

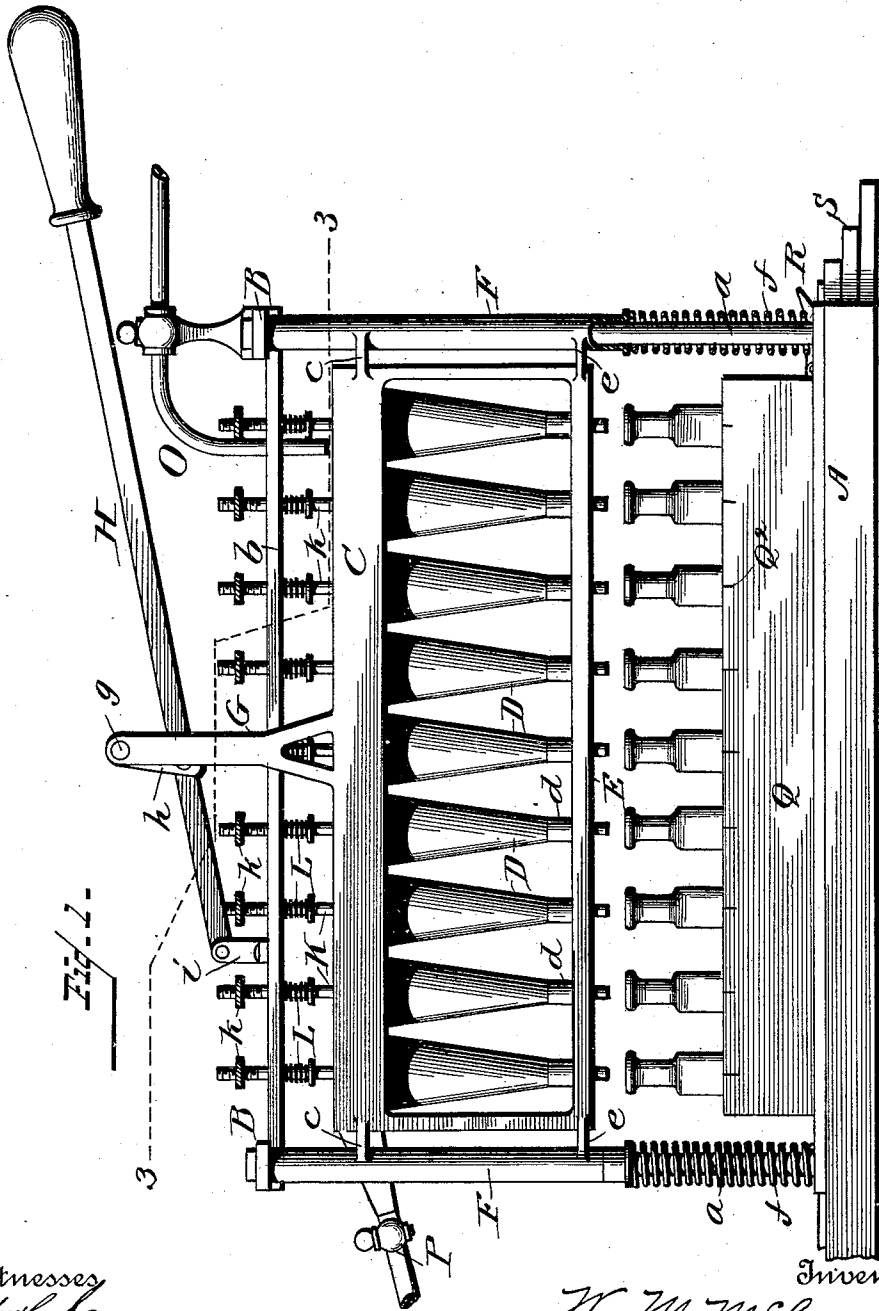
(No Model.)

3 Sheets—Sheet 1.

W. M. McCORMICK.
BOTTLE FILLING MACHINE.

No. 474,965.

Patented May 17, 1892.



Witnesses
Samuel Shidens

Arthur E. Dowell

Inventor
W. M. McCormick
By his Attorney *W. Alexander*

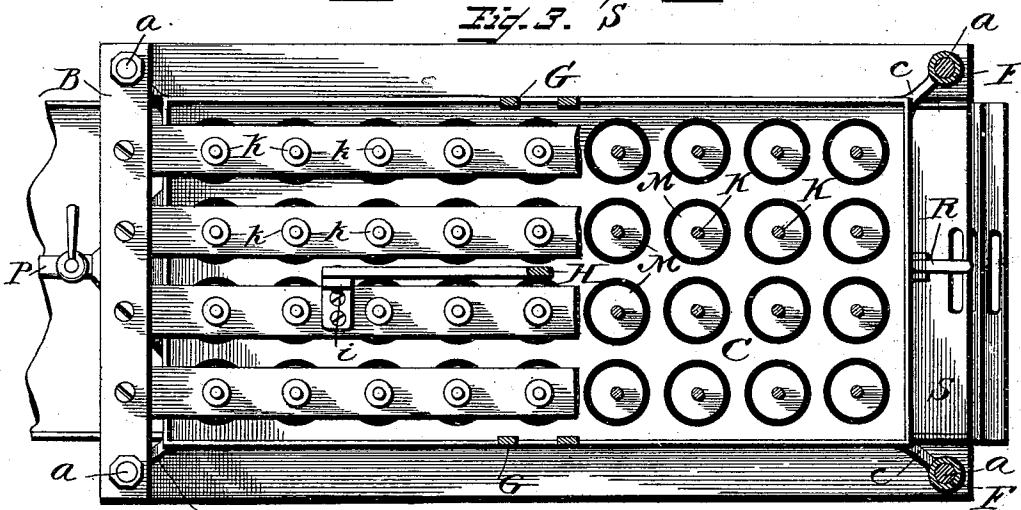
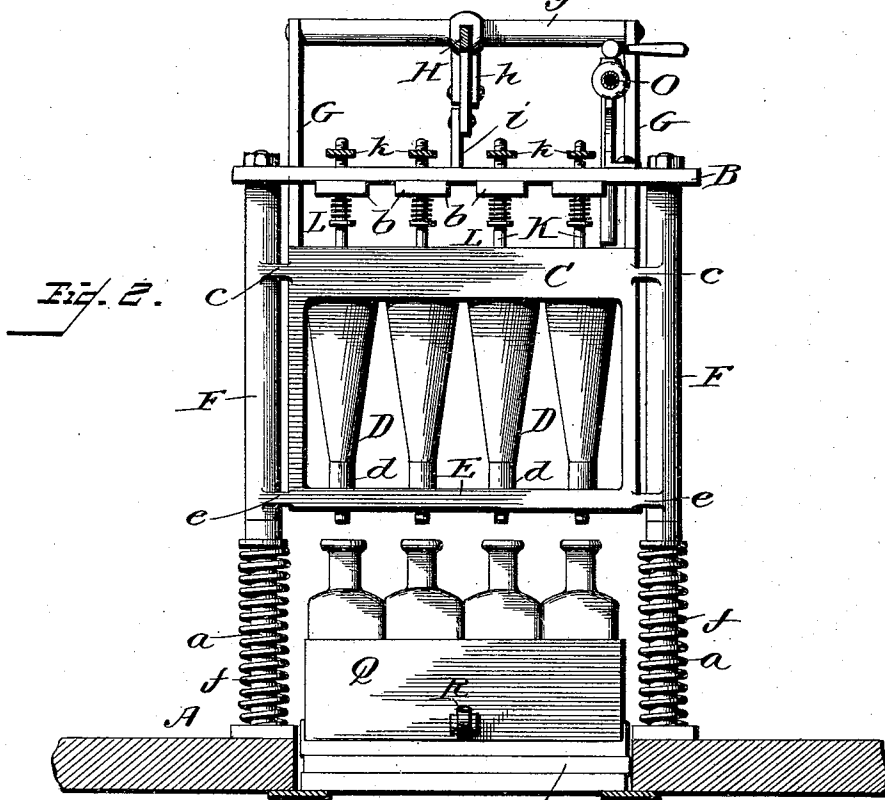
(No Model.)

3 Sheets—Sheet 2.

W. M. McCORMICK.
BOTTLE FILLING MACHINE.

No. 474,965.

Patented May 17, 1892



Witnesses
Arthur E. Sowell

Inventor
W. M. McCormick
 By his Attorney *W. Alexander*

UNITED STATES PATENT OFFICE.

WILLOUGHBY M. McCORMICK, OF BALTIMORE, MARYLAND.

BOTTLE-FILLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 474,965, dated May 17, 1892.

Application filed June 13, 1891. Serial No. 396,140. (No model.)

To all whom it may concern:

Be it known that I, WILLOUGHBY M. McCORMICK, of Baltimore, Maryland, have invented certain new and useful Improvements in Bottle-Filling Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification, in which—

Figure 1 is a side elevation of my improved bottle-filling machine, the filling-tubes being raised and the bottles inserted thereunder ready for filling. Fig. 2 is an end view of the same. Fig. 3 is a horizontal longitudinal sectional view on line 3 3, Fig. 1, looking downward. Fig. 4 is a longitudinal vertical sectional view of the machine. Fig. 5 is a detail sectional view illustrating the entrance of the filling-tubes into the bottles previous to the opening of the tube-valves. Fig. 6 is a similar view showing the tube-valve opened.

This invention is an improvement in bottle and can filling machines wherein a number of vessels may be simultaneously filled with liquids, &c.; and its objects are to provide means for rapidly filling a number of measuring tubes or funnels, each having a discharge-neck at bottom, wherein is a valve, all of which valves can be so adjusted that they will open simultaneously upon the lowering of the tubes and for automatically lifting them when released, so that the valves will be normally closed, to make each valve independently adjustable, to provide means for regulating the holding capacity of each tube, to provide improved bottle-holding devices, to so arrange the parts that when properly adjusted the lower ends of the tubes will enter the necks of the bottles previous to the opening of the valves, and to enable any one or more of the valves to be so adjusted that it will open before the others or not at all.

To these ends the invention consists in the novel construction of the tubes, the valves and valve-controlling devices thereof, the supports and operating devices for the tubes, and the bottle-holding devices, all of which will be clearly understood from the following description and claims.

Referring to the drawings by letters, A designates a base or table upon which the ma-

chine is mounted. *aa* are four upright rods fixed to the base and connected in pairs by transverse bars *BB*, which are connected to and support a series of parallel longitudinal bars *bb*. Beneath bars *b* is a vertically-movable shallow pan *C*, from the bottom of which depend a series of funnel-shaped tubes *DD*, the larger upper ends of which are secured to the bottom of the pan around corresponding openings therein, as shown. The tubes *D* are arranged in regular parallel rows, both transversely and longitudinally, and in line with the respective bars *bb*. The lower ends of the tubes pass through perforations in a horizontal vertically-movable stay-plate *E*, which serves to brace the tubes and hold the lower ends of the tubes in proper relative positions. Such plate could be replaced by stay rods or wires. The pan *C* is connected at its corners by arms *c* to loose sleeves or collars *F* on rods *a*, and the plate *E* is similarly connected by arms *e* to the lower ends of sleeves *F* or collars, which are in turn supported on and upheld by stout coiled springs *ff*, placed on the rods *a* between the lower ends of sleeves *F* and the base. Other devices or arrangements of springs may be employed to normally uphold the tubes.

To the sides of the pan *C* are attached up-standing brackets *GG*, which rise beside and above bars *bb*, and are connected at top by a transverse rod *g*, which is centrally connected by a swinging and pivoted link *h* to a lever *H*, one end of which is pivoted to an ear *i* on a bar *b*, and the other end can be depressed by hand or connected to a foot-treadle, so that by depressing lever *H* the pan *C* and tubes are depressed, thereby compressing the springs, which, as soon as the lever is released, will throw the pan, tubes, and lever upward to original position.

To the lower end of each funnel-tube is connected a tubular mouthpiece *d*, having a contracted lower end and a conical valve-seat *j* in its upper end, in which is normally seated a conical valve *J* on the end of a stem *K*, the upper end of which passes above the pan and through an opening in the bar *b* directly above, by which the valve-stem is guided in its vertical movements and kept properly centered in the tube. Each tube has its valve, as described.

L L are coiled springs placed on the valve-stems below the bars *b* and bearing against collars on the stems, so as to normally force them down and keep the valve closed. The 5 springs merely supplement the gravital action of the valves and might be dispensed with; but I prefer using them, as they impart a quicker and more positive movement to the valves. The upper ends of the stems above 10 bars *b* are threaded, and on them are screw caps or nuts *k k*, which can be vertically adjusted.

M M are conical bulbs on the stems below the springs and are preferably connected to 15 the stems by screw-threads, so that they can be adjusted up or down thereon into or out of the tubes, and thus regulate the capacity of the tubes, or rather the amount of liquids, &c., that can collect in the tubes.

O is a filling-tube provided with a cut-off cock by which the fluids, &c., can be let into pan C, and P is a valved overflow-tube by which the pan can be emptied after the several tubes are filled.

Q designates a bottle-holding pan, which can be slid beneath the tubes and in which are placed the bottles or other vessels to be filled, so arranged that the necks of the bottles will come just beneath the mouthpieces *d* 30 of the tubes.

q q are strips which are placed transversely of the pan and between the rows of bottles, so as to properly center them. The strips are removable and can be of varying thicknesses, 35 so as to properly center bottles of different breadths or diameters, as indicated in Fig. 4. An adjustable stop R may be fixed to the base, so that the pan will be stopped when the bottles are in proper position beneath the tubes, 40 said stop being adjustable or movable, so that after filling, the pan may be slid out from beneath the tubes and another pan introduced thereunder with other bottles for filling.

S S are removable strips, which can be 45 slipped under the tubes and beneath pan Q, so as to elevate the latter, or removed so as to lower it, in order to accommodate bottles or vessels of different heights.

In operation, after the bottles or other vessels to be filled are properly arranged in pans Q, the latter is slid beneath tubes D, as indicated in the drawings. The fluid is then poured into pan C until all the tubes D are filled, and any surplus fluid is drawn off 55 through tube P. Then lever H is depressed, thereby lowering pan C and tubes D, and when the lever reaches the position indicated by dotted line 5 in Fig. 4 the mouthpieces *d* of the tubes partly enter the mouths of the 60 bottles, as shown in Fig. 5; but the valves are not yet unseated. Consequently no liquid escapes from the tubes. Then the lever is still further depressed, and with it the pan and tubes, until the lever reaches the position indicated by line 6 in Fig. 4, when the valves 65 will be opened, as indicated in Fig. 6, because the nuts *k*, striking the bars *b*, stop the de-

scend of the valve-stems; but the tubes continue to descend. Consequently the fluid escapes into the bottles; but it will be seen that 70 no fluid escapes from the tubes until the mouthpieces have entered the mouths of the bottles, so that there can be no waste or spilling of fluid, and if any bottle happens to be out of line the mouthpiece *d* of the superim- 75 posed tube will strike the edge of bottle, and the operator will thus know it and can adjust the bottle before the valves are opened, for if any mouthpiece or tube be obstructed in its descent it will hinder the descent of all the 80 others, and the valves will not unseat until the mouthpieces enter the necks of the bottles if the pans Q are properly adjusted on the supports thereof. By means of bulbs M M the capacity of any or all of the tubes can 85 be varied so that different quantities may be supplied to different bottles at one operation of the machine. By adjusting nuts *k* any of the stems can be allowed so much vertical play that its valve will not be unseated even 90 when the tubes are at their lowest position, by which means I can adapt the machine for filling very large or broad vessels by only filling through alternate or intermediate tubes, and thus use from one up to the entire number 95 of the tubes and either or any of the tubes desired. The tubes, valves, funnels, pans, &c., are made of a metal or material which will not be chemically affected by the fluids or metal coated with a non-corrosive 100 substance. The pans Q have notches or marks Q² on their sides to indicate the transverse lines in which the bottles should be arranged in order that their necks will be just beneath the filling-tubes when the pans Q are properly 105 adjusted beneath the filling-tubes. The pans Q may be moved beneath and from under the filling-tubes by any suitable means, as by sliding them by hand, or by a reciprocating or traveling table or belt operated by a drum 110 and crank. (Not shown.)

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

1. The combination of the vertically-moving 115 filling-tube, the valve-stem entering said tube, a stop on the stem above the tube, and a fixed arresting device above the tube engaged by said stop, and means for depressing said tube, substantially as described. 120

2. In a filling-machine, the combination of a vertically-movable filling-tube, a vertically-movable valve and valve-stem independently suspended therein and movable therewith, the end of the stem projecting above the tube, 125 and a fixed arresting device above the tube engaging the upper end of the valve-stem and limiting the downward movement of said valve, so that it will be opened before the tube reaches its lowest position, and means 130 for raising and lowering said tube, substantially as specified.

3. The combination of the vertically-movable pan, the filling-tubes connected thereto

and depending therefrom, and fixed bars above said tubes, the valve-stems playing through said bars and entering the tubes, and the stop-nuts on said stems, and means for depressing said tubes, substantially as specified.

4. The combination of the vertically-movable filling-tubes, the stationary bars above the same, the valves therein connected to vertically-movable stems playing through openings in said bars, the adjustable nuts on said stems for limiting their downward movement, and means for lowering and raising said tubes simultaneously, substantially as and for the purpose set forth.

5. The combination of the upright rods, the horizontal bars supported thereon, the vertically-movable spring-supported pan guided by said rods, and means for depressing said pan, with the filling-tubes suspended from said pan, the mouthpieces on the lower ends thereof, the valves therein, the vertically-movable valve-stems playing through said bars, and the nuts for limiting the downward movement of the stems, substantially as described.

6. The combination of the vertically-movable pan, the filling-tubes connected thereto

and suspended therefrom, the fixed bars above said tubes, the valve-stems playing through said bars and entering the tubes, and the stop-nuts on said stems, and means for depressing said tubes, the springs for raising the same, and filling and overflow tubes, substantially as specified.

7. The combination of the uprights, the horizontal bars supported thereby, the vertically-movable spring-supported sleeves on said rods, the pan connected to and supported by said sleeves, the filling-tubes suspended from the pan, and the lever and connections for depressing said pan and tubes, with the vertically-movable valve-stems playing through openings in said bars and entering the tubes, the valves on the lower ends of said stems, closing said tubes, and the adjustable nuts on the upper ends of said stems for regulating their vertical movement, substantially as shown and described.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

W. M. McCORMICK.

Witnesses:

N. R. WALKER,
J. L. THAYER, Jr.