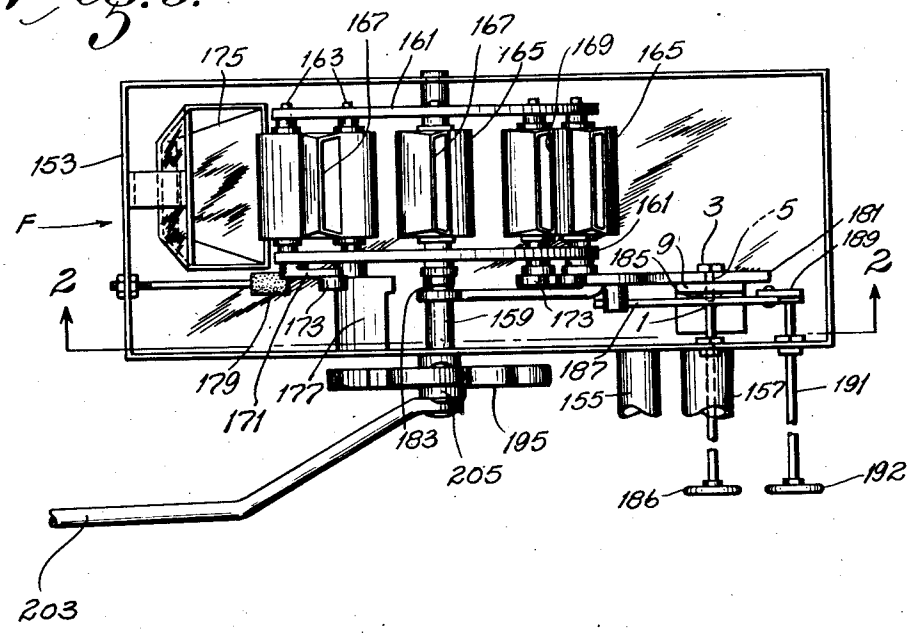
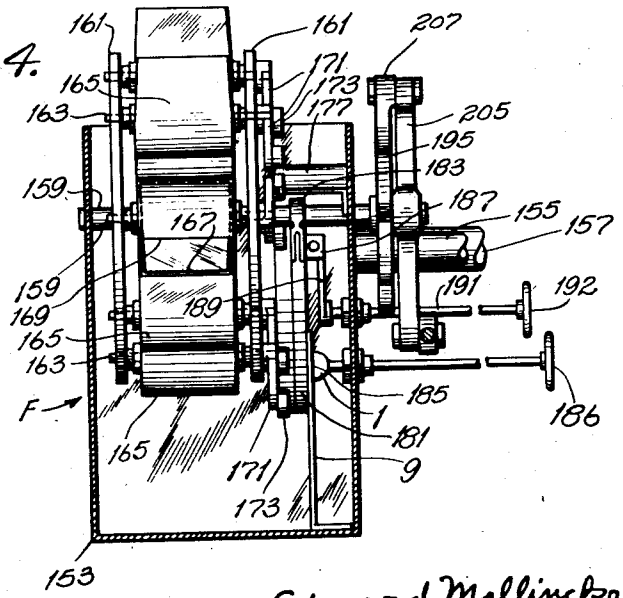


Fig. 4.



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Patented Oct. 20, 1931 1,828,117

UNITED STATES PATENT OFFICE

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FILLER MECHANISM

Original application filed June 25, 1926, Serial No. 118,440. Divided and this application filed December 7, 1927. Serial No. 238,349.

This invention relates to automatic fillers and with regard to certain more specific features, to a filler mechanism for ether or like material.

This invention is a division of the invention set forth in my patent application for method of and apparatus for packaging; and the product thereof, filed June 25, 1926, Serial No. 118,440.

Among the several objects of the invention may be noted the provision of a filler mechanism for ether, whereby an accurate charge may be delivered to cans or the like which pass the filler; the provision of a filler of the class described including adjustment features to compensate for the expansion of the material being delivered as changes in temperature occur; and the provision of a device of the class described which is compact and rugged in construction. Other objects will be in part obvious and in part pointed out hereinafter.

The invention accordingly comprises the elements and combinations of elements, features of construction, and arrangements of parts which will be exemplified in the structure hereinafter described, and the scope of the application of which will be indicated in the following claims.

In the accompanying drawings, in which is illustrated one of various possible embodiments of the invention,

Fig. 1 is a diagrammatic side elevation illustrating the application of the present filling mechanism;

Fig. 2 is an enlarged vertical and longitudinal section taken on line 2—2 of Fig. 3;

Fig. 3 is a plan view of the filling mechanism; and

Fig. 4 is a lateral section of the filling mechanism, taken on line 4—4 of Fig. 2.

Similar reference characters indicate corresponding parts throughout the several views of the drawings.

Referring now more particularly to Fig. 1, this filling mechanism F comprises a fluid-tight tank or box 153 suitably supported and carrying a liquid lever Q of the fluid to be filled into certain packages N, ether in the present embodiment.

The box 153 is arranged above means which are adapted to bring packages or cans N successively to said box 153 and lift said cans N so as to engage a snout 197 on the box 153 for the purpose to be set out herein. After the cans have been filled by the present mechanism, they are caused to descend and be taken away from the box 153, the movements of the packages being automatically effected.

The ether flows steadily into the box 153 from an inlet 155 and passes to an overflow 157. An axle 159, supported laterally of the box 153, rotatably carries two spaced plates 161. These plates 161 are provided with cross pins 163 for rotatably supporting a plurality of dippers 165. The dippers 165 have a pouring edge 167 and an inlet edge 169. Their construction is such that the centers of gravity are directly below the respective pins 163, when the lips or edges 167 are vertically positioned, that is, when the dippers are not re-positioned by other elements to be described. Outside of one of the plates 161, each rotatable axle 163 is provided with a depending crank 171 carrying a roller 173 at the end thereof.

Normally the dippers 165 are permitted to hang substantially vertically from their axles 163, and as they dip into the charge of fluid, these dippers are filled (the plates 161 rotating counter-clockwise, Fig. 2, by means of mechanism to be described).

A delivery trough 175 is mounted within the box 153 and is adapted to carry fluid out through the bottom of said box to a point centrally above the position of rest for the cans N as they are successively brought to the filler. Therefore, in order to empty the dippers into the trough 175, there is provided a stationary cam 177 adapted to engage the followers 173 as the dippers move to a point above said trough 175. By this means each dipper is rotated and caused to spill its charge into the trough, and as the roller 173 leaves the cam 177, the respective dipper takes up its original substantially vertical position under the action of gravity. A suitable buffer 179 is provided for preventing excessive oscilla-

tions of the dippers as they return to their normal vertical positions.

In order to adjust the amount (volume) of fluid that each dipper will pick up there is provided a gauging track or cam 181. This is swung from a rotatable support 183 hung from said shaft 159, and is supported by an adjustable slide clamp 185. The clamp 185 is operable to be tightened and loosened from a wheel 186.

In order to regulate the position of the cam 181, after it is unclamped, there is provided therewith a connecting rod 187, to which is pinned a crank 189 held to a control shaft 191. The control shaft 191 carries a wheel 192 or the like for making adjustments. The crank 189 is used to set the cam 181 in any of its various positions.

The cam 181 is adapted by a given particular position, to regulate the positions at which the dippers 165 emerge from the fluid. This is because the followers 173 cooperate with the edge 193 of the cam 181. The changeable positions of the dippers are proportional to the change in position of the cam, and the amount (volume) that each dipper will hold depends upon this positioning. This is evident when it is noted that the level in each dipper depends upon the relative level of the lip 169 with respect to the dipper. By the above means a predetermined weight is always deliverable from each dipper. Fig. 2 shows a solid line and an alternate dotted line position of the cam 181 and shows the effect had upon the dippers when said cam is re-positioned.

In the present embodiment eight dippers are used. Outside of the box 153, on the shaft 159, is provided an eight lobed ratchet 195, adapted to drive the shaft and the plates 161 in a counter-clockwise direction (Fig. 1). A cam shaft C which is part of a linkage adapted to move the cans N so as to have certain other operations performed on them, as well as to move them into cooperation with the snout or nozzle 197 is operated in a clockwise direction. The exact extraneous functions of the cam shaft C are more particularly set out in the parent application to this application, referred to above.

Each revolution of the cam shaft C results in advancing a package or can N (to be filled) beneath the snout 197 of the trough 175. It also results in said package being lifted into cooperation with said snout after the last preceding package has been lowered and carried away. Insofar as this is the action of the cam shaft C, it is desirable to empty one of the dippers 165 into said trough to fill said package, each time that the cam shaft C revolves once.

In order to accomplish the above purpose a cam 131 on the cam shaft C is provided with a peripheral lobe 199 adapted to oscillate a bell-crank lever 201. A connecting rod 203 links the bell-crank lever 201 with a rocker arm 205 rotatably supported on the shaft 159 of the filler. The rocker arm 205 carries a pawl 207 adapted to engage the notches of the ratchet 195, and to drive said ratchet ahead one notch for each revolution of the cam shaft C. By this means one filling charge is delivered from the trough 175 for every revolution of the cam shaft C, and for each placement of a can N under the snout 197.

The operation is believed to be clear from the foregoing. The cams are automatically filled as they are brought to the given point beneath the snout 197. The liquid level Q is maintained because of the overflow feature.

When the temperature changes so that the unit weight of ether changes, this change in unit weight is compensated for on a total weight basis by changing the volume, through adjustment of the wheel 186. Hence it is a relatively simple matter to maintain a substantially constant weight of total charge in each package.

In view of the above, it will be seen that the several objects of the invention are achieved and other advantageous results attained.

As many changes could be made in carrying out the above constructions without departing from the scope of the invention, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

I claim:

1. A filler comprising a supply tank adapted to contain liquid, means for maintaining said liquid at a given level, a trough, movable depending dippers adapted to dip liquid by moving substantially upwardly through the liquid surface, means for adjusting the angle at which the dippers approach said surface whereby they receive more or less liquid, and means for causing the dippers to tilt to discharge into the trough.

2. A liquid filler comprising a supply tank, means for maintaining a liquid level in said tank, a series of depending dippers, means adapted to move said dippers into and out of the liquid, a trough, means for tilting the dippers to spill into said trough when out of the liquid, and means for adjusting the tilt of the dippers as they are about to leave the liquid.

3. A liquid filler comprising a depending movable dipper adapted to pass into and out of a liquid at the surface thereof, a follower on the dipper, a cam adapted to cooperate with the follower as the dipper emerges from the liquid, and means for maintaining said liquid at a given level.

4. A liquid filler comprising a movable dipper, a carrier adapted to move the dipper into and out of a liquid at the surface there-

of, means for changing the position of the dipper with respect to the carrier comprising a cam, a follower attached to and movable with the dipper, adapted to cooperate with the cam as the dipper emerges from the liquid, and means for maintaining said liquid at a given level.

5. A liquid filler comprising a movable dipper, a carrier adapted to move the dipper into and out of liquid at the surface thereof, means for changing the position of the dipper with respect to the carrier comprising a cam, a follower attached to and movable with the dipper, adapted to cooperate with the cam as the dipper emerges from the liquid, a second cam adapted to cooperate with said follower to tilt the dipper to spill after the dipper has left the liquid, and means for maintaining said liquid at a given level.

6. A liquid filler comprising a movable dipper, a carrier adapted to move the dipper into and out of liquid at the surface thereof, means for changing the position of the dipper with respect to the carrier comprising a cam, a follower attached to and movable with the dipper, adapted to cooperate with the cam as the dipper emerges from the liquid, means for adjusting the position of said cam whereby the amount of liquid retained by the dipper is changed, and means for maintaining said liquid at a given level.

7. A liquid filler comprising a tank having an outlet means for maintaining a substantially constant liquid level in said tank, a plurality of dippers rotatably movable into and out of the liquid, said dippers depending from a carrier, a follower fastened to each of said dippers, a cam adapted to be engaged by each of said followers when their respective dippers are at least partially above the liquid level to deliver the contents of the dippers to said outlet, an adjustable cam adapted to be engaged by said followers as the dippers emerge from the liquid, means for holding and releasing said adjustable cam to and from a predetermined position and means for changing its position relatively to the followers of said dippers.

8. A liquid filler comprising a movable dipper, a carrier adapted to move the dipper into and out of a liquid to dip up said liquid, means for changing the position of the dipper with respect to the carrier so that the dipper discharges its contents, said means comprising a cam and a follower attached to and movable with the dipper adapted to cooperate with the cam and means preventing excessive oscillations of the dipper when its follower leaves the cam.

9. A liquid filler comprising a movable dipper, a carrier adapted to move the dipper into and out of a liquid to dip up said liquid, means for changing the position of the dipper with respect to the carrier so that the dipper discharges its contents, said means comprising a cam and a follower attached to and movable with the dipper adapted to cooperate with the cam and means preventing excessive oscillations of the dipper when its follower leaves the cam, said cam being adapted to change the position of the dipper with respect to the carrier as the dipper emerges from the liquid, said follower engaging said adjustable cam and means for changing the position of said adjustable cam.

10. In a filler of the class described, the combination of a series of depending dippers adapted to rotate about a predetermined axis and into and out of a liquid, followers formed with said dippers, an adjustable cam adapted to be engaged by said followers to control the positions of the dippers as they leave the liquid, means for supporting said cam comprising a link depending from said axis and a slidable portion engaged by a clamp and separate adjusting means for moving the cam.

11. A filler comprising a supply tank adapted to contain liquid, means for maintaining said liquid at a given level, an outlet extending through a portion of said liquid and to a point above the liquid level thereof, movable dippers adapted to dip liquid from the supply to the trough, means for tilting the dippers so as to deliver liquid to said outlet, tilting taking place above the liquid level and other means for tilting said dippers as they emerge through the liquid level.

12. A liquid filler comprising a supply tank, means for substantially maintaining a fixed level in said tank, a series of depending dippers, means adapted to move said dippers into and out of the liquid, and means for adjusting the tilt of the dippers before and as they are to leave the liquid, said dippers thereafter maintaining a substantially upright position until emptied so as to prevent spilling back into the supply.

In testimony whereof, I have signed my name to this specification this 2nd day of December, 1927.

EDWARD MALLINCKRODT, JR.