

J. F. HALLER.
FILLING MACHINE.
APPLICATION FILED JUNE 26, 1908.

938,482.

Patented Nov. 2, 1909.
2 SHEETS—SHEET 1.

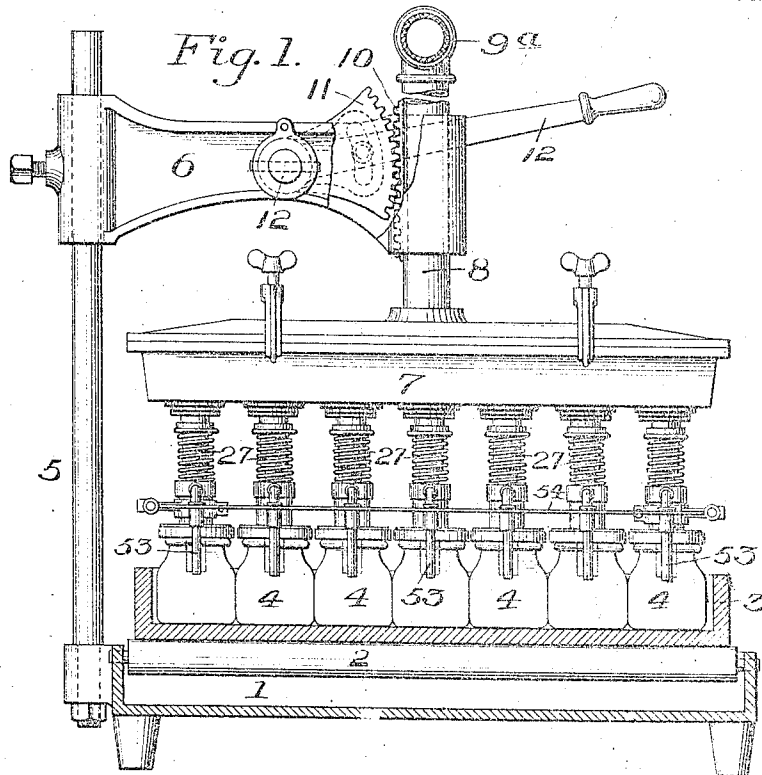


Fig. 2.

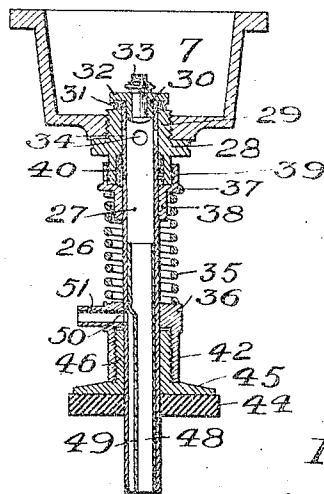


Fig. 3.

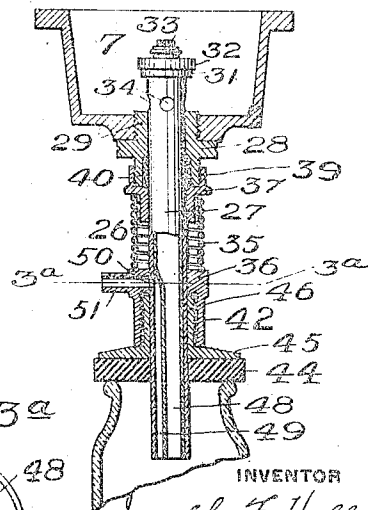
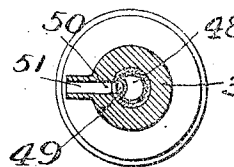


Fig. 3a



WITNESSES

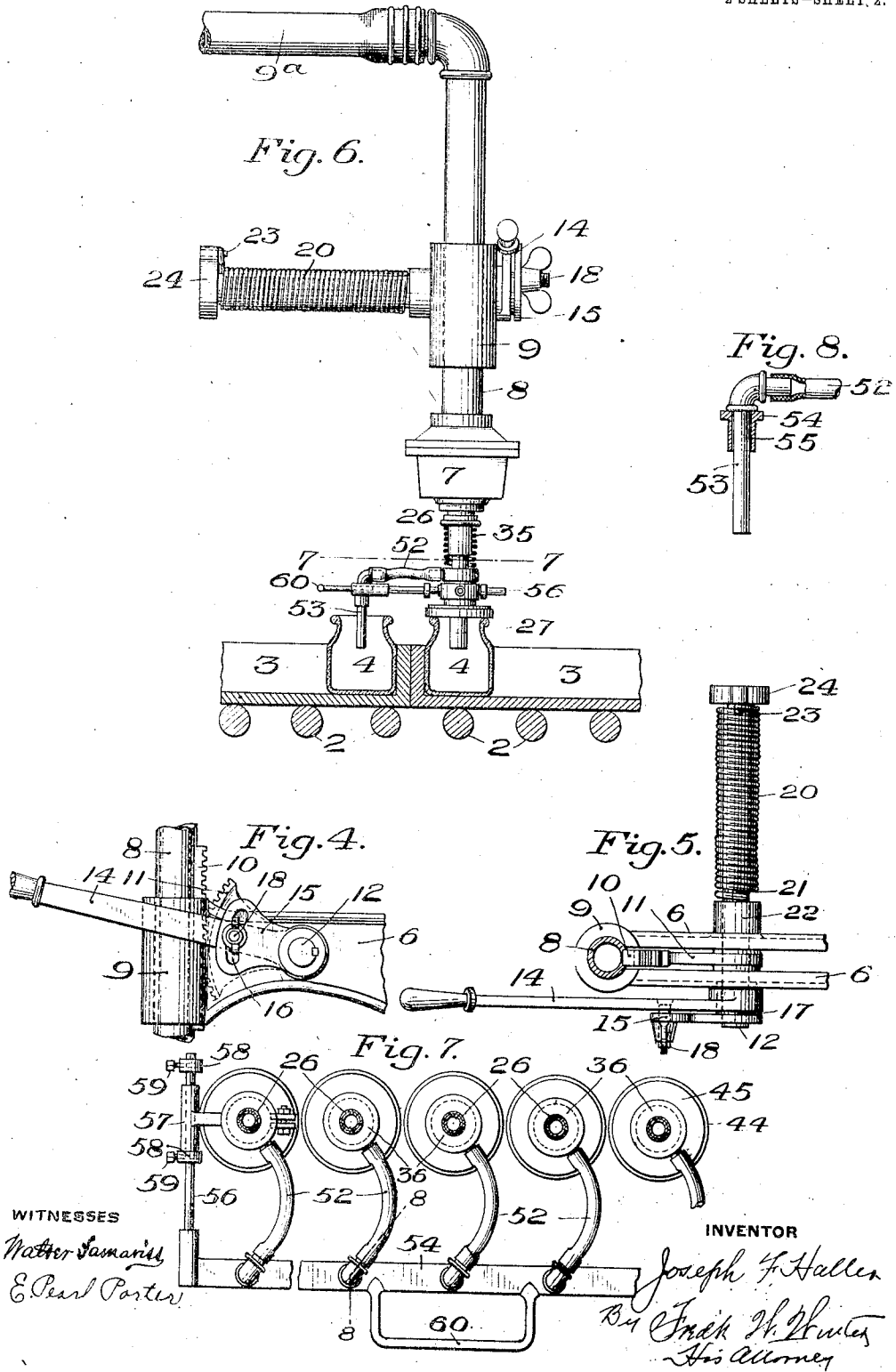
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UNITED STATES PATENT OFFICE.

JOSEPH F. HALLER, OF SHERIDANVILLE, PENNSYLVANIA.

FILLING-MACHINE.

938,482.

Specification of Letters Patent.

Patented Nov. 2, 1909.

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To all whom it may concern:

Be it known that I, JOSEPH F. HALLER, a resident of Sheridanville, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Filling-Machines, of which the following is a specification.

This invention relates to filling machines and more particularly to machines for filling bottles, jars and the like with a liquid or semi-liquid substance.

The object of the invention is to provide a machine of this character with improved means for depressing and elevating the filling head, providing adjustable means for conveying the overflow from the receptacles being filled to adjacent receptacles, and also improving the filling tube and other parts of the machine in details of construction hereinafter described and claimed.

In the accompanying drawings Figure 1 is in part an elevation and in part a transverse section of a machine embodying the invention; Fig. 2 is a vertical section on an enlarged scale through one of the filling tubes showing the same closed; Fig. 3 is a similar view showing the tube open; Fig. 3^a is a cross section on the line 3^a—3^a, Fig. 3; Fig. 4 is a vertical section showing the operating mechanism for raising and lowering the filling head; Fig. 5 is in part a plan view and in part a horizontal section of the same mechanism; Fig. 6 is a vertical section showing the means for conveying away the overflow; Fig. 7 is a horizontal section on the line 7—7, Fig. 6 showing the overflow devices in plan view; and Fig. 8 is a section on the line 8—8, Fig. 7.

The machine comprises a suitable base 1 forming a platform or table, preferably provided with rollers 2 for receiving trays 3 or the like containing bottles 4 or other receptacles to be filled. Extending up from the base is a suitable standard 5 to which is adjustably secured the arm 6 which serves as a support for the filling head 7 and its operating means. This filling head is in the form of a closed receptacle having connected thereto a vertical pipe 8 which is slidably mounted in a suitable opening or sleeve 9 in the arm 6. This pipe 8 serves as a support for the filling head and also as a supply pipe, having connected to its upper end a hose 9^a or other suitable flexible pipe which serves to convey the material to the filling head.

The pipe 8 is provided with a rack 10 which is engaged by a gear segment 11 secured to the shaft 12 which is rotatably mounted in the arm 6. Suitable means are provided for rocking the shaft 12 to elevate and depress the head, the means shown comprising a lever 14 which preferably is connected to the shaft in a manner to permit angular adjustment in relation to the shaft so as to adapt it to operators of various heights. The adjustable connections comprise an arm or plate 15 keyed or otherwise secured to the shaft and provided with a segmental slot 16 and with a hub or boss 17, the latter surrounding the opening through which the shaft extends. The lever 14 is loosely mounted on the hub or boss 17 and is secured to the arm or plate 15 by means of a bolt 18 extending through a hole in the lever and through the slot 16 in the arm or plate. Obviously by the bolt and slot connection the angular relation of the lever with reference to the shaft 12 can be varied to suit the convenience of the operator.

Suitable counter-balancing means for the head are provided, the same being in the form of a coiled spring 20 surrounding the shaft 12 and having one end secured by a pin 21 to a hub 22 on the arm 6 and having its other end secured by a pin 23 to a collar 24 fixed on the end of the shaft 12. This spring will be under such torsional tension that it about counter-balances the weight of the filling head and its connected means, so that the operator in either depressing or elevating the head need exert little force. The spring is so long that the slight movement necessary to depress the head will not materially increase its torsional tension so that it has merely a counter-balancing effect, it being intended that the operator must exert some slight effort to raise the head as well as depress the same. By counterbalancing the head so that the operator need exert only a slight force there is not the danger of pounding and breaking the receptacle which would be the case if the operator had to exert more force, and the operation is also less fatiguing.

The filling head 7 is provided with one or more filling tubes 26, the machine shown having a row of seven such tubes. Each filling tube comprises the main tube 27 slidably mounted in sleeve 28 secured in the bottom of the filling head, such as by a threaded extension 29. The main tube is closed

at its upper end, such as by the plug 30 and is provided at its upper end with a gasket or packing washer 31 held in position by the washer 32 and nut 33. At its upper end this
 5 tube is provided with one or more openings 34 so that when the tube is pushed upwardly these openings are exposed above the bottom of the filling head to allow material from the latter to flow down through the tube.
 10 The tube 27 normally is held depressed, that is, with the holes 34 concealed within the sleeve 28 and the washer 31 seating on the end of the projection 29, by means of a spiral spring 35 interposed between the collar 36 secured to the tube 27 and a collar 37
 15 on the sleeve 28 which has a threaded connection as at 39 with the sleeve 28. The latter sleeve is recessed, as at 40 to provide a stuffing box in conjunction with the
 20 sleeve 38.

The collar 36 is provided with a downwardly projecting sleeve portion 42 recessed internally from its lower end and internally threaded. The head or cap adapted to close
 25 the receptacles to be filled is in the form of a rubber disk 44 surrounding the lower end of the tube 27 with a metal disk 45 above the same. The latter disk is provided with a sleeve portion 46 which is externally
 30 threaded and screws up in the internal sleeve 42 of collar 36. This threaded joint, it will be observed, is internal so that the leakage coming down from the filling head flows over the sleeve portion 42 and cannot get
 35 into the threads to corrode them and cause sticking. The sleeve 42 forms an apron which houses and conceals the threaded joint.

The main tube 27 projects down below the
 40 cap 44 so as to enter the neck of the bottle, jar or other receptacle to be filled. Fixed inside of this main tube is an inner tube 48 of thin metal having a close fit in the outer tube and preferably soldered or otherwise
 45 secured thereto at its upper and lower ends. Along one side this inner tube is provided with a groove 49 formed by creasing the metal inwardly, said groove not extending
 50 up to the upper end of the tube, but extending sufficiently high to communicate with the tapped opening 50 in the collar 36. In this
 opening is secured a nipple or short tube section 51 to which is connected a hose 52
 55 or other flexible tube. The outer end of the hose is connected to a vertical rigid tube 53. The groove 49 and hose and tube connected thereto form not only a vent for the air
 60 which must escape from the receptacle being filled, but also form an overflow for the material being filled into the receptacle. Each
 of the filling tubes has connected thereto such vent and overflow. The tubes 52 and 53
 65 serve to conduct the overflow to adjacent empty receptacles. For instance, when the machine is filling one row of receptacles the

tubes 53 project into or down into close proximity to the mouths of the next adjacent row of receptacles, so that the latter receive the overflow from the receptacles being filled. Inasmuch as the receptacles to be
 70 filled may vary in size, and also as the receptacles are brought in on trays and the distance between the end rows of receptacles in two adjacent trays is greater than that
 75 between two adjacent rows in the same tray, it is desirable and necessary to provide for varying the distance between the filling tubes and the overflow tubes 53. This end is
 80 secured by providing a bar 54 having a series of holes 55 in which the tubes 53 have a loose or sliding fit so that when the filling head is brought down if the tubes 53 should
 85 strike the end of the receptacles they can freely slide upwardly and therefore avoid injury to the receptacles. To secure the lateral adjustment the bar 54 is provided at
 90 its ends with end portions or rods 56 having a sliding fit in the sleeves 57 carried by the end filling tubes, so that the bar 54 can be moved toward and from the filling tubes
 95 to vary the distance between the filling tubes and the overflow pipe 53 to accommodate the machine to receptacles of varying size. Preferably stops are provided so that the operator need exercise but little care in moving
 100 the bar 54 toward and from the filling tube. These stops may be of various forms and are shown in the form of collars or clamps 58 secured to the rods 56 in a manner to permit their ready adjustment thereon,
 105 such as by set screw 59. One such clamp is located on each side of the sleeve 57 and said clamps serve as stops limiting the movement of the bar 54 in both directions. Preferably the bar 54 is provided with a handle
 110 60 for the convenience of the operator.

In the operation of the machine described the material to be filled into the receptacles is supplied to the head 7 through the pipe
 115 9. The receptacles to be filled are brought in trays and placed underneath the filling head with one row of receptacles directly under the filling tubes. Bar 54 is adjusted so that the overflow tubes 53 are above the
 120 next adjacent row of receptacles. The operator then pulls down the lever 14 and thereby through segment and rack depresses the filling head until the caps 41 seat on the upper ends of the receptacles. This stops
 125 the downward movement of the filling tubes 27 so that the further downward movement of the filling head compresses the springs 35 and causes the sleeves 28 to slide in the
 130 tubes 27 until the openings 34 are exposed inside the filling head when the material flows down through the tubes into the receptacles. The air contained in the receptacles escapes through grooves 17 and tubes
 135 52 and any overflow from over filling the receptacles also escapes through said tubes 130

into the adjacent empty receptacles. When the receptacles are filled, or sufficiently so, the operator lifts on the handle 14 thus raising the filling head, when the springs 35 force the tubes downwardly so closing the upper ends thereof. The next row of receptacles is then brought under the filling tubes and the operation is repeated. When the last row of receptacles in the tray is reached the operator pulls bar 54 outwardly, that is, away from the filling heads so as to increase the distance between the filling tubes and the overflow tubes 53 and bring the latter in such position that they are over the first row of receptacles in the adjacent tray. The stops 58 will be so placed that the operator merely pulls the bar out until brought to a stop. When the first row of receptacles in the new tray are brought underneath the filling head the operator then pushes the bar 54 inwardly so as to decrease the distance between the filling tubes and the overflow tubes 53, corresponding to the distance between the centers of the rows of receptacles in the next tray.

The machine described is simple of operation and by means of the same the filling of receptacles can be carried on very rapidly and with little danger of spilling the overflow. The machine is also comparatively simple of construction so that it cannot readily get out of order, and can be easily repaired. The counter-balancing feature of the filling head enables the machine to be operated very rapidly and with little fatigue to the operator.

What I claim is:

1. In a filling machine, the combination of a depressible filling tube, an overflow tube carried by said filling tube and projecting laterally therefrom, and a support depressible with the filling tube and supporting the overflow tube, said overflow tube being freely vertically movable with relation to said support.

2. In a filling machine, the combination of a depressible filling tube, an overflow tube connected thereto, and a support for said overflow tube, said support being adjustable toward and from the filling tube.

3. In a filling machine, the combination of a depressible filling tube, an overflow tube connection thereto, a support to which the end of the overflow tube is connected, said support being adjustable toward and from the filling tube, and adjustable stops for limiting the movement of said support toward and from the filling tubes.

4. In a filling machine, the combination of a depressible head, a plurality of filling tubes carried thereby, an overflow tube connected to each filling tube, and a bar depressible with the head and provided with openings in which the ends of the overflow tubes freely slide vertically.

5. In a filling machine, the combination of a depressible head, a plurality of filling tubes carried thereby, an overflow tube connected to each filling tube, and a bar carried by said filling tubes and movable toward and from the same and serving to support the ends of the overflow tubes.

6. In a filling machine, the combination of a depressible head, a plurality of filling tubes carried thereby, an overflow tube connected to each filling tube, a bar provided with a series of openings in which the ends of the filling tubes are held, and a sliding connection between said bar and filling tubes.

7. In a filling machine, the combination of a depressible head, a plurality of filling tubes carried thereby, an overflow tube connected to each filling tube, a bar to which the ends of the said overflow tubes are connected, said bar being provided with right angle portions having sliding connections with the filling tubes, and stops for limiting the sliding movement.

8. In a filling machine, the combination of a depressible filling tube, an overflow tube connected thereto, and a support for said overflow tube, said support being adjustable toward and from the filling tube, and the overflow tube being freely vertically movable with relation to said support.

9. In a filling machine, the combination of a filling head, hand operated mechanism for raising and lowering said head and including a rocking shaft, a support in which said shaft is mounted to rotate, and a coiled spring around said shaft and having one end secured to said shaft and its opposite end secured to the shaft support and acting to counterbalance the head.

10. In a filling machine, the combination of a receptacle support, a filling head movable toward and from said support, mechanism for depressing and elevating said head, said mechanism including a rocking shaft and an operating lever, and means connecting said lever to said shaft and arranged to permit the angular relation of said lever to said shaft to be varied.

11. In a filling machine, the combination of a receptacle support, a filling head, mechanism for depressing and elevating said head movable toward and from said support, said mechanism including a rocking shaft, an arm secured to said shaft, a lever fulcrumed on the rocking shaft, and a slot and bolt connection between said lever and arm.

12. In a filling machine, the combination of a filling head, a plurality of filling tubes carried by said head, a vertical supply pipe connected to said head, a support in which said pipe is slidably mounted, means engaging said supply pipe and arranged to elevate and lower the head, and a flexible pipe connected to said supply pipe above the support.

13. In a filling machine, the combination

of a filling head, a plurality of filling tubes
carried by said head, a vertical supply pipe
connected to said head and provided with a
rack on its side face, a support in which said
5 pipe is slidably mounted, a gear segment
mounted on said support and engaging the
rack of the supply pipe and arranged to ele-
vate and lower the head, and a flexible pipe
connected to said supply pipe above said
10 support.

14. In a filling machine, the combination
of a filling head, a plurality of filling tubes
carried by said head, a vertical supply pipe

projecting upwardly from said head and
forming the sole support therefor, a support 15
in which said pipe is slidably mounted,
means engaging said supply pipe and ar-
ranged to elevate and lower the head, and a
flexible pipe connected to said supply pipe.

In testimony whereof, I have hereunto set 20
my hand.

JOSEPH F. HALLER.

Witnesses:

JOHN S. CORT,
E. W. WINTER.