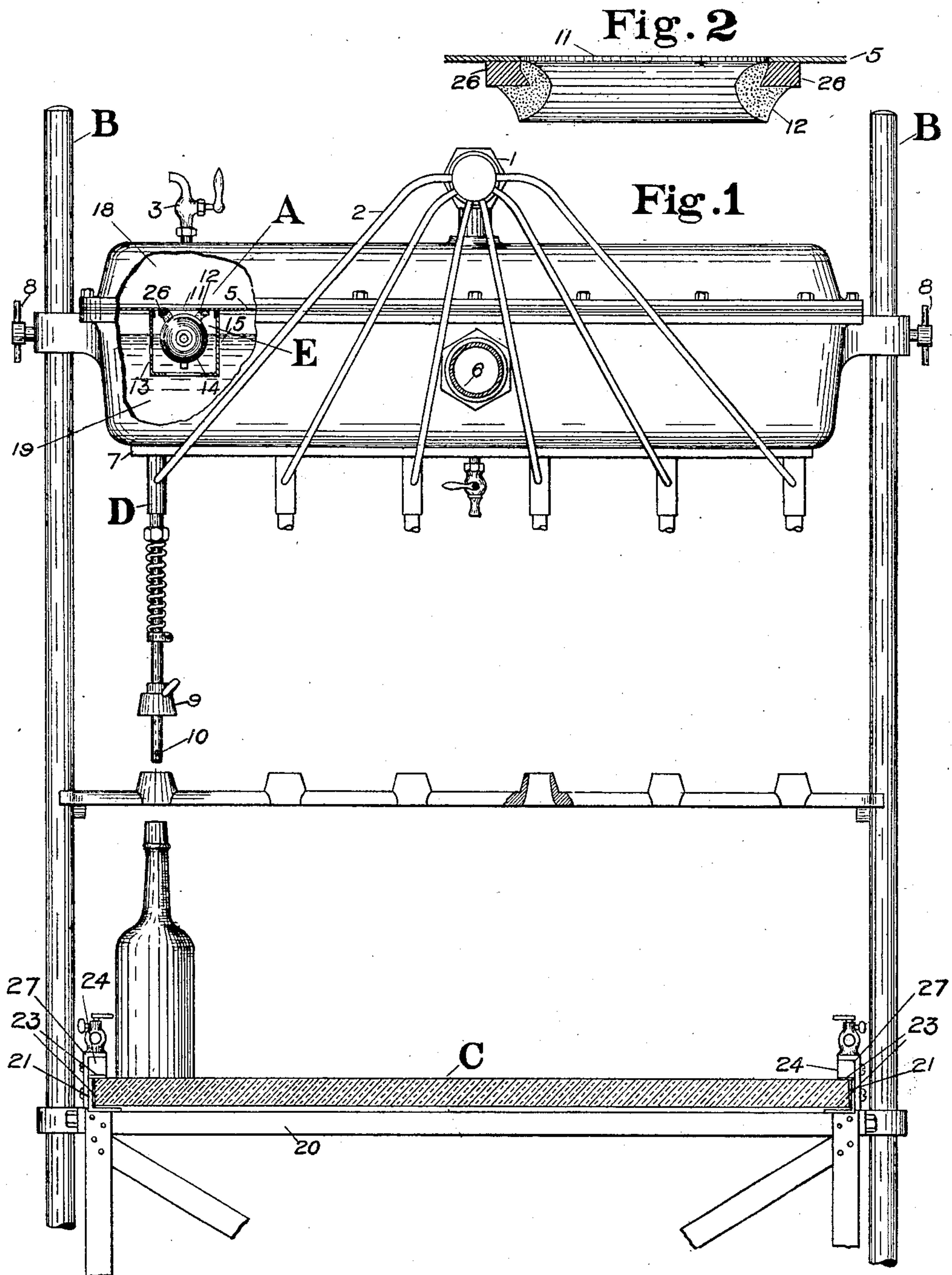


L. McCAMPBELL.  
BOTTLE FILLING MACHINERY.  
APPLICATION FILED SEPT. 26, 1907.

912,252.

Patented Feb. 9, 1909.



**WITNESSES:**

*Chas. W. Picknell*  
*C. B. Creelman*

**INVENTOR:**

*Leavelle McCampbell*  
BY *Robert H. Miller*  
ATTORNEY



# UNITED STATES PATENT OFFICE.

LEAVELLE McCAMPBELL, OF LOUISVILLE, KENTUCKY, ASSIGNOR TO LOUISVILLE FILLER COMPANY.

## BOTTLE-FILLING MACHINERY.

No. 912,252.

Specification of Letters Patent.

Patented Feb. 9, 1909.

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*To all whom it may concern:*

Be it known that I, LEAVELLE McCAMPBELL, a citizen of the United States, residing at Louisville, in the county of Jefferson and State of Kentucky, have invented new and useful Improvements in Bottle-Filling Machinery, of which the following is a specification.

My invention relates to that class of bottle filling machines designed to fill a number of bottles at once, and the objects of my improvements are, first, to provide a means for returning to the supply tank automatically and without undue exposure to air, such portion of the liquid as escapes through the tubes provided for the escape of air from the bottles during filling, and second, to provide a bed-plate and fastenings which shall prevent contamination of the liquid spilled while filling or removing the bottles.

The invention consists in the novel construction and combination of parts, as is hereinafter described and defined in the drawings appended hereto.

Figure 1 on the accompanying sheet shows an elevation of a bottle-filling machine, all the filling tubes but one being omitted; also omitting the support and the means of producing the vertically reciprocating motion of the tubes and tank. A part of the tank is broken away to show the interior construction. Fig. 2 shows an enlarged section of the seat of the float valve, located between the bottle-filling reservoir and the overflow reservoir.

Similar characters refer to similar parts in the two views.

In the said drawing A is a tank, divided by a flat plate 5 into two watertight compartments 18 and 19, the lower of which is connected with the general source of supply through the pipe at 6.

BB are standards on which the tank and appendages are adjustable at varying heights from the bed-plate by means of set screws 8. Provision is made by proper mechanism to impart a vertically reciprocating motion to the said tank and standards.

C is a bed-plate for the reception of the rows of bottles to be filled, only one bottle being here shown.

D is a filler tube, only one being shown, penetrating the lower compartment of the tank A.

E is a valve between the upper and lower

compartments of the tank A, more fully described below. A plate 7 is affixed to the lower side of the tank, and the tube D passes through this plate into the tank.

The filling tube D is provided with a cap 9, containing a pad or stopper, and when the whole system ABB is depressed, this pad closes the mouth of the bottle beneath. While liquid flows through the filling tube D, the air within the bottle escapes through a small tube whose lower extremity is at the opening shown at 10, and which is let into the interior of the filling tube and extends upward within said filling tube as later described. When a bottle is filling, the opening 10 is within the bottle. Through the opening 10, by means of the inner inserted tube before mentioned, air or liquid is conducted by suitable devices to the tube 2, thence through the head 1 into the upper reservoir or compartment 18, of the tank A. When a bottle is filled so that the liquid covers the opening 10, the air cushion between the stopper and the surface of the liquid in the bottle holds the liquid within said bottle at this height and the small air-tube opening at 10 allows the escape or overflow of any liquid displaced by a continued flow through the greater tube. The first purpose of the present improvement is to dispose automatically of this overflow, and return it to the source of supply. This is accomplished as follows: The said overflow passing first through the opening 10, next through the small tube within tube D, and then through the tube 2, is delivered into the upper compartment of the tank A. The valve E, in the partition between the upper and lower compartments, consists of a circular opening 11, and a hollow spherical float 14, held loosely in place beneath said opening by a metallic frame 13, and capable of closing said opening by pressing upward on a ring 12 of rubber or other suitable material forming a valve seat. This ring 12 engages a ring 26, connected with the plate 5, in the manner shown in Fig. 2. When bottles are not filling, the filling compartment 19 becomes nearly full and keeps said valve closed.

A proper and final adjustment of the rate of flow from the source of supply through the opening 6, will result in a reduction of the level and pressure in the lower or filling compartment 19, when the whole row of filling tubes is discharging into bottles, and the



valve E will open, the float falling with the level of the liquid, and permitting the accumulated liquid in the upper compartment to flow into said lower compartment. The frame 13 is pierced at 15, to allow the free passage of the liquid about the float. The upper compartment is provided with a stop-cock 3 to permit the escape of air. Normally it is kept open.

C is a bed-plate on which are placed the several rows of bottles to be filled. It is constructed of a solid plate of glass or vulcanite—if of glass, preferably of the variety known as floor-glass and ground on its upper surface. A framework 20 of any suitable construction supports the angle bars 21 which latter support the bed plate. One flange of each of the angle bars 21 projects under the lower side of the plate and the other flange thereof protects the outer edge. Bars shown in elevation at 24—24, rest on the side edges of the bed-plate C. Gaskets 23 are provided for the purpose of cushioning the plate. The bars are held firmly to the bed-plate by clamps 27—27 screwed to the angle irons 21—21 and to the bars 24—24 and projecting over its upper surface. These clamps, of which three are used on each side, are used as supports for side guides for bottles where guides are used. The whole bed is inclined slightly to the rear, where a mode of collection is provided for the accumulated liquid. The acids in many liquids, especially whisky, which has been stored in wood, upon coming in contact with any trace of ordinary metals, enters into chemical combination therewith producing a salt, visible as a cloud or sediment—said liquid thereby deteriorating in quality and decreasing in value.

By the above means the liquid spilled in rapidly changing the bottles, the drippage from the filler tubes, the flow from imperfect-necked and from broken bottles, instead of becoming unsalable and worthless—hitherto one of the elements of loss connected with machine bottling—is saved unharmed for further use. No other than a thick and solid layer of an absolutely non-corrosive material is practicable or effective for this purpose for the reason that a slightly imperfect bottle cuts grooves in passing over the bed in a single filling, and the interminable friction, even without this accidental roughness breaks through at once anything but a solid plate of the inactive material.

Having fully described my invention and its operation, I claim as new and desire to protect by Letters Patent only the following:

1. In a bottle filling machine, a bottle filling reservoir, a liquid-carrying tube connected therewith adapted to be inserted in the neck of the bottle, a liquid overflow tube,

an overflow reservoir connected therewith, means for returning the overflow of liquid to the overflow reservoir, a ball valve controlled by the level of the liquid in the bottle filling reservoir for discharging the liquid from the overflow reservoir and maintaining thereby a substantially uniform pressure in the bottle filling reservoir, and a bottle closing device on the liquid carrying tube.

2. In a bottle filling machine, a bottle filling reservoir, a tube connected therewith for conveying liquid to a bottle, an overflow reservoir, means for conducting the overflow of liquid to said overflow reservoir, and a device controlled by the level of the liquid in the bottle filling reservoir for discharging liquid from the overflow reservoir and simultaneously maintaining thereby a substantially uniform pressure in said bottle filling reservoir.

3. In a bottle filling machine, a bottle filling reservoir, a tube connected therewith for conveying liquid to a bottle, an overflow reservoir, means for conducting the overflow of liquid to said overflow reservoir, and a float valve controlled by the level of the liquid in the bottle filling reservoir for discharging liquid from the overflow reservoir and simultaneously maintaining thereby a substantially uniform pressure in the bottle filling reservoir.

4. In a bottle filling machine, the combination with two reservoirs at different levels, the one at the higher level being the terminal of the passage or passages provided for the escape of air from the bottle or bottles while filling and adapted for the reception of liquid overflowing thereinto; the one at the lower level being the principal reservoir from which delivery is made into the bottle or bottles; of a device controlled by the level of the liquid in the lower reservoir for discharging liquid from the upper reservoir and simultaneously maintaining thereby a substantially uniform pressure in said lower reservoir.

5. In a bottle filling machine, a bottle filling reservoir, a tube connected therewith for conducting liquid to a bottle, a liquid overflow reservoir, means for conducting the overflow of liquid from the bottle to said overflow reservoir, and a detached valve closing an opening in the bottom of the overflow reservoir and controlled by the level of the liquid in the bottle filling reservoir for discharging liquid from the overflow reservoir and maintaining thereby a substantially uniform pressure in the bottle filling reservoir.

LEAUELLE McCAMPBELL.

Witnesses:

EDW. N. SCHUBER,  
LOUISE C. STARK.