

June 13, 1944.

G. M. BINER

2,351,392

FILLING APPARATUS

Filed March 29, 1941

2 Sheets-Sheet 1

*Fig. 1.*

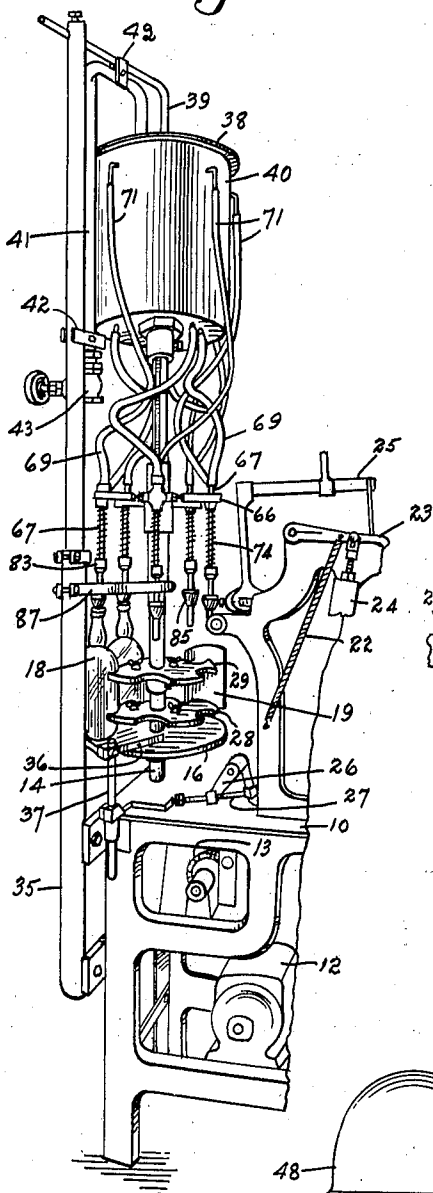


*Fig. 2.*

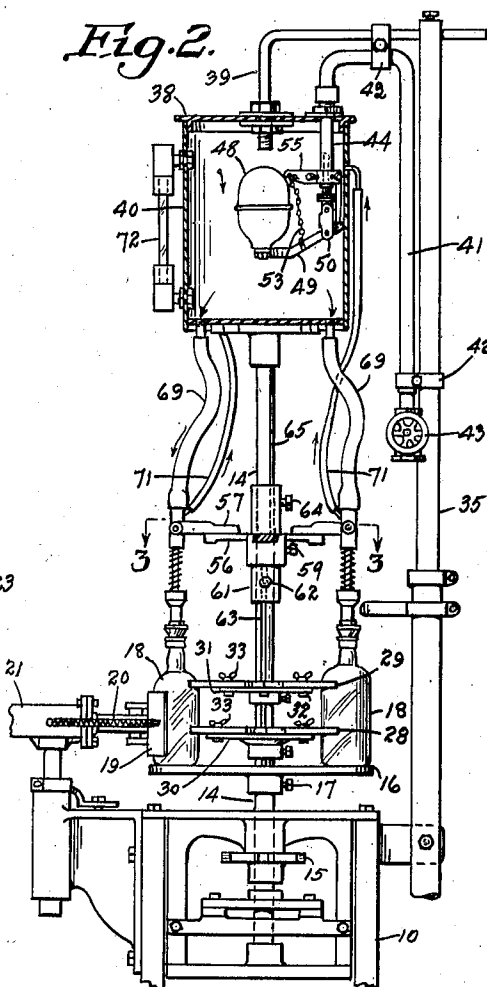
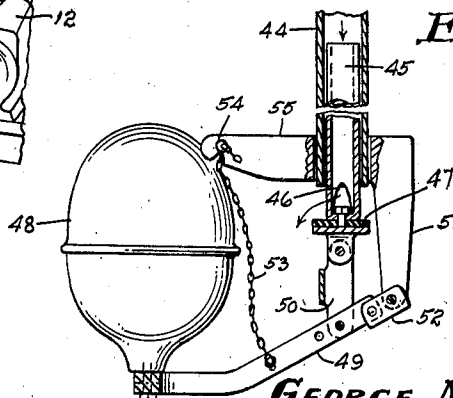


*Fig. 3.*



INVENTOR.  
**GEORGE M. BINER**  
 BY *Charles G. Stratton*  
 ATTORNEY.

June 13, 1944.

G. M. BINER

2,351,392

FILLING APPARATUS

Filed March 29, 1941

2 Sheets-Sheet 2

*Fig. 4.*

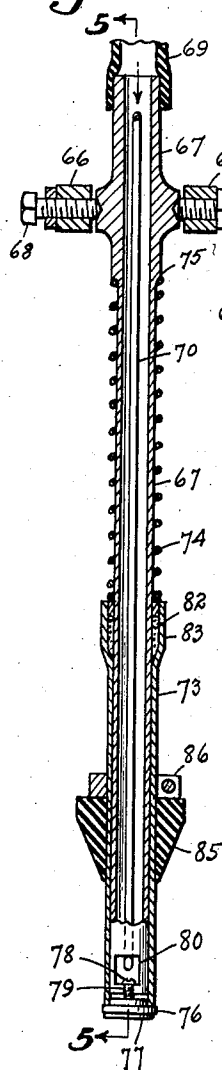


*Fig. 3.*

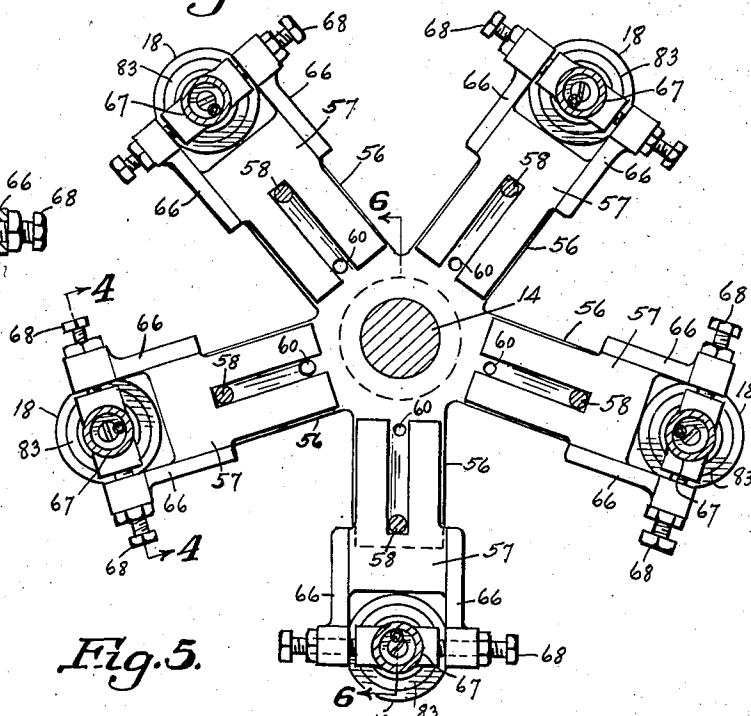


*Fig. 5.*

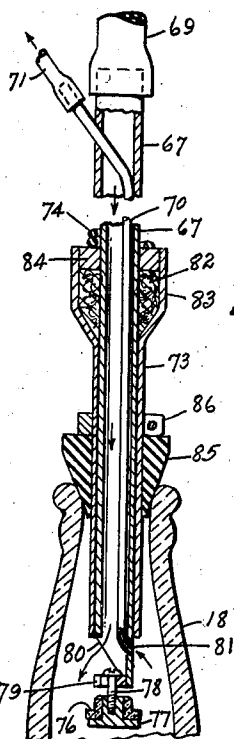


*Fig. 6.*

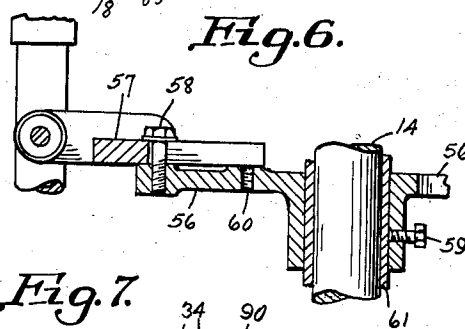


*Fig. 7.*

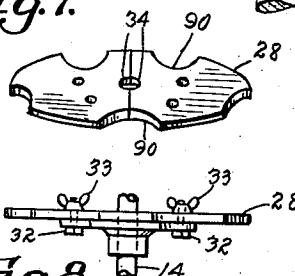


*Fig. 8.*

INVENTOR.  
**GEORGE M. BINER**  
BY *Carlos B. Stratton*  
ATTORNEY.

## UNITED STATES PATENT OFFICE

2,351,392

## FILLING APPARATUS

George M. Biner, Los Angeles, Calif.

Application March 29, 1941, Serial No. 385,840

4 Claims. (Cl. 226—68)

My invention relates to a filling apparatus for filling and labelling containers.

An important object of the invention is to provide means in the filling mechanism that will tend to maintain the container in proper position during the labelling operation.

Still another object is to provide a means in the filling mechanism for maintaining the container on a rotary platform, during rotation of the platform from one container-labelling position to a next succeeding labelling position.

Still another object is to provide a filling means that will move with a series of containers as they progress past a labelling station.

The invention also comprises novel details of construction and novel combinations and arrangements of parts, which will more fully appear in the course of the following description. However, the drawings merely show and the following description merely describes an embodiment of the present invention, which is given by way of illustration or example only.

In the drawings, like reference characters designate similar parts in the several views:

Figure 1 is a broken, perspective view of a device embodying the present invention.

Figure 2 is a broken vertical section through said embodiment.

Figure 3 is an enlarged section taken on the line 3—3 of Figure 2, looking in the direction of the arrows.

Figure 4 is a vertical section taken on the line 4—4 of Figure 3.

Figure 5 is a section taken on the line 5—5 of Figure 4, but partly broken away.

Figure 6 is a broken sectional view taken on the line 6—6 of Figure 3.

Figure 7 is a perspective view of a guide plate comprised in the embodiment.

Figure 8 is an elevation of said guide plate shown mounted in position.

Figure 9 is an enlarged section of a float controlled valve comprised in the invention.

Referring more in detail to the drawings, the frame 10 of the machine carries labelling mechanism which is not shown and described in detail herein, since detailed description and drawings of same are included in my co-pending application, Serial No. 200,336, filed April 6, 1938, now Patent Number 2,255,308, dated September 9, 1941, and entitled "Labelling machine."

Briefly, in my labelling mechanism, the drawings show a motor 12 and a chain drive 13 connected to be driven by the motor 12 and in turn connected to driving a main vertical shaft

14. A Geneva drive 15 is comprised in said mechanism to intermittently rotate shaft 14 by means of the continuously operating motor 12.

A platform 16, mounted on the shaft 14 by means of a set screw 17 is arranged for the support of a series of containers. A series of bottles 18 is shown in the drawings as being supported by the platform 16.

A label pressing pad 19 is arranged opposite a container on the platform 16, at one point in the rotation of the platform. Spring means 20 is arranged to retract the pad. Pneumatic actuating means 21 is disposed to urge the pad 19 toward a container on the platform, to press a label in place on the container. Further details of the label-pressing pad and its actuating mechanism will be found in my said co-pending application.

The drawings also suggest a spring 22 for returning an arm 23 against the influence of a dash pot 24. A rocker 25 is arranged at the top of the frame 10. A pivoted arm 26 is shown connected with a pin 27 in the operating mechanism. An arm 36 on a spindle 37 is arranged to be engaged by containers on the platform 16. This arm 36 is connected to render the labelling mechanism inoperative when a container is not disposed in an adjacent position on the platform 16. The relationship of the parts mentioned in this paragraph to the rest of the labelling mechanism and functions of these parts are clearly described in my said co-pending application, to which reference is made for detailed explanation.

Also mounted on the shaft 14, at spaced points above the platform 16, are guide plates 28 and 29. Spiders 30 and 31 respectively support the guide plates 28 and 29 and bolts 32 and wing nuts 33 fasten the guide plates on the spider supports. As shown in Figure 7, the guide plates are preferably made in two halves which are assembled together around the shaft 14. Complementary openings 34 in the halves of the guide plate fit around the shaft 14.

The filling mechanism is mounted on a standard 35. Said mechanism comprises a filler tank lid 38 supported on the standard 35 by means of an arm 39. A filler tank 40 is mounted on the upper end of the shaft 14 and rotates therewith.

A filler pipe 41 is supported on the standard 35 by means of clamps 42. A valve 43 controls flow of liquid to the tank 40. An auxiliary clamp 42 supports the filler pipe 41 from the arm 39. The portion 44 of the filler pipe within the tank

40 telescopes with a slidable valve sleeve 45. The sleeve 45 has lateral openings 46 at the lower end thereof for permitting the escape of liquid from the pipe portion 44 through the sleeve 45 and into the tank. The bushing 45 has a closed outer end, as shown in Figure 9, so as to cause the liquid to flow into the tank 40 with as little roiling effect as possible.

A rubber gasket 47 acts as a valve for closing the lower end of the pipe portion 44. To effect closing of this valve 47, a float 48 on a lever 49 is pivotally connected to the valve 47 by means of a link 50. The lever 49 is fulcrumed on a relatively stationary bracket 51 on the pipe portion 44, by means of a smaller link 52. A chain 53 limits downward movement of the float 48, the lever 49, the link 50, and the sleeve 45. The chain 53 is fastened to the lever 49 at one end and removably caught in a notch 54 in an arm 55 of the bracket 51, at the other end.

Spider arms 56 are arranged on the shaft 14, above the upper guide plate 29, and plates 57 are adjustably held thereon by means of bolts 58. Tapped openings 60 may be utilized for other bolts (not shown) for maintaining the plates 57 against lateral displacement.

A sleeve 61 is held on the shaft 14 by means of a set screw 62 that engages a spline 63 of the shaft. A set screw 59 maintains the spider arms 56 in position on the sleeve 61. A second set screw 64 on the sleeve 61 engages a flat side 65 at the upper end of the shaft 14.

Arms 66 on the plates 57 pivotally support filler tubes 67. Screws 68 provide the pivots for the filling tubes 67. Flexible conduits 69 connect the bottom of the tank 40 with the filling tubes 67. Each filling tube 67 contains a vent tube 70. Flexible tubes 71 connect the vent tubes with the tank in the upper portion thereof. A gauge 72 indicates the level of the liquid in the tank 40.

Sleeves 73 are arranged on the filler tubes 67, with the latter tubes slidable therein. A spring 74 coiled between a shoulder 75 on the filler tube 67 and an end of the sleeves 73 tends to maintain a gasket 76 in liquid-tight relationship with the bottom end of the sleeve 73. The gasket is supported on a flanged member 77 that is supported by means of a screw 78 at the bottom end of the filler tube 67. A lateral slot 79 permits the screw 78 to be removed laterally from the tube 67 when it is desired to replace or repair the gasket 76, or to adjust same.

The discharge opening 80 at the lower end of the filler tube 67 is through the side of the tube. As in the case of the discharge opening into the tank 40, the side opening 80 reduces to a minimum the foaming of liquid introduced into the container 18. The lower end of the vent tube opens into the interior of the container, as shown at 81, on the opposite side from the filler opening 80.

Packing 82 is arranged in an enlarged end 83 of the sleeve 73. A gland 84 maintains the packing in place and provides an abutment for the coiled spring 74. Thus a liquid-tight, sliding arrangement is maintained between the sleeve 73 and the filler tube 67.

An electric stopple 85 has a tapered face that fits in the opening of the container 18. A clamping member 86 prevents the stopple from sliding upwardly on the sleeve 73.

A resilient arm 87 is clamped on the standard 35 and arranged to cause the filler tubes 67 to swing inwardly toward the shaft 14, in case the filler tubes 67 have been swung outwardly to a

point where they might strike other parts of the mechanism.

In the operation of the device, the valve 43 is coupled to a source of liquid supply and the valve 43 is turned on. Thereafter the float 48 controls the in-flow of liquid to the tank 40.

The motor 12 is turned on and as the platform 16 is rotated, the operator places containers in successive notches 90 in the guide plates 28, 29. The inlets to the containers 18 are telescoped with the outer ends of the filling tubes 67, as shown in Figure 5 by swinging the tubes outwardly on their pivotal supports 68 and then inwardly to position the containers in the guide plates 28 and 29. In this position the stopple 85 fits snugly in the neck of the container and is held in such position by the coiled spring 74.

Excess air is evacuated from the container 18 through the vent tube 70 as the liquid flows into the container through the filling tube outlet 80.

The springs 74 exert pressure upon the containers in the direction of the platform 16 and tend to maintain the containers in position in the notches 90 during the label affixing step. Moreover, the springs 74 maintain the containers in position in the notches 90 and on the platform 16 during rotation of the platform 16, so as to prevent centrifugal motion from throwing the containers from the platform 16 during its rotation.

While I have illustrated and described what I now regard as the preferred embodiment of my invention, the construction is, of course, subject to modifications without departing from the spirit and scope of my invention. I, therefore, do not wish to restrict myself to the particular form of construction illustrated and described, but desire to avail myself of all modifications which may fall within the scope of the appended claims.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In a machine of the character described, the combination of a rotary upright shaft, a container support connected to rotate with said shaft, a filling tank also rotating with said shaft above the support, filling tube means flexibly connected to the tank and pivotally mounted to swing radially outwardly with respect to the shaft to engage a container for disposition on the support, means in connection with the shaft and cooperating with said filling tube means to hold engaged containers at definite stations on the support, a stationary cover for the tank having liquid supply means for said tank, a standard rising beyond the filling tube means, a bracket arm carried by said standard and stationarily supporting said tank cover, and a member stationarily supported on said standard and projecting toward the path of rotating movement of the filling tube means to swing unengaged filling tube means inwardly toward the shaft to avoid engagement thereof with the standard.

2. In a filling machine of the character including a rotary container-support connected to revolve a series of containers and revolving filling tube means for filling said container during revolution, and pivotally mounted to swing radially outwardly to inactive positions for engagement with and disengagement from, the containers, a rigid support outwardly beyond the series of filling tube means and means carried by said support and positioned to engage any outwardly extending filling tube means and return the same radially inward to container engaging position,

to avoid striking any part of the machine in the rotation of the support.

3. In a rotary filling machine, a rotary upright member, a container support connected to rotate with said support, a spider fixed on said rotary member above said support and having radially outstanding arms, bearing members on, and projecting beyond, said spider arms, adjustable connections between said spider and bearing arms adjustably clamping the latter in selected extension relative to the rotary upright member, filling tube means pivotally mounted in said bearing members to swing radially with respect to the rotary member and adapted at their lower ends to enter a container on said support, a filling tank carried by, and rotating with, the rotary member above said filling tube means, flexible supply tubes depending from said tank and connected to said filling tube means, a stationary support rising at a point outwardly beyond the filling tube means, a stationary cover for the tank, a bracket extending from said stationary support and connected to said cover, and tank supply means entering the stationary cover of the tank.

4. In a rotary filling machine, a rotary upright member, a container support connected to rotate

with said support, a spider fixed on said rotary member above said support and having radially outstanding arms, bearing members on, and projecting beyond, said spider arms, adjustable connections between said spider and bearing arms adjustably clamping the latter in selected extension relative to the rotary upright member, filling tube means pivotally mounted in said bearing members to swing radially with respect to the rotary member and adapted at their lower ends to enter a container on said support, a filling tank carried by, and rotating with, the rotary member above said filling tube means, flexible supply tubes depending from said tank and connected to said filling tube means, a stationary support rising at a point outwardly beyond the filling tube means, a cover for the tank connected to said stationary support and held thereby against rotation with the tank, tank supply means supported by said stationary cover, and a deflecting arm carried by said stationary support, said arm extending adjacent to the path of rotating movement of the filling tubes for restoring to substantially vertical positions any outwardly inclined tubes.

GEORGE M. Biner.