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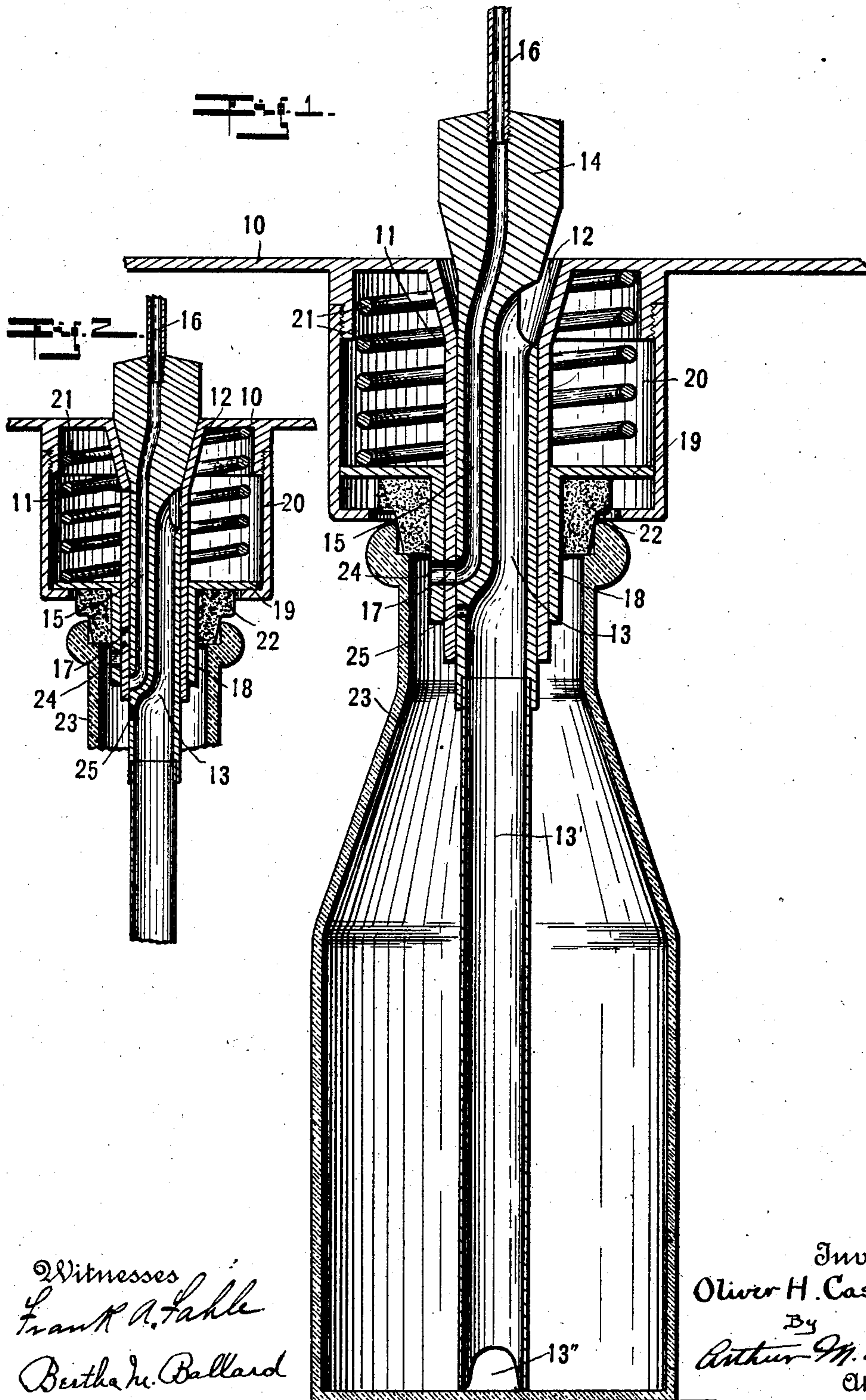
PATENTED FEB. 17, 1903.

O. H. CASTLE.  
MEANS FOR PACKAGING LIQUIDS.

APPLICATION FILED JAN. 13, 1902.

NO MODEL.

3 SHEETS—SHEET 1.



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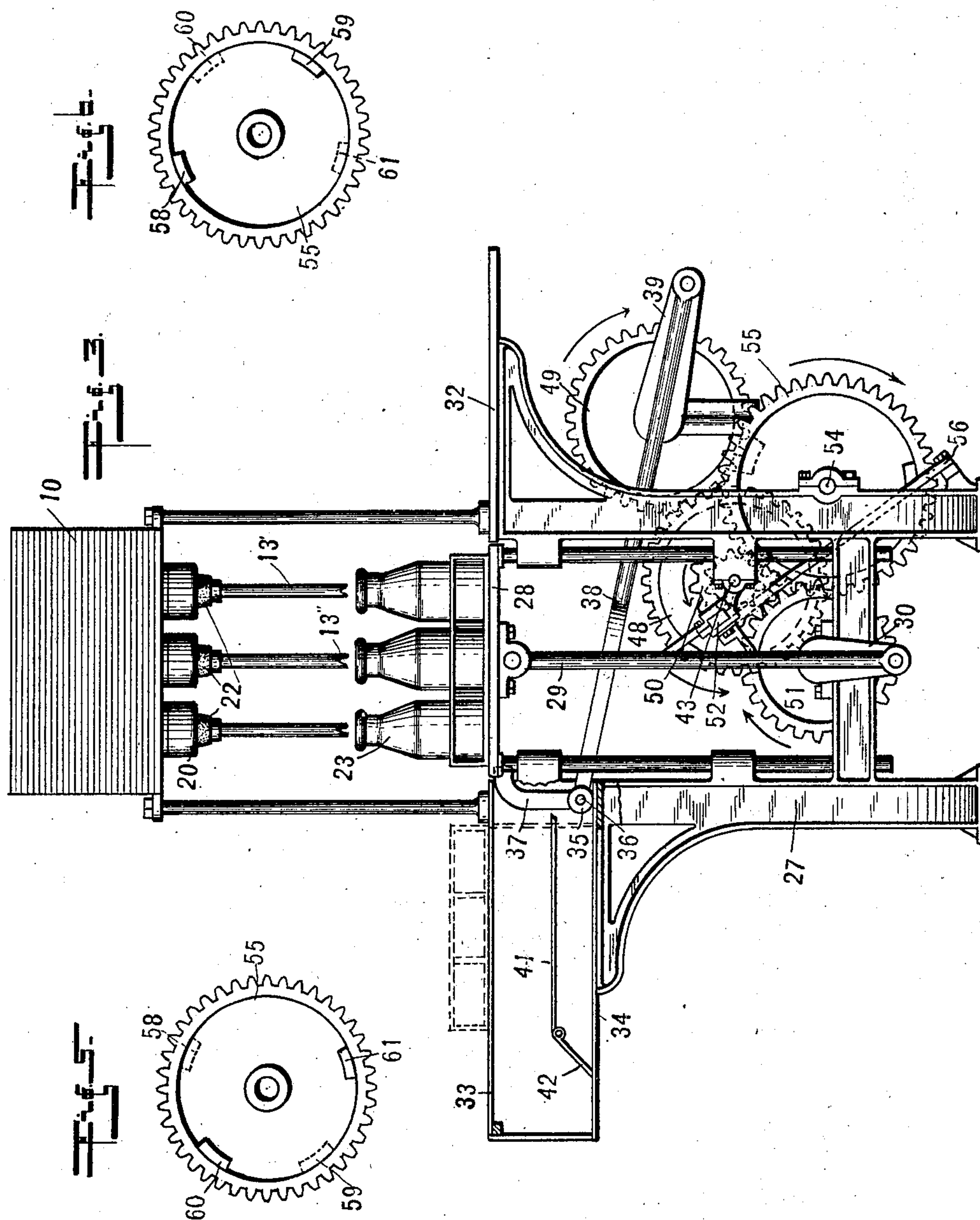
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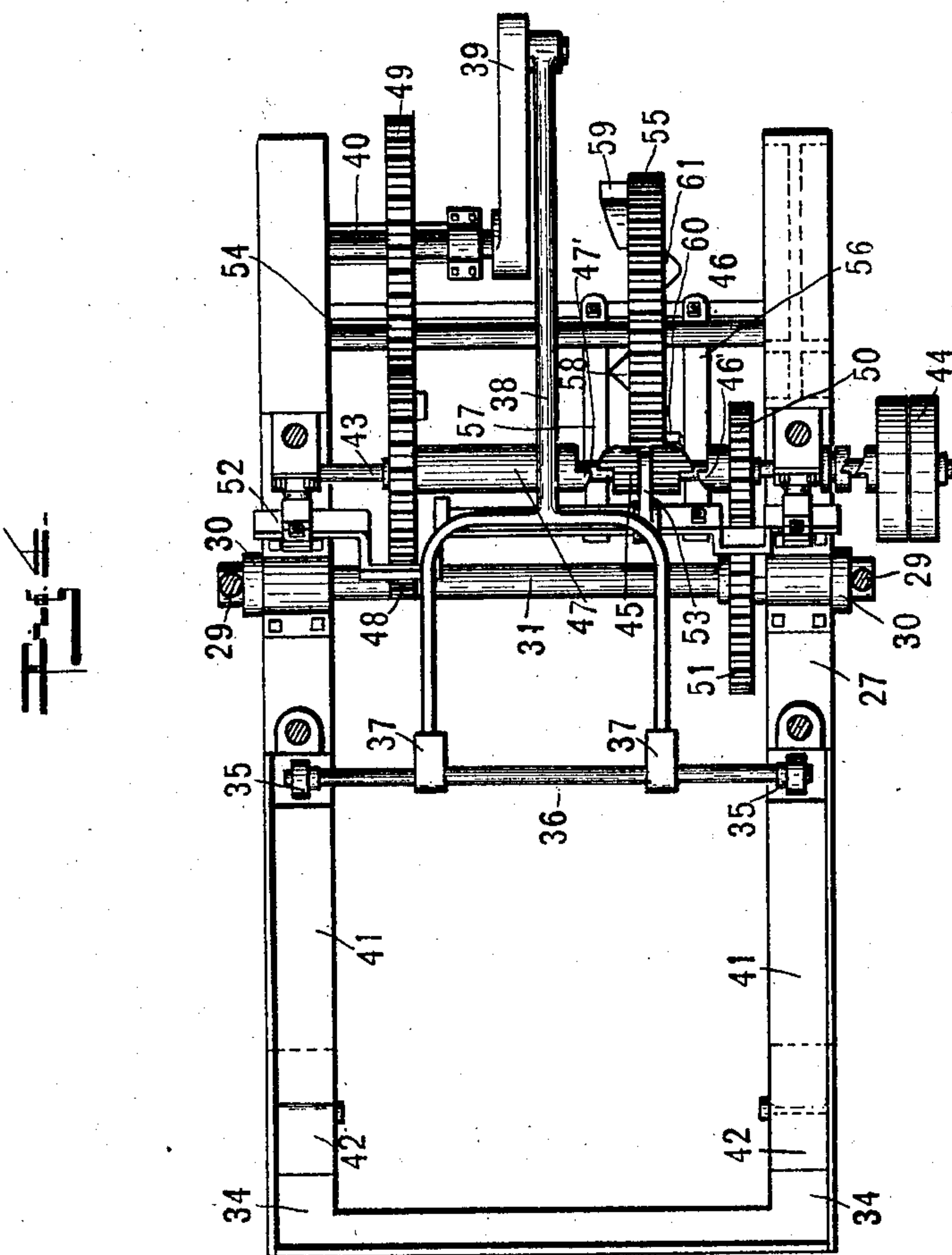
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3 SHEETS—SHEET 3.



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# UNITED STATES PATENT OFFICE.

OLIVER H. CASTLE, OF INDIANAPOLIS, INDIANA, ASSIGNOR TO CHARLES L. CASTLE, OF INDIANAPOLIS, INDIANA.

## MEANS FOR PACKAGING LIQUIDS.

SPECIFICATION forming part of Letters Patent No. 720,562, dated February 17, 1903.

Application filed January 13, 1902. Serial No. 89,396. (No model.)

*To all whom it may concern:*

Be it known that I, OLIVER H. CASTLE, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented a new and useful Means for Packaging Liquids, of which the following is a specification.

My invention relates to an improvement in means for placing liquids in packages, such as bottles.

In the bottling of many liquids difficulty is found by reason of the tendency of the fluid to foam and resulting waste.

The object of my invention is to produce a device by which a liquid, such as milk, may be introduced into bottles or other packages in such manner as not to foam and so that there shall be no slopping or waste.

A further object of my invention is to so construct and arrange the device that its operation may be substantially automatic.

The accompanying drawings illustrate my invention.

Figure 1 is a central vertical section of the essential and principal feature of my invention. Fig. 2 is a similar view of a portion of the parts shown in Fig. 1 with the parts in closed positions. Fig. 3 is a side elevation of an automatic machine. Fig. 4 is a plan immediately beneath the tables. Fig. 5 is an elevation of one side of the shifting cam. Fig. 6 is an elevation of the opposite side of said cam.

In the drawings, 10 indicates a reservoir, from the bottom of which leads a tube 11, said tube having formed in its upper end a valve-seat 12.

Fitted in the tube 11 and axially reciprocable therein is a tube 13, which carries at its upper end a valve or head 14, adapted to seat in valve-seat 12. Tube 13 is provided at its lower end with an extension 13', which is made of a length to correspond with the package to be filled, as will hereinafter appear, and said tube is notched, as at 13'', to form an outlet for the liquid. Formed in tube 13 is an air-vent 15, which leads from a point some distance down the side of tube 13 upward through the top of head 14, and connected with the upper end of this passage is an air-tube 16, which passes above the highest

level of fluid in reservoir 10. Formed through the wall of tube 11 immediately above the normal or lowest position of the lower end of the air-passage 15 is one or more openings 17.

Sleeved upon tube 11 is a sleeve 18, provided at its upper end with a flange 19, which fits in a cylinder 20, projecting from the bottom of reservoir 10. Mounted between the bottom of the reservoir and flange 19 is a spring 21, which normally urges flange 19 downward to its lowest position.

Mounted upon sleeve 18 is a rubber or other suitable gasket 22, which is adapted to fill the mouth of a bottle 23. Formed through sleeve 18 are one or more openings 24, which are adapted to be brought into register with openings 17 by an upward movement of the sleeve.

Formed through the wall of tube 13 at a point immediately below the lower end of tube 11 when tube 13 is in its lowest position is a vent 25.

In operation the parts are normally in positions shown in Fig. 2, valve 14 being seated in seat 12, and thus preventing the passage of any fluid from the reservoir. The mouth of a bottle placed over the tube 13' will come into contact with the gasket 22, and sufficient pressure is applied to compress spring 21 and move sleeve 18 up until openings 24 register or partially register with openings 17. At the same time the lower end of tube 13' has been engaged by the bottom of the bottle and tube 13 shifted so as to move valve 14 from its seat 12 and bring the lower end of the air-vent 15 into register or partial register with one of openings 17. The milk or other fluid thereupon flows down through the tube 13 13' and flows out from the lower end, so as to fill the bottle from the bottom, thus preventing any foaming. The air in the bottle passes out through openings 24 and 17 and vent 15. No matter how long the parts may be left in these positions only enough fluid to fill the bottle can pass into the bottle, owing to the fact that gasket 22 seals the upper end of the bottle. Upon withdrawal of the bottle gasket 22 remains in contact with the mouth of the bottle until tube 13 has dropped far enough to bring valve 14 to its seat, thus shutting off the supply of fluid. The fluid



within tube 13 13' is only sufficient to compensate for the space occupied by the said tube and the lower ends of tube 11 and sleeve 18. Opening 25 admits a sufficient amount of  
 5 air into tube 13 13' when the valve 14 is closed to allow a rapid discharge of fluid from said tube as it is withdrawn from the bottle, and any fluid which may have passed into the air-  
 10 passage 15 is held therein by the movement of the mouth of the passage out of register with openings 24 and 17.

The device described may be used where the bottles are applied by hand; but I prefer the embodiment of the device in an automatic  
 15 machine, such as that shown in Figs. 3 to 6, inclusive, of the drawings. In this machine the reservoir 10 is provided with a plurality of bottle-filling devices, such as those already described, the reservoir being supported upon  
 20 a suitable framework 27. Mounted immediately below the bottle-fillers is a vertically-reciprocable table 28, which may be reciprocated by means of pitmen 29 and cranks 30, which cranks are carried by a shaft 31. Ar-  
 25 ranged on a level with the lowest position of table 28 and on opposite sides thereof are a stationary receiving-table 32 and a slatted feeding-table 33. Mounted below each end of table 33 is a track 34, upon which rolls one of a  
 30 pair of wheels 35, carried by a shaft 36. Secured to shaft 36 is a pair of fingers 37, which extend upward to a point slightly beneath table 33. Connected to shaft 36 is one end of a pitman 38, the opposite end of which is  
 35 connected to a crank 39, carried by a shaft 40. Arranged above each track 34 is a parallel track 41, which at its rear end is provided with a valve-track 42, which forms an inclined connection between the rear end of  
 40 track 41 and track 34. Arranged parallel with shafts 31 and 40 is a shaft 43, which is driven by a suitable pulley 44. Splined upon shaft 43 is a pinion 45, which carries at opposite ends clutch members 46 and 47. Loosely  
 45 mounted upon shaft 43 is a gear 48, provided with a clutch member 47', adapted to cooperate with the clutch member 47. Gear 48 meshes with a gear 49, secured to shaft 40. Loosely mounted on shaft 43 is a gear 50,  
 50 which is provided with a clutch member 46', adapted to cooperate with clutch member 46. Gear 50 meshes with a gear 51, carried by shaft 30. Reciprocally mounted parallel with the shafts described is a shifter-bar 52,  
 55 which carries a yoke 53, adapted to engage and shift pinion 45, which, as shown, is provided with a medial peripheral groove, within which the yoke lies. Arranged parallel with the shafts already described is a fourth  
 60 shaft 54, which carries a cam-gear 55, said gear meshing with the pinion 45. Arranged parallel with the cam-gear 55 are two shifting levers 56 and 57, which levers are pivoted at their lower ends to the framework and at their  
 65 upper ends to the shifter-bar 52. Carried by one face of the cam-gear 55 are two cams 58 and 59, and the opposite face of cam-gear 55

carries two cams 60 and 61. Cams 58 and 59 are adapted to engage shifter-lever 57 and swing the same in one direction, while cams 60  
 70 and 61 are adapted to engage shifter-lever 56 and shift it in the opposite direction. The bottles 23 are placed in a rack 62 of any desired form, such that the bottles will be spaced according to the spacing of the filler-  
 75 tubes 13'. The parts of the machine as shown in the drawings are in the positions occupied when an empty set of bottles has just been placed upon the table 20 and pinion 45 is in  
 80 transit, cam 60 being in engagement with lever 56 and shifting said lever, so as to shift clutch member 46 into engagement with clutch member 46'. When this occurs, shaft  
 85 31 is rotated in the direction indicated by the arrow for a half-revolution, the bottles being thus projected up around their respective filling-tubes 13' and the shaft 40 remaining at rest. As soon as this half-revolution is ac-  
 90 complished gear 45 is shifted by cam 58 coming into contact with shifting lever 57, so as to throw the pinion to the point shown in Fig. 4. After a sufficient time has elapsed to insure the filling of the bottles cam 61  
 95 comes into engagement with lever 56 and brings clutch member 46 into engagement with clutch member 46', so as to produce another half-revolution of shaft 31, thus returning table 28 to its lowest position. There-  
 100 upon cam 59 comes into engagement with lever 57 and throws clutch member 47 into engagement with clutch member 47', and shaft 40 is given a complete revolution. This revolution causes pitman 38 to move shaft 36, to-  
 105 gether with its arms 37, to the left (in Fig. 3) under valve-track 42, the said track immediately dropping behind rollers 35. As pitman 38 is returned to the rear, rollers 35 pass up tracks 42, so as to project fingers 37 up through the slatted table 33 in position to en-  
 110 gage a filled bottle-tray 62 and project the same onto the table 28, with the bottles therein, in alinement with the tubes 13'. As soon as a complete revolution of shaft 40 is accomplished shaft 60 shifts gear 45, so as to bring  
 115 clutch member 46 thereof into engagement with clutch member 46', and the operation is repeated.

I claim as my invention—

1. In a device for packaging liquids, the combination with a liquid-reservoir, of a tube  
 120 leading from said reservoir and having a valve-seat formed therein at its inner end, a discharge-tube reciprocally mounted in the first tube, a valve carried by the upper end of said tube and adapted to seat in the valve-  
 125 seat, means carried by the reservoir for closing the mouth of a package, and an air-vent passage leading through the wall of the discharge-tube at a point below the mouth-closing means.  
 130

2. In a device for packaging liquids, the combination of a liquid-reservoir, a tube leading therefrom and having a valve-seat formed in its inner end, a discharge-tube extending



through and reciprocally mounted in said first-mentioned tube, a valve carried by the upper end of the discharge-tube and adapted to seat in the valve-seat, a sleeve sleeved upon the first-mentioned tube and carrying means for closing the opening in the package, and an air-passage formed in the upper end of the discharge-tube separate from the interior of the tube and opening through the side of the tube at a point to communicate with the interior of the package.

3. In a device for packaging liquids, the combination of a liquid-reservoir, a tube leading therefrom and having a valve-seat formed in its inner end, a discharge-tube extending through and reciprocally mounted in said first-mentioned tube, a valve carried by the upper end of said discharge-tube and adapted to seat in the valve-seat, a sleeve sleeved upon the first-mentioned tube and carrying means for closing the opening in the package, an air-passage formed in the upper end of the discharge-tube separate from the interior of the tube and opening through the side of the tube at a point to communicate with the interior of the package, and an air-vent leading through the wall of the discharge-tube into its interior.

4. In a device for packaging liquids, the combination with a liquid-reservoir, of a tube

extending from the bottom thereof and provided with a valve-seat at its inner end, a discharge-tube reciprocally mounted in the first-mentioned tube, a valve carried by the upper end of said tube and adapted to seat in the valve-seat, a sleeve reciprocally mounted upon the first-mentioned tube and provided with a flange, a casing surrounding the first-mentioned tube and secured to the reservoir so as to limit the movement of the sleeve, a spring arranged between the reservoir and flange so as to urge the sleeve outward upon its tube, a gasket carried by said sleeve and adapted to close the mouth of the package, an air-vent passage extending through the upper end of the discharge-tube independent of the interior thereof and emerging through the wall of said tube to communicate with the interior of the package, coacting registrable openings formed in the first-mentioned tube and in the sleeve so as to allow communication between the interior of the passage and the air-vent passage, and an air-vent leading through the wall of the discharge-tube into the interior thereof.

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