FIP7912 XR 731,526

Cross Reference

No. 731,526. PATENTED JUNE 23, 1903

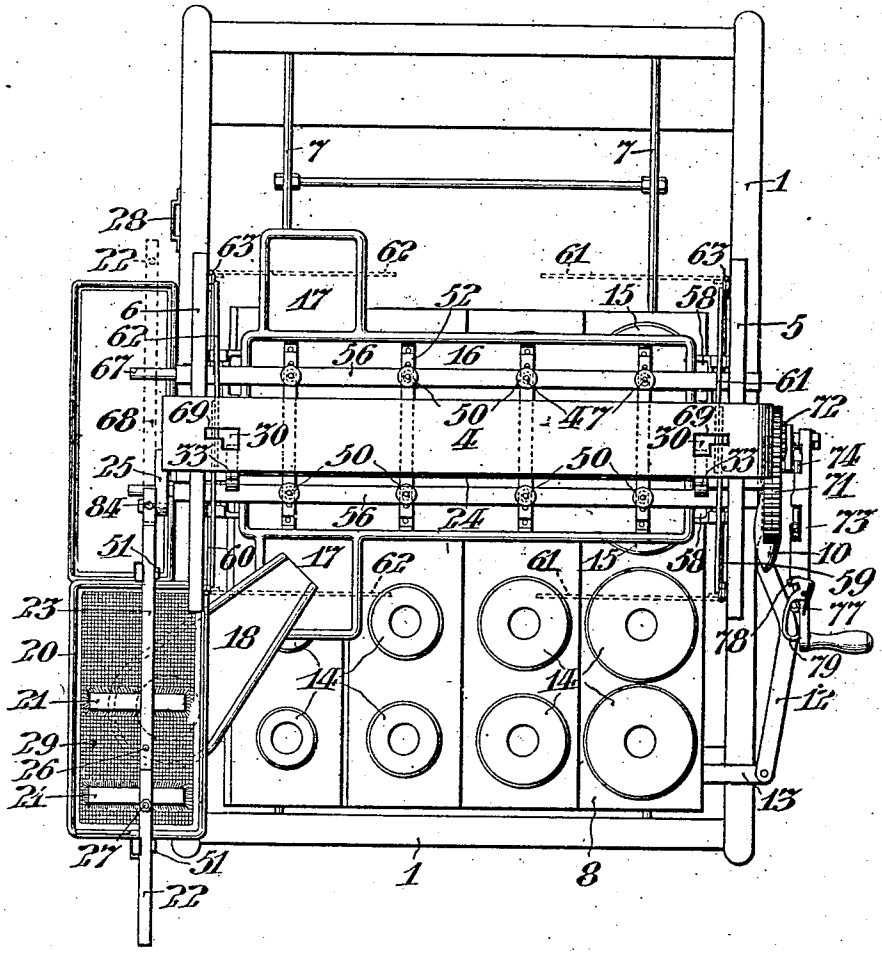
S. L. TROUPE.

APPARATUS FOR FILLING CANS OR OTHER RECEPTACLES.

APPLICATION FILED JULY 31, 1902.

NO MODEL. 5 SHEETS—SHEET 1.

FIG. 1.



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S. L. Troupe

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By his Attorney

W. C. Strawbridge

Cross Reference

DRAFTSMA

No. 731,526. PATENTED JUNE 23, 1903.

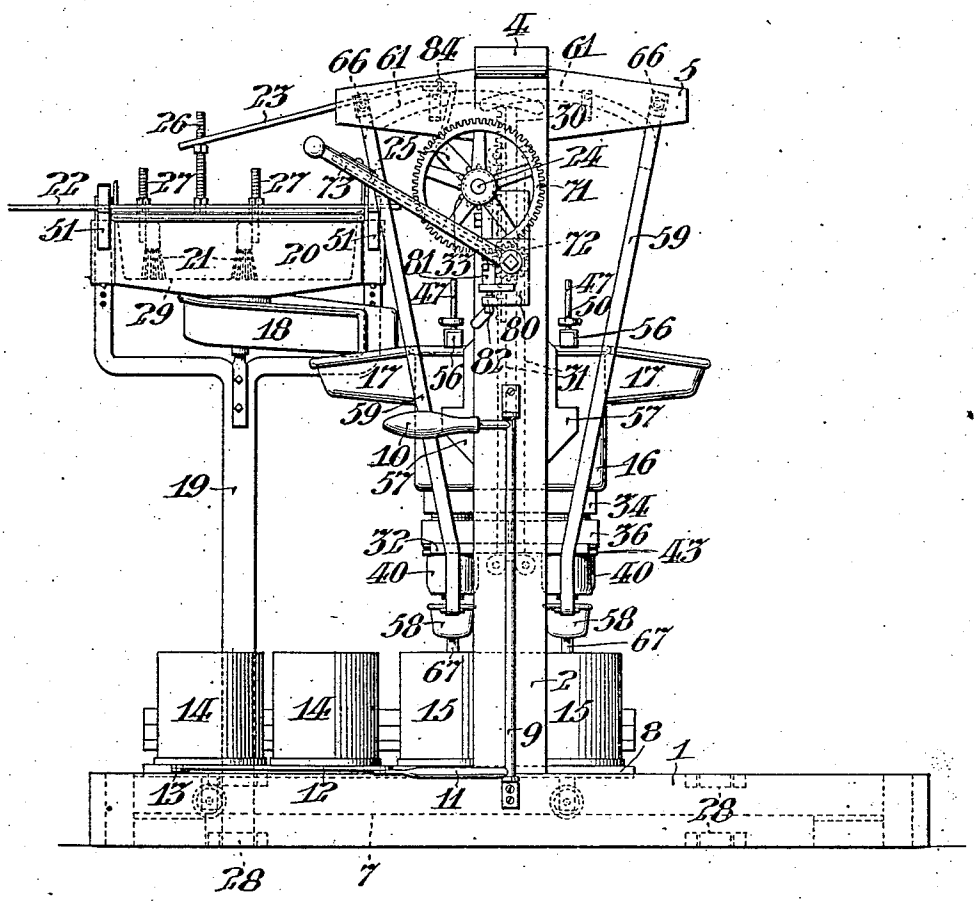
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NO MODEL. 5 SHEETS—SHEET 2.

FIG 2.



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DRAFTSMAN

No. 731,526. PATENTED JUNE 23, 1903.

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NO MODEL. 5 SHEETS—SHEET 3.

FIG. 3.

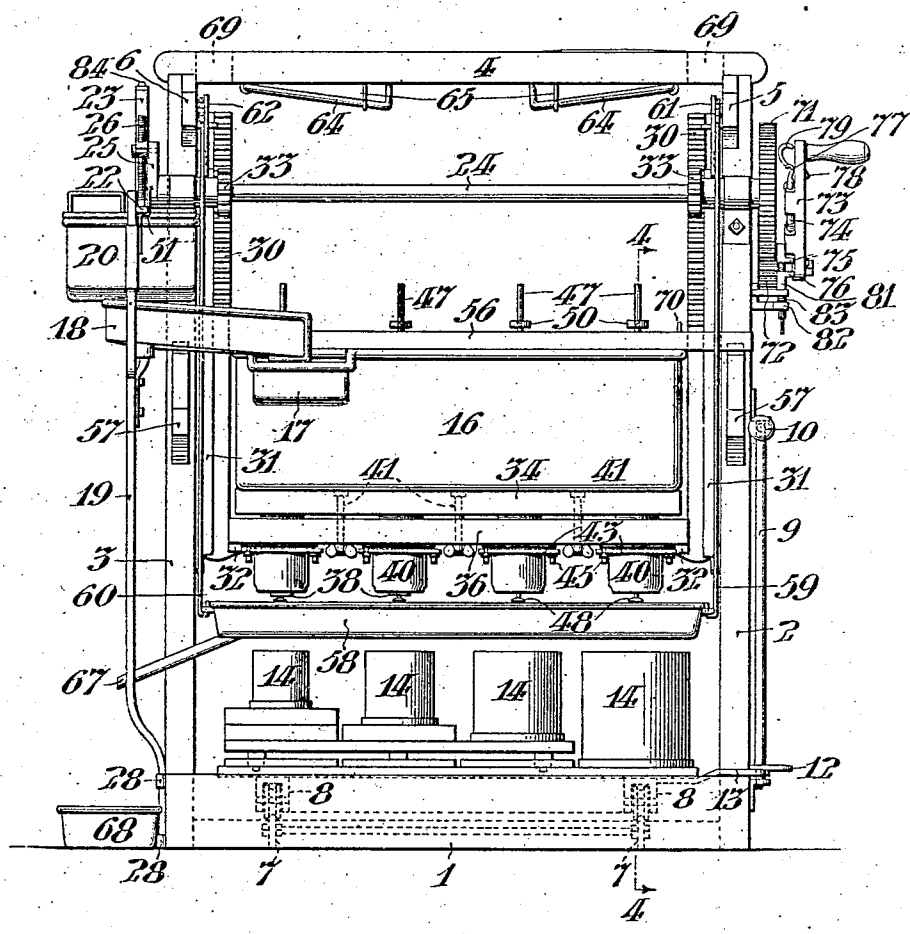
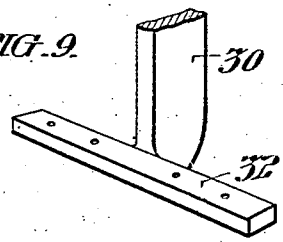


FIG. 9.



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NO MODEL. 5 SHEETS—SHEET 4.

FIG. 5.

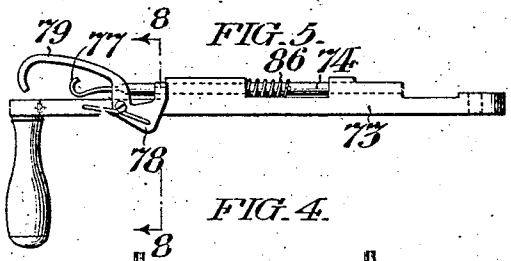


FIG. 8.

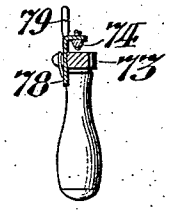


FIG. 4.

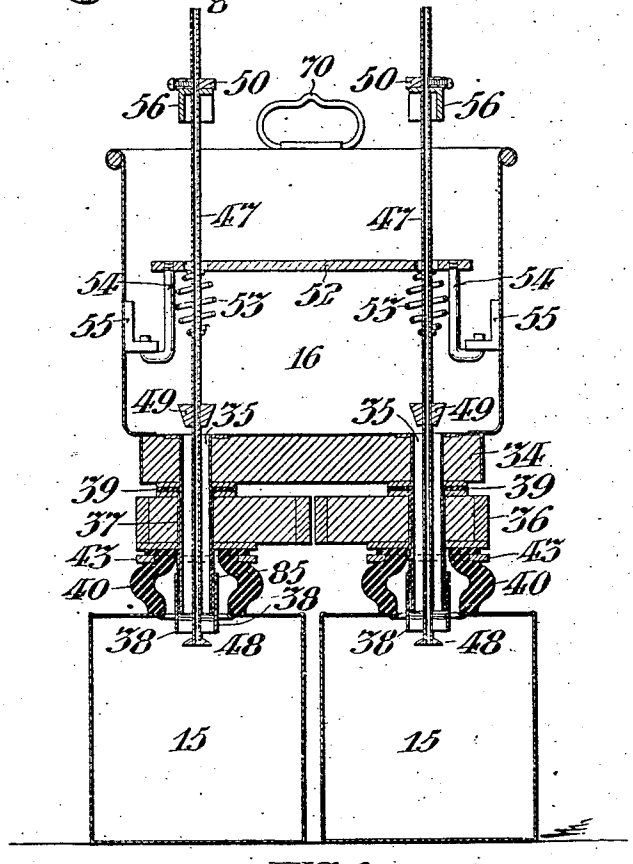


FIG. 6.

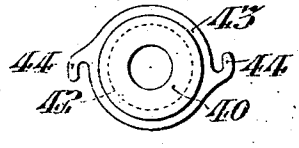
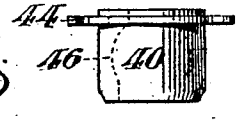


FIG. 7.



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/24 [redacted] BLE RECEPTACLES. Cross Reference

No. 731,526. PATENTED JUNE 23, 1903.

S. L. TROUPE.

APPARATUS FOR FILLING CANS OR OTHER RECEPTACLES.

APPLICATION FILED JULY 31, 1902.

NO MODEL. 5 SHEETS—SHEET 5.

FIG. 10

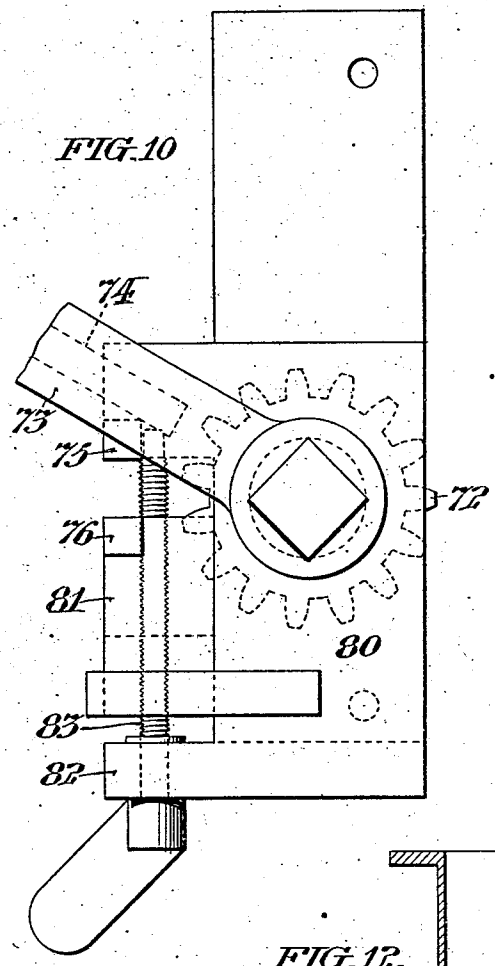


FIG. 11.

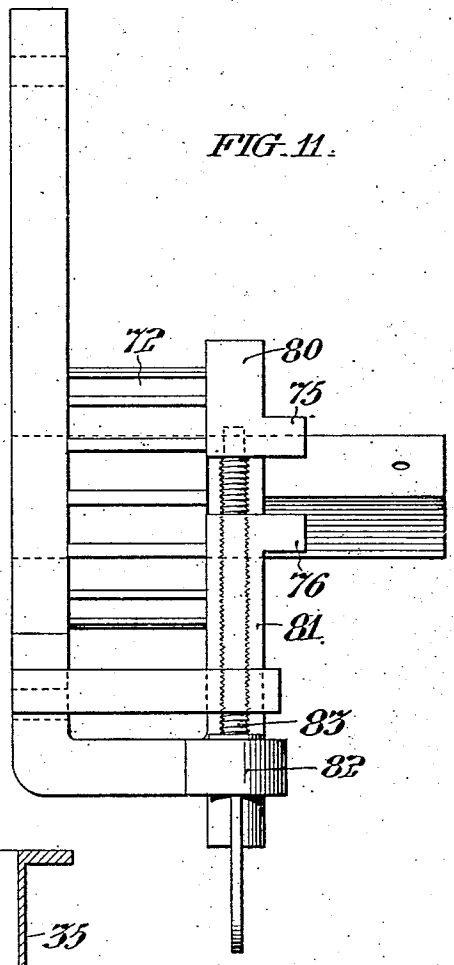
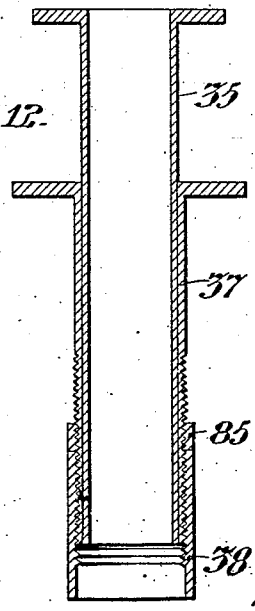


FIG. 12.



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No. 731,526. Patented June 23, 1903.

UNITED STATES PATENT OFFICE.

SAMUEL L. TROUPE, OF PHILADELPHIA, PENNSYLVANIA.

APPARATUS FOR FILLING CANS OR OTHER RECEPTACLES.

SPECIFICATION forming part of Letters Patent No. 731,526, dated June 23, 1903.

Application filed July 31, 1902. Serial No. 117,794. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL L. TROUPE, a citizen of the United States, residing in the city and county of Philadelphia, in the State of Pennsylvania, have invented certain new and useful Improvements in Apparatus for Filling Cans or other Receptacles, of which the following is a specification.

It is the object of my invention to provide an apparatus for filling cans or other receptacles with paint or other liquid or semi-liquid material, of simple and inexpensive construction, easy of manipulation, rapid in operation, and adapted to fill cans to a predetermined level more accurately than has been possible with kindred apparatus as heretofore constructed and arranged.

A further object is the organization of the apparatus in such manner or form that after having been employed for example in filling cans with paint of a selected color, it may, upon the removal and replacement of easily detachable parts, be employed in filling cans with paint of an entirely different color without causing admixture of remnants of the paint first referred to with the second lot or mass.

A further object is the provision of an apparatus of this class by the aid of which not only may cans of uniform selected cubic dimensions be accurately supplied with contents to a selected level, but also a series of cans of graduated capacities may be accurately supplied at one operation with contents to selected levels, at predetermined distances from their respective tops.

In the accompanying drawings I show, and herein I describe, a good form of a convenient embodiment of my invention, the particular subject-matter claimed as novel being hereinafter definitely specified.

In the drawings,

Figure 1 is a view in top plan of my apparatus.

Figure 2 is a view in end elevation of an apparatus shown in Figure 1, sight being taken toward the right hand end, as I term it, of the machine.

Figure 3 is a view of the machine in front elevation, that is to say, viewed toward the left hand side, as the machine is depicted in Figure 2.

Figure 4 is a vertical sectional elevation on the dotted line 4—4 of Figure 3.

Figure 5 is a plan view of the operating or crank arm.

Figure 6 is a top plan view of one of the air excluding collars as I term it.

Figure 7 is a view in side elevation of the same.

Figure 8 is a sectional view of the operating or crank arm, section being supposed on the dotted line 8—8 of Figure 5.

Figure 9 is a fragmentary perspective view of the lower end portion of one of the rack-bars.

Figure 10 is a view in side elevation of the inner end of the crank or operating arm, and associated parts.

Figure 11 is a view in edge elevation of the inner end portion of the crank or operating arm and associated parts.

Figure 12 is a vertical sectional elevation of the supply conduit as I term it.

Similar letters of reference indicate corresponding parts.

In the accompanying drawings,

1 is the base frame of the machine provided at opposite sides with a pair of standards designated 2 and 3 respectively, said standards being united at the top by the cross member 4. Said members 2 and 3 are provided at their respective tops with the wing plates designated 5 and 6 respectively. Of course, any suitable framework may be employed.

The base frame is provided with a pair of rails 7, on which is mounted a wheeled carrier 8 designed to support two sets of eight cans each, the apparatus herein depicted happening to be one adapted to fill eight cans at a time.

Through the provision of the carrier 8 adapted to support two sets of cans, I am enabled, while the machine is charging one set, to remove from the carrier the cans previously filled and to substitute therefor eight cans to be filled.

Thereupon as soon as the eight cans of one set are filled, the carrier is caused to traverse to the opposite end of the machine, carrying the filled cans out from beneath the filling apparatus, and the empty cans just placed in position on the carrier forward into position beneath said apparatus.

Cross Reference DRAFTSMAN

The carrier in the organization depicted, is in its travel from end to end of its ways or rails, always partly beneath the filling apparatus and partly out from beneath said apparatus. When the carrier is at one end of the rails, one end portion of the carrier with the cans thereon is beneath the filling apparatus and the other end portion with the cans thereon out beyond said apparatus, as shown in Figure 1, and when at the other end of the rails said first mentioned end portion will be out from beneath the filling apparatus and the second mentioned end portion will be in position beneath the filling apparatus.

As a convenient means for occasioning the required travel in opposite directions of said wheeled carrier, I arrange on suitable bearings on the upright 2 the rock shaft 9, the upper end of which is provided with an operating arm 10 and the lower end of which is provided with a horizontal arm 11 rigidly connected to it. To the outer end of said arm 11 is pivotally connected a link 12 the distant end of which link is in turn pivotally connected to a projection 13 extending laterally from the carrier.

The horizontal throw of the arm 10 in a movement in which it will describe a half circle, from the position shown in Figures 1 and 2 to the correspondingly opposite position, will, of course, occasion the corresponding movement through a semi-circular path of the arm 11, and the movement of said arm 11 will through the link 12 be transmitted to and occasion the desired travel of the carrier 8 to the distant end of the way.

When the wheeled carrier comes to rest, the mouths of the cans beneath the filling apparatus will, if said cans have been properly placed on the carrier, register with the nozzles of said filling apparatus.

14 are a series of empty cans, and 15 are a series of cans which are undergoing the filling operation.

Manifestly, as soon as the cans 15 (see Figure 2) have been filled, the throw of the arm 10 will cause the travel of the carrier to convey said cans out to the right hand end of the machine and the cans 14 into position beneath the filling apparatus.

The filling reservoir from which the cans are directly filled is designated 16. It is conveniently of quadrangular plan and extends across from the upright 2 to the upright 3. Conveniently it is provided with the two receiving open-topped spouts 17, one arranged at each of its sides, as shown in Figures 1 and 2, into one of which discharges a delivery spout 18, supported upon an auxiliary frame 19, beneath the outlet in the hopper bottom of a receiving reservoir 20. Said reservoir 20 is conveniently provided with an internal sieve 29, supported intermediate of its height.

The receiving reservoir 20, into which the paint to be charged to cans may be conveyed continuously or intermittently as may be desired, is provided with a pair of brushes 21 adjustably secured to reciprocating bar 22, and in contact with the sieve of said reservoir. Said bar is secured free for horizontal reciprocation in suitable slide ways 51 at the respective ends of the receiving reservoir.

As the paint is delivered to the supply reservoir it descends through the sieve supported thereon and upon the hopper bottom of said reservoir from which it discharges through the opening in said bottom to the delivery spout 18, from thence of course to the receiving spout 17 from which it flows directly into the filling reservoir 16. The paint or other material to be supplied to the cans may, of course, if desired, be applied directly to the filling reservoir 16 without passing through the several parts just described.

The brushes in their reciprocation act to assist in forcing the paint through the meshes of the sieve, and more particularly to eliminate any clots of paint or masses of matter which would tend to clog up the sieve, or interfere with the flow of the paint to the cans.

The main shaft 24 of the machine is, as to its left hand end, provided with a crank arm 25, to a wrist pin on which is connected the inner end of a link 23. Said link 23 is as to its outer end connected to a threaded upright 26, which rises from the reciprocating bar 22 to which the brushes 21 are directly connected. The outer end of said link has an opening through which extends the upper portion of said upright 26; a nut threaded on said upright limits the descent of the end of the link. By adjustment of said nut, the outer end of the link may be lowered to take up any lost motion in the movement of said link.

The link 23 is, as shown in dotted lines in Figure 2, composed of two parts or members, the meeting ends of which overlap and are joined by a pivot 84, with the result that the outer end portion of said link may be swung with respect to said pivot to project to the opposite side of the machine, as shown in dotted lines in Figure 1. As a result of this arrangement, when the standard 19, with the parts which it carries, is moved to the opposite side of the machine, said link 23 may, without other change than that of the swinging of its outer end portion upon or with respect to said pivot, maintain its working relations with respect to the parts moved, that is to say, continue to occasion, under the actuation of the crank 25, the reciprocation of the bar 22.

Preferably the brushes 21 are made fast to the bar 22 by means of threaded shanks 27 which extend through said bar, on which shanks above and below said bar are placed regulating nuts. Manifestly, by the adjustment of said nuts, said shanks 27 may be raised or lowered and the brushes attached to their lower ends correspondingly raised and lowered.

Where the convenience of the movements

of operators requires it, the reservoir 20, spout 18, and associated parts may be moved to the opposite side of the machine, and work in association with the receiving open topped spout 17 at the opposite (*i. e.*, right hand, Figure 2) edge of the filling reservoir 16 the auxiliary frame 19 being so arranged as with its supported parts to be readily moved to said opposite side of the machine. Said frame 19 may be, as to its supporting leg, of rectangular section, and be set in suitable brackets 28 formed in the base frame of the machine,—such brackets being arranged one at each side of the filling reservoir.

The reservoir 16 is supported upon the two bars 30 which at their upper portions are provided with teeth and which I, therefore, term rack bars, said bars being arranged for vertical sliding movement in suitable ways 31 upon the respective inner faces of the uprights 2 and 3. Said rack bars each have at its lower end an inwardly projecting nose in the form of a transversely extending bearing bar 32, (see Figure 9) which bar directly receives the weight of the reservoir 16 through the detachable bottom, whereof hereinafter, beneath the ends of which said noses 32 extend.

Upon the main shaft 24 are arranged the pinions 33 in mesh with the teeth of the rack bars, so that upon the rotation of said shaft the elevation or depression of said rack bars and the reservoir may be effected.

The bottom 34 of the reservoir 16 I term the permanent bottom merely to distinguish it from the detachable bottom. Said permanent bottom may, of course, however, be capable of removal from the walls of the reservoir. Said permanent bottom 34 of the reservoir 16 is provided with a series,—eight in number in the machine represented,—of filling openings in which are fitted filling pipes 35, which depend considerably below said bottom.

36 is a detachable bottom, as I term it, conveniently, although not necessarily, formed of two longitudinally extending members or plates placed edge to edge, the said members or plates being secured in this relation by being rested as to their respective ends upon, and being secured to, the respective horizontal nose bars 32 carried by the respective rack bars.

The detachable bottom thus rests upon the rack bar noses,—and in turn supports the weight of the filling reservoir 16. The permanent bottom is provided with a series of threaded shanks 41 (see Figure 3) which extend downward freely through suitable openings formed in the detachable bottom, and below said last mentioned bottom are provided with wing or other nuts. By this arrangement the reservoir is secured to the detachable bottom,—but may be removed therefrom upon the removal of the nuts from said shanks 41.

Said detachable bottom embodies eight filling openings which register with the filling openings 35, and within each of said openings in the detachable bottom is arranged (see Figure 12) a filling pipe 37. Said filling pipes 37 receive the depending ends of the pipes 35 and extend downward with said pipes 35 to a point considerably below the detachable bottom. Said pipes 35 fit snugly within the pipes 37 but are capable of being withdrawn therefrom.

The lower ends of each of the pipes 37 are shown as externally threaded and each provided with a correspondingly threaded adjustable nozzle 38 as shown particularly in Figure 12.

Encircling the pipes 37 are jam nuts 85, which, when screwed down against the upper ends of the adjusting nozzles, set them firmly against the threads with which they are engaged and thus render the structure more secure against the passage of air between 38 and 37.

Encircling each of the filling pipes between the permanent bottom and the detachable bottom, are preferably provided a series of rubber gaskets or washers 39, as shown in Figure 4.

40 are what I term air excluding collars, said collars being conveniently of the form more particularly shown in Figures 4, 6, and 7. In the form shown, each of said collars is formed as tube, conveniently made of rubber, having near its upper end an external annular groove 42 (shown in dotted lines in Figure 6) within which groove is seated a metal supporting ring 43 having hook-like projections 44 on opposite edges.

Two studs or kindred devices 45 (see Figure 3) depending from the lower face of the detachable bottom, on opposite sides of each pipe 37, will when a structure 40 is presented against the under face of said bottom and between them and thereupon slightly rotated, be engaged between said projections 44 and the body of the ring 43, and secure said structure 40 tightly, and yet free for quick removal, against said detachable bottom.

The arrangement depicted is one which enables the ready application of the air excluding collars to the detachable bottom as well as their ready removal. I prefer to form on the interiors of the air excluding collars the annular grooves or recesses 46 shown in dotted lines in Figure 7, so that said collars when their free lower ends are presented against the surfaces of the cans may the more readily slightly collapse longitudinally in the manner shown in Figure 4, to allow of the penetration of the supply conduits within the cans, without breaking the air seals said collars form with the detachable bottom and the cans. Said collars readily accommodate themselves to inequalities in the surface of the cans.

In connection with each filling conduit, as I term it, formed by a supply pipe 35 and a supply pipe 37, I employ what I term an air pipe 47, two of said pipes 47 being shown in

detail in Figure 4. Each of said pipes, which are of small diameter relatively to the supply conduits, passes, in the arrangement illustrated, through and extends to a point below the filling conduit with which it is associated, and as to its upper end, extends considerably above the top of the reservoir.

The lower ends of the pipes 47 are preferably provided each with the external paint spreading or distributing rib or enlargement 48, shown, and said pipes are in the vicinity of the upper ends of the pipes 35 equipped each with a valve 49, which valves are respectively adapted to close the entrance mouths of the respective supply pipes 35.

Each of the pipes 47 is provided as to its upper portion with a stop or collar 50 fitted thereto and secured in selected position thereon by any suitable binding screw or other means.

Across the interior of the filling reservoir extend a series of spring plates 52 each of which embodies two openings through which respectively extend two of the pipes 47. Springs 53 encircling the pipes 47 bear against the under faces of the spring plates and suitable stops on said pipes, the tendency of which springs manifestly is to force said pipes downward, and consequently the valves 49 to their seats.

Said spring plates are provided at their respective ends with the hooks 54 shown particularly in Figure 4, adapted to engage in suitable keepers 55 on opposing sides of the reservoir.

Longitudinally of the reservoir 16 extend a pair of bars 56 which normally rest on the upper edges of the ends of said reservoir when the latter is in elevated position. The respective uprights 2 and 3 are provided at their respective sides with brackets 57 in line with said bars, said brackets being so located that when the reservoir 16 carrying said bars is lowered a sufficient distance said bars will encounter and rest upon said brackets, said reservoir, in its continued descent, leaving said bars upon said brackets and descending considerably below them, as shown, for instance in Figure 4.

58 are two drip pans, each supported at each end upon a pendulous drip pan arm. The members of the pairs of drip pan arms are in the drawings lettered 59 and 60, those near the upright 2 being designated 59, and those near the upright 3 being designated 60. The upper ends of the arms 59 are pivotally secured to the outer ends of the wing plate 5, and the upper ends of the arms 60 are pivotally secured to the outer ends of the wing plate 6. To the upper ends of the drip pan arms 59 are respectively connected the drip pan branch arms 61 shown in dotted lines in Figure 2, and to the upper ends of the drip pan arms 60 are respectively connected the drip pan branch arms 62.

The inner ends of the two drip pan branch arms 61, when in the position shown in Figure 2, intersect the path of the adjacent rack bar, and the inner ends of the two drip pan branch arms 62 intersect the path of the other rack bar, with the result that said drip pan branch arms are encountered by the upper ends of the rack bars in the upward movement of the latter.

Each drip pan branch arm is as shown in Figure 1, secured to the drip pan arm on which it is carried, by means of a hinge 63. In the arrangement of the parts one leaf of a hinge is secured to a drip pan arm and the other to the associated drip pan branch arm, the pintles of said hinges being approximately vertical. As a result of this arrangement, while the vertical movement of the drip pan branch arms will, when said branch arms are in the positions shown in full lines in Figure 1, occasion the swinging movement of the drip pan arms, said drip pan branch arms are nevertheless free to be swung, when required, outward to the positions shown in dotted lines in Figure 1.

Upon the cross member 4 are arranged a pair of eyes suspended from which are a pair of hooks 64. The bodies of said hooks may be conveniently stowed, when not in use, up against the body of the cross member 4 by any suitable rigid hook like keepers 65.

The respective ends of the reservoir 16 are provided with handles 70 (see Figure 4) adapted as hereinafter explained to be engaged by said hooks 64.

The operation of the apparatus will be readily understood.

The reservoir 16 with its associated parts normally exists in the position shown in Figure 2. Said reservoir,—and when herein I speak of a reservoir without qualification I refer to the filling reservoir,—may be assumed to be filled with paint or other liquid or semi-liquid, either deposited directly within it, or supplied thereto by way of the parts 17, 18, 20,—the operation of which last mentioned parts has already been sufficiently set forth.

Rotation of the main shaft in the appropriate direction will permit the descent of the rack bars and the reservoir and associated parts.

In the descent of said parts the lower edges or lips of the air excluding collars 40 make contact with the upper faces of the cans, each such collar surrounding the receiving opening of a can, and in the continued descent of the parts such collars are caused to press more and more firmly upon the upper faces of the cans and thereby increase the effectiveness of the air seal.

The timing of the movements of the apparatus is such that in the descent of the parts after the lips of the air excluding collars make contact with the faces of the cans, the bars 56, which theretofore rested on and descended with the reservoir, encounter the brackets 57 and resting upon the latter remain stationary while the reservoir continues its descent.

The stops or collars 50 secured to the air pipes 47, rest or come to rest upon the now stationary bars 56 and said air pipes 47 are thus caused to cease their descent. The valves 49 which control the supply conduits are as explained connected to the air pipes 47, and, of course, in the continued descent of the reservoir, said supply or filling conduits are freed so to speak from said valves 49 which, stopped and suspended with the air pipes, are, of course, unseated.

When the descending reservoir comes to rest the parts will occupy the positions shown in Figure 4, the air excluding collars being firmly pressed against the faces of the cans and the valves 49 being well clear of their seats.

In this position of the parts the paint, which was free to run down the supply conduits when the valves 49 were unseated after the lips of the air excluding collars made contact with the cans, will pour down through the filling conduits into the cans, the ribs 48 serving to spread or distribute it therein, and the air displaced from said cans ascending through the bores of the air pipes.

When the liquid levels in the cans reach the lower ends of the air pipes the escape of air through said pipes will be, of course, cut off, and the remaining air in the cans will, during the continued ingress of the paint, and until the liquid levels reach the lower ends of the adjusting nozzles 38, ascend through the paint in the filling conduits and outside of the pipes 47, and occasion bubbles on the surface of the paint in the reservoir close to the respective air pipes.

When the liquid level in a can reaches the lip of the adjusting nozzle 38 the egress of air through the filling conduit will, of course, be cut off, and the flow of paint through the filling conduit will thereupon cease owing to the resistance of the banked air in the top of the can, and within the associated air excluding collar, and the operator in charge will know by the cessation of the bubbles that the liquid level in the can has reached said adjusting nozzle.

When the operator in charge has seen the bubbles appear and then cease in the vicinity of each of the cans, he will know that they have all been filled, as stated, to the levels of the lower edges of the adjusting nozzles within them, and he will thereupon occasion the rotation of the shaft 24 in the appropriate direction to cause the elevation of the reservoir away from the cans.

As will be understood, the supply conduits remain, when the cans have been filled to the levels of the lips of the adjusting nozzles, full of paint, which, however, will not flow into the cans by reason of the resistance of the air cushions in the tops thereof above the levels of the lower edges of said nozzles, and which air cushions are, of course, so to speak, continuous of the air cushions within the respective air excluding collars.

When the reservoir begins to ascend, carrying with it said supply conduits, the elevation of the nozzles from out the mass of liquid in the cans, permitting the air in the cans to rise through said conduits, allows the quantity of liquid in said conduits to flow into the cans and complete the filling of the latter to the desired point.

The lips of the air excluding collars are not lifted from the cans until just after the valves 49 are seated.

Immediately after the reservoir begins to rise, the entrance mouths of the supply or filling conduits receive the temporarily stationary valves 49, the passage of the paint from the reservoir into the supply conduits being thus shut off, so that the final charges made to the cans when the reservoir begins its upward movement, represent the amount of paint in the supply conduits plus the very minute quantity passing into said conduits in the interval between the time the ascent begins and the time the valves 49 are seated. That is to say, the paint ceases to flow into a can, as explained, quickly after the liquid therein is so high that it reaches the lip of the adjusting nozzle, and said can receives in addition to such amount, the small additional amount contained in the supply conduit, plus the minute quantity which may flow into the said conduit prior to the seating of the valve 49—and which last mentioned amount may be very easily allowed for in the setting of the parts. Such last mentioned amount obviously will depend upon the distance the reservoir must travel upward before the valve 49 is seated, and the quickness with which said travel is accomplished. As the distance from the valves 49, when unseated, to their seats, when the parts are in the acting position shown in Figure 2, is short, and as the reservoir may always be caused to ascend at practically the same speed, the two factors affecting the result remain uniform, and hence said minute quantity will be a substantially uniform and determinable quantity.

As will be understood, the cessation of the direct flow of liquid from the reservoir to the interior of the can may be regulated by the position of the regulating adjusting nozzle 38 upon the supply conduit, and said nozzle may be very accurately adjusted to any desired set within its range of adjustment by simply rotating it to the right or left.

In the operation of filling a can the apparatus is to be so adjusted that the liquid level in the can will reach the adjusting nozzle when the can has received the quantity of liquid which will,—with the slight amount entering afterward, that is to say the amount then in the supply conduit and such minute additional amount as enters said conduit before the valve 49 is seated,—fill the can to the precise point desired, and which, in the case of many liquids, is usually a fraction of an inch below the inner surface of the can top.

As will be understood, therefore, my apparatus will automatically fill the cans with precision up to any desired level.

The springs 53 which encircle the air pipes 47, bear respectively against the spring plates and stops upon said pipes, and serve to force the valves 49 to their seats, assisting the natural gravitative tendency of said valves and pipes.

As the reservoir rises and after the valves 49 have found their seats, so that the further entry of paint to the filling conduits is precluded, the lips of the air excluding collars are lifted away from the cans, and at about the same time the end edges of the reservoir, encountering the bars 56, causes the participation of said bars in the upward movement of the reservoir.

As the reservoir ascends the wheeled carrier 8 is moved along its rails in one direction or the other, to convey the filled cans out from beneath the filling apparatus and a new set of empty cans beneath said apparatus; the reservoir is thereupon again caused to descend and the operation repeated.

As the reservoir ascends the upper end of each of the vertically movable rack bars encounters and raises the free ends of the two drip pan branch arms which intersect its path, and tilt said drip pan branch arms and the drip pan arms with which they are respectively connected, upon or with respect to the pivotal connections 66 (Figure 2) between said drip pan arms and the wing plates and upon which pivotal connections said arms are adapted to have their pendulous movement. The throwing upward of the free ends of the drip pan branch arms by the rack bars throws inward the lower ends of the drip pan arms the lower ends of which are connected as explained to the drip pans 58. The arrangement and proportioning of the parts is such that when the rack bars come to rest in their upward movement the drip pans will come to rest in line below the supply conduits and receive any drippings from said conduits. The tendency of the arms 59, 60, is to hang in almost vertical position in line below the pivotal connections 66, and to return to said position by gravity upon the drip pan branch arms being no longer held up by the rack bars.

As the reservoir descends, therefore, the drawing away of the vertically movable rack bars from the drip pan branch arms, permits the drip pan arms and pans to assume the positions they naturally occupy in line below the respective pivotal connections 66, the pans being thus self removing from the path of the descending reservoir.

I prefer to provide the two drip pans 58, at one side of the apparatus, each with an outlet pipe 67, terminating over a drip collector 68,—through which pipes drippings received in the pans 58 are delivered to said collector to be removed at the convenience of the operator. Said collector 68 is of such length that in all positions of the drip pans the outlet ends of the pipes 67 will overhang it.

When it is desired, after the apparatus has charged cans with paint of one color, to can a quantity of paint of a different color, it is desirable to remove the reservoir and to substitute a clean reservoir so that the last mentioned paint will not in being canned receive streakings or traces of the paint formerly dealt with by the apparatus.

To do this I swing the drip pan branch arms 61, 62, outwardly into the position shown in dotted lines in Figure 1, and thereupon rotate the shaft 24 in the appropriate direction until the reservoir is elevated within range of the hooks 64, the upper ends of the vertically movable rack members, in such movement, passing up through the openings 69, formed for them in the cross member 4 as shown in Figure 1.

I thereupon release the hooks 64 from their keepers and engage them with the handles 70 of the reservoir. I then remove the nuts from the bolts 41 which pass from the permanent bottom through the detachable bottom of the reservoir, (Figure 3) and thereupon reverse the rotative movement of the shaft 24, whereupon the enforced descent of the rack bars will occasion the descent, and separation from the reservoir, of the detachable bottom carrying the pipes 37, the adjusting nozzles, and the air excluding collars,—leaving the reservoir with its pipes 35, air pipes 47, and spring plates 52, suspended at the top portion of the framework.

When the detachable bottom with its associated parts has been lowered as far as necessary to afford space for the removal of the reservoir, said reservoir is lifted from the hooks 64, and another reservoir provided with its own pipes 35 and 47, spring plates 52 and associated parts, is substituted, and suspended on the hooks 64; the detachable bottom is thereupon again elevated to receive in its pipes 37 the pipes 35 and 47 of the newly applied reservoir and to be made fast to the permanent bottom of the new reservoir by the bolts depending therefrom.

The hooks 64 are then disengaged from the handles 70 of the new or fresh reservoir and placed within their keepers, the reservoir lowered, and the drip pan branch arms swung back into their ordinary positions in close proximity to the inner faces of the wing plates 5 and 6, respectively.

In connection with the change of reservoirs, the receiving reservoir 20 and the delivery spout 18 may, if the paint to be operated upon is to be delivered through them, be removed from the supplementary frame 19 and replaced by others.

The shaft 24 is at what I term the right hand end of the machine provided with a driven gear 71, in mesh with which is the driving gear 72, and connected with the shaft of said driving gear is a crank arm 73 of special construction. Said crank arm is fitted

to the squared extremity of the shaft last mentioned in the vicinity of which are the two stops shown particularly in Figures 10 and 11.

Mounted in a suitable way in or on said crank arm is a longitudinally movable locking bolt 74 the inner end of which is adapted to make alternate contact with the upper end of an upper stop 75 and the lower end of the lower stop 76.

An expansive spring 86 bearing against a pin on said bolt 74 and a fixed portion of the crank arm, tends to force said bolt constantly toward the inner end of the arm.

The outer end of said bolt is provided with a hook 77, by which it may readily be manually engaged and drawn outward.

A pawl 78 pivotally mounted on the outer end portion of the crank arm has a nose adapted, when said bolt is drawn to outermost position, to enter a recess in said bolt and retain it in said position. The other end of said pawl has a handle piece 79 by which the throw of said pawl to either engage or release the bolt may readily be manually accomplished.

The upper stop 75 is a fixture and may be integral with a plate 80 attached to the upright 2. The lower stop 76 may be formed as a part of or carried on a slide plate 81 arranged to have sliding movement with respect to the plate 80. 82 is a lug projecting from said plate 80. 83 is a screw shaft swiveled in said lug, and having an unthreaded advance extremity entered in a recess in the plate 80, and an intermediate portion passed through and engaged with an internal thread of an opening in the slide plate 81. Rotation of said screw shaft will manifestly occasion the vertical movement of the plate 81 and vertical adjustment of the stop 76 carried on said plate. The stops 75, 76, are both in line with the bolt 74, but said bolt when drawn outward will in the rotation of the crank arm 73 clear said stops.

Rotation of the crank arm to the right occasions the elevation of the reservoir. When the reservoir has reached the desired height the inner end of the crank handle will, as the apparatus is arranged, be in such position that the bolt 74 may engage the top of the stop 75.

The pawl 78 is thereupon manipulated to release said bolt, which thereupon under the impetus of its spring, moves inward across the top of the stop 75, as shown in Figure 10. Said stop 75 therefore retains said crank arm, during the time the reservoir is up, against its tendency, due to the weight of the reservoir, to rotate to the left and allow of the lowering of the reservoir.

When it is desired to lower the reservoir the bolt 74 is retracted and locked by the pawl. The crank is then rotated to the left, to allow of the descent of the reservoir to the position illustrated in Figure 4, two revolutions being required in a machine of the proportions and arrangement illustrated. When the parts are in the set illustrated in said Figure 4, the crank arm will be in such position that the bolt 74 may engage beneath the stop 76. The pawl 78 is thereupon rocked to release said bolt, which thereupon under the impetus of its spring moves inward across the lower face of the stop 76. Said stop, thereupon, acts to restrain any movement of the crank to the right, under the influence of the expanding tendency of the compressed or collapsed air excluding collars, transmitted to said crank through the reservoir, rack bars, and the gears, and serves to secure the parts against the tendency to be elevated by said collars.

As the fixed position of the crank arm after having been rotated to the left to lower the reservoir and its associated parts, determines the position in which the parts come to rest and the relation of the supply conduits to the cans, (apart of course from independent adjustment of the nozzles 38, and the setting up or down of the cans by blocks beneath them), I find the adjustability of the stop 76 a useful feature,—as the point at which the crank arm should come to rest with the reservoir in its lowest position, will vary as between sets of cans all of one size and sets of cans all of another size, subsequently operated upon, and by adjustment of said stop I can very readily and accurately control the point at which the crank arm and the reservoir with its supply conduits shall thus come to rest.

It will now be understood that in my apparatus the filling reservoir with its so-called permanent and so-called detachable bottoms operates in the filling of cans or the like, as a whole or unitary structure, the detachability of the detachable bottom only coming into play at times when it is desired to substitute one reservoir body for another. Also that the supply conduits constitute in effect unitary structures notwithstanding that they, for the purpose of substituting one reservoir body for another in connection with the detachable bottom, in the particular apparatus which happens to be depicted, comprise each two independent pipes or tubes connected to the permanent bottom and the detachable bottom respectively. It is apparent that either in the general organization depicted, or with a reservoir without a detachable bottom, said supply conduit broadly as such, might be differently constituted, without departure from the spirit of my invention, the term in its broadest signification being intended to cover a single thickness outlet pipe, as well as the double pipe illustrated.

Where a series of cans of different dimensions are to be filled, I prefer to so arrange them that the tops of all will be at a common level, and this result may, of course, be obtained by providing the carrier with blocks or

supports placed beneath the cans of size smaller than the largest, as shown particularly in Figure 3.

As the supply conduits will all contain,—when the paint or liquid level in the cans reaches the lips of the adjustable nozzles, and when the paint or liquid thereupon ceases to flow through them—about the same amount of paint or other liquid,—and as such amounts will, when they finally run into the cans as the supply conduits are elevated, have a greater effect in augmenting the liquid level in cans of small diameter than they will in cans of larger diameter,—I adjust or set the adjustable nozzles which operate in connection with the small cans farther down than those operating in connection with the large. Thereupon, when the liquid ceases to flow into the cans at the time the liquid levels therein reach the adjustable nozzles, the liquid levels in the smaller cans will be proportionately lower than those of the larger cans. Thereupon, when the final discharge of the contents of the supply conduits to the cans takes place, the liquid levels in all the cans may be brought up to a point at a uniform distance from the tops of the cans, by reason of the fact stated, that the discharge from the supply conduits will increase the liquid levels in the small cans more than it will those of the large cans.

When in the accompanying claims I refer to liquid, I intend the term to cover not only paint but any liquid or semi-liquid in connection with which the apparatus may be made useful.

It will, of course, be understood that in referring to the apparatus as intended for filling cans and the like, the expression employed is to be construed broadly and is intended to cover any and all kinds of receptacles in connection with which the apparatus described may be employed.

Having thus described my invention, I claim—

1. In an apparatus for filling receptacles, in combination, a supply conduit in communication with a source of liquid supply, a valve controlling the flow of liquid through said conduit, means for varying the vertical position of said conduit, and a stop arranged above the outlet mouth of the conduit to occasion the unseating of said valve before the supply conduit reaches the lowest point in its movement.

2. In an apparatus for filling receptacles, in combination, a supply conduit in communication with a source of liquid supply, a valve which controls the flow of liquid through said conduit, means for raising and lowering said conduit, a stop arranged above the outlet mouth of the conduit to occasion the stoppage of said valve in its descent before the supply conduit reaches the lowest point in its movement, and a spring which tends to assist in the seating of said valve as the supply conduit is elevated.

3. In an apparatus for filling cans and the like, a supply conduit, a valve which controls said conduit, means for occasioning the raising and lowering of said conduit, means for adjusting the effective length of said conduit, said means consisting of an adjusting nozzle having screw threaded engagement with said conduit, and a jam nut co-acting with the said nozzle, for the purpose set forth.

4. In an apparatus for filling cans and the like, a supply conduit, means for adjusting the length of said conduit, and an air pipe mounted in association with said conduit, a valve for controlling said conduit, the said valve being supported upon the air pipe intermediate the ends thereof.

5. In an apparatus for filling cans, a supply conduit, an air pipe leading through said conduit, a conduit controlling valve mounted on said air pipe intermediate the ends thereof, and an air excluding collar associated with said conduit.

6. In an apparatus for filling cans, a supply conduit, an air pipe leading through said conduit, a valve mounted on said air pipe, an air excluding collar associated with said conduit and detachably supported independently thereof, and a regulating or adjusting nozzle mounted on said conduit.

7. In an apparatus for filling cans, a supply conduit, a valve which controls said conduit, an air excluding collar detachably supported independently of said conduit, a regulating or adjusting nozzle mounted on said conduit, and means for occasioning the raising and lowering of said conduit and collar.

8. In an apparatus for filling cans, a supply conduit, an air pipe leading through said conduit, a valve mounted on said air pipe, an air excluding collar encircling a portion of said conduit, a regulating or adjusting nozzle mounted on said conduit, means for occasioning the raising and lowering of said conduit and collar, and means whereby the supply conduit is automatically unseated or opened as the conduit descends and seated or closed as the conduit ascends.

9. In an apparatus for filling cans or the like with liquid, in combination, a reservoir, means for raising and lowering said reservoir, a supply conduit extending from said reservoir and adapted to discharge within the mouth of a can to be filled, a valve controlling said pipe, and means, situated above the bottom of the reservoir, for automatically unseating said valve, substantially as set forth.

10. In an apparatus for filling cans or the like, a reservoir, an outlet for said reservoir, a valve controlling said outlet, a frame in which said reservoir is supported, a device controlled by a stop or shoulder on the frame of the apparatus for opening the valve as the reservoir descends, substantially as set forth.

11. In an apparatus for filling cans, in combination, a reservoir having an outlet, a frame in which said reservoir is mounted, means for raising and lowering said reservoir, a valve

mounted in said outlet, a stop associated with the frame and adapted to be encountered by a connection of said valve to stop the descent of said valve before the reservoir reaches the end of its descent, substantially as set forth.

12. In an apparatus for filling cans, in combination, a reservoir having an outlet, a framework, means for occasioning the raising and lowering of said reservoir, a valve for the reservoir outlet, an air pipe extending through said outlet, means for raising the valve from its seat before the reservoir reaches the lowest point in its descent, and for restoring said valve as the reservoir ascends.

13. In an apparatus for filling cans, in combination, a reservoir having an outlet, and adapted to be raised and lowered, a framework for supporting the reservoir, a valve for the reservoir outlet, means disconnected from the reservoir for operating the valve, an air excluding collar encircling the outlet, moving up and down with the reservoir, and adapted to make contact with a can to be filled.

14. In an apparatus for filling cans, in combination, a reservoir having an outlet, and adapted to be raised and lowered, a valve for the reservoir outlet, means for raising the valve from its seat before the reservoir reaches the lowest point in its descent, and a nozzle vertically adjustable with respect to the outlet, substantially as set forth.

15. In an apparatus for filling cans or the like, in combination, a reservoir having an outlet, means for occasioning the raising and lowering of said reservoir, a valve for the reservoir outlet, means for raising the valve from its seat before the reservoir reaches the lowest point in its descent, and an air excluding collar encircling the outlet and moving up and down with the reservoir, and adapted to make contact with a can to be filled, and an adjustable nozzle, substantially as set forth.

16. In an apparatus for filling cans or the like, in combination, a reservoir having a supply conduit extending from it, means for occasioning the elevation and lowering of said reservoir, an air pipe extending through said conduit, a valve for said conduit carried on said air pipe, an adjustable nozzle mounted on the conduit, and an air excluding collar, substantially as set forth.

17. In an apparatus for filling cans or the like, in combination, a reservoir, means for raising and lowering said reservoir, a supply conduit, an adjustable nozzle mounted on said conduit, an air excluding collar adapted to be raised and lowered with the reservoir and adapted to make air-tight contact with the face of the can to be filled, an air pipe extending through said conduit, a valve connected to said pipe and adapted to said conduit, and means for arresting the descent of said valve before the reservoir reaches the limits of its descent, substantially as set forth.

18. In an apparatus for filling cans or the like, in combination, a reservoir, a framework, means for raising and lowering said reservoir, a series of supply conduits, adjustable nozzles on said conduits, a series of air pipes extending through said conduits, a series of valves carried on said air pipes, a series of air excluding collars, and means for automatically seating and unseating said valves.

19. In an apparatus for filling receptacles, in combination, a reservoir, a framework, means for raising and lowering said reservoir, a series of supply conduits, a series of air pipes extending through said conduits, valves carried on said air pipes, nozzles adapted to be inserted in cans to be filled, a series of air excluding collars encircling said nozzles, stops mounted on the air pipes, bars supported on the reservoir, adapted to encounter said stops, brackets or stops connected with the framework and adapted to be encountered by said bars in the descent of the reservoir, substantially as set forth.

20. In an apparatus for filling receptacles, in combination, a reservoir, means for raising and lowering said reservoir, a series of supply conduits, a series of air pipes extending respectively through said conduits, a series of valves carried respectively on said air pipes, a series of air excluding collars, stops mounted on the respective air pipes, means supported on the reservoir, adapted to encounter said stops, brackets or stops connected with the framework and adapted to be encountered by said means in the descent of the reservoir, plates or the like arranged in the reservoir, and springs encircling the respective air pipes and bearing against said spring plates and projections of the air pipes, respectively.

21. In an apparatus for filling cans or the like, in combination, a reservoir, means for raising and lowering said reservoir, a detachable bottom connected to said reservoir, both the bottom and the detachable bottom of the reservoir having outlet openings, depending pipes arranged in the outlets of the reservoir bottom, depending pipes arranged in the outlets of the detachable bottom and inclosing the depending pipes of the reservoir bottom, adjusting nozzles threaded upon or with respect to the pipes of the detachable bottom, air excluding collars secured to the under face of the detachable bottom, air pipes extending through the depending pipes, valves mounted on said air pipes, and means for automatically operating said valves, substantially as set forth.

22. In an apparatus for filling receptacles, in combination, a reservoir having a bottom, and a detachable bottom, said detachable bottom having means for engaging the receptacles to be filled and for directing liquid received from the reservoir to the interiors of receptacles.

23. In an apparatus for filling receptacles, in combination, a reservoir having a bottom, and a detachable bottom, said detachable bottom having means for engaging the recepta-

cles to be filled and for directing liquid received from the reservoir to the interior of such receptacles, a framework, and elevating and lowering means connected to said detachable bottom, and a device for temporarily supporting said reservoir when the detachable bottom has been removed from it.

24. In an apparatus for filling receptacles, a framework, a pair of rack bars, means for occasioning the vertical movement of said rack bars, a reservoir having a permanent bottom and a detachable bottom, means for connecting said detachable bottom to said rack bars, outlets from said reservoir extending through the detachable bottom, and means for automatically controlling the opening and closing of said outlets, substantially as set forth.

25. In an apparatus for filling receptacles, in combination, a vertically movable reservoir having a permanent bottom, a series of depending pipes opening through said bottom, a detachable bottom secured to said permanent bottom, and having depending pipes inclosing the depending pipes first mentioned, adjusting nozzles mounted on said pipes depending from the detachable bottom, air excluding collars encircling said depending pipes, air pipes extending through said depending pipes, valves mounted on said air pipes, stops on said pipes, and devices encountered by said stops in the descent of the reservoir, substantially as set forth.

26. In an apparatus for filling receptacles, in combination, a reservoir having a permanent bottom, and a detachable bottom, a supply conduit, an adjustable nozzle mounted on said supply conduit, an air pipe extending through said supply conduit, a valve mounted on said air pipe, a stop mounted on said air pipe, a valve tripping device carried with the reservoir when the latter is in elevated position, a fixed device associated with the framework adapted to be encountered by the valve tripping device in the descent of the reservoir, substantially as set forth.

27. In an apparatus for filling cans, in combination, a reservoir having depending pipes, air pipes extending through said depending pipes, valves mounted on said air pipes, springs which force said air pipes downward, means for raising and lowering the reservoir, means for checking the descent of the air pipes before the reservoir reaches the limit of its downward movement.

28. In an apparatus for filling cans, in combination, a reservoir having depending outlet pipes, air pipes associated with said outlet pipes, valves mounted on said air pipes, stops mounted on said air pipes, bars carried on said reservoir and adapted to be encountered by said stops, shoulders or stops supported in the vicinity of the reservoir adapted to be encountered by said bars, substantially as set forth.

29. In an apparatus for filling receptacles, a reservoir having a permanent bottom and a detachable bottom, means for raising and lowering said reservoir, means carried by said detachable bottom for making air-tight contact or connection with the can, and supply conduits leading from the interior of the reservoir through the permanent bottom and the detachable bottom, substantially as set forth.

30. In combination with a reservoir, the depending pipes leading from said reservoir, the air pipes extending through said depending pipes and having valves, stops mounted on said air pipes, bars which alternately rest upon the reservoir and upon fixed supports, and are adapted to be encountered by the stops on the air pipes, and springs connected respectively to the respective air pipes and bearing against fixed supports, substantially as set forth.

31. In an apparatus for filling cans, a reservoir having outlets in its bottom, means for raising and lowering said reservoir, a drip pan and positively acting means whereby the said drip pan is automatically carried into position beneath said outlet after each filling operation.

32. In an apparatus for filling cans, in combination, a reservoir having a series of outlets, means for raising and lowering said reservoir, a drip pan adapted to extend beneath said outlets, mechanism by which as the reservoir is raised, said drip pan is permitted or caused to swing in line beneath said outlet, and as the reservoir descends is caused to swing outward away from said outlet.

33. In an apparatus for filling cans, a reservoir, means for raising and lowering said reservoir, two series of outlets arranged in the bottom of said reservoir, a pair of drip pans, pendulous drip pan bars upon which said drip pans are supported and means for occasioning the pendulous movement of said bars.

34. In an apparatus for filling cans, a reservoir, means for raising and lowering said reservoir, two series of outlets arranged in the bottom of said reservoir, a pair of drip pans, drip pan bars upon which said drip pans are supported and free to be moved toward and from each other into and out of position beneath the respective series of outlets of the reservoir, means through which the swinging movement of said arms and pans is automatically occasioned in association with the rise and fall of the reservoir.

35. In combination with a movable reservoir, having outlets in its bottom, a drip pan, and means actuated by the movement of said reservoir to occasion a movement of said drip pan into and out of position beneath said reservoir in the intervals between the filling operations of the reservoir.

36. In an apparatus of the class described, a pair of drip pans, two pairs of drip pan arms, vertically moving rack bars, and means through which the ascent and descent of said rack bars controls the movements of the drip pans and their arms.

37. In an apparatus for filling cans, in combination, a reservoir, a pair of drip pans, two pairs of drip pan arms, two pairs of drip pan branch arms, said last mentioned arms being arranged by pairs to overlap, vertically moving rack bars adapted in their ascent to encounter the drip pan branch arms and occasion the swing of the drip pan arms, substantially as set forth.

38. In an apparatus for filling receptacles, in combination, a main shaft, a reservoir adapted to be raised and lowered, a crank arm, a longitudinally movable bolt or the like associated with said crank arm, a stop device adapted to be engaged by said bolt when the reservoir is in its uppermost position to prevent the descent of the reservoir until said bolt is drawn out of engagement with said stop.

39. In an apparatus for filling receptacles, in combination, a main shaft, a reservoir adapted to be raised and lowered, a crank arm, a longitudinally movable bolt or the like associated with said crank arm, a stop device adapted to be engaged by said bolt when the reservoir is in its lowermost position to prevent the ascent of the reservoir until said bolt is drawn out of engagement with said stop.

40. In an apparatus for filling cans, in combination, a reservoir adapted to be raised and lowered, a rotatable shaft, a crank arm, a bolt mounted on said arm, and a pair of stops one or the other of which is adapted to be encountered by said bolt when released, one of said stops being adjustable, said stops being respectively adapted, by engaging said bolt, to secure the reservoir when in its uppermost position against descent and when in its lowermost position against ascent.

41. In combination with a reservoir having outlets in its bottom, a drip pan, and means associated with the said reservoir to occasion automatic movement of the said drip pan into and out of position beneath said reservoir in the intervals between the filling operations of the reservoir.

42. In an apparatus for filling cans and the like, a movable reservoir, supply conduits, valves for controlling the said conduits, and means for permitting a selected valve to move in unison with the reservoir to prevent the separation of the said valve from its seat in the opening of its associated conduit pipe, substantially as described.

43. In an apparatus for filling cans and the like, a vertically movable reservoir, supply conduits leading from said reservoir, valves for controlling said conduits, means for preventing the separation of selected valves from their seats in the openings of their associated conduit pipes as the said reservoir moves downwardly.

In testimony that I claim the foregoing as my invention I have hereunto signed my name this 15th day of July, 1902.

SAMUEL L. TROUPE.

Witnesses:

LILLIAN M. HUDNUT,

L. KLEINFELDER.