S. R. KING.

BOTTLE FILLING DEVICE.

APPLICATION FILED APR. 15, 1918.

1,325,991.

Patented Dec. 23, 1919.

Fig. 1

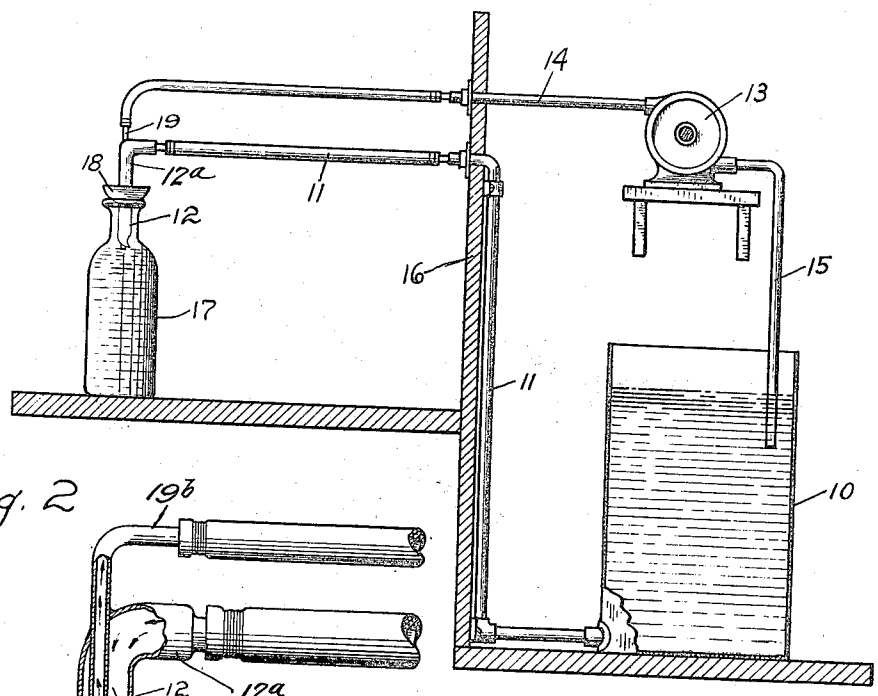


Fig. 2

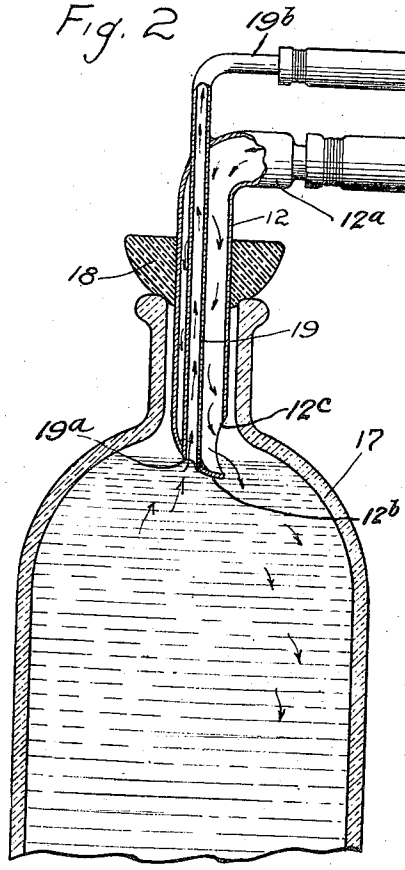
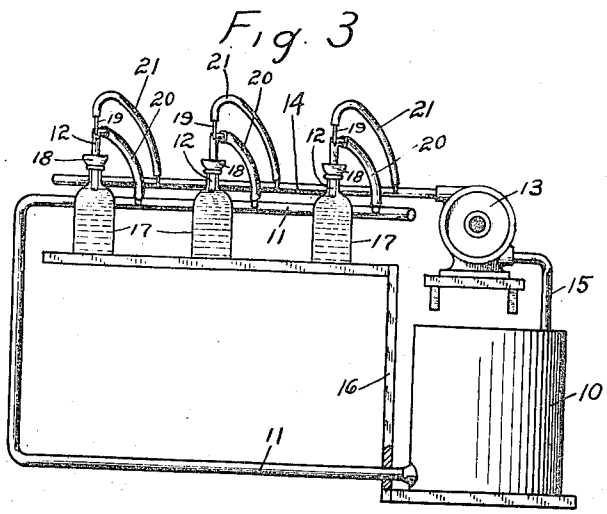


Fig. 3



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BOTTLE-FILLING DEVICE.

1,325,991. Specification of Letters Patent. Patented Dec. 23, 1919.

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To all whom it may concern:

Be it known that I, SAMUEL R. KING, a citizen of the United States, residing at Glenbrook, county of Fairfield, State of Connecticut, have invented an Improvement in Bottle-Filling Devices, of which the following is a specification.

This invention has for its object to provide a simple and inexpensive apparatus for filling bottles, that shall be rapid and efficient in operation, will fill each bottle just so full and no more, and will wholly eliminate danger of loss from overflow.

With these and other objects in view, I have devised the novel apparatus which I will now describe referring to the accompanying drawing forming a part of this specification and using reference characters to indicate the several parts.

Figure 1 is a view, partly in elevation and partly in section, illustrating the construction and mode of operation of my novel apparatus;

Fig. 2, a sectional view on an enlarged scale illustrating the filling operation and how overflow is prevented, and

Fig. 3 is an elevation illustrating a modified form of the apparatus adapted to fill a plurality of bottles simultaneously.

10 denotes a reservoir, or suitable source of supply, for containing the liquid to be bottled. A filling pipe 11 leads from near the bottom of the reservoir, and is provided with a nozzle 12. 13 denotes a suction pump from which a return pipe 14 leads and is provided with a tip which operates in connection with the nozzle, as will be more fully explained. A continuation of the return pipe, indicated by 15, leads from the pump to the reservoir.

It should be understood that the special arrangement of the parts or their position, relatively to each other, is wholly unimportant so far as the principle of the invention is concerned. I have shown the filling pipe and return pipe 14 as supported by and extending from a suitable wall or standard, indicated by 16. The portions of these pipes, extending from the wall or standard to the filling position, are necessarily either resilient or flexible. In practice rubber tubing is found to serve the purpose admirably.

17 denotes the bottle to be filled and 18 a stopper, or suitable closing means, for the bottle, preferably of rubber, through which the nozzle and the tip 19 of the return pipe pass. The nozzle 12 is in the form of a tube having an angularly disposed inlet branch 12^a provided with a pipe engaging nipple, the discharge end being closed by a curved end wall 12^b and provided with a laterally disposed discharge opening 12^c. The vent tip 19 of the return pipe consists of a tubular body extending longitudinally through the nozzle 12, having its inlet end 19^a secured to the curved end wall 12^b of the nozzle 12 and having its discharge end passed through and secured to the branch 12^a. Said discharge end is provided with an angular branch 19^b shaped to engage a pipe and lying parallel with and contiguous to the branch 12^a. It should be noted that the orifice of tip 19 of the return pipe is in horizontal alinement with the orifice of the nozzle, that is neither above nor below it, and that the return pipe extends above the top of the reservoir, that is above the normal liquid head.

In use, having filled the reservoir, the operator starts the suction pump. The stopper, carrying the nozzle and the tip of the return pipe, is then placed in the neck of the bottle to be filled, completely closing it. The return pipe draws air from the bottle and discharges it into the reservoir, and fluid from the reservoir passes through the filling pipe and through the nozzle into the bottle to fill the vacum caused by the pump. Liquid will continue to pass into the bottle until the liquid level in the bottle rises above the orifice of tip 19. As soon as the liquid rises above this orifice liquid will be drawn from the bottle through the nozzle and return pipe 14 to the pump, and will be discharged through the continuation of the return pipe into the reservoir. This insures uniform filling of the bottles, and eliminates all danger of overflow and waste of the liquid. It is not necessary to stop the pump until the liquid in the reservoir is exhausted, and if the operator does not remove the bottles from the nozzle as fast as filled, no harm can be done as the liquid can not rise in the bottle above the orifice of tip 19, but will simply pass back to the reservoir. The instant the operator lifts the stopper from the neck of the bottle, outside air will be drawn through the return pipe and will be discharged into the reservoir. No liquid can then pass from the reservoir through the filling pipe for the reason that

the filling pipe extends above the liquid head in the reservoir, and there is no vacuum to be filled.

The form illustrated in Fig. 3 differs only in that provision is made for filling a plurality of bottles simultaneously. A plurality of branch pipes 20, ordinarily flexible, lead from the filling pipe 11 to a plurality of nozzles 12, and a plurality of branch pipes 21 lead from a plurality of tips 19 to return pipe 14. This enables a quick operator to keep a plurality of bottles in process of filling at the same time. As already explained, no overflow will occur if the operator fails to remove the bottles as fast as filled.

Having thus described my invention, I claim:

A bottle filling device of the character described comprising a stopper shaped to close the mouth of the bottle, a nozzle passed through the stopper, a vent tip extending longitudinally through the nozzle, the inner end of said vent tip being passed through and secured to the inlet branch of the nozzle, a reservoir, a flexible pipe connecting said reservoir with the outer end of said nozzle at a point above the normal liquid head of the reservoir, a suction pump, a flexible connection between said pump and the outer end of the vent tip, and connections between said pump and said reservoir, whereby air may be drawn out of the bottle through the vent tip and discharged into said reservoir and fluid within the reservoir may be forced out to said receptacle.

In testimony whereof I affix my signature.

SAMUEL R. KING.