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FILLING MACHINE

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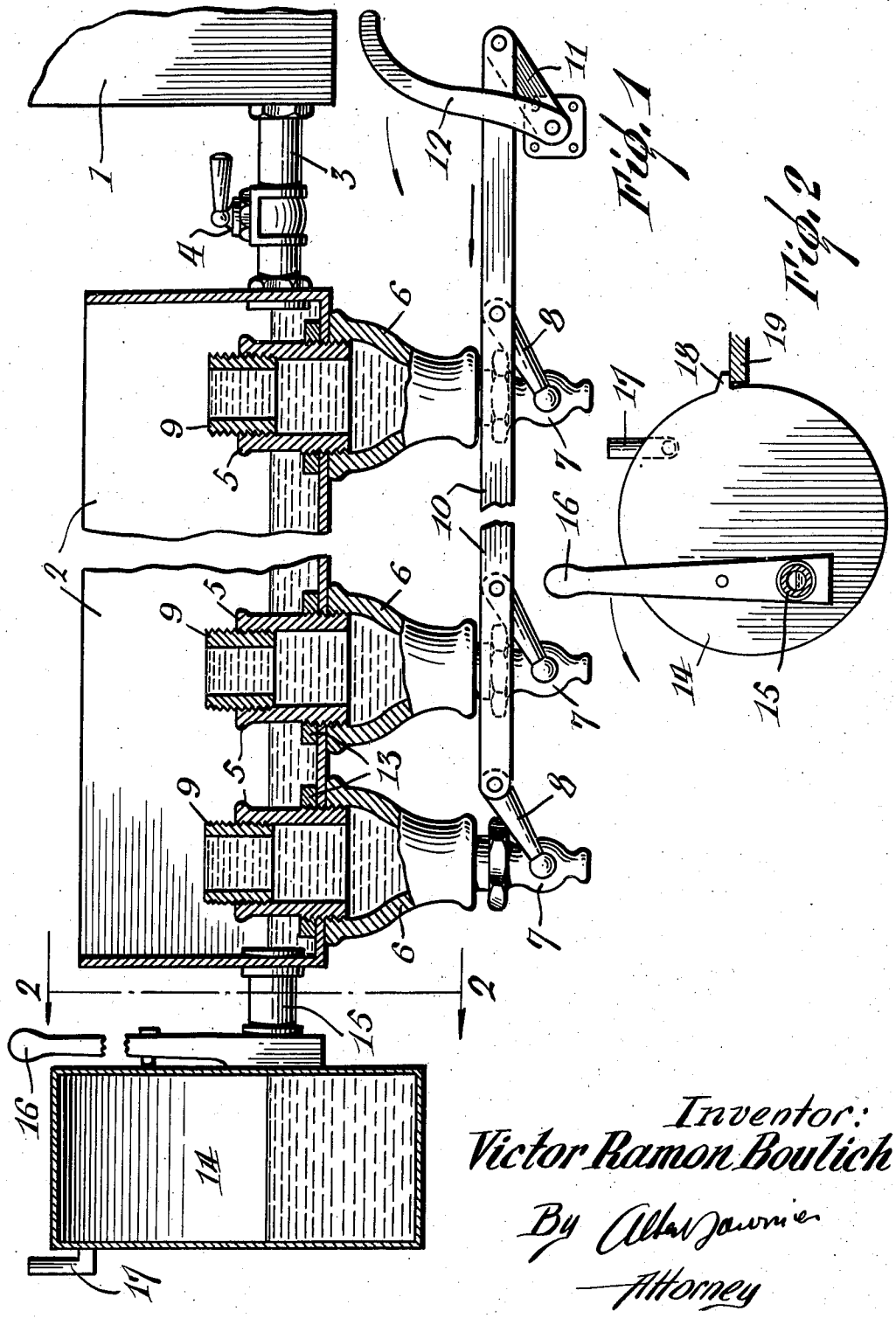


Fig. 1

Fig. 2

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FILLING MACHINE

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3 Claims. (Cl. 221—100)

The present invention pertains to a novel filling machine for dispensing a liquid into a number of receptacles simultaneously. The principal object of the invention is to provide a machine of this character for the simultaneous filling of any desired predetermined number of receptacles. Another object of the invention is to provide such a machine that is simple and inexpensive in construction and thoroughly effective and satisfactory in operation. Still another object is to provide such a machine wherein the measured discharge can be regulated for one or any number of the receptacles to be filled.

In keeping with this object, the apparatus comprises a filling tank adapted to be supplied with fluid from any suitable source such as a larger tank having a valved connection thereto. Each of the outlets from the filling tank includes a tubular member having its upper end open and disposed within the tank. The tubular member is fitted with a valve adapted to discharge into the receptacle. The valves are connected to a common operating member for simultaneous operation.

The upper end of each of the tubular assemblies is adjustable as to its level within the filling tank, preferably by means of a tube threaded therein. The measuring units are filled by charging the tank at least to the upper level of the units and draining off, so that the units remain filled and discharge their contents into the receptacles when the valves are opened. It will thus be seen that the volume of liquid measured in each unit is governed by the adjustment of the tubular member at the upper end.

In connection with draining off, as above set forth, another object of the invention is to provide a suitable means for this purpose. Such means consists of an auxiliary or levelling tank connected to the filling tank below the level of the upper ends of the measuring units. The levelling tank is so mounted that the elevation of its bottom can be regulated. It is preferably mounted pivotally and eccentrically, so that it has a greater volume at one side of the axis than at the other. In the event that the liquid level in the filling tank is slightly below the tops of the measuring units, the levelling tank with liquid therein is manually turned to bring its side of larger volume uppermost, and this added supply of liquid brought into communication with the filling tank is sufficient to cover the tops of the measuring units.

The invention is fully disclosed by way of example by the following description and the accompanying drawing in which:

Figure 1 is a longitudinal section of the device, and

Figure 2 is a section on the line 2—2 of Figure 1.

Reference to these views will now be made by use of like characters that are employed to designate corresponding parts throughout.

In Figure 1 is shown a supply tank 1 and a filling tank 2. The two tanks are connected by a pipe 3 in which is inserted a hand valve 4. The tank 1 represents a supply adapted to fill the tank 2 to a desired level therein, and the tank 2 contains liquid for filling a number of bottles or other receptacles. The number of such bottles or receptacles to be filled from the tank 2 is predetermined according to the number of outlets provided, but is otherwise unlimited inasmuch as there may be provided as many outlets as desired.

Each of these outlets includes a nipple 5 threaded through the bottom of the tank 2. A reducing nipple 6 is screwed on the exposed lower end of each nipple 5 and is fitted in turn at its lower end with a valve 7 having an operating handle 8. In the upper end of each nipple is threaded a tube 9 for a purpose that will presently be described. All of the handles 8 are pivotally attached to an operating rod 10 linked at 11 to an operating lever 12. When the lever is pushed in the direction of the arrow, all of the valves 7 open simultaneously. A ring or packing nut 13 is threaded on each nipple 5 in engagement with the bottom of the tank 2 to prevent leakage.

An auxiliary or levelling tank 14 is pivotally mounted on a pipe 15 extending into the tank 2 near the bottom thereof. The tank 14 has an off center mounting on the pipe 15 as shown more clearly in Figure 2. That is, the bottom of the tank 14 is lowered when the tank is turned through 180 degrees by its handle 16. An air discharge tube 17 extends from the end of the tank more remote from the axis. A lug 18 on the periphery of the tank 14 engages a fixed stop 19 to limit the movements of the tank.

In the operation of the device, the tank 2 is charged from the tank 1 by opening the valve 4, at which time the levelling tank 14 is adjusted with its upper end more remote from the pivotal axis 15 than the lower end, as shown in Figure 1. Fluid is admitted to the tank 2 to a level slightly above that of the tubes 9, and then the valve 4 is closed. The levelling tank 14 is then reversed so that its lower end is more remote from the pivotal axis, and the tank 2 drains below the level

of the tubes 9. The members 6, 5 and 9, however, remain filled, and the combined volume of each group is the measured amount to be discharged through each valve 7. Since this volume is determined in each case by the elevation of the corresponding nipple 9, the volume can be varied by adjusting the nipple 9 in the corresponding member 5. The groups are simultaneously discharged into receptacles placed beneath the valves 7, by pushing the lever 12 as already set forth.

In reversing the tank 14 from the position shown in Figure 1, after closing the valves 7, some of the contents thereof will be returned to the tank 2 because of the elevating of the actual bottom of tank 14. This expedient in some cases is sufficient to fill the tubes 9, and it is then unnecessary to fill from the tank 1.

It will now be evident that the invention provides a simple and effective means for simultaneously filling a number of receptacles with a measured volume of fluid. Any number of vessels may be filled simultaneously, according to the number of units, provided in the filling tank 2. The measured volume is regulated by the simple expedient of adjusting the tubes 9. The fluid is levelled off at the tops of the tubes by drainage or by replenishment by means of the levelling tank 14.

Although a specific embodiment of the invention has been illustrated and described, it will be understood that various alterations in the details of construction may be made without departing from the scope of the invention, as indicated by the appended claims.

What I claim is:

1. In a filling machine, a filling tank, a supply receptacle connected to said tank for supplying said tank with liquid, outlets extending from a level in said tank, and a levelling tank connected to said filling tank below said level for draining the latter to a level below the first named level.

2. In a filling machine, a filling tank, a supply receptacle connected to said tank for supplying said tank with liquid, outlets extending from a level in said tank, and a levelling tank connected to said filling tank below said level for draining the latter to a level below the first named level, said levelling tank being adjustable in elevation relatively to its connection to said filling tank.

3. In a filling machine, a filling tank, a supply receptacle connected to said tank for supplying said tank with liquid, outlets extending from a level in said tank, said outlets having their upper ends adjustable in said tank, and a levelling tank connected to said filling tank for draining the latter to a level below said upper ends of the outlets.

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