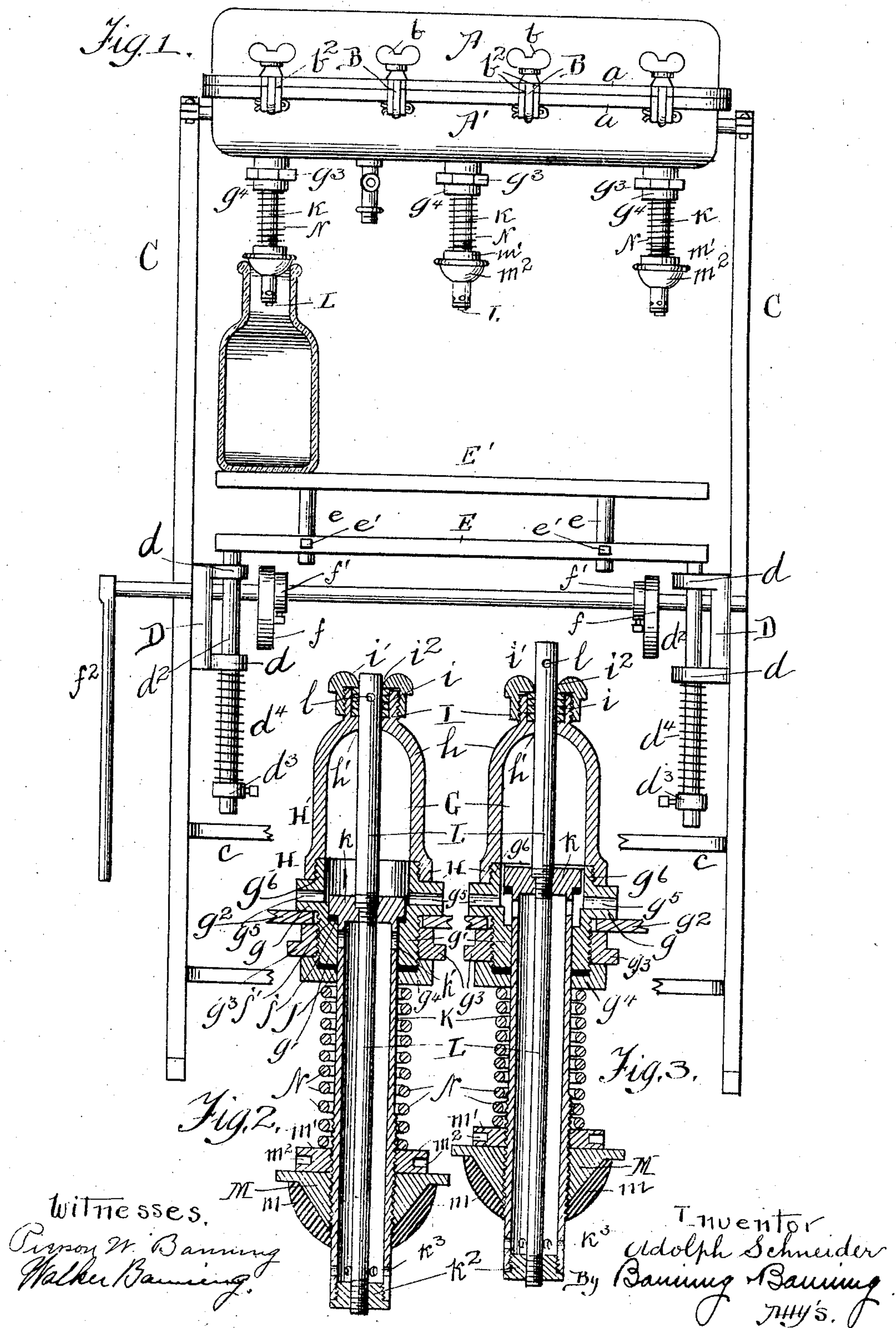


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PATENTED JAN. 31, 1905.

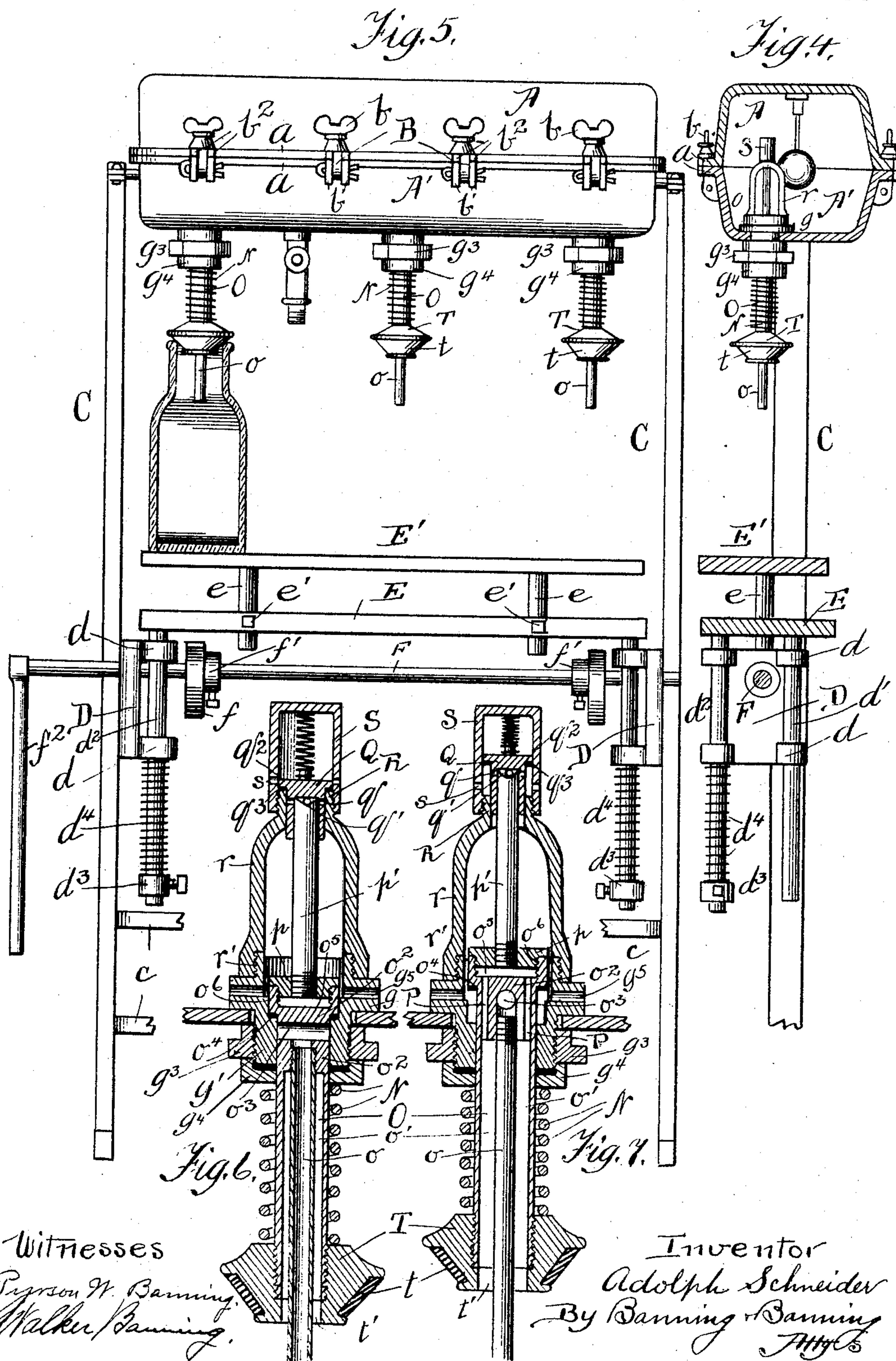
A. SCHNEIDER.
BOTTLING MACHINE.
APPLICATION FILED FEB. 29, 1904.

2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.



UNITED STATES PATENT OFFICE.

ADOLPH SCHNEIDER, OF CHICAGO, ILLINOIS.

BOTTLING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 781,165, dated January 31, 1905.

Application filed February 29, 1904. Serial No. 195,892.

To all whom it may concern:

Be it known that I, ADOLPH SCHNEIDER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Bottling-Machines, of which the following is a specification.

The object of this invention is to provide an apparatus for use in the bottling of liquids which will be simple in operation and thoroughly reliable and enable a number of bottles to be filled simultaneously at a single operation; and the invention more particularly relates to the construction of valve employed in this operation and to the means by which the several bottles to be filled are brought into filling position and to the means by which the valves are simultaneously opened for the purpose of admitting the liquid into the bottles.

The invention finally consists in the features of construction and combinations of parts hereinafter described and claimed.

In the drawings, Figure 1 is an elevation, having the supporting-frame partly broken away, of a filling-tank and series of valves; Fig. 2, a sectional view of one of the valves in closed position; Fig. 3, a similar view in open position; Fig. 4, a sectional view of the filling-tank; Fig. 5, a side elevation of the tank, showing a modified form of valve attached thereto; Fig. 6, a sectional view of the modified form of valve in closed position, and Fig. 7 a similar view in open position.

The valve of the present invention may be used with any ordinary form of tank, and the tank as shown is merely used for purposes of illustration and consists of an upper section A and a lower section A', both sections having contact-flanges *a*, and the two sections are secured together by means of lock-pins B, operated by means of thumb-screws *b*, which lock-pins are pivoted between ears *b'* on the lower section of the tank and are adapted to swing up between lugs *b''* on the upper section of the tank, against which lugs the thumb-screws are adapted to contact in forcing the two sections together. The tank is mounted upon uprights C, which uprights are connected together by means of cross-bars *c* or

in any other suitable manner. Each of the uprights is provided on its inner face with a flat plate D, having on its face lugs *d*, four in number, which lugs are provided with holes for the passage therethrough of an inner guide-rod *d'* and an outer guide-rod *d''*, the latter of which is provided on its under face with a ring or collar *d'''*, and between the ring or collar and the lower lug through which the rod passes is a spring *d''''* for returning the rod to normal position when the spring has been released from tension. The two rods support a platform E, which platform is provided with an adjustable bottle-support E', adjustably mounted upon posts *e*, which pass through the platform E and are adjustably held therein by means of set-screws *e'* or otherwise, allowing the bottle-support to be raised or lowered to meet the requirements of use.

Below the platform is a longitudinally-extending shaft F, provided at each end with cam-blocks *f*, adjustably held in position by means of collars *f'*, which cam-blocks are adapted to contact the under face of the platform and lift the same against the pressure of the springs *d''''*, and a rocking movement is given to the shaft by means of a lever *f''*. This arrangement enables the platform and the bottles carried thereby to be simultaneously raised or lowered at will by the movement of the lever.

Extending downwardly from the tank are a series of valves G, each valve consisting of a shell or casing *g*, open at the top and provided with a screw-threaded neck *g'* of smaller diameter, which extends down through the wall of the tank *g''*, providing a shoulder for contact with the inner face of the tank-wall, and the shell or casing is held in place by means of an exterior ring or collar *g'''*, which screws onto the screw-threaded neck and is held in place by means of a lock-nut *g''''*, thereby firmly securing the valve-casing in place on the tank. The casing is provided with a series of holes or perforations *g''''''*, which lead into the interior of the casing, and the casing is provided with an upwardly-extending screw-threaded collar *g''''''''*, to which is screw-threaded a ring H, provided with upright supports H',

which terminate in a U-shaped head h , provided with a hole or opening h' therethrough and further provided with an upwardly-extending screw-threaded packing-box I, having
 5 an inner diameter greater than the hole h' , and within the packing-house are a series of packing-rings i , the number of which may be varied to meet the requirements of each case, and said packing-rings are held in position by
 10 means of an exterior cap i' , having an opening i'' of the same diameter as the opening h' , which opening i'' is formed to have a paper edge.

The valve-casing is provided with a hole or
 15 opening J through its center, which opening connects with the interior of the valve-casing and forms a shoulder or ledge j in conjunction therewith, and upon this shoulder or ledge is arranged a packing-ring j' . Slidably
 20 mounted within the hole or opening J is a valve-tube K of suitable diameter to provide for the passage of liquid therethrough, and said tube is provided with an enlarged head k , which is adapted to contact the packing-
 25 ring j' when the valve is closed, and below the head in the wall of the tube are a series of inlet holes or openings k' , which when the valve is closed are held below the packing-ring to prevent the inflow of liquid, but which
 30 are adapted to be shoved up above the packing-ring to allow the liquid to enter the filling-tube. The filling-tube is provided at its lower end with a closing-cap k^2 , and above the closing
 35 cap are a series of outlet-holes k^3 for discharging liquid into the bottle when the valve is open. Within the liquid-tube is a lower air-equalization tube L, which is screw-threaded
 40 at one end into the closing-cap and at its other end into the head of the liquid-tube, and said tube connects with an upper air-equalization tube L', which extends up through the valve-casing and between the uprights mounted
 45 thereon and pass through the stuffing-box I. The air-equalization tube is closed at its upper end and open at its lower end and is provided near its top with a vent-opening l in its side
 50 wall, which vent-opening when the valve is closed will lie within the stuffing-box and in contact with the packing therein, thereby preventing the escape of air; but when the
 55 valve is raised the movement of the valve will force the vent-opening L above the packing in the stuffing-box and above the thin tapered edge of the closing-cap i' , thereby establishing communication within the interior of the
 60 bottle and allowing air to flow therefrom as the liquid enters the bottle. If it is desired to equalize the pressure within the tank and the bottle prior to the admission of the liquid,
 65 the vent-opening l will be positioned in the air-equalization tube at such a point that when the valve is closed the movement necessary to raise the vent-opening above the packing in the stuffing-box will be less than the
 70 movement required to bring the liquid-open-

ing k' above the packing-ring j' . If is desirable to have the liquid and air passages opened simultaneously, such an arrangement may be made either by positioning the vent-opening
 75 l further down or by adding one or more packing-rings and raising the closing-cap accordingly, thereby increasing the distance necessary to be traveled to raise the air-vent above the stuffing-box. The liquid-tube is
 80 provided at a point above the liquid-discharge openings with an upwardly-beveled closing-head M, which is screw-threaded onto the tube and provided with a rubber gasket m ,
 85 which forms a seating-surface for closing the bottle, and above the closing-head is an adjusting-ring m' , which may be provided with recesses m^2 for the insertion therein of a
 90 spanner-wrench or similar instrument. Between the adjusting-ring and the lock-nut g^4 is a spring N, which normally holds the valve in closed position, but allows the filling-tube
 95 and air-equalization tube carried thereby to be raised under pressure to unseat the air and liquid valves and allow the liquid to pass into the bottle and the air to escape therefrom
 100 until the bottle has been filled to such a point that it enters the end of the air-equalization tube in the closing-cap k^2 , at which point the further escape of air is prevented and an air-cushion is formed which prevents the further
 105 inflow of liquid into the bottle. In use the tank is filled with liquid to the proper point and the bottle-support is adjusted to suit the bottles to be filled, after which a series of
 110 bottles, one for each valve, are inserted into place on the supporting-platform to have their mouths contact the rubber gasket on the closing-head, after which the lever operating
 115 the cam-blocks is moved and the supporting-platform raised, thereby simultaneously raising all the bottles, and with them the liquid and air equalization tubes, thereby unseating
 120 the air and liquid valves and allowing the bottles to be simultaneously filled with liquid until the liquid has closed the end of the air-equalization tubes, after which the flow of
 125 liquid will be stopped automatically by the closure of the air-escape passage. The lever can then be released and the bottles brought down into their initial position and removed
 130 from the filling apparatus to be corked or otherwise disposed of.

In Figs. 5, 6, and 7 is shown a somewhat modified form of valve which is provided with a shell or casing similar in every respect to
 135 that hitherto described and secured to the tank in the same way, but having a modified valve arrangement, in which O represents a valve-tube slidably mounted within the casing and provided on its interior with a liquid-
 140 supply tube o of considerably less diameter than the outer valve-tube, which arrangement leaves an annular space o' between the two tubes for the passage of air. The outer tube
 145 is provided with a head o^2 , into which the

liquid-supply tube is screw-threaded, and said head is provided with a transversely-extending liquid-supply passage o^3 , above which the head is enlarged to leave a contact shoulder or ledge o^4 , and the end of the enlarged head is provided with a recess o^5 , the walls of which are provided with interior screw-threads o^6 . Leading from the recess are two air-passages P, which communicate with the annular chamber or passage-way o' around the liquid-tube, as best shown in Fig. 7. Within the recess in the end of the head is a screw-threaded cap p of a size to leave a space within the recess below the cap for the passage of air, and into the cap p is screw-threaded an air-equalization pipe p' , which extends upwardly and is provided on its end with a valve-thimble Q, which incloses the end of the air-equalization tube and is provided in its side walls with air-vent passages q , and the end of the tube is preferably provided with notches q' in order to establish free communication between the air-vent passages q and the interior of the tube. The thimble is provided with a flanged head q^2 , carrying a packing-ring q^3 , which ring normally abuts against the end of a screw-threaded neck R, supported upon a U-shaped yoke or upright r , which is carried by a ring r' , screw-threaded onto the valve-casing in a manner similar to that hitherto described. Around the screw-threaded neck is a closing-head S, provided with vent-openings s , which are normal in the position above the packing-ring carried on the valve-thimble, but will not allow the escape of air as soon as the vent-openings in the thimble have been raised sufficiently to clear the end of the valve-seat with which they cooperate. To the lower end of the slidable tube is screw-threaded a closing-head T, provided with a rubber gasket, and said head is provided with an annular chamber t' , which communicates with the open end of the slidable tube, so that when a bottle is in position with its mouth contacting the sides of the rubber gasket its interior will be in communication with the air-passage up through the slidable valve-tube. The operation of the valve just described is similar in every respect to the operation of the valve of Figs. 1, 2, and 3, and the time of admission of air and liquid can be regulated by arranging the valve-seats to act either simultaneously or successively, as may be desired. The valves are interchangeable and may be both used on the same machine, differing only in their interior arrangement and details of construction.

It will be seen that the filling apparatus of this invention is very simple in construction and operation and that it may be readily adjusted to meet varying requirements of use

without the necessity for substitution or reorganization of parts. The valve is certain and direct in its operation and is operated entirely by the movement of the bottles themselves, which arrangement obviates the necessity for using stop-cocks, handles, or other similar contrivances.

What I regard as new, and desire to secure by Letters Patent, is—

1. In a filling device for bottles, the combination of a tank, a valve-casing provided with a bushing for attachment to the tank and provided with a liquid-inlet passage, an upright secured to the valve-casing, a stuffing-box in the upright, an adjustable cap on the stuffing-box, a liquid-pipe and an air-equalization pipe slidably mounted within the valve-casing, the air-equalization pipe passing through the stuffing-box and being provided with an air-port near its end, a seat for the liquid-pipe, and an enlarged head on said pipe adapted to be brought into contact with the seat, substantially as described.

2. In combination with a tank, a filling-valve consisting of a casing counterbored on its interior to leave an annular ledge or shoulder and having a liquid-port leading into the interior of the casing, means for securing the valve-casing to the tank, a yoke upwardly extending from the casing on the inside of the tank, a stuffing-box located at the top of the yoke, packing-rings within the stuffing-box, an adjustable cap on the stuffing-box, a slidable liquid-pipe provided with an enlarged head adapted to seat against the annular ledge or shoulder, a sealing-head on the liquid-pipe, an air-equalization pipe passing up through the interior of the liquid-pipe and through the stuffing-box and provided with an air-port near its end adapted to be moved into and out of the stuffing-box, and a spring adapted to be compressed by the upward movement of the liquid-pipe, substantially as described.

3. In a filling-valve, the combination of a valve-casing provided on its interior with a ledge or shoulder provided with a liquid-inlet, a liquid-pipe provided with a head adapted to seat against the ledge or shoulder and provided with an inlet-port near its upper end, an air-equalization pipe carried by the liquid-pipe and provided with a port in its side, a stuffing-box through which said air-equalization pipe passes, packing-rings within the stuffing-box, and an adjustable cap for regulating the size of the stuffing-box, substantially as described.

ADOLPH SCHNEIDER.

Witnesses:

WALKER BANNING,
SAMUEL W. BANNING.