B. E. TAYLOR.

CAN CHARGING APPARATUS.

APPLICATION FILED DEC. 13, 1919.

1,373,275.

Patented Mar. 29, 1921.

5 SHEETS—SHEET 1.

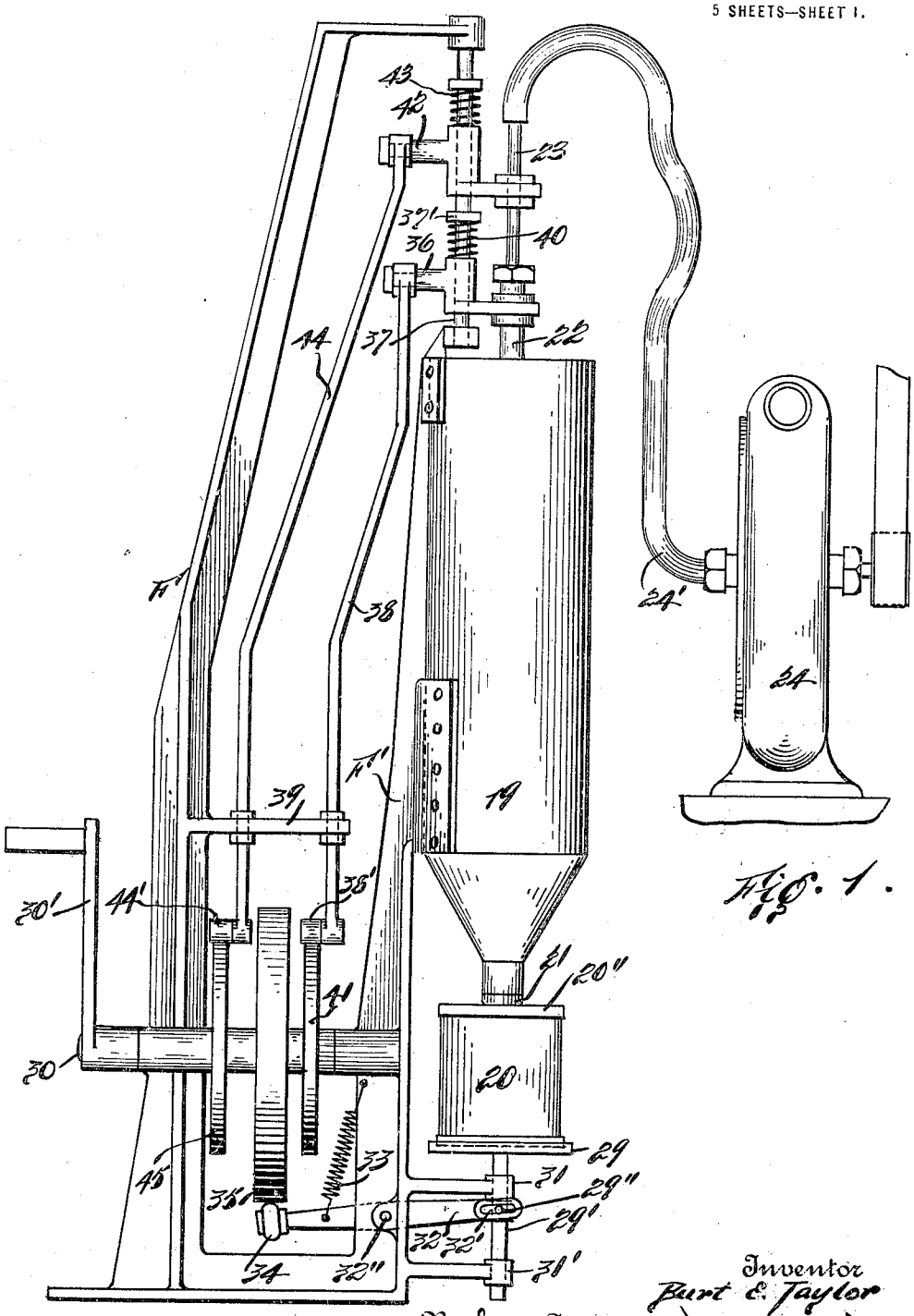


FIG. 1.

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By his Attorney Walter D. Edmonds.

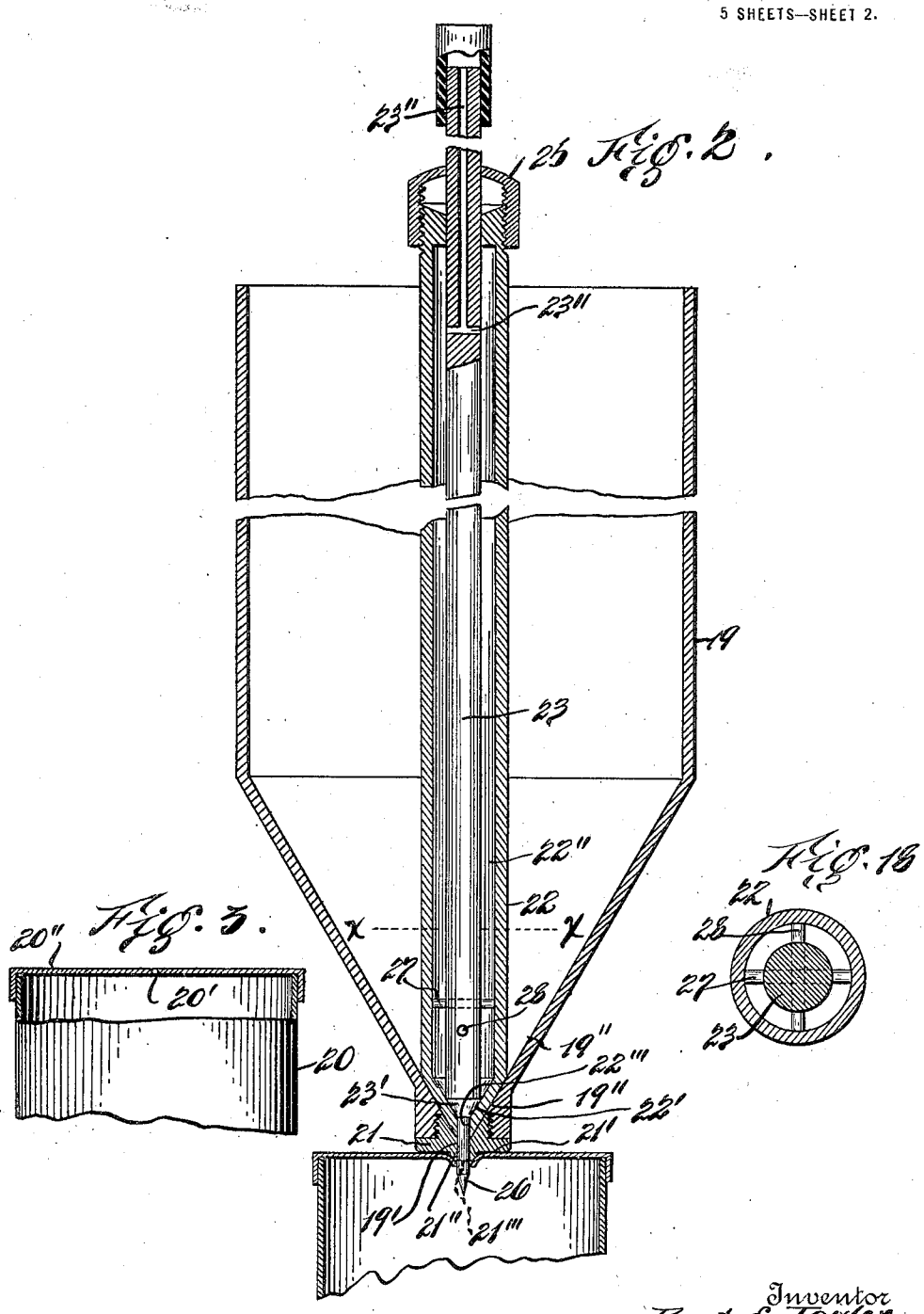
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5 SHEETS—SHEET 3.

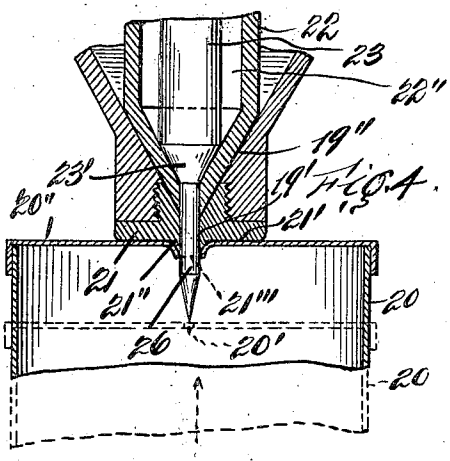


FIG. 4.

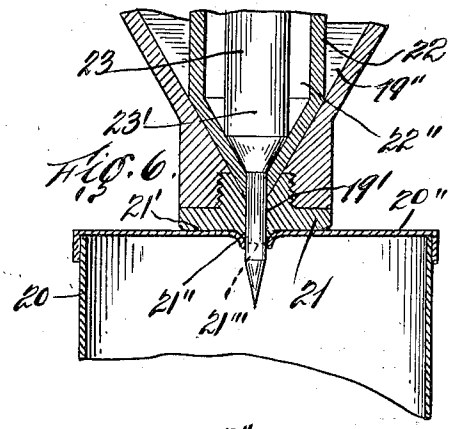


FIG. 6.

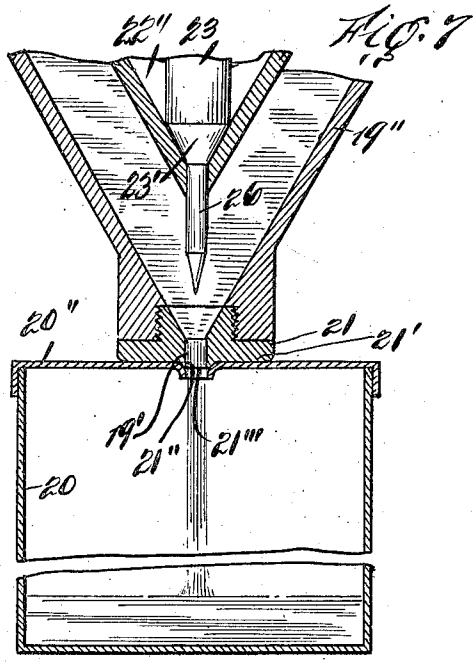


FIG. 7

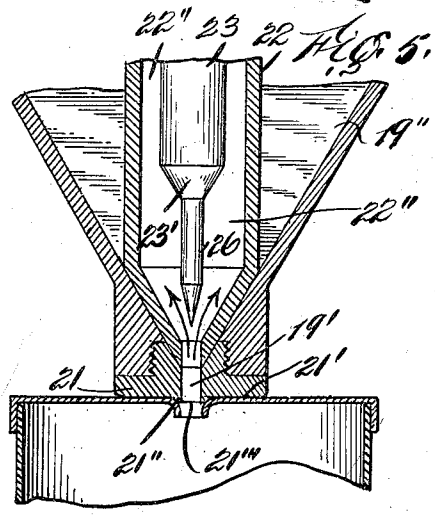


FIG. 5.

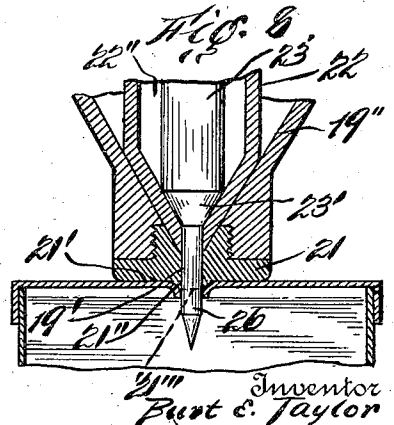


FIG. 8.

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5 SHEETS—SHEET 4.

FIG. 9.

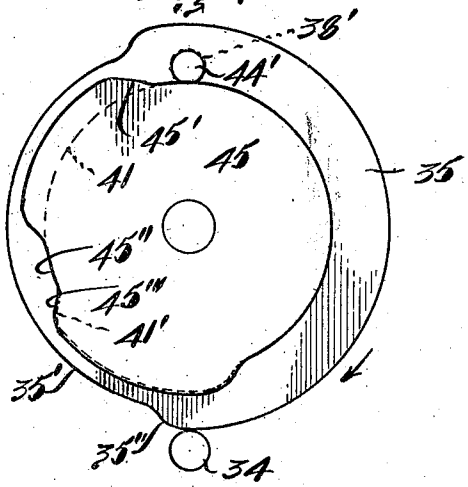


FIG. 10.

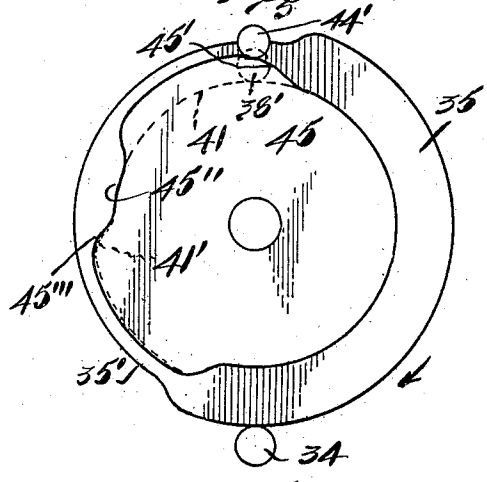


FIG. 11.

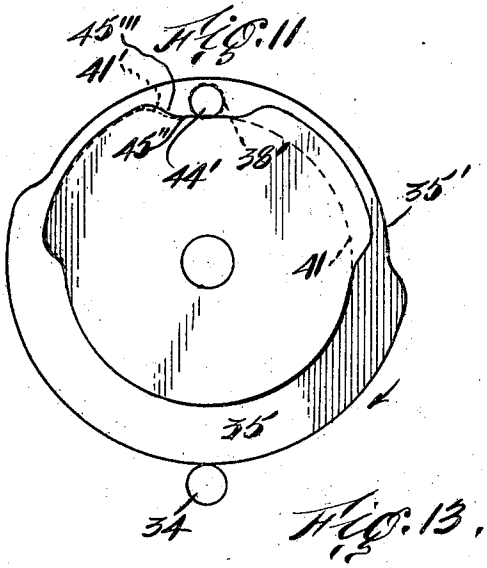


FIG. 12.

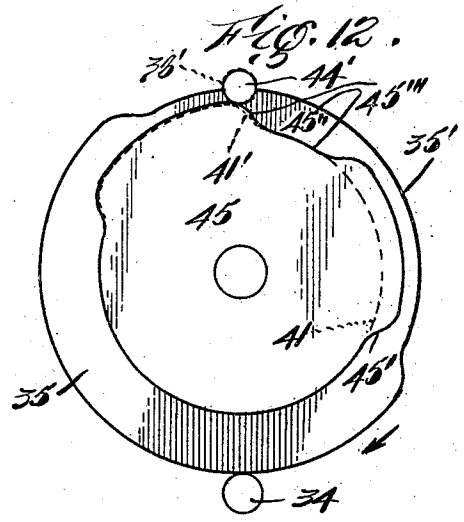


FIG. 13.

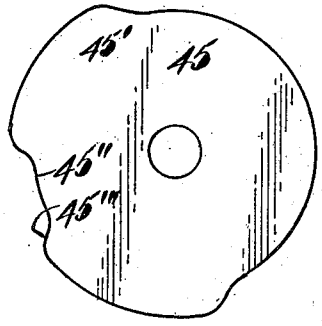
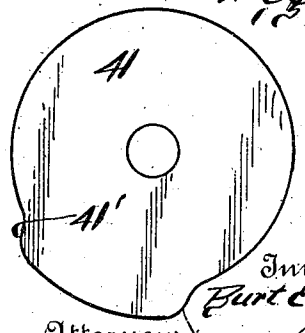


FIG. 14.



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CAN CHARGING APPARATUS.

APPLICATION FILED DEC. 13, 1919.

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Patented Mar. 29, 1921.

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Fig. 15.

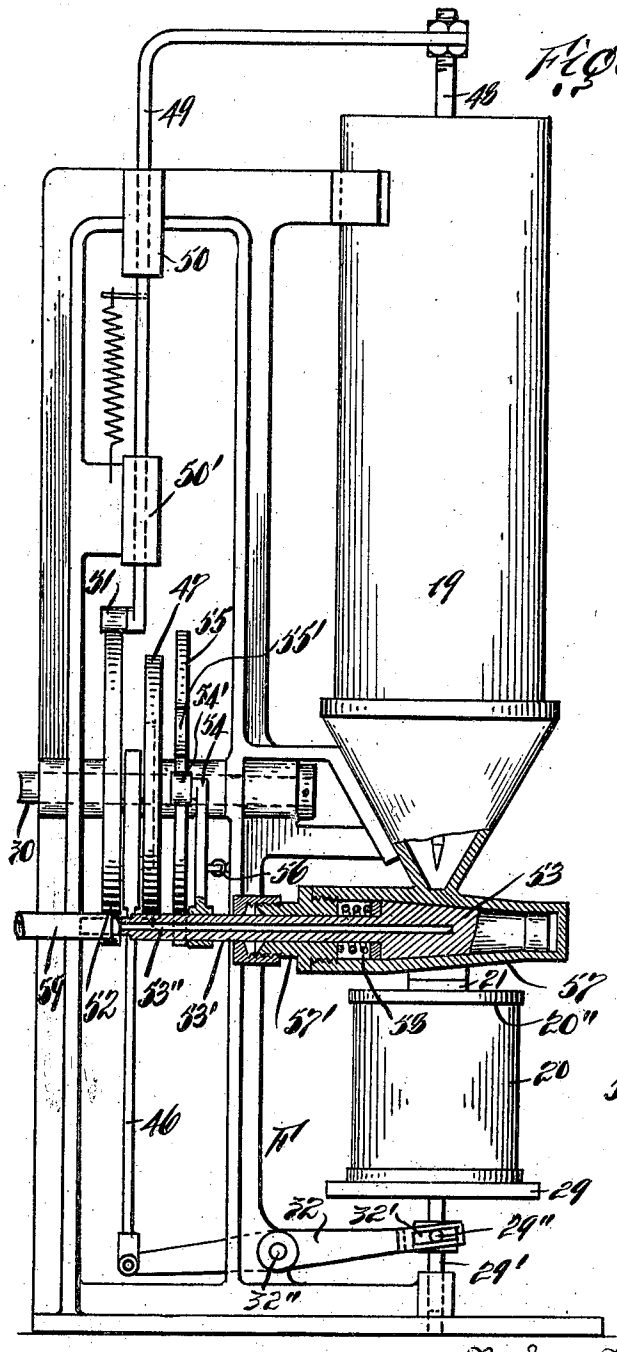


Fig. 16.

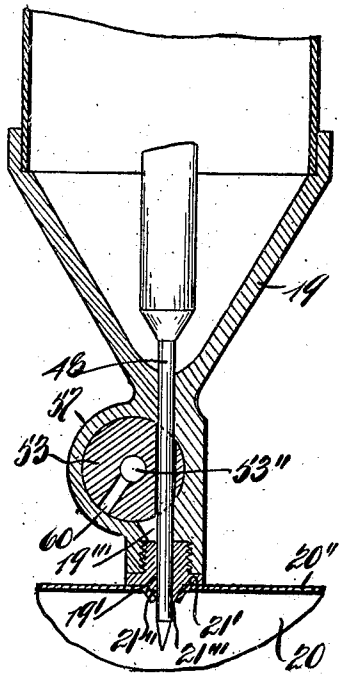
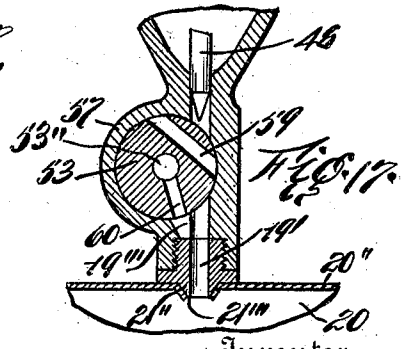


Fig. 17.



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UNITED STATES PATENT OFFICE.

BURT E. TAYLOR, OF MOUNT VERNON, NEW YORK, ASSIGNOR TO THE BORDEN COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

CAN-CHARGING APPARATUS.

1,373,275. Specification of Letters Patent. Patented Mar. 29, 1921.

Application filed December 13, 1919. Serial No. 344,713.

To all whom it may concern:

Be it known that I, BURT E. TAYLOR, a citizen of the United States, and a resident of Mount Vernon, county of Westchester, and State of New York, have invented certain new and useful Improvements in Can-Charging Apparatus, of which the following is a specification.

My present invention relates to apparatus in aid of the charging, or filling, of cans, particularly of the well-known cylindrical, sheet-metal type, such as employed, for example as containers of evaporated milk, or other, products, or materials, of liquid, or liquescent, character possessing, in common, under suitable conditions, the property of flowing; many of which materials are so subject to infection and injury through exposure to the atmosphere, that their container cans are ultimately hermetically sealed in aid of preservation, and to that end charged through relatively small openings in the top as per present approved and well-understood practice.

The objects of my present invention comprise provision of novel means, and appliances, whereby the said perishable flowing materials are comparatively automatically chargeable into the cans with more speed, less wastage, less disturbance and less exposure to atmospheric or other injury than heretofore.

These objects I attain by aid of my invention comprising the novel adjuncts and mechanical factors, elements and parts, examples of which and of their operation are illustrated in the accompanying drawings in which:

Figure 1 is a side view or elevation of a can-charging apparatus embodying features of my invention, and including a can.

Fig. 2 is, on enlarged scale, a vertical central sectional view showing certain details.

Fig. 3 is a central vertical sectional view of the top of a can showing its relatively small opening.

Figs. 4 to 8 inclusive are central vertical cross-sectional views, on still larger scale, showing the relation of certain parts of my novel valve and other devices and their positions relatively to each other and to the receptacle for the material and to the opening in the can at different stages of their operation preparatory to, and during, the charging.

Figs. 9 to 12 inclusive are diagrammatic views of certain of the cams and their respective relations to each other and to thereby influenced parts during the operations.

Figs. 13 and 14 are diagrammatic views of the cams which contribute to the operation of the punch and valves respectively.

Fig. 15 is a partly sectional and partly side elevational view illustrative of certain modified forms of my invention.

Figs. 16 and 17 are, on enlarged scale, views principally in central vertical section illustrative of the relations to each other of certain of the modified forms shown in Fig. 15 at different stages of the operation.

Fig. 18 is on enlarged scale a horizontal sectional view taken on the line $x\ x$ of Fig. 2.

I provide for the material to be charged, for example evaporated milk, a cylindrical receptacle 19 of any preferred capacity sufficient to insure retention therein, preparatory to charging, of at least somewhat more of the material than required to therewith charge, to desired level, the can 20 through an opening 20′ in the head 20″ thereof. It will be understood that the can is, in this instance, of the usual sheet-metal, or equivalent, variety and air tight, except for its said opening.

The receptacle is provided adjacent, *i. e.* preferably in, its bottom with a preferably therewith concentric downwardly-delivering outlet 19′. The top of the receptacle is closed, or open, as may be preferred, and the material is introduced thereinto manually or automatically, and the rate and extent of such charging of the receptacle regulated, if desired, by any of the well-known devices employable for such purposes. The interior of the lower part of the receptacle is downwardly tapered or constricted, funnelwise, toward the outlet, the construction being such as to thereby provide an internally concave conical or funnel-shaped valve seat 19″ proximate to, and concentrically surrounding the outlet.

In the present instance the construction of the receptacle 19 is such as to comprise a therefrom detachable, therewith screw jointed, tip 21 within which the taper 19″ is extended, and through which passes the outlet 19′ as shown in the drawings. This tip is composed of rigid material, such preferably as hardened metal, and comprises, for a purpose hereafter described, a part, or face

plate, having a substantially plane downwardly presented continuous, *i. e.* unrecessed surface 21′ of uniform level throughout extending annularly, and radially outwardly, from and completely surrounding said outlet, and a therefrom downwardly extending tubular flange portion 21″ having an angular edge, 21‴, concentric with, and closely surrounding the path of the outlet 19′, the inner surface of the flange constituting a part of the inner surface of the outlet and the outer surface, or exterior, of the flange flaring therefrom, *i. e.* from the apex of its edge to its juncture with said plane surface, and being preferably, concavely curved. (See Fig. 6, etc.)

In the type of my invention illustrated in Figs. 1, 2, 4–8, I dispose within the receptacle 19 a therein reciprocatable valve-member, 22, the lower end of which is tapered complementarily with the taper 19″ of the receptacle *i. e.* is externally convexly conical, so as to be coöperatable with the latter.

The valve-member 22 is tubular, *i. e.* contains a therein longitudinally extended bore or cavity, 22″, from which, adjacent its bottom, leads an opening 22‴ registrable with the outlet 19′ of the receptacle 19. The interior of the lower part of the cavity, or bore, 22″ is downwardly tapered or constricted, funnelwise, toward the opening 22‴ as shown in the drawings, the construction being such that the thus tapered interior provides a concavely conical valve seat, 22′, within the cavity proximate to, and surrounding, its opening 22‴. This valve seat is, as is important, presented in the same direction as the valve seat in the receptacle, *i. e.* the operative surfaces of both are, preferably, in substantial parallelism with, or, as it were, "nested" with, each other.

I dispose, principally within the cavity 22″, a therein reciprocatably movable pneumatic valve member, *i. e.* a rod, 23, comprising an inner valve portion 23′ which is convexly tapered complementarily with the concavely tapered valve seat of the cavity 22″, *i. e.* is externally convexly conical so as to coöperate therewith. The upper portion of the member 23 is bored to produce a centrally disposed pneumatic channel which connects with a transverse bore opening into the cavity 22″, the said bores constituting a pneumatic passage, or air duct, 23″, which is operatively connected with any suitable air-exhausting apparatus, such, for example, as the ordinary rotatory pump, 24, (diagrammatically indicated in Fig. 1) through an intermediate flexible hose connection 24′, the upper portion of the member 23 being extended slidably, as shown in Fig. 2, through and beyond the otherwise closed top of the valve-member 22, and requisite air-tightness being there imparted by aid of a stuffing box, 25.

The lower end of the valve-member, or rod, 23, comprises, in this instance, and for a purpose hereafter described, a therefrom downward projection, or can-opener punch 26 passable through the outlet 19′ and the opening 22‴ so as to be projected beyond them. The lower portion of the valve-member, or rod, 23, is guided during its reciprocations by thereby carried pins 27, 28, the ends of which bear slidingly against the surface of the cavity, or bore, 22″, of the tubular valve-member 22, (Figs. 2 and 18) thereby also insuring accuracy of movement of the punch 26.

From the above described construction, it follows that when the tubular valve is seated, the outlet of the receptacle is closed, and that when, pending such closure, the punch is raised above the opening in the tubular valve member, air may be drawn upwardly through said opening and through the outlet of the receptacle.

Underneath outlet 19′ of the receptacle 19 I provide a movable, *i. e.* vertically reciprocatable, support, 29, (Figs. 1, 15) for the can 20, the disposition being such as when properly adjusted to cause said outlet and the opening 20′ of the can to register.

I provide means whereby to automatically timely move, or reciprocate, relatively to each other the said can support, tubular valve member, 22, and rod valve member, 23. Such means comprise, in the present instance, a stationary frame F (Fig. 1) by an arm F′ of which is stationarily carried, or suspended, the receptacle, 19. Journaled in said frame is a rotatory shaft 30 carrying a crank arm, or handle, 30′, by aid of which it may be manually, or otherwise, rotated. The can support, or table, 29, comprises a leg 29′ slidably mounted in guide arms 31, 31′, carried by the frame. A pin 29″ carried by the leg, is held slidably in a slot 32′ located in one arm of a rock lever 32, pivoted as at 32″ to the frame. The other arm of the lever 32 is normally held up by a thereto attached retractile spring 33 carried by the frame, thus forcing the can support downward enough to normally keep the top of a thereon standing can out of contact with the bottom, or outlet, of the receptacle, 19. This arm of the lever 32 carries a roller, 34, against which operatively bears a cam 35 carried by the shaft 30, and so shaped, and timed, as to force the can support upward against the stress of the spring 33, and cause the can top to bear against the flange, 21″, and the plane surface, 21′, of the tip, 21, of the receptacle, 19, and as powerfully and as long as, required for exhausting and charging the can according to my hereafter described present procedure.

I provide means as follows for when, and as required, reciprocating the tubular valve member 22. A block 36 carried by said

member is slidably mounted on a rod, 37, stationarily carried by extensions of the frame F. The block is connected with one end of a link, or rod, 38, slidably passing through a guide arm, 39, carried by the frame. An expansion spiral spring 40 encircles the rod 37 and bears against a stud 37′ thereby carried and against the block 36 to hold the tubular valve member 22 normally forced down upon its seat in the receptacle 19. The other end of the link 38 carries a roller 38′ against which operatively bears a cam 41 carried by the shaft 30, and so shaped, and timed, as to, when, and so long as, required, lift and uphold the tubular valve member 22 from its seat in the receptacle.

I provide substantially similar, and analogously operating, means for when, and as required, reciprocating the inner valve member, 23 independently of the tubular valve, *i. e.* a thereby carried block 42 similarly slidably mounted on the rod 37, and normally forced downward by an expansion spring 43, also a link, or rod, 44, which slidably passes through the guide arm 39. One end of the link 44 is connected with block 42, and the other end carries a roller 44′ against which operatively bears a cam, 45, carried by the shaft 30 and so shaped, and timed, as to, when, so far, and so long as, required, lift and uphold the rod valve member 23 from its seat in the tubular valve member 22, and thus also its projection, or punch, 26 out of and above the outlet 19′ and the opening 22‴.

Figs. 9 to 14 inclusive of the drawings diagrammatically exemplify the conformations and timings of the cams referred to in order to produce the required respective movements of the tubular valve 22, the rod valve member 23, and the cam support 29, relatively to each other and to the receptacle 19.

Operation.—The apparatus and can are, preliminarily to charging, positioned as follows, viz: The tubular valve member, 22, is, by aid of gravity, and of the spring 40, held down upon the valve seat, 19″, of the receptacle, 19, thereby closing the outlet 19′ of the latter; thus enabling the receptacle to be then charged with the evaporated milk or other flowing material. The pneumatic valve member, or rod, 23, is also, by aid of gravity, and of the spring, 43, held firmly down upon the valve seat, 22′, within the tubular valve member, thus closing the opening 22‴ of 22 and positioning the punch 26 within the opening 22‴ and the outlet 19′, and so as to project downwardly beyond the latter. In this preliminary or normal position the parts referred to are shown in Figs. 2, 4 and 8 of the drawings. Meanwhile the can-support, 29, is held down to its normal position by tension of the spring, 33, on the rock lever 32. A can is now placed on the can support adjusted so that the center of its head, or of the therein opening, if any, registers with the center of the outlet 19′, of the receptacle 19. It will be understood that, as in usual practice, the heads of the cans, of the type referred to, already contain a relatively small central opening, or aperture, of usually not to exceed one thirty second of an inch in diameter, such opening being illustrated in Fig. 3, but the existence of such an opening in the can in advance of my operation, is, although preferable, not essential thereto, my punch 26 being competent to puncture the head, as well as to enlarge a thereby, or otherwise already, made opening.

The shaft, 30, being now rotated, the roller 34 carried by the lever 32 will ride up the rise 35″ (Fig. 9) of the cam, 35, to the position indicated in Fig. 9, thereby raising the can and causing the punch, 26, to puncture it, or to enter its already made opening, 20′, which, in either case, will finally provide the can with an opening of substantially the same diameter as that of the punch and, correspondingly, as that of the outlet 19′ of the receptacle 19,—the cross sectional diameter of the punch in this instance being say about one-sixteenth of an inch. The upforcing of the can is thus continued until the plane upper surface of its head is thereby caused to contact closely with the thereto opposed above mentioned plane downwardly presented surface 21′ of the rigid tip 21. It will be noted that during this upward forcing of the can, not only does the punch, 26, by reason of its tapered form, as shown in the drawings, enlarge the opening in the can head thereby annularly distorting, or transversely bending backward, portions of the sheet metal of the head adjacent the initial puncture, or opening, but also that the annular flange 21″ cooperates with the punch in so doing and furthermore, owing to its shape, wedgingly enters and enlarges the opening and, at the same time, presents a suitable concavely curved surface corresponding complementarily to the convexly curved surface of the flange 21″ imparted to the edge of the sheet-metal by its said distortion proximate the opening. The result is the formation of a temporary air-tight joint, or union, between the can, and the receptacle 19, or, more specifically, the tip 21, of the latter, this being due in part to the constrictive grip, or squeeze, of the, to an extent resilient, distorted sheet-metal on the flange 21″. This union, thus produced, I have discovered to be so effective as to dispense with gaskets, or other packing devices, hitherto depended upon to impart sufficient air-tightness in such connections.

After the can has been, as described, air-

tightly united with the tip of the receptacle 19, the shaft, 30, being further rotated, the roller 44′ carried by the link 44 will ride up the rise 45′ of the cam 45, as indicated in Fig. 10 of the drawings thereby raising the valve member, 23, off of its seat 22′ and lifting its therefrom projecting punch 26 to above, and clear of, the outlet 19′ and the opening 22‴, thus bringing the parts into the respective positions indicated in Fig. 5. The exhaust being then applied, air is, to a sufficient extent, if not altogether, withdrawn from the can (as indicated by the arrows in said figure) through the outlet and openings referred to, and thence through the bore of the tubular valve member and the air-duct of the inner valve-member, 23. Further rotation of the shaft, 30, will, owing to the depression 45″ of the cam 45 (Figs. 11 and 13) permit the valve-member, 23, including its punch 26 to resume their above described normal positions, again indicated in Fig. 6, thereby closing the opening, 22‴, of the tubular valve-member 22, cutting off the exhaust, and leaving the interior of the can substantially devoid of atmospheric pressure.

Further rotation of the shaft will cause the roller, 44′, to ride up the second rise, 45‴, of the cam 45, and, simultaneously the roller, 38′, to ride up the rise, 41′, of the cam, 41, (Figs. 12, 14) thereby causing the tubular valve member, 22, and its therein seated valve member, 23, including its punch, 26, to simultaneously and in air-tight contact with each other rise sufficiently to clear the outlet 19′ of the receptacle 19, as indicated in Fig. 7, whereupon so much of the charge of flowing material contained in the receptacle as is required to fill the can is, by the combined action of gravity and atmospheric pressure, quickly, and without undue disturbance, transferred into the can through the latter's relatively small opening. Further rotation of the shaft will restore the tubular valve member 22 and the pneumatic valve member 23 to their normal initial positions as shown in Fig. 8, (the former during, and by, its descent driving the surplus, if any, of the flowing material upward and back into the receptacle,) and thereafter cause the roller 34 to ride down into the depression 35′ of the cam 35 thereby permitting the can support 29 to resume its initial normal position, after which the charged can is removed to be sealed or otherwise treated, and an empty can being placed on the support the cycle is repeated, the construction being such that this is accomplished during each complete rotation of the shaft.

The construction and operation are such as to result in the charging of a can through a therein relatively minute opening more expeditiously economically, and hygienically and with less skill on the part of the operator, than hitherto known to me.

In Figs. 15, 16 and 17 I have illustrated another, though unpreferable, type of my invention some of the means employed, particularly those for exhausting the can, being, in this instance, different from those previously described, but the remaining elements being substantially the same and indicated in the drawings by the same reference nuerals as before, *i. e.* 19 is the receptacle, having the outlet 19′ and provided with the tip 21 (Fig. 15), having the plane surface 21′, and the annular flange 21″ having the angular edge 21‴ for the purpose of making an air tight joint between the can and the receptacle as in the previous construction, 29 is the reciprocatable support for the can having the leg 29′ carrying the pin 29″ within the slot 32′ in one arm of the rock-lever 32 pivoted to the frame F as at 32″. In this instance, however, the lever is positively rocked and held where and when required by aid of a link 46 carried by the other arm of the lever. The link carries a roller (not shown) which coöperates with an internal cam, 47, rotated by the shaft, 30, and shaped and timed to impart the requisite reciprocations and intervening pauses to the can support. In this instance there is substituted for the former pneumatic valve member, 23, a reciprocatable punch member, 48, the operative projection of which is passable through, and beyond, the outlet 19′ and is of form and dimension such as to snugly fit the outlet thereby substantially closing it to the flowing material contained in the receptacle. This punch is reciprocated analogously to the pneumatic valve member of the previously described construction, *i. e.* by aid of a therewith connected link, or rod, 49, slidably supported in guides 50, 50′, carried by the frame, and carrying a roller, 51, coacting with a cam, 52, carried by the shaft, and shaped and timed to reciprocate and intermittently hold the punch when, and as required. I provide in this instance the following means in aid of exhausting air from the can, viz: an oscillatory spindle valve, 53, operated by aid of a thereby carried arm, 54, carrying a roller, 54′, with which coöperates a rotary cam, 55, carried by the shaft, 30, and provided with a projection, 55′, shaped and timed to cause the valve to temporarily assume and maintain while required the position shown in Fig. 17, the normal position of this valve being that shown in Fig. 16, and the valve being returned thereto and held therein by a retractile spring, 56, connecting the arm 54 with the frame F. The valve, 53, is movably supported within, and by, a usual stationary cylindrical shell or seat 57, carried by the frame F by aid of the threaded joint, or union, 57′. An expansile spring, 58, bears

against the union and the valve to keep the latter properly seated. The valve, 53, comprises a stem 53′ containing, as does the valve, a concentric bore, or air duct, 53″, which is connected by aid of a rubber hose 59, or other unrigid connection, with an air-exhausting apparatus (not shown in Fig. 15) the same as in the previously described construction (see Fig. 1).

The valve, 53, contains a by-pass, or eccentric transverse bore, 59, alinable, in register, with the outlet 19′ when the valve is in its normal position shown in Fig. 16.

The valve also contains a radial bore, or channel, 60, communicating with its concentric bore, or air duct, 53″ and alinable, in register, with a lateral enlargement, 19‴, of the outlet, 19′, when the valve has been, as above described, oscillated from normal position by the cam 55.

The operation is, in principle, the same as that of the previously described form of my invention,—the parts being in the position shown in Fig. 16 and the can suitably positioned on the support, 29, a single rotation of the shaft, 30, serves to force the can up against the tip, 21, thereby causing the punch, 48, to puncture the head, or to enlarge its already opening, thereby distorting the sheet-metal and producing the previously described air-tight joint between it and the receptacle 19. The punch is then raised sufficiently for it to clear the valve, 53, whereupon the latter is turned into the position shown in Fig. 17 and air exhausted from the can, through the valve, after which the punch, being completely withdrawn from the outlet 19′ and the valve returned to its normal position as in Fig. 16, the material is permitted to flow under gravity and atmospheric pressure from the receptacle into the exhausted can after which further flow is prevented by outlet 19′ being stopped by the descent of the punch thereinto and therethrough to its normal position, the filled can is lowered and removed and the cycle indefinitely repeated. It will be understood that the outer surface of the flange, 21″, may, without departing from my invention or its results, be simply angular or conical as shown in Figs. 16 and 17, instead of being, as is however preferable, concavely curved, and also that other variations from the specific forms shown in the drawings are within the purview of my claims.

Having now described my invention, what I claim as new and desire to secure by Letters Patent is the following, viz:

1. In an apparatus for charging flowing material into a container, a receptacle for the material having adjacent its bottom an outlet surrounded by an internally concave conical valve-seat; an externally convexly conical tubular valve member coöperative with said seat, reciprocatable within said receptacle, and having within it an internally concave conical valve seat presented in the same direction as said first mentioned valve seat and surrounding a therein opening concentric with said outlet; an inner valve coöperative with the valve seat in the tubular valve; respective means to constantly yieldingly force each of said valves respectively and independently of each other toward their said seats; means to, independently of the tubular valve, when, so far and so long as required, lift and uphold the inner valve from its seat; means to, independently of said last mentioned means, when, and so long as required, lift and uphold the tubular valve from its seat and in the same direction as the inner valve was lifted.

2. In an apparatus for charging a flowing material into a sheet-metal can having in its head an aperture, a receptacle for the material having adjacent its bottom a therethrough downwardly delivering outlet; a thereunder movable support for the can disposed to register said outlet with said opening; means to temporarily air-tightly intercommunicably combine said outlet with said opening; and within said receptacle a tubular movable valve member having an opening intercommunicable with said outlet, a relatively thereto therein movable member comprising a valve portion coöperatable with the interior of said tubular valve member to close its said opening also comprising an air-duct communicating with said interior, and also comprising a part disposable simultaneously within said outlet and said opening in the can top.

3. In an apparatus for charging a flowing material into a sheet-metal can, a receptacle for the material having adjacent its bottom an interiorly disposed valve seat and a therethrough downwardly delivering outlet; a tubular valve member movable within said receptacle relatively thereto to coöperate with said seat and provided with a bore or cavity having adjacent its bottom an interiorly disposed valve seat and a therethrough downwardly-delivering outlet communicable with said outlet from the receptacle; a pneumatic member, containing an air duct communicating with said cavity in the tubular valve member, disposed in part within said cavity, movable relatively thereto and to said receptacle and can, and carrying a valve adapted to normally coöperate with the valve seat within said tubular valve member; a can-opener projection or punch carried by said pneumatic member and passable within and beyond said outlets so as to enter the can; means to yieldingly normally hold the said valves closed on their seats and the end of the can-opener projected through said outlets; means to support the receptacle and the can normally out of, and

to bring them into, contact with each other; means to, while in such contact, withdraw the can-opener from the can and to unseat the said valve of said pneumatic member; means to exhaust air from the can through said outlets, said cavity, and said duct; and means to thereafter move said tubular valve member until the outlet of the receptacle is thereby opened to passage of the material therethrough into the can.

4. In an apparatus for charging a flowing material into a sheet-metal can, a receptacle having through its bottom a downwardly delivering outlet for the material, and, externally surrounding said outlet, a rigid part having a, from said outlet radially extending, substantially plane downwardly presented surface and a therefrom downwardly presented angular edge concentric with and closely surrounding the path of said outlet; a movable downwardly pointed can-opener member normally rigidly supported within, and projecting downwardly from, said outlet; a thereunder movable support for the can; means to raise said support and its thereby carried can upwardly until said can-opener has entered the head of the can and said head is forced and tightly held in contact with said plane part, whereby said flange is wedged against portions of the can head distorted thereby and by said can-opener; and means to thereafter withdraw said can-opener from said outlet.

5. Means for producing a temporary air-tight joint, or union, between a sheet-metal can, having in its head an opening, and a therewith intercommunicable member having an outlet registrable with said opening, which comprise, carried by said member a tubular, therefrom projecting, flange, its interior constituting a part of said outlet and its exterior flaring therefrom, and a part continuously surrounding said flange and having a continuous, substantially plane, operative surface of uniform level throughout entirely surrounding said outlet and flange; a support for the can disposed thereon to bring its said opening into register with said outlet; means to compress together the can and said member until the flange has entered, and is wedged against, the sides of said opening and the operative surface of said part surrounding the flange bears continuously in uninterrupted annular contact against the head of the can around its said opening.

6. Means to make a temporary air-tight union with a can having in its head an opening, the said means comprising a member, or face plate, having an outlet registrable with said opening and a continuous, annular, relatively plane, surface, of uniform level, completely surrounding said outlet and disposable opposite to, and in parallelism with, said head, and a, from-said-surface-projecting, tubular flange having an angular edge concentric with and closely surrounding the path of said outlet and its outer surface, from the apex of said edge to its juncture with said plane surface, concavely curved; and means to force said flange into said opening and cause said head to bear against said plane surface.

7. In an apparatus for charging a flowing material into a can, a receptacle for the material having adjacent its bottom an outlet surrounded, within said receptacle, by a valve seat; a reciprocatable tubular valve-member disposed within said receptacle cooperatively with said seat and having adjajacent its bottom an opening registering with said outlet and surrounded, within said tubular valve member, by a valve-seat; another valve member reciprocatable within said tubular valve member coöperatable with said last mentioned valve seat and comprising an air-duct communicating with the interior of said tubular valve member; means to reciprocate said valve members to and from their respective seats, and means to, through said duct, exhaust air from the interior of said tubular valve member and from said opening and outlet.

8. In an apparatus for charging a flowing material into a can, a receptacle for the material having adjacent its bottom an outlet surrounded, within said receptacle, by a valve seat; a reciprocatable tubular valve-member disposed within said receptacle cooperatively with said seat and having adjacent its bottom an opening registering with said outlet and surrounded, within said tubular valve-member, by a valve-seat; another valve member reciprocatable within said tubular valve-member coöperatable with said last mentioned valve seat and comprising an air-duct communicating with the interior of said tubular valve member and also a projection or punch passable through said opening and outlet; means to reciprocate said valve members to and from their respective seats, and means to, through said duct, exhaust air from the interior of said tubular valve member and from said opening and outlet.

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