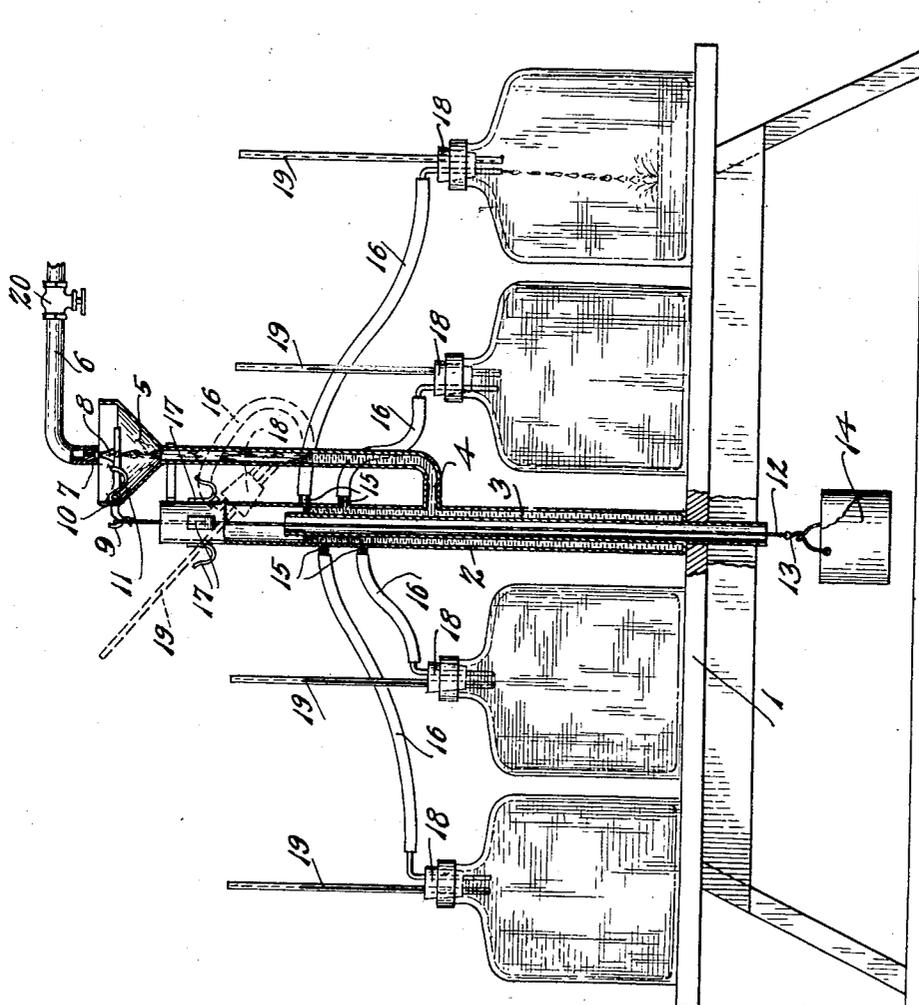


G. MOORE.
 LIQUID DISTRIBUTING APPARATUS.
 APPLICATION FILED MAY 17, 1917.

1,342,859.

Patented June 8, 1920.



Inventor
George Moore

Witness
C. H. Seeler
 C. H. Seeler

By *Edgar M. Kitchin*
 His Attorney.

UNITED STATES PATENT OFFICE.

GEORGE MOORE, OF JOPLIN, MISSOURI.

LIQUID-DISTRIBUTING APPARATUS.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, GEORGE MOORE, a citizen of the United States, residing at Joplin, in the county of Jasper and State of Missouri, have invented certain new and useful Improvements in Liquid-Distributing Apparatus; and I do hereby 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.

This invention relates to improvements in liquid distributing apparatus, and more particularly to such as is essentially adapted for the automatic control of the filling of containers.

The object in view is the efficient control of the distribution of liquid relative to quantities of liquid in containers being filled by means susceptible of being produced and operated at a minimum expense.

With this and further objects in view, as will in part hereinafter become apparent and in part be stated, the invention comprises certain novel constructions, combinations and arrangements of parts as subsequently specified and claimed.

In the accompanying drawing, the figure is a view partly in side elevation and partly in vertical section of an apparatus embodying the features of the present invention.

Referring to the drawings by numerals, 1 indicates a table or other support on which is mounted the tubular upright 2 whose lower end is closed and whose upper end may be open. This upright 2 may be considered the main delivery pipe or receptacle, since, as will become apparent, it is the receiving and distributing container. Within the pipe 2 is arranged a tube 3 which terminates at a point below the upper end of the pipe 2 and extends downward through the bottom of the pipe and preferably through the support 1, and has its lower end open so that liquid within the pipe 2 rising above the level of the upper end of the tube 3 may readily flow therefrom.

A supply pipe 4 communicates with the pipe 2 at a point in pipe 2 below the plane of the upper end of tube 3. The pipe 4 is adapted to supply liquid to the pipe 2 and to this end is provided with an upright portion terminating at its upper end in a hous-

ing 5 preferably of funnel shape. A supply pipe 6 leads from any appropriate source of supply, not illustrated, and discharges through a nozzle 7 into the housing 5. The opening of the nozzle 7 forms a valve seat for a valve 8 which is preferably of the needle type, but may be any appropriate valve. The valve 8 is carried by a lever 9 pivoted at 10 to the housing 5. A spring 11 engages the lever 9 and presses the same in a direction for holding the valve 8 away from its seat. The outer portion of the lever 9 overhangs the upper end of the pipe 2 and tube 3, and a cable 12 engages the said outer portion of lever 9 and depends through said pipe and tube. The lower end of the cable 12 is provided with a hook 13 on which is removably suspended a bucket or other container 14. It will be obvious, of course, that these parts may be otherwise arranged with respect to each other while the same results may be obtained, but the arrangement stated insures compactness and enables the use of simple and comparatively inexpensive parts.

The pipe 2 is provided with a number of discharge outlets 15, 15, arranged at different elevations along the length of the pipe, the uppermost outlet being below the level of the upper end of tube 3. The lowermost outlet is also preferably above the point of communication of pipe 4 with pipe 2, but this is not essential. Each discharge outlet 15 communicates with a movable tube 16. Each tube 16 may be rendered movable either by its manner of connection with the outlet or by being formed of flexible material, as shown in the drawing. The upper portion of pipe 2 is preferably provided with hooks or other like hangers 17 above the horizontal plane of the upper end of the pipe 3, and when any one of the tubes 16 is not in use it may be placed over one of the hooks 17 in a position with its free end above the level of the upper end of pipe 3, and discharge of liquid from the particular pipe 15 will thus be prevented.

In operation, bottles or other containers agreeing in number to the number of tubes 16 are placed on the table 1 and the free ends of the tubes 16 are placed in the respective bottles.

A stopper or other closure 18 for the bot-

5 tle or other receptacle to be filled is mount-
 ed on the free end of each tube 16 with the
 tube extending through the stopper. A tube
 19 is extended through each stopper 18 and
 10 is of sufficient length and sufficiently rigid
 to stand upright when the stopper 18 is ap-
 plied to a particular bottle so that the up-
 per end of the respective tube 19 extends
 above the plane of the upper end of tube 3.
 15 Assuming that as many bottles are to be ap-
 plied as there are tubes 16, and that the sev-
 eral stoppers 18 have been applied to the
 respective bottles, the supply is turned on
 through pipe 6 as by the opening of a valve
 20, liquid flowing through pipe 4 first filling
 the lower portion of pipe 2 and rising to
 the level of the first discharge outlet 15.
 The liquid then flows through the tube 16
 20 connected with this outlet until it has filled
 the particular bottle with which the given
 tube 16 is in communication and has risen
 in pipe 19 of that bottle to a level with the
 next higher discharge outlet 15. The liquid
 in pipe 2 rises above the first discharge out-
 25 let 15 proportionally to the rise in the said
 pipe 19 until it reaches the second discharge
 outlet 15. The liquid then discharges
 through the second discharge outlet 15 un-
 til the second bottle is filled and so on
 30 throughout the successive bottles until the
 bottle communicating with the uppermost
 discharge outlet 15 has been filled. Obvi-
 ously, the liquid level in all of the pipes 19
 rises uniformly to the uppermost limit,
 35 which is the horizontal plane of the upper
 end of the tube 3. As soon as this limit is
 reached, the liquid begins to discharge
 through the tube 3 and falls into the recep-
 40 tacle 14. As soon as the receptacle 14 is
 sufficiently nearly filled for enabling the
 weight of the water therein to overcome the
 tension of spring 11, the lever 9 will have
 its outer portion drawn downward and the
 45 valve 8 will gradually be moved upward and
 positioned on its valve seat in nozzle 7. The
 supply of liquid will thus be cut off. The
 operation thus stated would be carried out
 so long as the flow through nozzle 7 is not
 50 greater than the capacity for discharge at
 any one of the tubes 16 and its connections.
 It will be apparent, of course, that if the
 flow from nozzle 7 is increased to an extent
 equal to the capacity for discharge of all
 55 of the tubes 16, all the bottles will be filling
 at one time, but the present invention is
 especially adapted for the distribution of
 filtered water delivered directly from filter-
 ing apparatus and in practical use the flow
 from nozzle 7 will seldom, if ever, exceed
 60 the discharge capacity of any one tube 16.
 This invention is particularly valuable in
 the filling of receptacles with filtered liquid
 which usually flows comparatively slowly.
 The apparatus is completely automatic in
 65 its operation and does not require the atten-

tion of an attendant after the several clo-
 sures or stoppers 18 have been applied to
 the bottles to be filled and the valve 20 has
 been turned on. The operator can set the
 apparatus at night and leave it to do its
 70 work. On the return of the operator in the
 morning the filled bottles may be removed
 and empty ones caused to take their place.
 If it should become desirable to remove any
 one of the bottles for any reason during the
 75 operation, it is only necessary to lift the
 stopper or closure 18 from the bottle or
 other receptacle and place the free end of
 the respective tube 16 over one of the hooks
 17 in a position with the free end of the
 80 pipe 16 above the level of the upper end of
 tube 3. In this position the respective tube
 16 cannot discharge and the apparatus can
 be left operating with respect to all of the
 other containers being filled. Obviously, all
 85 of the tubes 16 may be hung over the hooks
 17 with the exception of one in the event
 that a single container is to be filled.

It is frequently desirable to fill bottles or
 other containers consecutively rather than
 90 simultaneously, so that a bottle may be filled
 and taken away without waiting for the fill-
 ing of any other bottle. Hence the several
 discharge outlets 15 have been shown at
 different elevations, but it is apparent, of
 95 course, that the difference of elevation may
 not be used where the filling of bottles in
 multiples is the only requirement of the
 apparatus. It is also apparent that numer-
 ous other changes in the detail arrangement
 100 of the parts may be made entirely within the
 scope and spirit of the invention.

What I claim is:—

1. In liquid distributing apparatus, the
 combination of a main delivery pipe having
 105 a maximum elevation of contained liquid for
 delivery, supply means for the main deliv-
 ery pipe, means for cutting off the supply
 when the maximum elevation is reached, and
 discharge tubes connected with the delivery
 110 pipe at different elevations and having their
 free ends movable from points below to
 points above the maximum elevation.

2. In liquid distributing apparatus, the
 combination with liquid supply means, of a
 115 distributing container communicating there-
 with, a tube extending upwardly from be-
 neath the container through the bottom of
 the container to a point in the container
 above the highest point of elevation of de-
 120 livery of liquid from the container, a valve
 for controlling the supply of liquid to the
 container, a lever carrying said valve, a
 spring pressing the valve from its seat, a
 cable engaging the free end portion of the
 125 lever, and a receptacle disposed to receive
 the discharge from the lower end of the tube,
 the receptacle being connected to the cable
 for exerting a downward pull thereon pro-
 130 portional to the weight of liquid in the re-

ceptacle, and the receptacle being adapted to contain a quantity of liquid possessing weight in excess of the resistance of the spring, whereby the valve is adapted to be
5 seated by the action resulting from the weight of liquid discharging through the tube into the receptacle.

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

GEORGE MOORE.

Witnesses:

C. H. FESLER,
EDGAR M. KITCHIN.