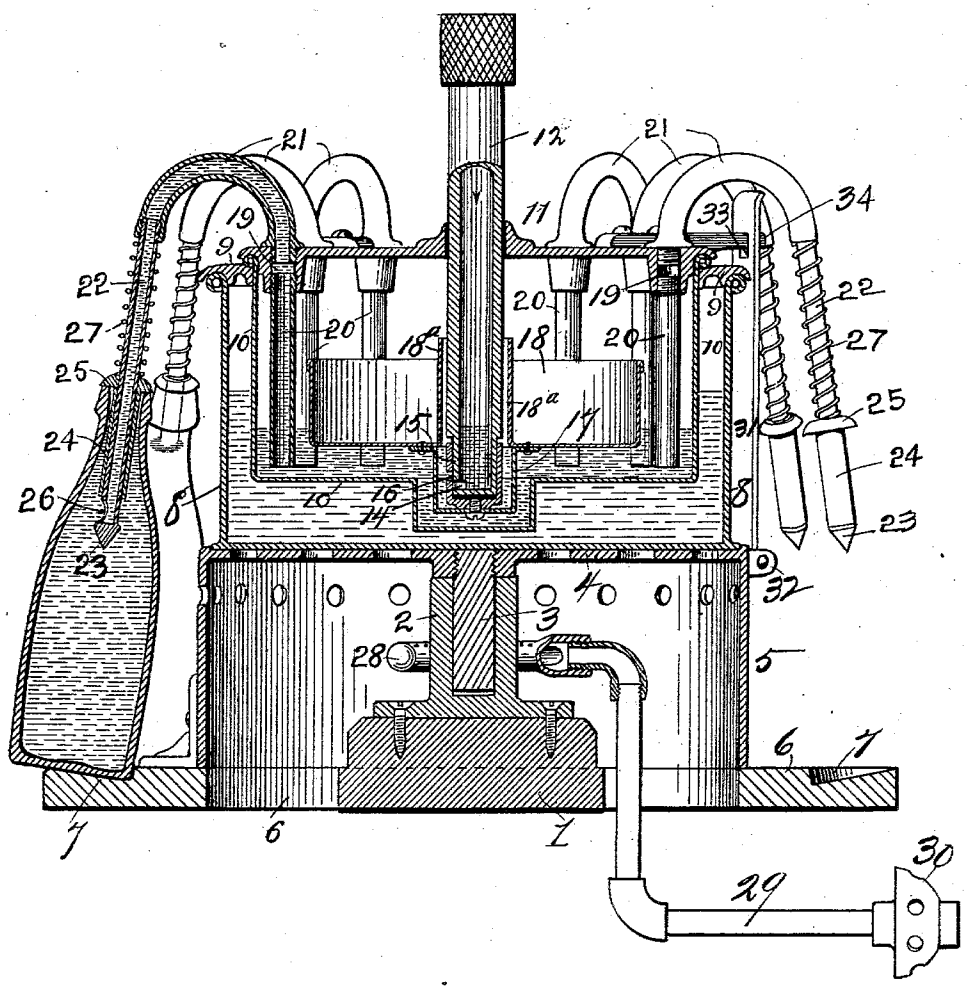
No. 717,720. PATENTED JAN. 6, 1903.

E. H. SCHOFIELD.

BOTTLE FILLING MACHINE.

APPLICATION FILED APR. 14, 1902.

NO MODEL.



WITNESSES:

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EUGENE H. SCHOFIELD, OF TOLEDO, OHIO.

BOTTLE-FILLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 717,720, dated January 6, 1903.

Application filed April 14, 1902. Serial No. 102,883. (No model.)

To all whom it may concern:

Be it known that I, EUGENE H. SCHOFIELD, a citizen of the United States, residing at Toledo, in the county of Lucas and State of Ohio, have invented certain new and useful Improvements in Bottle-Filling Apparatus; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawing, and to the figures of reference marked thereon, which forms a part of this specification.

My invention relates to and its object is to provide an apparatus for the automatic filling of bottles, and more particularly to provide means in such an apparatus for starting the flow of liquid into the bottle to be filled by the mere placing of the bottle in position and to provide means for supplying each bottle with exactly the desired amount of liquid and in such manner that there shall be no overflow or waste after the bottle is removed.

A further object of my invention is to provide an apparatus which may be readily taken apart for cleaning and to provide means for heating and keeping hot the liquid to be bottled.

My invention also relates to certain details of construction hereinafter described, and pointed out in the claims.

I attain these objects by means of the devices and arrangement of parts hereinafter described and shown and illustrated in the single figure of the accompanying drawing, which is a central vertical sectional elevation of my device, showing a bottle filled and with the inlet to the supply-tank closed.

In the drawing, 1 is a base which forms a support for my machine. On top of the base is secured a socket-piece 2, in which is socketed a spindle 3, which is secured to the center of the under side of the circular table 4. This table has depending sides 5, from the bottom of which projects horizontally a circular shelf or rim 6. In the top of this rim are indentations 7, formed to receive the bottom of the bottle. It will be seen that the table 4 and the shelf 6 are, by means of the socket-piece and spindle 2 3, horizontally revoluble upon the fixed base 1.

Resting upon the top of the table 4 is a circular tank 8. Upon the top margin of this tank rests a flat ring 9, which forms an inwardly-projecting flange. 10 is another tank the upper outwardly-rolled margin of which rests upon and is supported by the edge of the circular opening through the ring 9. The tank 10 is thus suspended within the tank 8. The tank 10 is provided with a removable cap or cover 11, through the center of which is a round hole through which passes a stationary vertical feed-pipe 12, closed at bottom. This pipe serves the double purpose of a supply-pipe and a fixed vertical shaft upon which the apparatus revolves horizontally, as hereinafter stated. Through the side of this pipe, at bottom, is a rectangular opening 14.

Surrounding the pipe 12, at bottom, is a closely-fitting sleeve 15, adapted to slide vertically upon the lower end of the pipe 12. Through the wall of the sleeve is a rectangular opening 16, which by the vertical movement of the sleeve is capable of being thrown into and out of coincidence with the opening 14 through the pipe 12. The sleeve 15 is, by means of a bent brace 17, rigidly connected with the bottom of a float 18. This float is circular in horizontal section and has a vertical opening 18^a through its center, through which the tube 12 passes. It will be seen that the vertical movement of the float reciprocates the sleeve 15 in such manner as to bring the two openings 14 and 16 into and out of coincidence with each other.

An advantage of the valve construction here described is that the device works uniformly regardless of any variation of pressure in the feed-tube and also permits the rotation of parts, as hereinafter described.

Through the top 11, near its margin, is a series of threaded openings 19, spaced at equidistant intervals. Depending from and communicating with each of these openings is a tube 20, the open lower end of which is near the bottom of the tank 10.

Connected with each of the openings 19 and secured to the top of the plate 11 is a tube 21, the extremities of which are curved out-

wardly and downwardly, as shown, toward the shelf or rim 6. Each of the tubes 21 is provided with straight extension 22, closed and flanged at bottom, as at 23, and upon which slides a sleeve 24, having at top a flange 25. In the side of the tube 22, near its lower extremity, is a hole 26, which when the lower end of the sleeve 24 rests against the flange 23 is closed and which when the tube is raised is open, so that liquid in the tube 22 will escape. On each of the tubes 22, between the flange 25 and the shoulder formed by the end of the curved tube 21, is a coiled spring 27, the stress of which holds the sleeve 24 normally depressed, so that the holes 26 are normally closed.

Surrounding the socket-piece 2 is a gas-burner 28, formed as a hollow ring and supplied with gas through supply-tube 29 and mixer 30.

The operation of my device is as follows: When hot liquids are to be bottled and the temperature is to be maintained during the operation, the tank 8 is partly filled with water and the gas is lighted at the burner, the liquid to be bottled being furnished through the supply-pipe at the proper temperature. The parts being assembled, as shown and described, the liquid to be bottled is caused to flow through the pipe 12 into the tank 10. When the liquid rises in this tank to the proper predetermined height, the flow of liquid is stopped by the rise of the float 18, which causes the sleeve to rise and close the opening 16 in the tube 12. The pipes 22, which are in communication with the liquid in the tank 10, are filled with the liquid by applying suction to the apertures 26. The fluid in the tank 10 being at the proper height and the pipes 21 22 being filled, the open mouth of a bottle is passed upwardly, so that the end of the tube 22, with its sleeve 24, slips into the bottle. The bottle is pressed upwardly against the flange 25 to overcome the resistance of the spring 27, and the bottom of the bottle is placed in depression 7. Now the sleeve 24 is lifted, the orifice 26 is open, and the liquid in the tank 10 is siphoned out into the bottle until the liquid rises in the bottle to the level of the liquid in the tank, when the flow of liquid through the pipe 22 will cease. The withdrawal of this quantity of liquid from the tank 10 causes the float 18 to descend and causes the apertures 14 and 16 to register. Now the liquid flows through the supply-pipe into the tank in sufficient quantity to again lift the float and to again shut off the supply. Thus the liquid in the tank is held constantly at a predetermined level, and this level is reached in the bottle each time a bottle is filled. In practice when the operator has placed a bottle in position he gives the table 6 a part turn, bringing another pipe 22 in front of him and slips another bottle into place. He then gives the table another part turn, and so on. Near him stands another operator, who removes the bottles from the machine as fast as they are filled and places them in racks to be corked. The instant the bottle is removed the spring 27 forces the sleeve 22 down against shoulder 23, thus closing the aperture 26 until another bottle is put in place. It will be seen that after the machine is once started the tubes 22 remain filled, and it is only necessary to place a bottle in position to start the discharge from the tube 22, and it will be seen that the bottle will now be filled to exactly the proper height and without further attention.

When the machine is used for hot liquids and the tank 8 is filled, it will be necessary to provide means to prevent the tank 10 from floating with its load. I accomplish this by means of a bar 31, hinged, as at 32, to the part 5 and having at top an opening 33, adapted to slide over an arm 34, secured to the top of the cover 11. The bars 31 and 33 also prevent the springs 27 by their upward thrust from lifting the top plate 11 from its place and insure tight joints between the vessels 8 and 10 and their covers.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a bottle-filler, a tank, means for heating the contents of the same, a liquid-holder in said tank, means for maintaining a constant liquid-level in the liquid-holder, a bottle-holder, conduits leading from the liquid-holder each adapted to be connected with the interior of a bottle, and a horizontally-revoluble support for the apparatus independent of the heating means.

2. In a bottle-filler, a revoluble table, a tank supported thereon, a liquid-holder supported within the tank, a cover for said holder, a supply-pipe extending vertically through the center of the cover, and bottle-filling devices connected with said liquid-holder combined with means for heating the contents of the tank.

3. In a bottle-filler, a revoluble liquid-holder, bottle-filling devices connected with said holder, a float in the liquid-holder having a central vertical opening therethrough, a supply-pipe leading through said opening and having an opening near its lower end, a sleeve which slides on the lower end of said supply-pipe and having an orifice adapted to move into and out of coincidence with said opening in the supply-pipe, and connections between the float and the sleeve which cause the float and the sleeve to move in unison.

4. A bottle-filler comprising a bottle-holder, a liquid-holder, tubes leading from the liquid-holder and adapted to be thrown into communication with bottles on the bottle-holder, sleeves which move longitudinally on said tubes, springs which hold said sleeves nor-

mally projected, a cover for said liquid-holder through which cover said tubes pass and to which they are secured, and means for detachably securing said cover in place.

5. In a bottle-filler, a warming-tank, a liquid-holder supported within the tank, an annular cover for the tank, an independent cover for the liquid-holder, a supply-pipe extending vertically through the center of the cover for the liquid-holder, and bottle-filling devices connected with said liquid-holder.

In testimony whereof I affix my signature in presence of two witnesses.

EUGENE H. SCHOFIELD.

Witnesses:
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