No. 815,741. PATENTED MAR. 20, 1906.

C. F. REINHARDT.

BOTTLE FILLING APPARATUS.

APPLICATION FILED SEPT. 22, 1905.

4 SHEETS—SHEET 1.

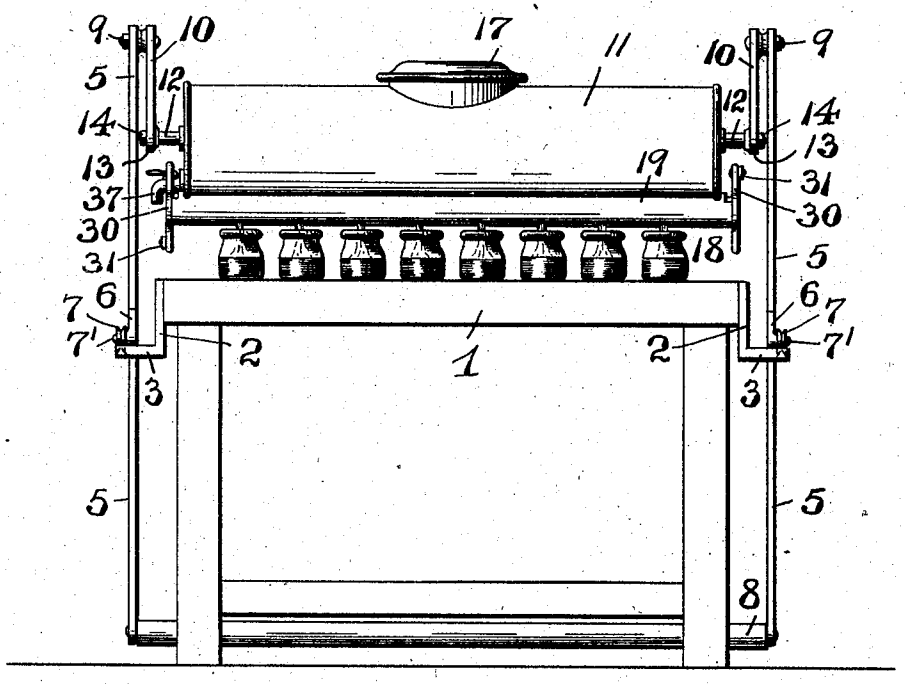


Fig. 1

WITNESSES:

Geo. D. Richards.

Harry G. Hallett

INVENTOR:

Charles F. Reinhardt,

BY

Fred'k C. Fraentzel,

ATTORNEY

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4 SHEETS—SHEET 2.

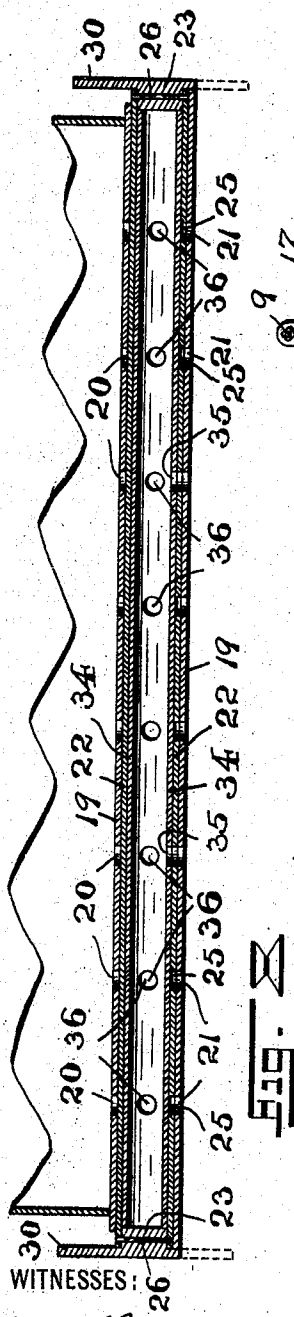


Fig. 3.

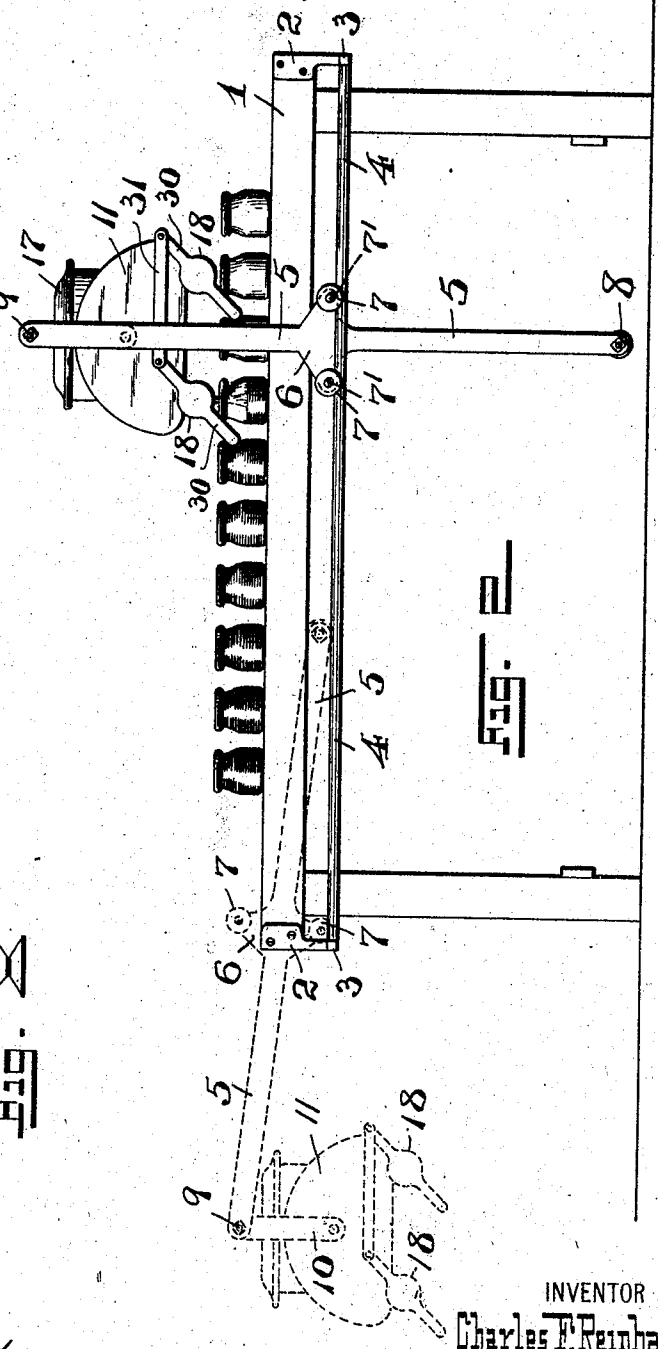


Fig. 2.

WITNESSES:

Geo. D. Richards

Harry G. Hazelton

INVENTOR

Charles F. Reinhardt,

BY

Fred K. C. Faentzel,

ATTORNEY

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4 SHEETS—SHEET 3.

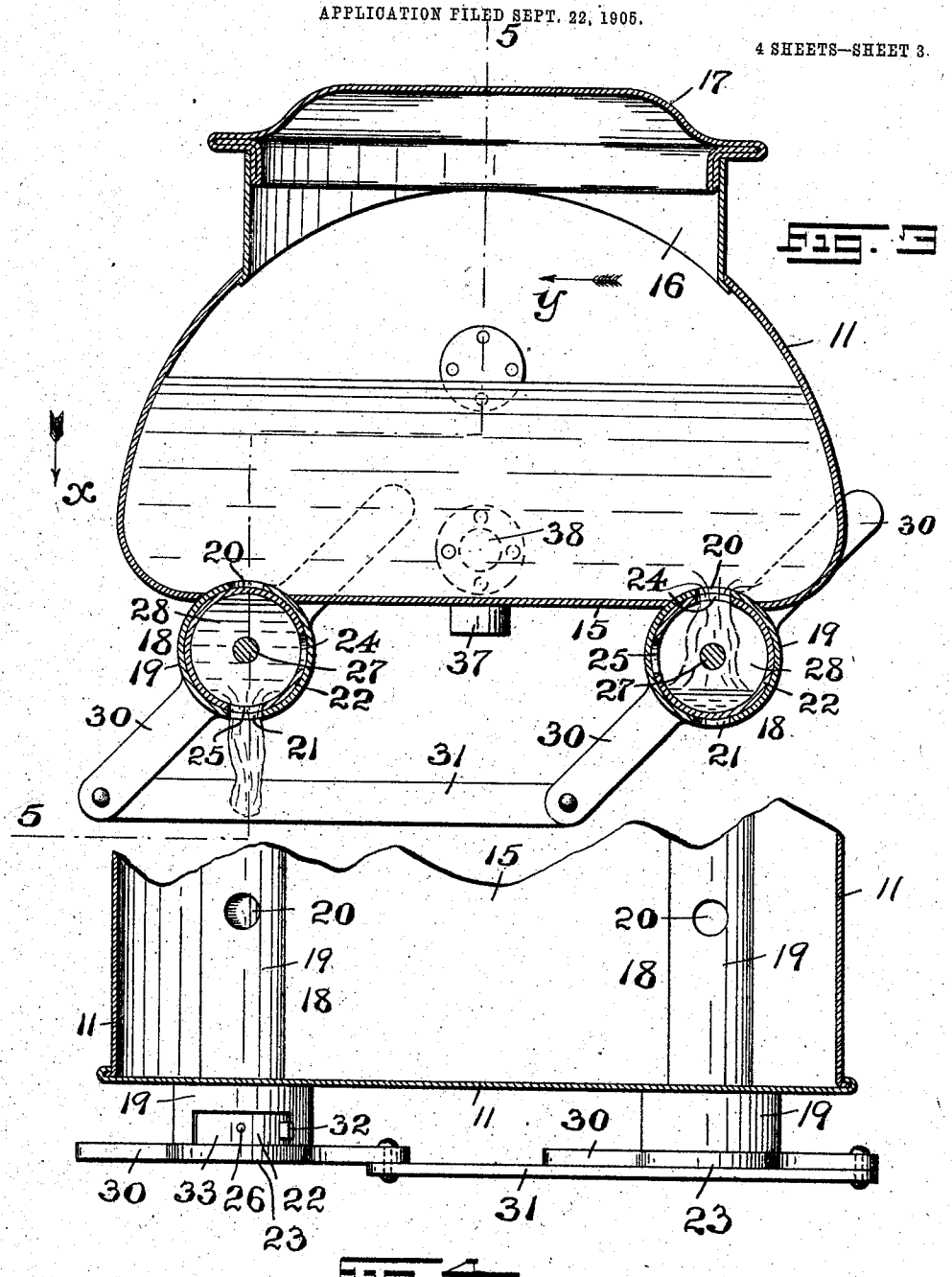


Fig. 3

Fig. 4

WITNESSES:

Geo. D. Richards

Harry G. Hallen

INVENTOR:

Charles F. Reinhardt,

BY

Fred'k. Fraentzel.

ATTORNEY.

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4 SHEETS—SHEET 4.

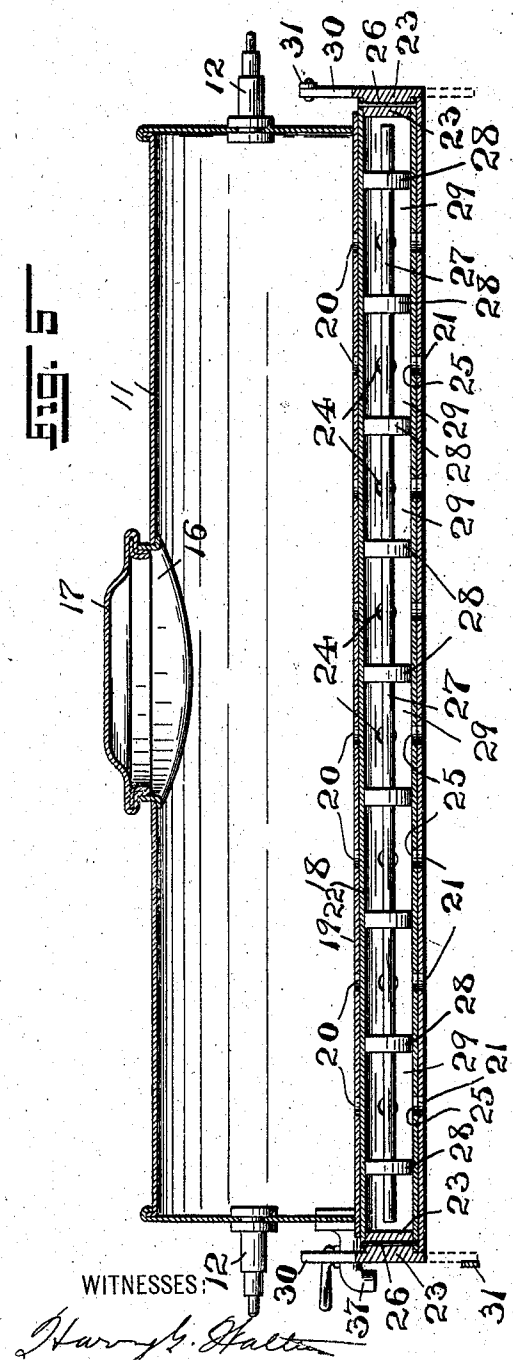


Fig. 5

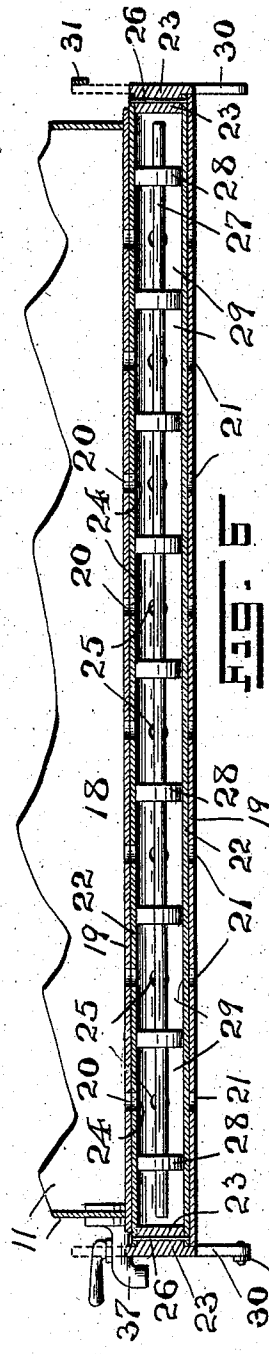


Fig. 6

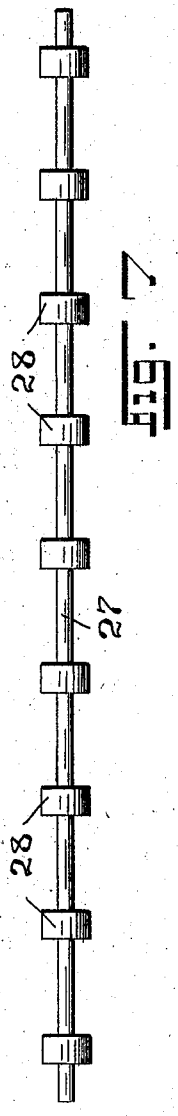


Fig. 7

WITNESSES:

Harry G. Hatton

Geo. D. Richards

INVENTOR:

Charles F. Reinhardt,

BY

Fred C. Fraentzel,

ATTORNEY

UNITED STATES PATENT OFFICE.

CHARLES F. REINHARDT, OF NEWARK, NEW JERSEY.

BOTTLE-FILLING APPARATUS.

No. 815,741. Specification of Letters Patent. Patented March 20, 1906.

Application filed September 22, 1905. Serial No. 279,570.

To all whom it may concern:

Be it known that I, CHARLES F. REINHARDT, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Bottle-Filling Apparatus; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

This invention relates generally to that class of machines or apparatus which are used for filling a number of bottles, jars or cans simultaneously with liquids; and my present invention has reference more particularly to a novel machine or apparatus for filling bottles, jars, cans, and the like and which is especially adapted for use in filling the vessels or packages with semifluid or viscid liquids, such as condensed milk, cream, and the like.

My invention has for its principal object to provide a simply-constructed and readily-manipulated machine or apparatus of the character hereinafter more particularly set forth, which may be used for filling a great many bottles, jars, or cans all at one time.

A further object of this invention is to provide a novel means for continuously filling all the packages in which the liquid—such as condensed milk, cream, and the like—is dispensed, and, furthermore, to provide a novel means for dividing off or separating certain predetermined quantities of the liquid from the main body of the apparatus, corresponding to the number of the packages which are being filled with either half-pints, pints, or quarts, without any possibility of producing an overflow from the packages which are being filled, and that each package may have exactly the required quantity of liquid.

Other objects of this invention not at this time more particularly mentioned will be clearly understood from the following detailed description of the same.

With the various objects of my invention in view the said invention consists, primarily, in the novel machine or apparatus for filling bottles, jars, cans, and the like hereinafter set forth; and, furthermore, this invention consists in the novel arrangements and combinations of devices and parts, such as will be hereinafter more fully described, as well as in the details of the construction of the same, and all of which will be finally embodied in the clauses of the claim which are appended to and which form an essential part of this specification.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 is an end view of one form of machine or apparatus embodying the principles of my present invention, and Fig. 2 is a side elevation of the same. Fig. 3 is a transverse vertical section, on an enlarged scale, of a liquid-receiving reservoir or container and a pair of feeders provided with measuring means or chambers for feeding the liquid into the receiving-packages; and Fig. 4 is a horizontal section of the opposite end portion of the parts illustrated in said Fig. 3 looking downward in the direction of the arrow X. Fig. 5 is a longitudinal vertical section of the same parts, but on a reduced scale, said section being taken on line 5 5 in said Fig. 3 looking in the direction of the arrow Y, said section illustrating more clearly one arrangement of measuring means or compartments within one of the feeders, the parts of the feeder being shown in their relatively opened relation while feeding or dispensing the liquid into the bottles, jars, cans, and the like; and Fig. 6 is a longitudinal section of the feeder which is shown in said Fig. 5, but with its feeding or dispensing means represented closed. Fig. 7 is a view of a partitioning device to be used with a feeder for reducing the sizes of the measuring-compartments of a feeder. Fig. 8 is a longitudinal sectional representation of a feeder of a slightly-modified construction and which is especially adapted for use in filling quart bottles or jars.

Referring now to the several figures of the drawings, the reference character 1 indicates any suitably-constructed bench or table provided on its opposite sides and preferably at or near its ends with suitable brackets 2, having outwardly-extending arms or portions 3, to which are suitably secured and which carry upon each side of the said bench or table 1 suitable rails or tracks 4, substantially as shown in Figs. 1 and 2 of the drawings. Movable longitudinally upon these rails or tracks 4 is a framework or carriage carrying a liquid-receiving reservoir or container with the liquid-feeders. The said framework or carriage consists, essentially, of a pair of side bars 5, each bar being provided with a centrally-disposed and prefer-

ably enlarged portion, as 6, having one or more pins or journals 7′ for one or more rollers or wheels 7, which are placed upon and may be rolled backwardly or forwardly upon the said rails or tracks 4. Connecting the lower end portions of the said side bars or rods 5 is a laterally-extending rod or bar 8, forming a proper counterweight for properly balancing the parts in their operative positions, as will be presently more fully described.

At its upper end each rod or bar 5 is provided with a pivot or pintle, as 9, with each of which is pivotally connected a downwardly-extending oscillating or swing arm 10. The previously-mentioned liquid-receiving tank or container is indicated by the reference character 11, and it is swingingly suspended from and between the lower end portions of said arms 10 by means of suitable journals 12, which extend into bearing portions 13, connected with said arms 10, and are suitably secured against accidental displacement by means of nuts 14 or other suitable retaining devices. The said liquid-receiving tank or container 11 may be made of any suitable metal and any desired shape, but is preferably provided with a flat bottom 15, as shown. In its upper portion the said tank or container 11 is provided with a receiving-opening 16, upon which may be placed a suitable cover or lid 17. Thus it will be seen that the said liquid-receiving tank or container 11 is operatively suspended from between the arms of the said framework or carriage, and while it is perfectly balanced above the said bench or table 1 it can be moved back and forth above said bench or table with the greatest of ease. When it is desired to fill the said tank or container 11 with a supply of the liquid, which is to be fed from the said tank or container to the bottles, jars, cans, and the like by the measuring-feeders, to be presently more fully described, the framework or carriage is moved to an end of the bench or table 1 until brought against the arms 3 of the brackets 2 at said end, as indicated in Fig. 2 of the drawings, when the said framework or carriage and said liquid-receiving tank or container 11 will assume the positions shown in the dotted outline, (indicated in said Fig. 2 of the drawings,) whereby the said tank or container 11 is brought to such a lowered position at the end of the bench or table that it can easily be replenished with a fresh supply of liquid without discomfort to the operator by having to lift the heavy liquid-containing cans into their pouring relation above the said receiving-tank or container 11, if, instead, the latter when empty were still retained in its position directly above the bench or table 1.

Referring now more especially to Figs. 3, 4, 5, and 6 of the drawings, it will be noticed that the said liquid-receiving tank or container 11 is provided in its bottom 15 with one or more laterally-extending feeders 18, the said feeders being preferably of a cylindrical shape having their upper portions arranged within the tank or container 11 and their greater remaining and lower portions arranged beneath the bottom of the said tank or container and the end portions of each feeder extending up to or beyond the respective ends of the tank or container 11, substantially as illustrated.

Each feeder 18 comprises a fixed outer tube 19, provided in its upper surface with a series of inlet-openings 20, and directly opposite said openings 20 in the lower surface of the said tube is a series of outlet-openings 21. Rotatively arranged within the said fixed tube 19 is an oscillatory tube 22, having its two ends closed, preferably, by means of stop-plugs 23. The said inner and oscillatory tube 22 is provided with a series of inlet-openings 24 and at right angles thereto are a series of outlet-openings 25, each set of openings 20 and 21 in the fixed tube 19 and the openings 24 and 25 in the inner and oscillatory tube 22 being in vertical alinement with each other, as will be clearly evident from an inspection of the drawings. The said end plugs 23 are preferably made removable from the end portions of the tube 22, being held in place by means of removable pins 26 or other suitable-constructed fastening devices. Within the said inner tubing 22 is a suitable partitioning means comprising a stem or shaft 27, upon which are arranged a number of circular plates or disks 28, which are held by frictional contact with the inner cylindrical surface of the said inner tube. The said plates or disks 28 are spaced upon the stem or shaft 27 in such a manner that when the partitioning device is slipped into said tube 22 the said plates or disks 28 will form with the inner portions of a number of compartments, as 29, and in each compartment there is one set of said openings 20 and 21 and 24 and 25.

From an inspection of Fig. 6 it will be seen that when the openings 24 of the inner tube 22 are made to register with the openings 20 in the outer tube complete passage-ways for the liquid from within the tank or container 11 are provided and each compartment or chamber 29 becomes filled with a predetermined quantity of the liquid. Now as soon as a quarter-turn of the inner tube 22 is made the openings 25 are made to register with the openings 21 of the outer fixed tube 19, as indicated in Fig. 5 of the drawings, allowing the liquid to pass from the chambers or compartments into the receiving vessels or packages, which are placed upon the said bench or table 1. The sizes of the said compartments 29 (shown in said Figs. 5 and 6) are such that each compartment will just retain one half-pint of condensed milk and each bottle, jar, or

can placed beneath the feeder or feeders will receive the same and exact amount of condensed milk. By enlarging the diameter of said shaft or stem 27 and by varying the thickness of the disks or plates 28 the sizes of said chambers 29 may be varied by placing the interchangeable stems and disks within the inner tube 22, as will be clearly understood. For oscillating the said inner tubes 22 within the fixed outer tube 19, two feeders being preferably used, each plug 23 is provided with an operating-lever 30, the said levers 30 having pivotally connected with their respective ends, preferably in the manner illustrated in the drawings, certain connecting-links 31. A cut-away part 33 in the end portion of the fixed outer tube 19 and a lug teat, or projection 32 upon the inner tube 22 are arranged in the manner shown in Fig. 4 of the drawings to limit the oscillatory movements of said inner tubes and permit of but a quarter-turn of each inner tube 22 within its fixed outer tube 19.

The various openings connected with the two feeders 18 are arranged preferably in the manner illustrated in Fig. 4 of the drawings, so that the quarter-turn of the two inner tubes in the respective feeders 18 will cause the contents of the filled compartments in the one feeder to be discharged into the row of receptacles placed beneath said feeder, while the previously-emptied compartments of the other feeder are replenished with a new supply of the liquid from the tank or container 11, and vice versa, when the levers of the feeders are thrown or forced in an opposite direction from that shown in said Fig. 4. In this manner all the alternate rows of bottles, jars, or cans are filled by the one feeder while the compartments of the other feeder are being refilled, and thus a continuous supply of the liquid to the bottles, jars, or cans placed upon the bench or table is maintained.

In Fig. 8 of the drawings I have shown a modified construction of feeder in which I have dispensed with the use of the separating or compartment-forming disks or plates 28 and which is more especially adapted for the filling of larger bottles, jars, or cans. In this construction of feeders I employ in addition to the fixed tube 19 and the oscillatory tube 22 an additional tube 34, which is slipped into the tube 22 in place of the stem 27 and its disks 28, said tube 34 being provided with a few outlet-openings 35, but has the same number of inlet-openings 36, corresponding to the number of the inlet-openings in said tube 19 and 22. The workings of this form of feeder will be clearly understood from an inspection of said Fig. 8 of the drawings.

From the foregoing description it will be seen that I have devised a simply-constructed apparatus which can be easily and rapidly manipulated for filling simultaneously a large number of bottles, jars, cans, and the like with condensed milk or cream, but which may be used also for other filling purposes, such as filling paints and other liquids in suitable receptacles placed upon the bench or table.

If desired, the tank 11 may be provided with an opening 38 and a cock or spigot 37 for drawing off the contents from said tank.

Having thus described my invention, what I claim is—

1. In an apparatus for filling receptacles with liquid, a receiving-tank or container, and a filler connected with said tank, said filler comprising an outer fixed tube and an inner tube movably arranged in said outer tube, said inner tube being divided into separated liquid-receiving compartments, substantially as and for the purposes set forth.

2. In an apparatus for filling receptacles with liquid, a receiving-tank or container, and a filler connected with said tank, said filler comprising an outer fixed tube and an inner tube movably arranged in said outer tube, said inner tube being divided into separated liquid-receiving compartments, said fixed and movable tube being provided with inlet-openings and outlet-openings, said inlet-openings being closed when said outlet-openings are open, and vice versa, substantially as and for the purposes set forth.

3. In an apparatus for filling receptacles with liquid, a receiving-tank or container, a filler connected with said tank, removable end plugs connected with said filler, and partition-disks removably arranged in said filler, said disks dividing the filler into separated receiving-compartments, substantially as and for the purposes set forth.

4. In an apparatus for filling receptacles with liquids, a receiving-tank or container, a filler connected with said tank, removable end plugs connected with said filler, and partition-disks removably arranged in said filler, said disks dividing the filler into separated receiving-compartments, said filler having a series of inlet-openings and outlet-openings, said inlet-openings being closed when the outlets are open, and vice versa, substantially as and for the purposes set forth.

5. In an apparatus for filling receptacles with liquid, a receiving-tank or container, and a filler connected with said tank, said filler comprising an outer fixed tube and an inner tube movably arranged in said outer tube, removable end plugs connected with said filler, and partition-disks removably arranged in said filler, said disks dividing the filler into separated receiving-compartments, substantially as and for the purposes set forth.

6. In an apparatus for filling receptacles with liquid, a receiving-tank or container, and a filler connected with said tank, said filler comprising an outer fixed tube and an inner tube movably arranged in said outer tube, removable end plugs connected with

said filler, and partition-disks removably arranged in said filler, said disks dividing the filler into separated receiving-compartments, said fixed and movable tubes being provided with inlet-openings and outlet-openings, said inlet-openings being closed when said outlet-openings are open, and vice versa, substantially as and for the purposes set forth.

7. In an apparatus for filling receptacles with liquid, a filler comprising an outer and an inner tube, said inner tube being movable within said outer tube, said outer and inner tubes having a series of outlet-openings and inlet-openings, said inlet-openings being closed when the outlet-openings are open, and vice versa, substantially as and for the purposes set forth.

8. In an apparatus for filling receptacles with liquid, a filler comprising an outer and an inner tube, said inner tube being movable within said outer tube, said inner tube being subdivided into receiving-compartments, all of the same size and each adapted to receive a predetermined quantity of liquid corresponding to the size of the individual receptacles which are to be filled, substantially as and for the purposes set forth.

9. In an apparatus for filling receptacles with liquid, a filler comprising an outer and an inner tube, said inner tube being movable within said outer tube, said inner tube being subdivided into receiving-compartments, all of the same size and each adapted to receive a predetermined quantity of liquid corresponding to the size of the individual receptacles which are to be filled, said outer and inner tubes having a series of outlet-openings and inlet-openings, said inlet-openings being closed when the outlet-openings are open, and vice versa, substantially and as for the purposes set forth.

10. In an apparatus for filling receptacles with liquid, a filler comprising an outer and an inner tube, said inner tube being movable within said outer tube, said inner tube having removable end plugs, and partition-disks removably arranged in said inner tube, said disks dividing said inner tube into receiving-compartments, all of the same size and each adapted to receive a predetermined quantity of liquid corresponding to the size of the individual receptacles which are to be filled, substantially as and for the purposes set forth.

11. In an apparatus for filling receptacles with liquid, a filler comprising an outer and an inner tube, said inner tube being movable within said outer tube, said inner tube having removable end plugs, and partition-disks removably arranged in said inner tube, said disks dividing said inner tube into receiving-compartments, all of the same size and each adapted to receive a predetermined quantity of liquid corresponding to the size of the individual receptacles which are to be filled, said outer and inner tubes having a series of outlet-openings and inlet-openings, said inlet-openings being closed when the outlet-openings are open, and vice versa, substantially as and for the purposes set forth.

12. In an apparatus for filling receptacles with liquid, the combination, with a bench or table, of a receiving-tank or container and filler supported above said bench or table, and means for moving said tank or container and filler back and forth above the said bench or table, means for moving said tank or container and filler beyond an end of the bench or table, and means for lowering said tank or container and filler, substantially as and for the purposes set forth.

13. In an apparatus for filling receptacles with liquid, the combination, with a bench or table, of a framework movably connected with said bench or table, a receiving-tank or container pivotally supported in said framework, and a filler connected with said tank or container, substantially as and for the purposes set forth.

14. In an apparatus for filling receptacles with liquid, the combination, with a bench or table, of a framework movably connected with said bench or table, a receiving-tank or container pivotally supported in said framework, and a filler connected with said tank or container, means for moving said framework, said tank or container and filler beyond an end of the bench or table, and means for lowering said tank or container and filler, substantially as and for the purposes set forth.

15. In an apparatus for filling receptacles with liquid, the combination, with a bench or table, of rails at the sides of said bench or table, a framework, provided with rollers movable upon said rails, a receiving-tank or container supported in said framework, and a filler connected with said tank or container, means for moving said framework, said tank or container and filler beyond an end of the bench or table, and means for lowering said tank or container and filler, substantially as and for the purposes set forth.

16. In an apparatus for filling receptacles with liquid, the combination, with a bench or table, of rails at the sides of said bench or table, a framework comprising a pair of side bars, rollers on said side bars movable upon said rails, a lower connecting-rod between said side bars, a swing-arm pivotally connected with the upper portion of each side bar, a receiving-tank or container pivotally supported between said swing-arms, and a filler connected with said tank or container, substantially as and for the purposes set forth.

17. In an apparatus for filling receptacles with liquid, the combination, with a bench or table, of rails at the sides of said bench or table, a framework comprising a pair of side bars, rollers on said side bars movable upon said rails, a lower connecting-rod between said side bars, a swing-arm pivotally connect-

ed with the upper portion of each side bar, a receiving-tank or container pivotally supported between said swing-arms, and a filler connected with said tank or container, means for moving said framework, said tank or container and filler beyond an end of the bench or table, and means for lowering said tank or container and filler, substantially as and for the purposes set forth.

18. In an apparatus for filling receptacles with liquid, the combination, with a bench or table, of a receiving-tank or container supported above said bench or table, a pair of fillers connected with said tank or container, a means of communication between said tank or container and said fillers, means for simultaneously actuating both fillers, whereby the means of communication between one filler and said tank or container is closed, while the means of communication between the other filler and said tank or container is open, substantially as and for the purposes set forth.

19. In an apparatus for filling receptacles with liquid, the combination, with a bench or table, of a receiving-tank or container supported above said bench or table, a pair of fillers connected with said tank or container, a means of communication between said tank or container and said fillers, means for simultaneously actuating both fillers, whereby the means of communication between one filler and said tank or container is closed, while the means of communication between the other filler and said tank or container is open, and means for moving said tank or container and fillers back and forth above said bench or table, substantially as and for the purposes set forth.

20. In an apparatus for filling receptacles with liquid, the combination, with a bench or table, of a receiving-tank or container supported above said bench or table, a pair of fillers connected with said tank or container, a means of communication between said tank or container and said fillers, means for simultaneously actuating both fillers, whereby the means of communication between one filler and said tank or container is closed, while the means of communication between the other filler and said tank or container is open, and means for moving said tank or container and fillers back and forth above said bench or table, means for moving said tank or container and fillers beyond an end of the bench or table, and means for lowering said tank or container and fillers, substantially as and for the purposes set forth.

21. In an apparatus for filling receptacles with liquid, the combination, with a bench or table, of a framework movably connected with said bench or table, a receiving-tank or container pivotally supported in said framework, a pair of fillers connected with said tank or container, a means of communication between said tank or container and said fillers, means for simultaneously actuating both fillers, whereby the means of communication between one filler and said tank or container is closed, while the means of communication between the other filler and said tank or container is opened, substantially as and for the purposes set forth.

22. In an apparatus for filling receptacles with liquid, the combination, with a bench or table, of a framework movably connected with said bench or table, a receiving-tank or container pivotally supported in said framework, a pair of fillers connected with said tank or container, a means of communication between said tank or container and said fillers, means for simultaneously actuating both fillers, whereby the means of communication between one filler and said tank or container is closed, while the means of communication between the other filler and said tank or container is opened, means for moving said framework, said tank or container and fillers beyond an end of the bench or table, and means for lowering said tank or container and fillers, substantially as and for the purposes set forth.

23. In an apparatus for filling receptacles with liquid, the combination, with a bench or table, of rails at the sides of said bench or table, a framework provided with rollers movable upon said rails, a receiving-tank or container supported in said framework, a pair of fillers connected with said framework, a means of communication between said tank or container and said fillers, and means for simultaneously actuating both fillers, whereby the means of communication between one filler and said tank or container is closed, while the means of communication between the other filler and said tank or container is opened, substantially as and for the purposes set forth.

24. In an apparatus for filling receptacles with liquid, the combination, with a bench or table, of rails at the sides of said bench or table, a framework provided with rollers movable upon said rails, a receiving-tank or container supported in said framework, a pair of fillers connected with said tank or container, a means of communication between said tank or container and said fillers, means for simultaneously actuating both fillers, whereby the means of communication between one filler and said tank or container is closed, while the means of communication between the other filler and said tank or container is opened, means for moving said framework, said tank or container and filler beyond an end of the bench or table, and means for lowering said tank or container and fillers, substantially as and for the purposes set forth.

25. In an apparatus for filling receptacles with liquid, the combination, with a bench or table, of rails at the sides of said bench or ta-

ble, a framework comprising a pair of side bars, rollers on said side bars movable upon said rails, a lower connecting-rod between said side bars, a swing-arm pivotally connected with the upper portion of each side bar, a receiving-tank or container pivotally supported between said swing-arms, a pair of rollers connected with said tank or container, a means of communication between said tank or container and said fillers, means for simultaneously actuating both fillers, whereby the means of communication between one filler and said tank or container is closed, while the means of communication between the other filler and said tank or container is open, substantially as and for the purposes set forth.

26. In an apparatus for filling receptacles with liquid, the combination, with a bench or table, of rails at the sides of said bench or table, a framework comprising a pair of side bars, rollers on said side bars movable upon said rails, a lower connecting-rod between said side bars, a swing-arm pivotally connected with the upper portion of each side bar, a receiving-tank or container pivotally supported between said swing-arms, a pair of fillers connected with said tank or container and said fillers, means for simultaneously actuating both fillers, whereby the means of communication between one filler and said tank or container is closed, while the means of communication between the other filler and said tank or container is open, means for moving said framework, said tank or container and filler beyond an end of the bench or table, and means for lowering said tank or container and filler, substantially as and for the purposes set forth.

27. In an apparatus for filling receptacles with liquid, the combination, with a receiving-tank or container, of a pair of fillers connected with said tank or container, each filler comprising a fixed outer tube and an inner tube rotatively arranged in said outer tube, said outer and inner tubes being provided with inlet-openings and outlet-openings, and means for simultaneously actuating both of said inner tubes of the respective fillers, substantilly as and for the purposes set forth.

28. In an apparatus for filling receptacles with liquid, the combination, with a receiving-tank or container, of a pair of fillers, connected with said tank or container, each filler comprising a fixed outer tube and an inner tube rotatively arranged in said outer tube, said outer and inner tubes being provided with inlet-openings and outlet-openings, and means for simultaneously actuating both of said inner tubes of the respective fillers, consisting of a lever connected with each inner tube and a connecting-link between said levers, substantially as and for the purposes set forth.

29. In an apparatus for filling receptacles with liquid, the combination, with a receiving-tank or container, of a pair of fillers connected with said tank or container, each filler comprising a fixed outer tube and an inner tube rotatively arranged in said outer tube, said outer and inner tubes being provided with inlet-openings and outlet-openings, removable end plugs in the ends of the respective inner tubes, and means connected with said end plugs for simultaneously actuating both of said inner tubes of the respective fillers, substantially as and for the purposes set forth.

30. In an apparatus for filling receptacles with liquid, the combination, with a receiving-tank or container, of a pair of fillers connected with said tank or container, each filler comprising a fixed outer tube and an inner tube rotatively arranged in said outer tube, said outer and inner tubes being provided with inlet-openings and outlet-openings, removable end plugs in the ends of the respective inner tubes, and means connected with said end plugs for simultaneously actuating both of said inner tubes of the respective fillers, consisting of a lever connected with each end plug and a connecting-link between said levers, substantially as and for the purposes set forth.

In testimony that I claim the invention set forth above I have hereunto set my hand this 19th day of September, 1905.

CHARLES F. REINHARDT.

Witnesses:

FREDK. C. FRAENTZEL,

GEO. D. RICHARDS.