

Nov. 29, 1927.

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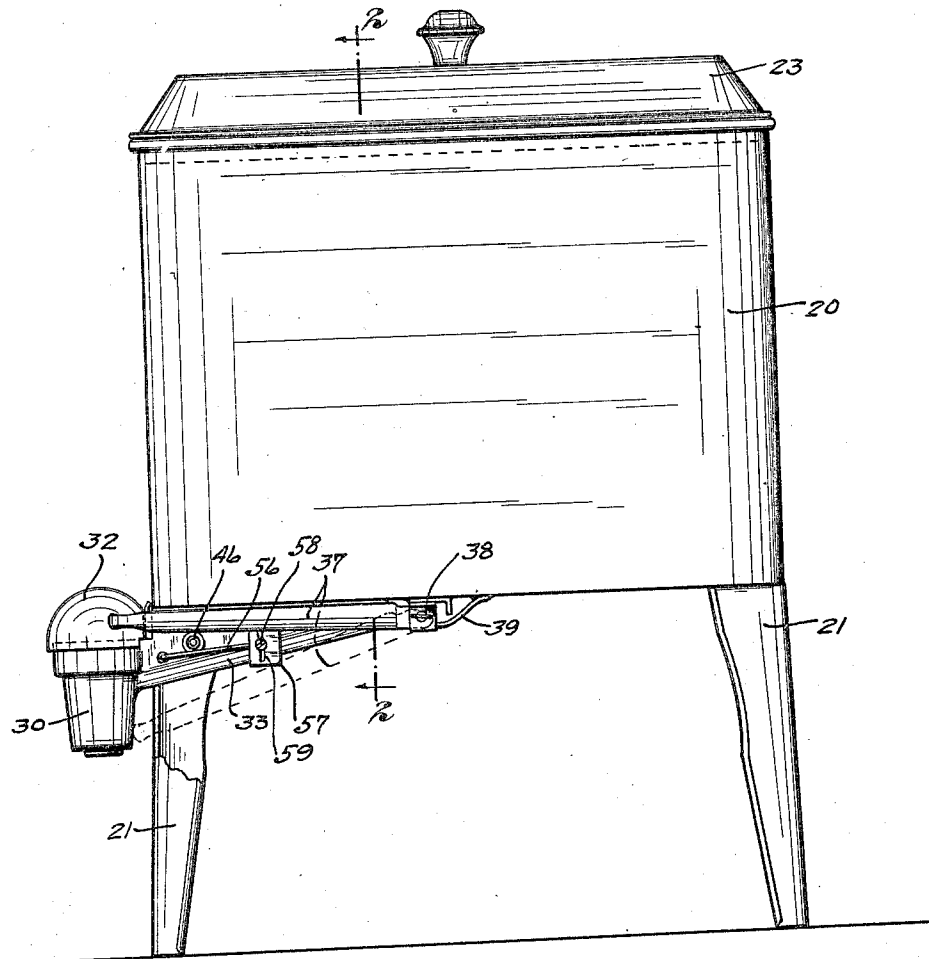
A. SLATEN

CREAM DISPENSING DEVICE

Filed March 5, 1925

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Fig. 1



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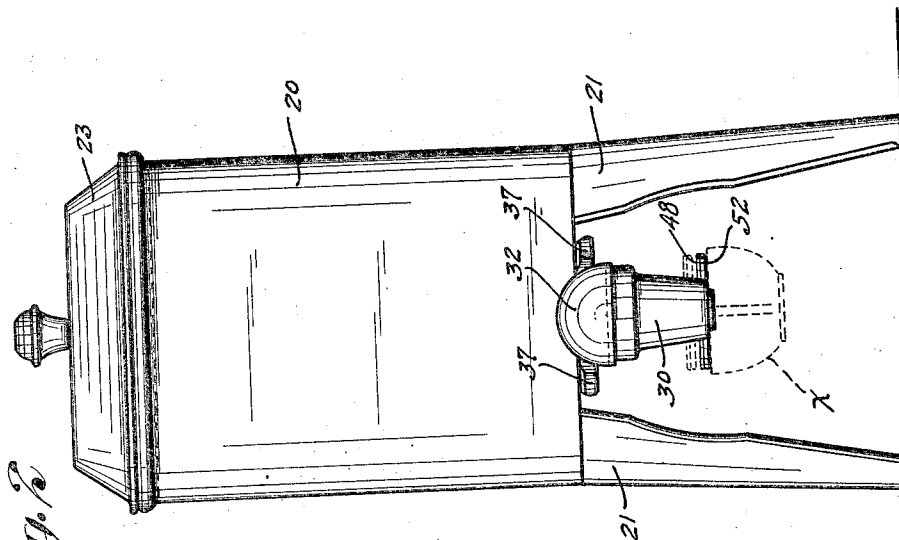
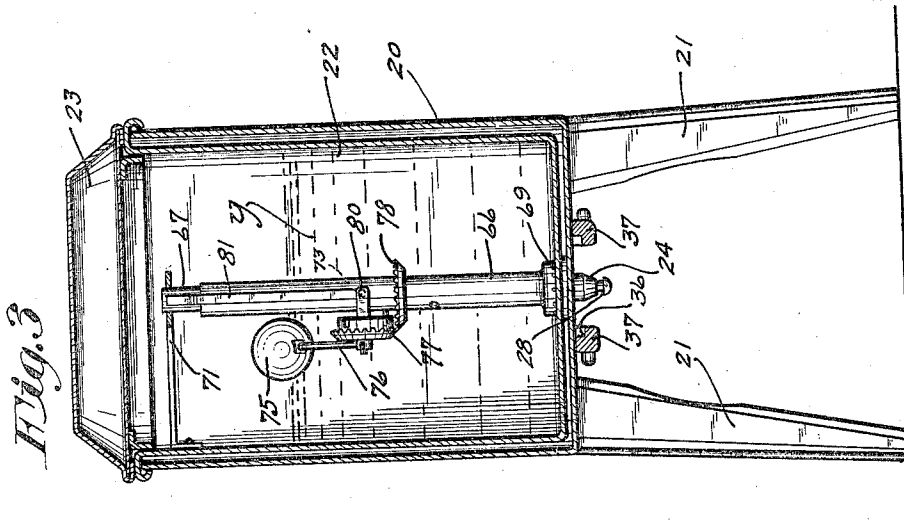
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5 Sheets-Sheet 3

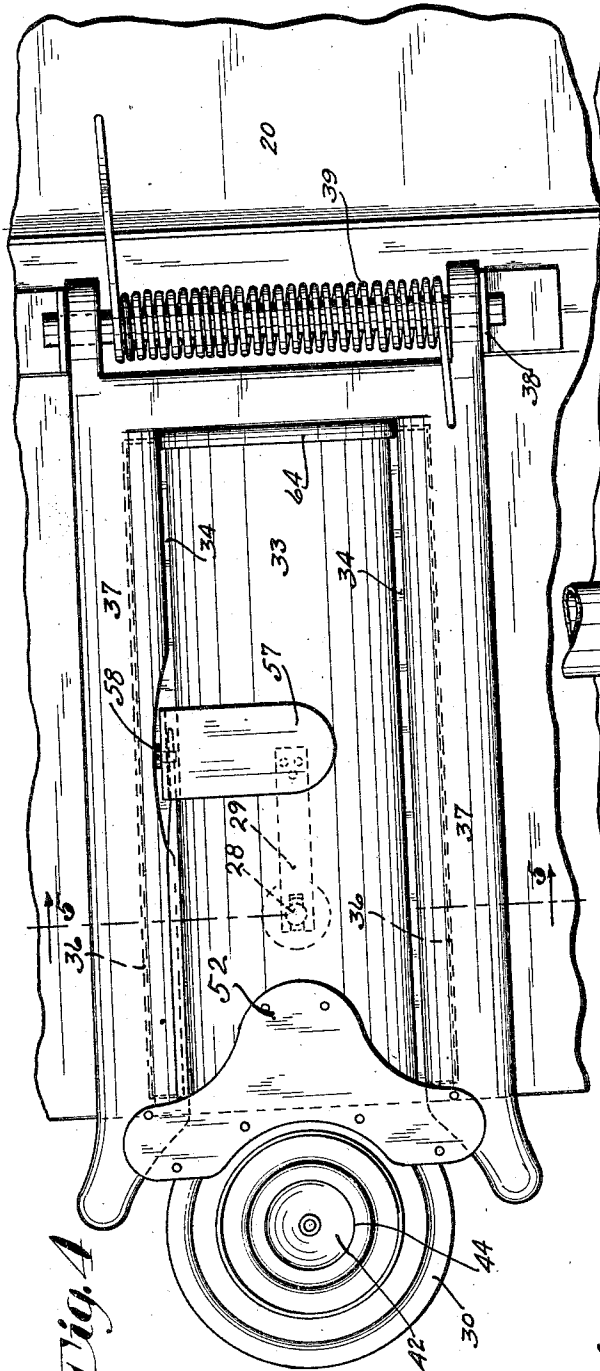


Fig. 4

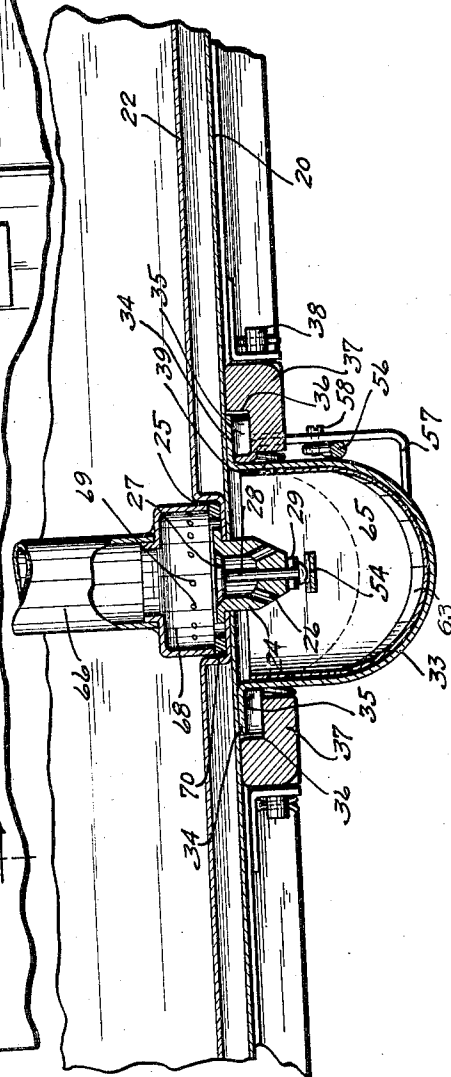


Fig. 5

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5 Sheets-Sheet 4

Fig. 6

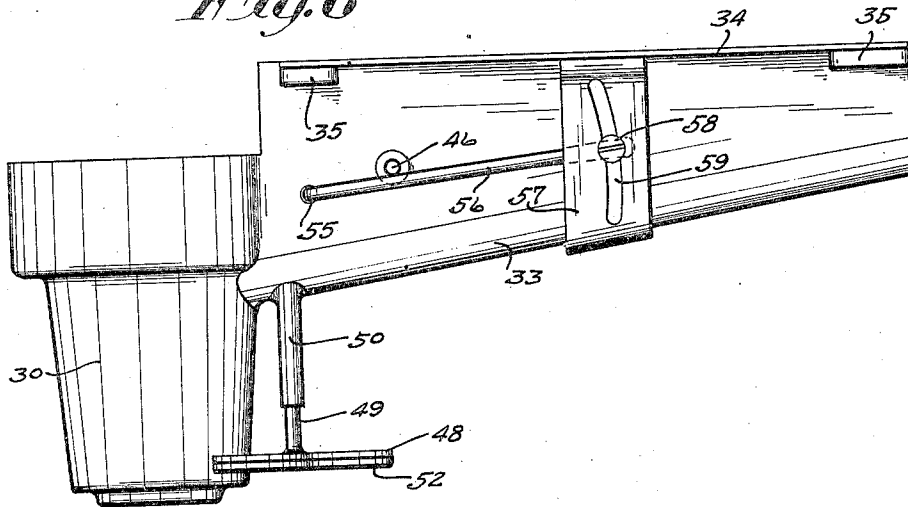


Fig. 7

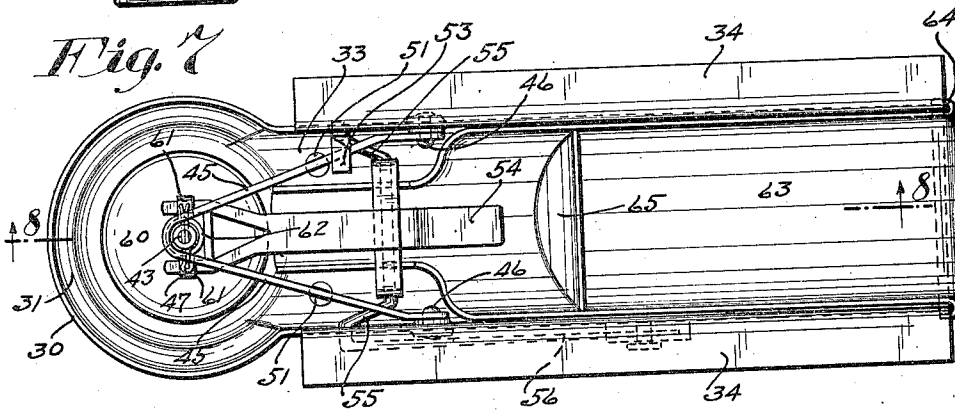
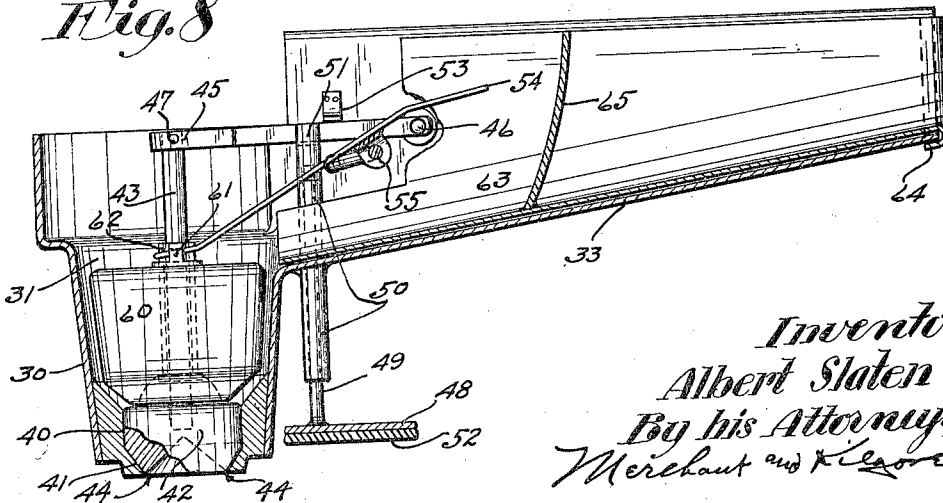


Fig. 8



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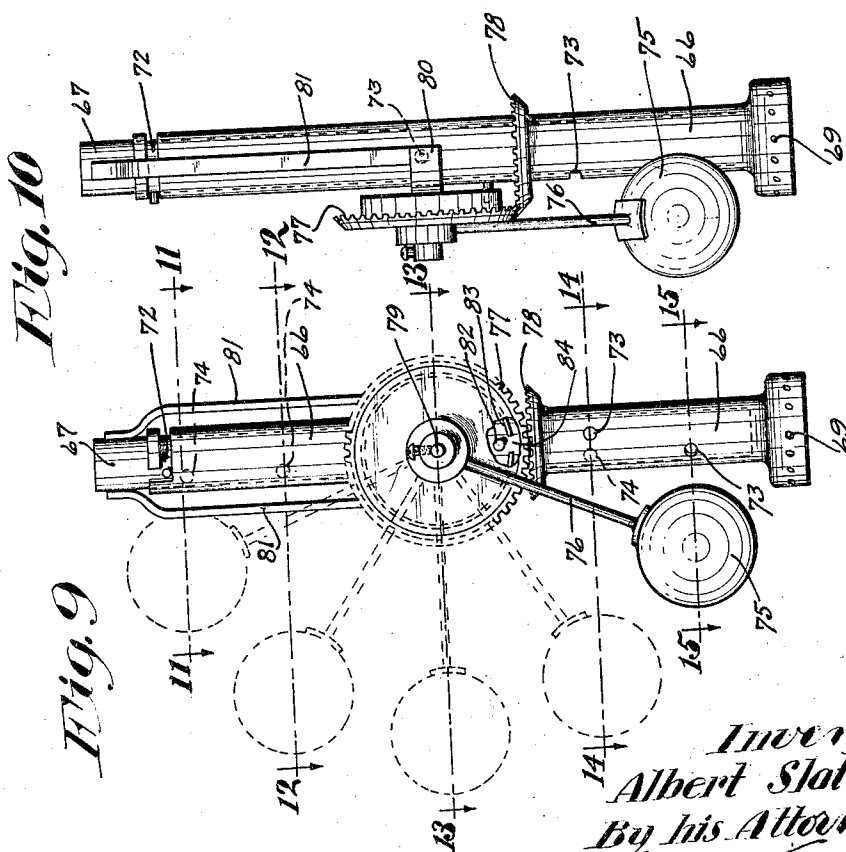
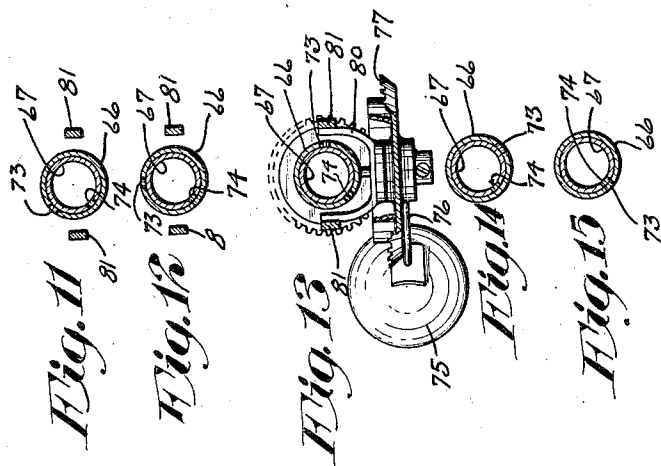
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UNITED STATES PATENT OFFICE.

ALBERT SLATEN, OF MINNEAPOLIS, MINNESOTA.

CREAM-DISPENSING DEVICE.

Application filed March 5, 1925. Serial No. 13,382.

My invention relates to cream dispensing devices and has for its object to improve the same in the several particulars hereinafter noted.

To the above end, generally stated, the invention consists of the novel devices and combinations of devices hereinafter described and defined in the claims.

In the accompanying drawings, which illustrate the invention, like characters indicate like parts throughout the several views:

Referring to the drawings:

Fig. 1 is a right side elevation of the cream-dispensing device with a part broken away and another part shown in a different position by means of broken lines;

Fig. 2 is a front elevation of said device and further illustrating, by means of broken lines, a cup positioned under the cream-measuring compartment;

Fig. 3 is a view in transverse vertical section, taken on the line 2—2 of Fig. 1;

Fig. 4 is a bottom plan view of the cream-measuring and valve-controlling assembly together with a fragment of the bottom of the casing, on an enlarged scale;

Fig. 5 is a detail principally in section taken on the line 5—5 of Fig. 4;

Fig. 6 is a right side elevation of the cream-measuring and valve-controlling assembly removed from its support and on an enlarged scale;

Fig. 7 is a plan view of the parts shown in Fig. 6;

Fig. 8 is a view principally in longitudinal vertical section taken on the line 8—8 of Fig. 7;

Fig. 9 is an elevation of the draw-off assembly removed from the tank with a part broken away and with other parts shown in different positions by means of broken lines;

Fig. 10 is a right side elevation of the draw-off assembly as shown in Fig. 9; and

Figs. 11 to 15, inclusive, are detail views principally in section taken on the lines 11—11 to 15—15, inclusive, of Fig. 9.

The numeral 20 indicates a rectangular casing supported on four relatively long legs 21. Mounted in the casing 20 is a correspondingly formed cream supply tank 22 spaced from said casing at its ends, sides and bottom to afford an air insulating space. The supply tank 22 is provided with a displaceable cover 23 that is made hollow to afford an air insulating space.

Cream is drawn from the tank 22 through

a cup-like valve casing 24 mounted in a depression 25 in the bottom of said tank and extends downwardly through an aperture in the bottom of the casing 20. In the bottom of this casing 20 is a plurality of circumferentially spaced downwardly and outwardly inclined discharge ports 26. Communication from the valve casing 24 to the ports 26 is normally closed by a valve 27 mounted on a seat in the top of said casing. The valve 27 is arranged to close with the cream pressure in the tank 22 and has a depending stem 28 provided with a headed lower end. The valve stem 28 works through a bore in the bottom of said casing. This valve 27 is partly closed by gravity and partly by a leaf spring 29 anchored to the bottom of the casing 20 and arranged to bear on the headed lower end of the valve stem 28.

At the front of the device is a cream-measuring and valve-controlling assembly that includes a receptacle 30 having a cream-measuring compartment 31 and a displaceable cover 32. Formed with the receptacle 30 is an inclined trough 33, which extends below the casing 20 and under the valve casing 24 and considerably rearward thereof. This trough 33 is arranged to receive cream from the discharge ports 26, when the valve 27 is open, and convey the same into the measuring compartment 31. The sides of the trough 33, at their upper edges, are turned horizontally outward to afford a pair of flanges 34 on the under sides of which are secured front and rear pairs of supporting lugs 35. The flanges 34 and supporting lugs 35 are mounted in long rabbeted seats 36 formed in the arms of a yoke-like frame 37.

The frame 37, at its rear end, is hinged at 38 to the under side of the casing 20, rearward of the valve casing 24. A coiled spring 39, encircling the pivot pin of the hinge 38, with one of its ends reacting against the bottom of the casing 20 and the other against the frame 37, holds said frame horizontally raised against the under side of said casing. The outer ends of the arms of the frame 37 extend slightly outward of the front of the casing 20, and by pressing downward thereon, against the tension of the spring 39, the frame 37 may be so positioned that the cream-measuring and valve-controlling assembly may be lifted therefrom. The engagement of the supporting lugs 35 with the ends of the seats 36 holds said supporting lugs from sliding on the frame 37 and keeps

the trough 33 properly positioned under the discharge ports 26.

The top of the receptacle 30 is circumferentially expanded and its lower end is open and has mounted therein a sleeve-like port 40, the upper end of which is beveled to the walls of the compartment 31. The lower end of this port 40 is contracted and beveled to afford a valve seat 41. A heavy piston-acting non-drip valve 42 is mounted in the port 40 and has a beveled lower end, which directly rests on the seat 41 and seals the port 40. Said valve 42 has an upstanding valve stem 43 and the under side of said valve is made concave so that the lower end thereof terminates in a sharp cylindrical edge 44. The valve stem 43 is guided by a pair of converging arms 45 pivoted at 46 to the sides of the trough 37 for vertical swinging movement and having their outer ends connected and pivoted at 47 to the upper end of said valve stem.

To open the valve 42, by means of a cup X, indicated by broken lines in Fig. 2, placed under the receptacle 30 to receive the measured cream in the compartment 31 when the valve 42 is open, there is provided a cup-engaging horizontal metal plate 48 located just back of the receptacle 30 and under the trough 33. This cup-engaging plate 48 has a pair of laterally spaced upright stems 49 slidably mounted in a pair of guide tubes 50, which guide tubes extend into the trough 33 through the bottom thereof. The stems 49 have on their upper ends bifurcated heads 51 through which the arms 45 extend. These heads 51 normally rest on the upper ends of the guide tubes 50 as stops and support the cup-engaging plate 48 through the connecting stems 49 at the proper height. The heads 51 are preferably secured to the stems 49 by screw threads, and when the valve 42 is closed there is clearance between the lower edges of the arms 45 and the heads 51, so that said valve will not be held from its seat 41. Secured to the under side of the cup-engaging plate 48 is a cushion mat 52 of rubber or any other suitable material, which prevents the rim of the cup X from coming into direct contact with said plate, which might chip or break the same. The valve 42 is closed and the cup-engaging plate 48 returned to normal position partly by gravity and partly by a spring 53 secured to the trough 33 and arranged to bear on one of the arms 45. The length of the spring 53 is such that it will not slip off from the respective arm 45 when the valve 42 is open.

To open the valve 27 to fill the compartment 31 with cream from the tank 22, there is provided a lever 54 intermediately pivoted on a shiftable fulcrum in the form of a crank shaft 55 journaled in the sides of the trough 33. This crank shaft 55 has, on one of its ends, outward of the trough 33, a long arm

56, the free end of which extends between the respective side of said trough and an anchor plate 57 rigidly secured to said trough. The arm 56 is adjustably secured to the anchor plate 57, to hold the shiftable fulcrum 55 at different elevations, by a set screw 58, which has screw-threaded engagement with said arm and works in a segmental slot 59 in the anchoring plate 57. This screw 58 when tightened frictionally clamps the arm 56 onto the anchor plate 57. The short or inner end of the lever 54 extends under the headed lower end of the valve stem 28 for engagement therewith to open said valve, as will presently appear.

The lever 54 is operated by a float 60 in the cream-measuring compartment 31, and through which the valve stem 43 projects. The long or outer end of the lever 54 is bifurcated and connected to the float 60 by a pair of diametrically opposite upstanding apertured lugs 61 secured to said float and through which the prongs of the bifurcated end of the lever 54 loosely extends. Extending axially through the float 60 and secured thereto is a guide sleeve 62, which loosely surrounds the valve stem 43. When the measuring compartment 31 is empty and the valve 42 closed, the float 60 rests on said valve and holds the lever 54 in position to hold the valve 27 open.

Within the trough 33 is a removable metal liner 63 having a rolled inner end 64, which interlocks with the respective end of said trough and holds said liner in position. The lower or delivery end of the liner 63 is contracted and extends between the guide tubes 50. Within the liner 63 is a transverse partition 65, located back of the valve casing 24, that prevents backward flow of cream toward the open end of said liner when the valve 27 is open.

As is well known, cream in the tank 22 will separate and the heavy cream will rise to the top and the thin cream will settle at the bottom. To draw this cream from the tank so that the same has a uniform thickness and so that the last of the cream drawn from the tank 22 will have the same consistency as the first, there is removably mounted in said tank a draw-off assembly, which includes an upright tubular valve casing 66 in which is mounted a long sleeve valve 67. The lower end of the valve casing 66 is expanded to afford a mixing chamber 68 over the valve casing 24. This mixing chamber 68 has in its walls a plurality of circumferentially spaced relatively small passages 69 for the flow of the thin cream at the bottom of the tank into said mixing chamber.

The lower end of the valve casing 66 extends into the depression 25, in the bottom of the tank 22, and rests on a pliable gasket 70. By reference to Fig. 5, it will be noted that the mixing chamber 68 completely sur-

rounds the valve casing 24 and valve 27. The valve casing 66 extends above the level of the cream Y in the tank 22, and said casing and sleeve valve 67 mounted therein are held in an upright position by a bearing 71 in the form of a flat spring arm rigidly secured to one of the sides of the tank 22 and having an aperture in its free end through which the upper end of the sleeve valve 67 projects and is turnably mounted.

The valve casing 66 and sleeve valve 67 are connected by a bayonet joint 72, the pin of which is secured to said valve and the slot of which is formed in the valve casing 66. The pin of the bayonet joint 72 supports the sleeve valve 67 in the valve casing 66 with the upper end of said valve projecting above the valve casing 66 and the lower end of said valve above the mixing chamber 68. Formed in the valve casing 66 is a plurality, as shown 5, longitudinally and circumferentially spaced ports 73 that are spirally arranged. A like number and correspondingly arranged ports 74 are formed in the sleeve valve 67 and arranged to be progressively brought into registration with the ports 73 by the rotation of the sleeve valve 67 in its casing 66.

The sleeve valve 67 is operated by a float 75 in the tank 22 and having a radial arm 76 secured to the hub of a bevel gear 77 which meshes with a fixed bevel gear 78 rigidly secured to the valve casing 66, and through which said casing axially extends. The bevel gear 77 is journaled on a trunnion 79 the inner end of which is formed with a yoke 80 the prongs of which embrace the valve casing 66 and are rigidly secured to the lower ends of a pair of depending arms 81 rigidly secured to the sleeve valve 67 at diametrically opposite points above the valve casing 66. The upper ends of the arms 81 afford stops for the free end of the bearing arm 71.

To cause the gear 77 to mesh with the gear 78 at the proper point, there is secured to the valve casing 66 a pin 82 and on the back of the gear 77 is an axially located ring 83 having a single entrance notch or passage 84, which is in registration with the pin 82 when the float 75 is at its lowermost position, as shown by full lines in Fig. 9. In this position of the float 75, the same is held against further downward movement by the sleeve valve 67, through the arm 76, the rotation of which is stopped by the bayonet joint 72, as shown in Fig. 9. During the assembly of the valve casing 66 and the sleeve valve 67, the pin of the bayonet joint 72 must be brought into registration with the entrance notch in said joint and the passage 84 brought into registration with the pin 82 to bring the ports 73 and 74 in their proper relation to each other and to cause the gear 77 to mesh with the gear 78 at the proper point. When the float 75 is at its uppermost position, as indicated by broken lines in Fig. 9,

the two uppermost ports 73 and 74 will be in registration. As the cream is drawn from the tank 22 the float 75 is lowered and progressively brings the co-operative pairs of ports 73 and 74 into registration. When the float 75 reaches its lowermost position, as shown in Fig. 9, the lowermost pair of ports 73 and 74 are in registration.

The draw-off assembly can be removed from the tank 22 simply by springing the bearing arm 71 out of interlocking engagement with the sleeve valve 67, for the purpose of cleansing the same and to facilitate the cleansing of said tank. During the cleansing of the draw-off assembly, the sleeve valve 67 and parts carried thereby can be separated from the valve casing 66 by bringing the pin of the bayonet joint 72 into registration with its entrance slot and the entrance passage 84 in the ring 83 into registration with the pin 82, and then sliding said sleeve valve axially out of the valve casing 66.

The cream-measuring and valve-controlling assembly can be removed from the rest of the device by swinging the frame 37 downward, against the tension of the spring 39, as shown by dotted lines in Fig. 1, and lifting said assembly from the seats 36. When this assembly is thus removed, the liner 63 may be removed therefrom and the valve 42 and float 66 removed from the receptacle 30 by removing the pivot 47 which, as shown, is in the form of a cotter pin to detach the valve stem 43 from the arms 45. At this time, the float 60 can be detached from the lever 54 by a lateral movement to withdraw its lugs 61 from said lever. After the valve 42 and float 60 are removed from the receptacle 30, said float can be removed from the valve stem 43 by an axial movement. With the parts of this assembly thus separated, the same can be quickly and thoroughly cleansed. The liner 63 keeps the cream out of direct contact with the trough 33 and also out of contact with the parts in said trough.

Operation.

It may be here stated that the device is especially adapted for use in restaurants, hotels, and the like for filling coffee or other beverage cups with a predetermined amount of cream or other liquid.

The operation of the above described cream dispensing device may be briefly described as follows: Before filling the tank 22 with cream, the cream-measuring and valve-controlling assembly is detached from the device so that the float-actuated lever 54 will not hold the valve 27 open. As the tank 22 is being filled with a supply of cream, the float 75 will rise thereon, and if the tank 22 is filled substantially to the top of the valve casing 66, the sleeve valve 130

67 will be rotated to bring the uppermost pair of ports 73 and 74 into registration. After the tank is filled with cream, the cream-measuring and valve-controlling assembly is put in position. During the filling of the tank 22 with cream, the mixing compartment 68 and the sleeve valve 67 will be filled at the same time through the ports 69 and cooperating ports 73 and 74. The conveying capacity of the ports 69 and the ports 73 and 74 is such that the proper amount of light and heavy cream will be simultaneously withdrawn from the tank 22 and commingled in the mixing chamber 68 and valve casing 66.

After the cream-measuring and valve-controlling assembly is put in position, the float 60, acting on the lever 54, will open the valve 27 and allow the cream in the mixing chamber 68 to escape through the ports 26 and be conveyed by the liner 63 to the measuring compartment 31, and at which time the port 42 is closed. As the compartment 31 fills with cream, the float 60 is raised therein and gradually operates the lever 54 and allows the valve 27 to close partly by gravity and partly by the spring 29. By adjusting the arm 56, the fulcrum 55 for the lever 54 may be varied at will and thereby regulate the opening of the valve 27 by the float 60 to vary the amount of cream in the measuring compartment 31.

When it is desired to fill a cup with cream, the same is placed under the receptacle 30 and the cup lifted to engage and lift the plate 48 which, acting through the stem 49, arms 45, and valve stem 43, will open the valve 41 and allow the cream in the compartment 31 to flow through the port 40 and into the cup held thereunder. After the cream in the measuring compartment 31 has all escaped into the cup held thereunder, said cup is lowered to release the plate 48 and permit the valve 42 to return to closed position partly under the action of gravity and partly under the action of the spring 53. With the closing of the valve 42, the float 60 moves downward on the valve stem 43 and again operates the lever 54 to open the valve 27 and allow the escape of cream from the mixing chamber 68 to again fill the measuring compartment 31 until stopped by the closing of the valve 27 as the same is released by the movement of the lever 54 under the raising action of the float 60, as the same is raised under the action of the cream flowing into the measuring compartment 31. The action of the non-dripping valve is highly important and in actual use has overcome one of the primary objections to cream-dispensing devices now in use which is the dripping of cream during the intervals between which cream is withdrawn from the dispenser.

By making the side of the valve 42 convex

and terminating the same in a sharp cylindrical edge 44, cream will not adhere to the bottom of said valve by capillary attraction, but will collect on said sharp cylindrical edge. During the closing movement of the valve 42, which is with a fast piston-like action due to the weight of said piston and the spring 53, a blast of air is produced by the entrance of said piston into the sleeve-like port that clears the walls of said port, valve seat and piston of any liquid thereon and shoots the same from said port and valve seat and into the cup held under said port, thus preventing dripping of liquid after the valve 42 is closed. Any liquid on the valve 42 will quickly collect on its sharp cylindrical edge 44 and be easily shot therefrom by the closing of said piston.

What I claim is:

1. In a liquid dispensing device, the combination with a supply tank having a supply discharge port, and a supply cut-off valve normally closing said port, of a measuring compartment having a discharge port, a yielding closed discharge cut-off valve for the discharge port of the measuring compartment, a float in the measuring compartment for opening the supply cut-off valve and permitting the same to close, and manually operated connections for opening the discharge cut-off valve.

2. In a liquid dispensing device, the combination with a supply tank having a supply discharge port, a supply cut-off valve for closing said port, and automatic means for closing the cut-off valve, of a liquid-measuring compartment having in its bottom a discharge port, a yielding closed vertically movable discharge cut-off valve for the discharge port, cup-controlled connections for opening the discharge cut-off valve, and a float in the measuring compartment for opening the supply cut-off valve and permitting the same to close.

3. In a liquid dispensing device, the combination with a supply tank having a supply discharge port, a supply cut-off valve for closing said port, and automatic means for closing the cut-off valve, of a liquid-measuring compartment having in its bottom a discharge port, a yielding closed vertically movable discharge cut-off valve for the discharge port and having a stem, connections to said stem including a cup-engaging member for opening the discharge cut-off valve, and a float in the measuring compartment for opening the supply cut-off valve and permitting the same to close.

4. In a liquid dispensing device, the combination with a supply tank having a supply discharge port, and a supply cut-off valve normally closing said port, of a liquid-measuring compartment having in its bottom a discharge port, a yielding closed vertically movable discharge cut-off valve for

the discharge port and having a stem, connections to said stem including a cup-engaging member for opening the discharge cut-off valve, and a float in the measuring compartment and having an aperture through which said stem projects, and a lever connection from the float to the supply cut-off valve for opening and releasing the same.

5 5. In a liquid dispensing device, the combination with a supply tank having a supply discharge port, and an automatically closed supply cut-off valve for said port and having a depending stem, of a liquid-measuring compartment having in its bottom a discharge port, a yielding closed vertically movable discharge cut-off valve for the discharge port, cup-controlled connections for opening the discharge cut-off valve, and a float in the measuring compartment and having an intermediately fulcrumed lever arranged to engage the stem of the supply cut-off valve and open the same.

6. In a liquid discharging device, the combination with a supply tank having a supply discharge port, a supply cut-off valve for closing said port, and automatic means for closing the cut-off valve, of a liquid-measuring and dispensing assembly removably mounted on said tank and comprising a receptacle having a measuring compartment provided with a discharge port, a discharge cut-off valve normally closing the discharge port, a float in the measuring compartment, and separable connections from the float to the supply cut-off valve for opening and releasing the same.

7. In a liquid-dispensing device, the combination with a supply tank having a supply discharge port, a yielding closed cut-

off valve normally closing said port, of a liquid-measuring and valve-controlling assembly removably mounted in respect to the supply tank and comprising a receptacle having a measuring compartment, a trough having a removable liner arranged to receive liquid from the supply discharge port and deliver the same to the measuring compartment, said measuring compartment having a discharge port, a discharge cut-off valve normally closing said discharge port, means for opening the discharge cut-off valve, a float in the measuring compartment, and a lever arranged to be actuated by the float to open the supply cut-off valve.

8. The structure defined in claim 7 in which said lever is intermediately fulcrumed and in which the fulcrum is shiftable to change the relation of the lever in respect to the supply cut-off valve.

9. In a liquid-dispensing device, the combination with a supply tank having a supply discharge port and a yielding closed cut-off valve normally closing said port, of a liquid-measuring and valve-controlling assembly removably mounted in respect to the supply tank and comprising a receptacle having a measuring compartment, a trough arranged to receive liquid from the supply discharge port and deliver the same to the measuring compartment, said measuring compartment having a discharge port, a discharge cut-off valve normally closing said discharge port, cup-actuated means for opening the discharge cut-off valve, a float in the measuring compartment, and a lever arranged to be actuated by the float to open the supply cut-off valve.

In testimony whereof I affix my signature.
ALBERT SLATEN.