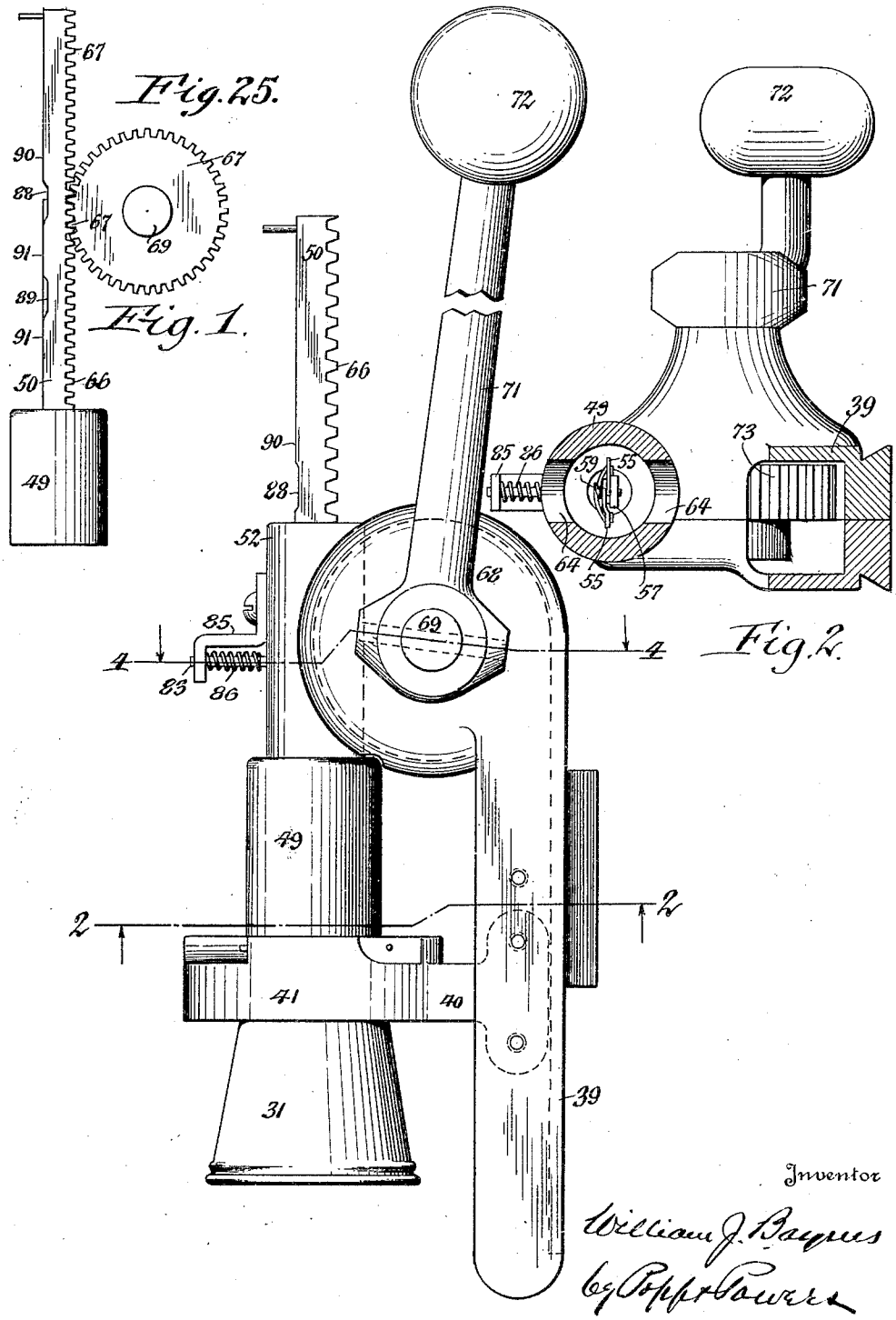
Dec. 17, 1929. W. J. BAYNES 1,740,386

APPARATUS FOR EJECTING ICE CREAM FROM CONTAINERS

Filed April 12, 1928 6 Sheets-Sheet 1



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APPARATUS FOR EJECTING ICE CREAM FROM CONTAINERS

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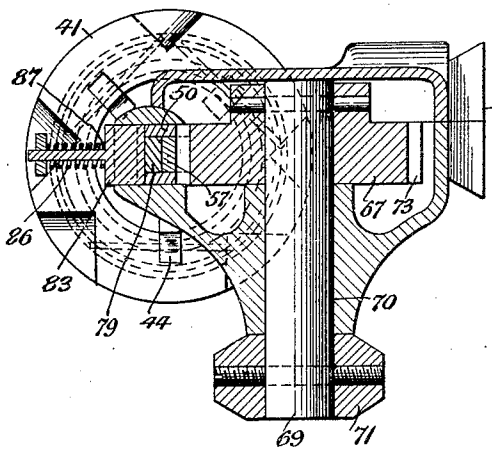


Fig. 4.

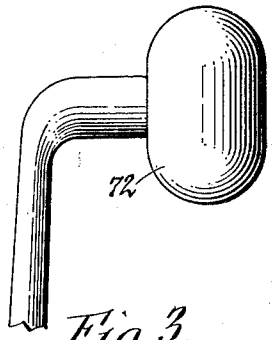


Fig. 3.

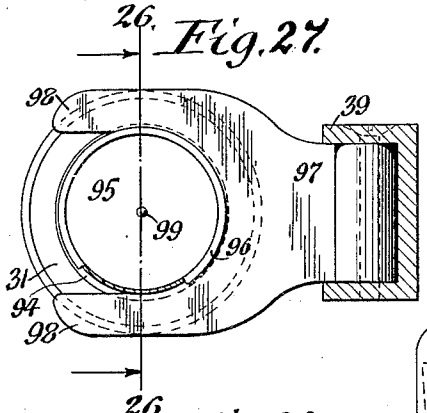


Fig. 27.

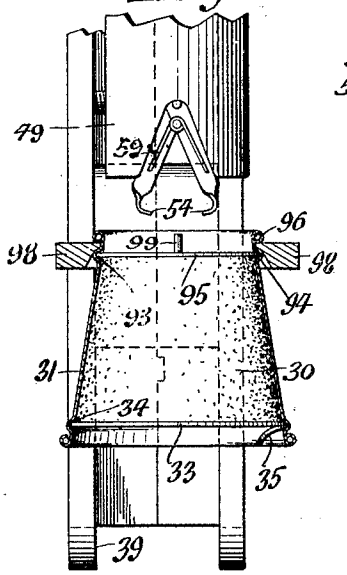
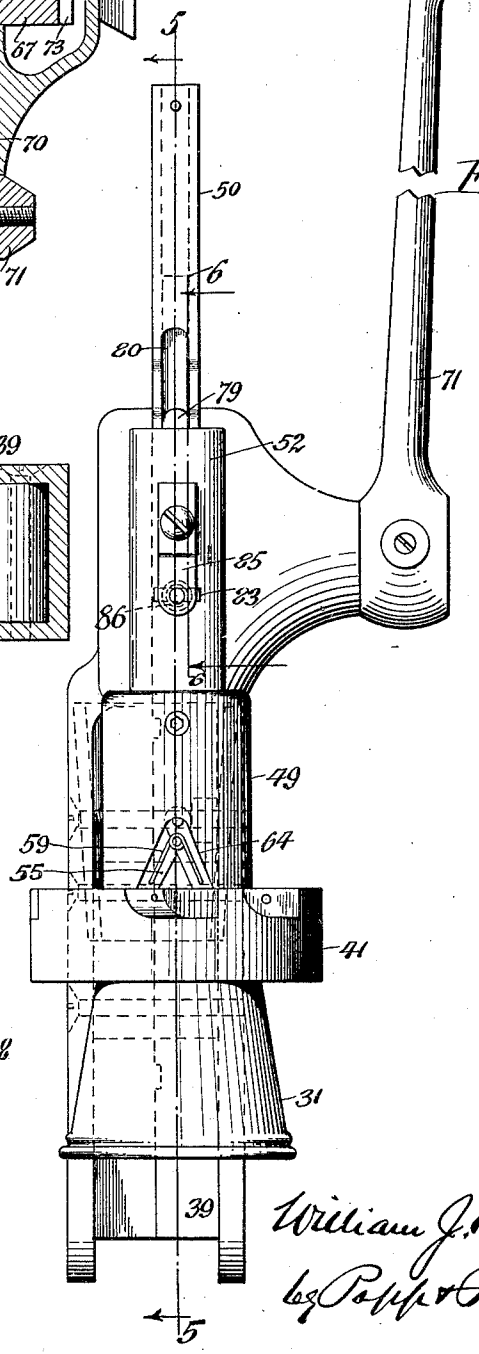


Fig. 26.



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APPARATUS FOR EJECTING ICE CREAM FROM CONTAINERS

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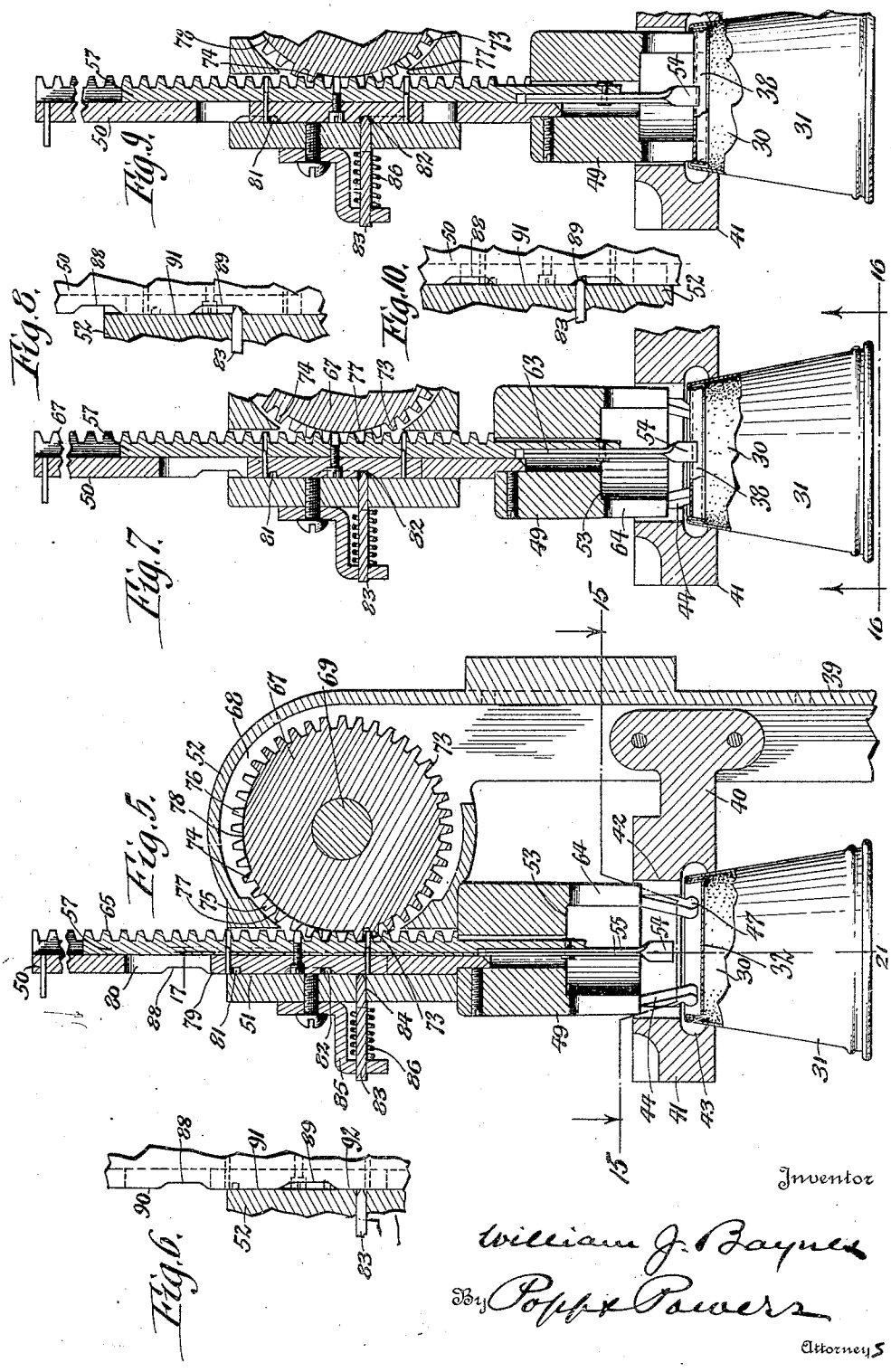


Fig. 9.

Fig. 8.

Fig. 10.

Fig. 7.

Fig. 5.

Fig. 6.

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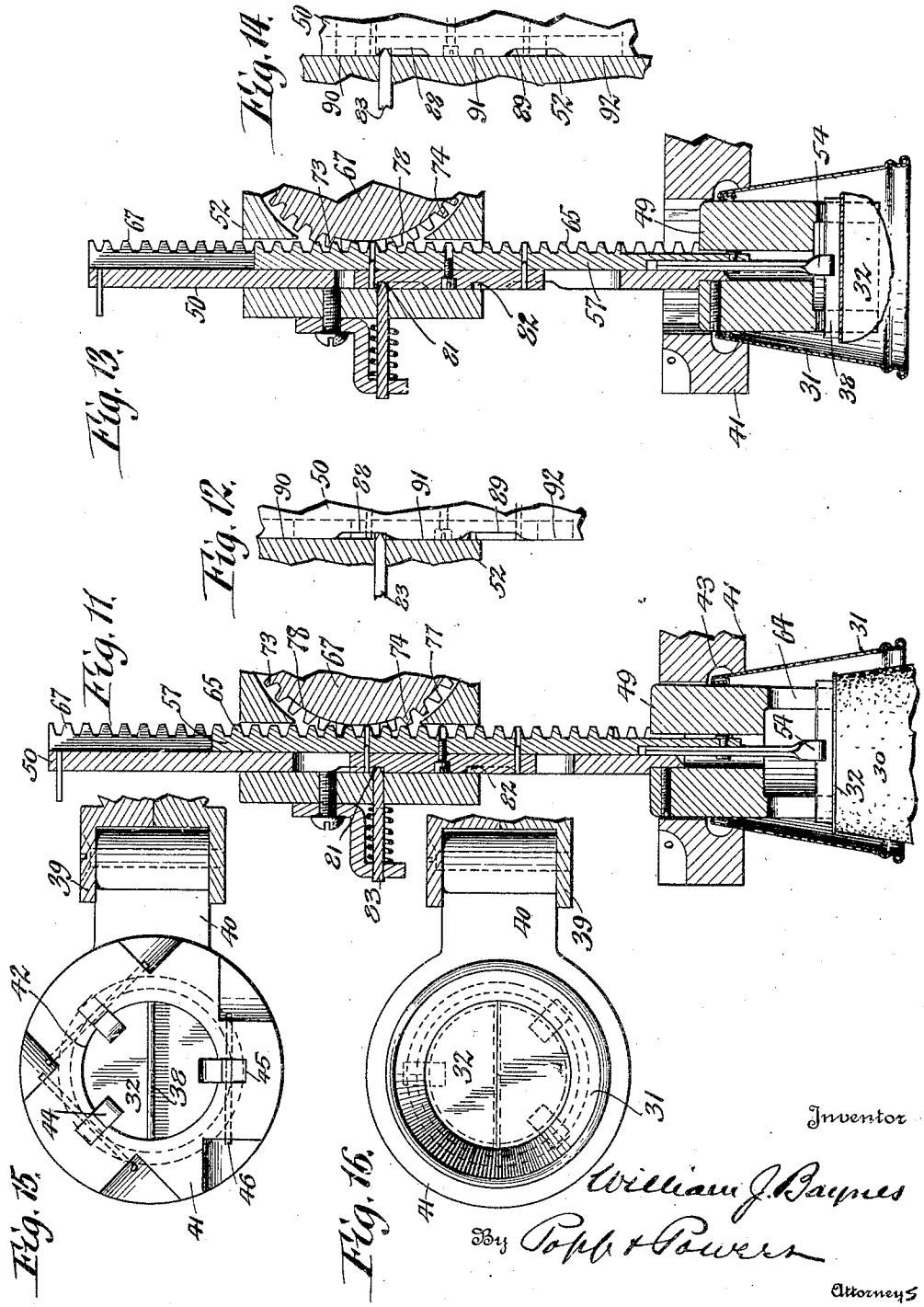
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APPARATUS FOR EJECTING ICE CREAM FROM CONTAINERS

Filed April 12, 1928 6 Sheets-Sheet 4



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APPARATUS FOR EJECTING ICE CREAM FROM CONTAINERS

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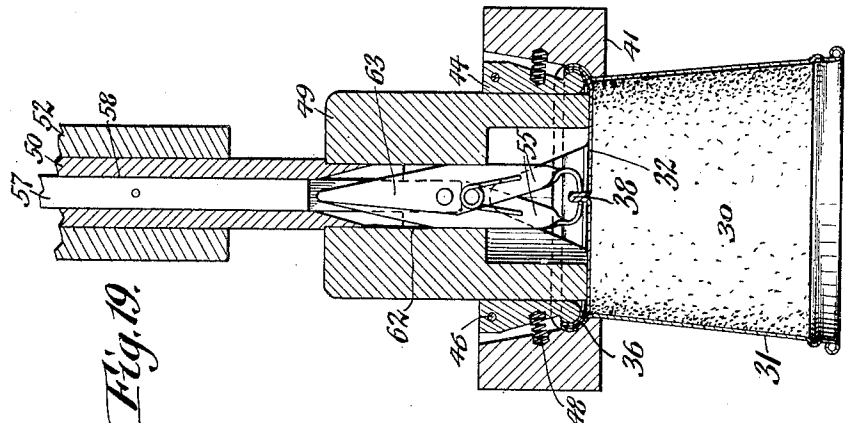


Fig. 19.

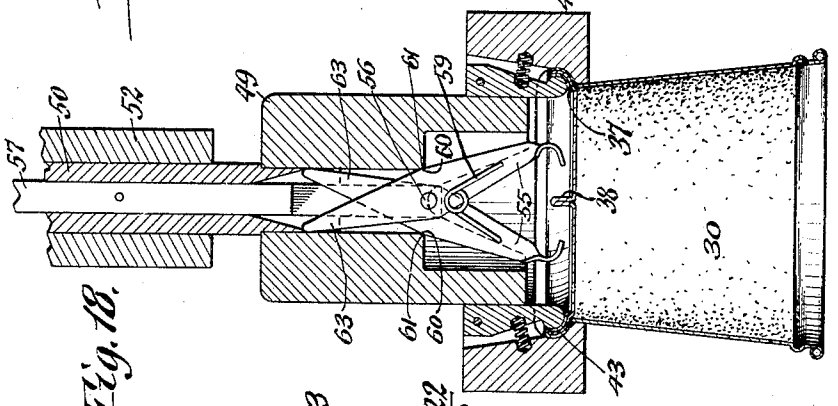


Fig. 18.

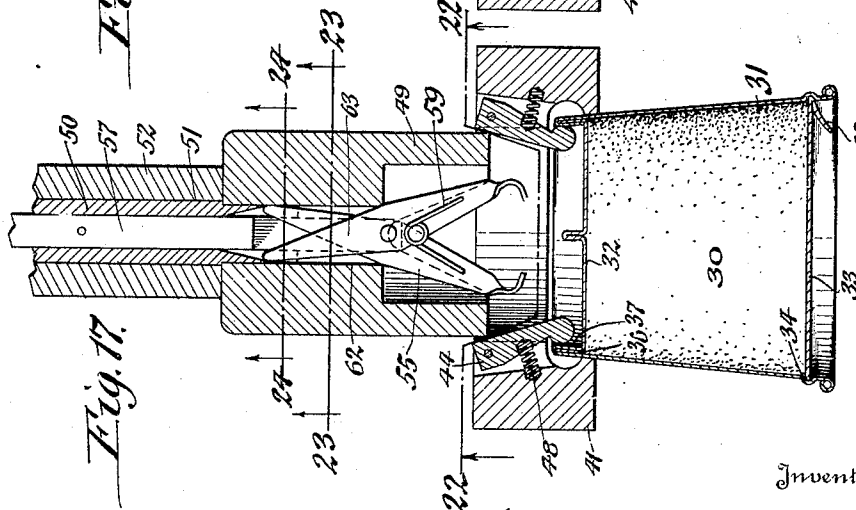


Fig. 17.

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APPARATUS FOR EJECTING ICE CREAM FROM CONTAINERS

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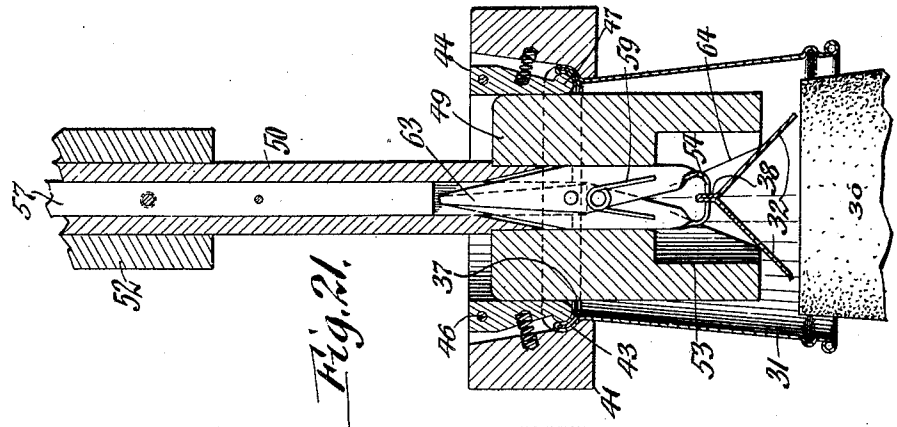


Fig. 21.

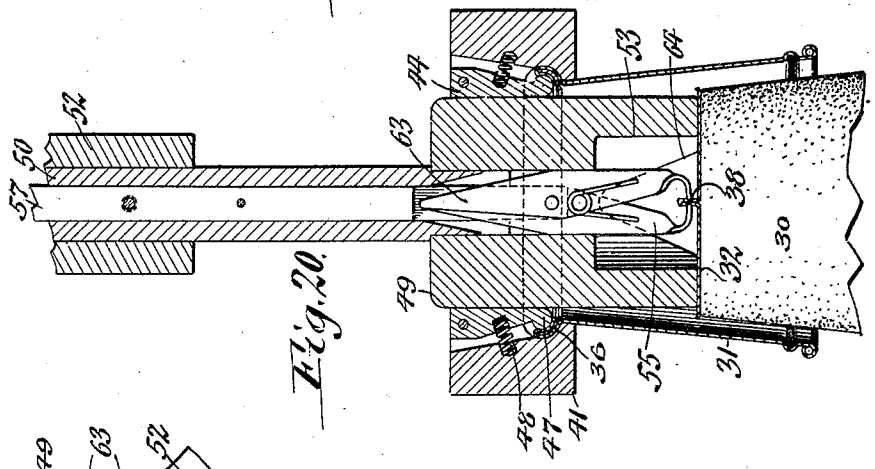


Fig. 20.

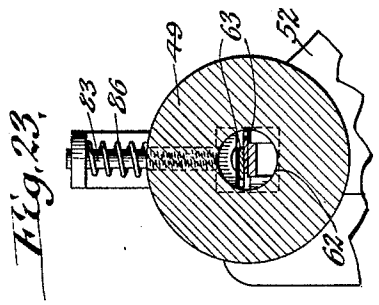


Fig. 23.

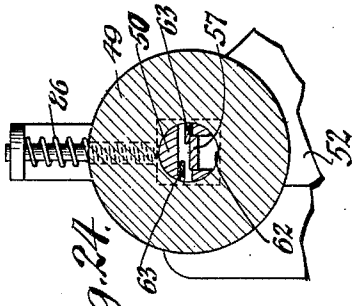


Fig. 24.

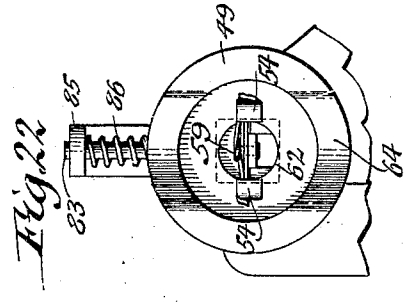


Fig. 22.

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Patented Dec. 17, 1929 1,740,386

UNITED STATES PATENT OFFICE

WILLIAM J. BAYNES, OF BUFFALO, NEW YORK

APPARATUS FOR EJECTING ICE CREAM FROM CONTAINERS

Application filed April 12, 1928. Serial No. 269,402.

This invention relates to an apparatus for dispensing ice-cream and similar material, and more particularly to an apparatus which is adapted to eject the material from a container by pushing the bottom of the same inwardly and thereby causing the contents of the container to be ejected outwardly from the upper end of the container.

It is the object of this invention to provide an apparatus for this purpose whereby such removal of the contents of an ice-cream container may be effected without touching the contents by human hands and also without causing any parts of the apparatus to engage the contents so that contamination of the material which otherwise might occur is prevented.

A further object of this invention is to accomplish this by means which are comparatively simple in construction and permit of performing this function conveniently and expeditiously.

In the accompanying drawings:

Figure 1 is a side elevation of an apparatus embodying an approved form of this invention.

Figure 2 is a horizontal section taken on line 2—2 of Fig. 1.

Figure 3 is a front elevation of the apparatus shown in Fig. 1.

Figure 4 is a horizontal section taken on the correspondingly numbered line of Fig. 1.

Figure 5 is a fragmentary vertical longitudinal section of the same taken on line 5—5 of Fig. 3, and showing the position of the parts which they occupy when the container has been placed in the ejecting mechanism preparatory to beginning the removal of the contents therefrom.

Figure 6 is a fragmentary vertical section taken on line 6—6 of Fig. 3, showing the position of the controlling cam which controls the position of the lock whereby the plunger is held against movement at certain times during the operation of the apparatus, the position of this controlling cam and the lock in this particular figure corresponding to the position of the parts shown in Figs. 5 and 17.

Figures 7 and 8 are fragmentary vertical sections corresponding to Figs. 5 and 6, but showing the parts in the position which they occupy preparatory to gripping the bottom of the container and also preparatory to engaging the plunger therewith.

Figures 9 and 10 also are fragmentary vertical sections corresponding to Figs. 5 and 6, respectively, but showing the gripping mechanism engaging with a part of the bottom of the container and the ejecting plunger engaging with the bottom.

Figures 11 and 12 are further fragmentary vertical sections similar to Figs. 5 and 6, respectively, but showing the position which the parts occupy when a block of material has been pushed partly out of the container by the ejecting mechanism.

Figures 13 and 14 are further fragmentary vertical sections similar to Figs. 5 and 6, showing the position of the parts during the final operation of the ejecting mechanism in which the bottom of the container is removed from the lower end of the block of ice-cream or similar material.

Figure 15 is a fragmentary horizontal section taken on line 15—15 Fig. 5, looking downwardly.

Figure 16 is a horizontal section taken on line 16—16 Fig. 7, looking upwardly.

Figures 17, 18, 19, 20 and 21 are fragmentary vertical sections taken on line 17—21 in Fig. 5, but showing the parts in the several positions which correspond respectively to Figs. 5, 7, 9, 11 and 13.

Figure 22 is a bottom plan view of the plunger and adjacent parts, this view being taken on line 22—22, Fig. 17.

Figures 23 and 24 are horizontal sections taken on the correspondingly numbered lines in Fig. 17 and looking upwardly.

Figure 25 is a side elevation, on a reduced scale of the plunger, the plunger shifting bar and the gear wheel meshing with the gear rack on the plunger bar, forming part of the ejecting mechanism.

Figure 26 is a fragmentary vertical section taken on line 26—26, Fig. 27.

Figure 27 is a fragmentary horizontal section similar to Fig. 15, but showing a modified form of the means for holding the container

adjacent to the lower end thereof while the same is in a vertical position.

In the following description, similar characters of reference indicate like parts in the several figures of the drawings:—

Although the container in which the ice-cream 30 or similar goods is packed and from which this material is adapted to be ejected by my improved apparatus, the same, as shown in the drawings as an example of one suitable for the present purpose comprises a tubular body 31 and a disk-shaped bottom 32 which is removably mounted on the lower end of the body.

After the container has been filled with ice-cream or the like, the top thereof may be closed by a cover in any suitable or approved manner, which cover may have the form of a disk 33 which is engaged at its peripheral edge with an internal annular groove 34 adjacent to the upper edge of the body for holding the cover frictionally in place. This cover may be removed from the upper end of the container body preparatory to ejecting the contents thereof in any suitable manner, for instance by means of a lip or finger-piece 35 arranged on an edge portion of this cover, as shown in Fig. 17, which may be grasped by the fingers or otherwise for pulling the cover out of the groove in the body, and wholly detaching the same therefrom so as to expose the material within the body, without, however, touching the hand on any part of this material preparatory to serving the same.

The several parts of this container, comprising the body, bottom and cover, are preferably made of paper suitably treated so as to render the same sufficiently water-proof to permit of packing ice-cream or similar material therein as is now commonly the practice in dispensing materials of this character.

The bottom may be mounted on the lower end of the container body in various ways, the means for this purpose shown in Figs. 5, 7, 9, 11, 13 and 17 to 21 consisting of an annular flange 36 which in the normal upright position of the container depends from the margin of the bottom and engages with an internal annular upwardly opening groove formed at the lower end of the container by an internal flange 37 which is reversely bent from the lower end of the container body but spaced therefrom a sufficient distance to form the annular channel or groove which receives the flange 36 of the bottom.

On its outer side the bottom is provided with means which cooperate with the ejecting mechanism for the purpose of permitting the latter to obtain a hold of the bottom during the ejecting operation and retain control of this bottom so that during the final operation of this apparatus the bottom will be detached from the lower end of the block of ice-cream 30 or similar material and then held for a time preparatory to releasing the same and beginning the ejecting operation on another container.

Although these means which are provided on the bottom of the container for engagement by a gripper mechanism may be varied, the same in the present example consist of a projection 38 extending outwardly from the bottom on the central part thereof and preferably formed by doubling the central part of the bottom outwardly in the form of a transverse rib extending diametrically across this bottom, as shown in Figs. 5, 7, 9, 11, 14, 15 and 21.

A satisfactory form of apparatus embodying my invention and comprising means for supporting the container during the ejecting operation, means for gripping the bottom of the container, and means for pushing the bottom inwardly relatively to the body for ejecting the contents of the container, are constructed as follows:—

Referring to Figs. 1–24, the numeral 39 represents an upright standard which forms part of the main frame of the apparatus and which may be mounted on any suitable support where the apparatus will be readily available for dispensing ice-cream or the like to the trade when required. On its lower part this standard is provided with a forwardly projecting bracket 40, the front portion of which is provided with a horizontally supporting ring 41, having the axis of its opening 42 arranged vertically.

Within the lower part of the bore of this ring, the same is provided with an internal annular groove 43. The container from which the ice-cream or similar material is to be ejected, is inverted and then pushed with its inverted lower end upwardly into the lower part of the opening in the supporting ring 41 so that the lower end of this container body and the bottom mounted thereon is arranged within the annular groove 43 of the supporting ring. While in this position, the container is engaged at its inverted lower end by holding means which operate to hold the body reliably in place and permit the bottom thereof to be pushed inwardly or downwardly for discharging the contents of the same through the inverted upper end thereof.

In the present case the means for thus holding the container consists of a plurality of clamping fingers 44, preferably three in number, which are arranged equidistant around the inner side of the bore of the supporting ring 41 and each pivoted at its upper end in a vertical slot 45 by means of a horizontal pin 46 passing through the respective clamping finger and the adjacent part of the supporting ring 41 so that the lower end of the respective gripper which is provided with a jaw 47 can swing toward and from the inner side of the lower edge portion of the body and press or deflect this edge portion into the groove 43 of the supporting

ring for clamping the container between this ring and these clamping fingers. These clamping fingers are yieldingly held in an inwardly swung position by means of springs 48, each of which is interposed between the opposing central parts of one of the clamping fingers and the supporting ring 41, as shown in Figs. 17–21.

When these clamping fingers are in their inward position, as shown in Fig. 17, an annular gap or space is formed between the same and the groove 43 in the lower part of the supporting ring 41, so that upon passing the lower edge of an inverted container upwardly into the supporting ring, this edge will enter this gap or annular space, and upon subsequently moving these clamping fingers outwardly the same will cause the lower edge portion of the container to be deflected or pressed into the groove 43, as shown in Figs. 18, 19, 20 and 21, thereby holding the container reliably in place during the operation of ejecting the contents therefrom.

This outward movement of the clamping fingers 44 is effected by a vertically movable plunger 49 which is preferably of circular form and which also operates as a means for pushing the bottom of the container inwardly or downwardly relatively to the body for ejecting the contents. In the elevated position of this plunger, as shown in Figs. 5 and 17, the same permits the springs 48 to move the clamping fingers 44 inwardly for forming an annular gap between the same and the supporting ring for the reception of the inverted lower edge of the container.

During the initial portion of the downward movement of the plunger 49 the same, by engaging with the inner sides of the several clamping fingers, causes the latter to be swung outwardly at their lower ends and thereby grip the inverted lower edge of the container between these fingers and the supporting ring, as shown in Fig. 18, thereby retaining a firm hold on the container so that during the continued downward movement of the plunger the same can push the bottom inwardly and eject the contents from the inverted upper end of the container.

The means whereby the plunger is guided during such vertical movement preferably consist of an upright shifting rod 50 which is secured at its lower end to the upper part of the plunger and which slides in a vertical guideway 51 formed on the front part of a head 52 which projects from the upper end of the standard 39 forwardly over the supporting ring 41. In its lower end the plunger is provided with a downwardly opening cavity or pocket 53 for the reception of part of the means whereby the bottom of the container is gripped preparatory to ejecting the ice-cream or similar material from the container so as to retain a hold thereof and permit of completely detaching this bottom from the contents of the container and also properly disposing of this bottom in any desired manner.

This gripping mechanism comprises two gripping jaws 54 which are normally arranged within the lower part of the plunger and movable toward and from each other so as to engage opposite sides of the projection 38 on the bottom of the container and obtain a firm hold thereof. These jaws are formed on the lower arms 55 of two gripping levers which have their upper parts pivotally connected with each other and also pivotally mounted by means of a horizontal pin 56 to the lower end of a vertically reciprocating gripping shifting rod or bar 57 which is guided in a vertical groove 58 formed lengthwise of the plunger shifting bar 50.

These gripper levers, when free, are yieldingly held with their lower arms spread apart by spring means which preferably consist of a spring 59 having its ends connected with the lower arms of the gripper levers. The inward movement of the lower arms of these gripper levers for causing the jaws thereof to engage with opposite sides of the retaining projection 38 on the container bottom, is effected by engagement of cam faces 60 on the upper parts of the outer edges of these gripper arms with the cam edges 61 formed by the lower edges of the opening 62 in the upper part of the plunger which receives the lower part of the plunger supporting rod, the gripper levers, the gripper shifting bar and the adjacent parts associated therewith.

The outward movement of the lower gripper arms and the separation of the jaws 54 thereof may be limited in various ways, for example by engagement of the highest part of the cam surface 60 thereof with the cam faces on the plunger 61, as shown in Figs. 17 and 18, and also by providing the gripper levers with upper arms 63 above the pivot 56 thereof, which upper arms are adapted to engage with the upper part of the bore 62 of the plunger in the elevated position of the gripper levers and the plunger, thereby limiting the opening movement of the gripper levers, as shown in Figs. 17 and 18.

The mechanism for operating the plunger and the gripper mechanism is so organized that in the initial position of the apparatus preparatory to placing the filled container within the supporting ring, the clamping jaws 44 are opened and in their innermost position, the plunger is in its highest position and the gripper jaws 54 are spread apart, as shown in Figs. 5 and 17. While the parts are in this position the filled container is inserted in an inverted position into the supporting ring from the bottom thereof so that the inverted lower edge of the container is in the space between the supporting ring and

the clamping fingers as indicated in the figures just referred to.

During the first part of the downward movement of the plunger and gripping mechanism the plunger is brought near to the upper or outer side of the bottom of the container and the jaws of the gripper mechanism, while still in an open position, are brought in line with the projection 38 of the bottom on opposite sides thereof, as shown in Figs. 7 and 18.

During the next operation of the mechanism which actuates the plunger and gripper mechanism, the plunger is moved downwardly independently of the gripper jaws and associated parts so that the lower end of the plunger engages with the outer or underside of the bottom and the gripper levers are closed so as to engage their jaws with opposite sides of the projection 38 on the bottom, as shown in Figs. 9 and 19, whereby a firm hold of the gripper mechanism is obtained on the bottom.

During the next step in the operation of the mechanism which actuates the plunger and gripper mechanism, the plunger and gripper jaws are moved downwardly in unison a predetermined extent, whereby the bottom of the container is pushed downwardly or inwardly relatively to the body of the container, so that this bottom is separated from the body either by tearing the same at its marginal portion away from the flange 36 thereof, as shown in Figs. 11 and 20, but if the grip upon the lower edge portion of the container by the fingers 44 is not sufficiently tight the flange 36 of the bottom will be pulled downwardly out of the annular groove between the body and its flange 37 and moved downwardly or inwardly with the bottom. At the end of this last mentioned step the periphery of the block of ice-cream 30 or similar material is wholly disengaged from the inner side of the container body.

During the final step in the operation of the actuating mechanism of the plunger and gripper, the jaws of the gripper remain at rest but retain their hold on the projection 38 of the bottom and the plunger moves downwardly a short distance independently of the gripper mechanism whereby the edge portions of the plunger on opposite sides of the projection 38 on the bottom by engaging with the outer side of the bottom on diametrically opposite sides of this projection, will cause such parts to be deflected or folded downwardly toward each other in the manner of two wings, as shown in Figs. 13 and 21, whereby the bottom is removed from the lower end of the ice-cream block or other material and this block is completely detached from the parts of the container and ejected therefrom into any suitable receptacle which may be provided for its reception.

In order to permit the two halves of the bottom to assume this folded or V-shaped position for disengaging the same from the lower end of the ice-cream block, the sides of the plunger at right angles with those parts which engage with the outer side of the bottom are provided with notches 64 which latter provide the necessary clearance spaces into which the central smooth portion of the V-shaped folded bottom enters by an upward movement and assumes a folded position relatively to the plunger, which permits the bottom to be stripped from the lower inverted end of the block of material.

In completing the cycle of operations of this apparatus, the plunger and gripper mechanism are returned to their uppermost or initial position which will cause the plunger and grippers to be operated in a manner reverse of that which has just been described, and when the plunger and grippers approach their uppermost position the grippers are first opened so as to release the gripper jaws from the projection on the bottom, so that the latter is free to drop into any receptacle which is provided for its reception, and as the plunger and grippers continue their upward movement to their initial position, the plunger is withdrawn from operative engagement with the clamping fingers so as to permit the latter to be moved inwardly out of engagement from the lower edge portion of the container by means of the springs 48, as shown in Figs. 5 and 17, thereby releasing the container and permitting the same to either drop out of the hole or ring 41 by gravity, or permitting the same to be removed therefrom by hand if the same should tend to stick therein, thereby leaving the apparatus in condition for performing the next cycle of ejecting operations on the following filled container.

During these several operations no parts of the ejecting mechanism have come into contact with the contents of the container, thus avoiding contamination of one block of material from another block, as would be the case if the same instruments were permitted to engage with successive blocks of material which are being served, and at no time do the hands of the operator come in contact with the material which is being served, thereby rendering it possible to serve ice-cream and similar food products in the most sanitary and appetizing manner.

In order to actuate the plunger and gripper mechanism for securing the above described cycle of operations, various means may be employed, but those shown in the drawings have been found satisfactory in actual practice and as there shown, the same are constructed as follows:—

The numeral 65 represents an upright row of gear teeth formed on the rear side of the gripper actuating bar 57 whereby the latter

in effect forms a gear rack. On opposite sides of the gear rack 65 of the gripper actuating bar the plunger actuating bar 50 is provided with vertical rows of gear teeth 66 which together form a gear rack thereon, which teeth are of the same size and spaced the same distances as the teeth 65 of the gripper actuating gear rack, and at times the teeth of this plunger gear rack register with those of the gripper actuating gear rack, but at other times the teeth of the plunger rack move vertically independently of the teeth of the gripper rack for a purpose which will presently appear.

The numeral 67 represents a gear wheel arranged within a house 68 formed in the rear part of the head 52 at the upper end of the standard 39 and mounted on a shaft 69 which is journaled horizontally and transversely in a bearing 70 on this part of the frame.

A rotary motion may be imparted to this shaft and the gear wheel alternately in opposite directions by means of a crank 71 secured to the outer end of the shaft 69 and provided with a handle 72. The teeth of this gear wheel 69 are so formed as to produce a main group of wide teeth 73 which extend across the entire face of this gear wheel for about two-thirds of its periphery, an intermediate group of gear teeth 74 which are also of the full width of this gear wheel and arranged midway between the extremities of the group of main wide gear teeth 73 and two sets of comparatively narrow gear teeth 75, 76 which are arranged on the periphery of this gear wheel in the spaces between opposite sides of the intermediate gear teeth 74 and the extremities of the group of main wide gear teeth 73, said narrow teeth 75, 76 being formed adjacent to opposite flat sides of this gear wheel by mutilating or leaving blank spaces 77, 78 on the central part of the periphery of the gear wheel between the extremities of the group of gear wheels 73 and opposite sides of the small group of intermediate wide gear teeth 74.

On the front side of the gripper gear rack 57 is arranged a locking block 79 which slides in a vertical groove 80 formed lengthwise in the adjacent front part of the plunger gear rack 50. On its front side this locking block is provided with an upper locking notch 81 and a lower locking notch 82 which are adapted to be engaged by the rear end of a latch 83 which is movably mounted on the adjacent front part of the main frame, the particular manner of mounting this latch, as shown in Figs. 4, 5, 7, 9, 11 and 13 being so constructed that this latch has a horizontal forward and backward movement and is guided with its wide rear part in a guide opening 84 on the main frame while its narrow front part is guided in a bracket secured to the adjacent part of the main frame.

This locking latch is yieldingly held in its rearmost position by means of a spring 86 surrounding the narrow front part of this latch and bearing at its inner or rear end against a shoulder 87 formed on this latch, but its front end bears against the inner side of the bracket 85, as shown in Fig. 4. On its front side the plunger operating bar is provided with a cam face consisting of an upper receding part 88, a lower receding part 89, an upper salient part 90 arranged above the upper receding part 88, an intermediate salient part 91 arranged between the upper and lower receding parts 88, 89 and a lower salient part 92 arranged below the lower receding part 89.

The latch 83 is of a sufficient width to engage the front cam face of the plunger shifting bar 50 and the rear face of the locking block 79 secured to the front side of the gripper actuating bar 57.

The relative arrangement of the teeth on the gear wheel 67 and the locking notches 81 and 82 of the gripper actuating bar and the receding and salient parts of the cam on the plunger actuating bar are such that upon turning the shaft 68 forwardly approximately one-quarter of a turn, the operation of the plunger and gripper mechanism for ejecting the block of ice-cream from a container will be effected in the manner heretofore described; and upon turning this shaft backwardly to the same extent the plunger and gripper mechanism will be restored to its initial elevated position, preparatory to beginning the next cycle of operations as previously set forth, when the shaft is in its rearmost position.

Upon turning the shaft forwardly and backwardly the plunger will be moved downwardly continuously a full stroke without interruption and also moved backwardly with a full stroke without interruption inasmuch as the gear rack of the same is constantly in mesh with either the narrow or the wide teeth of the gear rack which extend completely around the periphery of the gear wheel, so that in effect this gear wheel is complete and non-mutilated so far as its cooperation with the rack of the plunger is concerned.

Although the gear wheel rotates continuously in its forward and backward movement the gear rack of the gripper mechanism only takes part intermittently in such movement due to the mutilation of the central part of this gear wheel by the admission of teeth thereon which form the blank spaces 77 and 78 on opposite sides of the short group of wide teeth 74 intermediate of the extremities of the main long group of wide teeth 73.

As indicated in Fig. 5 the plunger and grippers are in their highest position, at which time the central parts of the teeth of the main wide group 73 are in engagement with the teeth of the gripper gear rack, and as shown in Fig. 6, the latch 83 is at this time

held in its foremost retracted or inoperative position by the lower salient face 92 of the plunger actuating rod 50 so that this latch will not interfere with the movement of the gripper actuating bar 57. Upon now turning the gear wheel 67 forwardly, the first part of this movement will cause the plunger and bottom grippers to move downwardly together inasmuch as the gear teeth at one extremity of the long group of wide teeth 73 at this time are in mesh with the teeth of the gripper gear rack.

After the gear wheel has effected the first step of its forward motion and the plunger and gripper mechanism has been shifted from the position indicated in Figs. 5 and 17 to the position shown in Figs. 7 and 18, the teeth at the extremity of the long group of wide teeth 73 have moved out of engagement with the gripper gear rack and the teeth of the latter are now traversed by the blank space 77 of the mutilated separate part of this gear so that during this step the gripper actuating bar is not moved downwardly, but only the plunger actuating bar 50 is moved downwardly so that the cam edges 61 of the plunger during the next step by engagement of its cam faces 61 with the lower arms of the gripper levers 55, will operate to close these levers to cause the jaws 54 to grip the projection 38 of the bottom, as shown in Figs. 9 and 19.

While the gear wheel 67 is out of mesh with the gripper actuating gear rack during this step, this gear rack is held against motion by the locking latch 83 which at this time engages with the lower locking notch 82 in the locking block, such engagement at this time being permitted by reason of the lower receding face 89 being presented to the rear end of the latch 83 and thus permitting the latter to be pushed forwardly by the spring 86 so as to interlock with this lower locking notch 82, as shown in Figs. 7, 8, 9, 10.

After the gripper jaws 54 have been thus closed against opposite sides of the projection 38 of the container bottom in the manner described, the continued forward rotation of the gear wheel 67 causes the intermediate wide teeth 74 of the mutilated central part of this gear wheel to engage with the adjacent teeth of the gripper operating gear rack, as shown in Fig. 9, and thereby cause the gripper mechanism to move downwardly in unison with the plunger from the position shown in Figs. 9 and 19 to the position shown in Figs. 11 and 20.

At this time the latch 83 is disengaged from the lower locking notch 82 of the gripper locking block by the action of the intermediate salient cam face 91 which operates to throw the latch 83 from the position shown in Fig. 10 to a position corresponding to that shown in Figs. 5 and 6. At the end of this stroke, however, the latch 83 again drops from the intermediate salient face 91 of the cam upon the upper receding face 88 of the cam so as to permit the latch to engage with the upper locking notch 81 of the gripper locking block, as shown in Figs. 11 and 12. The gripper actuating bar now remains in this locked position against further downward movement while the plunger and its shifting bar 58 continue their downward movement to the end of the stroke for the purpose of causing the bottom to be partially folded and the block of ice-cream to be fully detached therefrom, as shown in Figs. 13 and 21, for which purpose the upper receding face 88 of the cam on the plunger bar is made sufficiently long so as to leave the latch in engagement with the gripper locking block at this time, as shown in Figs. 13 and 14.

While the gripper actuating mechanism is thus held stationary during the final portion of the forward stroke of the gear wheel, the latter is presenting the untoothed or blank central part 78 of the gear wheel to the teeth of the gripper actuating gear rack so that the latter is not effected thereby, as shown in Fig. 13.

Upon reversing the movement of the gear rack and turning the same back to its initial rearmost position, the operation of the gear wheel upon the gear racks and the control of the latch 83 by the cam on the plunger shifting bar for locking and unlocking the gripper actuating bar is effected in the manner reversed to the order just described, so that during the last part of the upward stroke of the gripper mechanism the jaws of the gripper are disengaged from the projection 38 on the bottom and the latter is permitted to drop, in the manner described.

In the modification of the invention shown in Figs. 26 and 27, means are provided for supporting a container which is constructed somewhat differently from that shown in the previous figures, the container in this case being provided adjacent to its lower end with an internal annular groove 93 which is formed thereon by an annular bead 94 projecting outwardly from the body, which groove receives the peripheral edge of a disk shaped bottom 95. At its lower extremity this body is provided with an annular circumferential rim 96, thereby forming an annular channel on the exterior of the container body between the external bead 94 and the external rim 96.

For the purpose of supporting a container of this construction, the supporting means preferably comprise an arm 97 secured at its rear end to the standard 39 of the main frame and provided at its front end with a fork, the arms 98 of which are adapted to be engaged with the annular external groove on the container between the bead 94 and rim 96, and thereby support the same against

vertical displacement while being filled, as shown in Figs. 26 and 27.

In this modified form of container, the bottom thereof is provided centrally with a projection 99 having the form of a pin instead of a rib, as shown in the other figures of the drawings, which pin is adapted to be engaged by the jaws 54 of the gripper mechanism for retaining a hold of the bottom during the ejecting operation in the same manner as previously described.

From the foregoing it will be apparent that this apparatus permits of expeditiously and conveniently ejecting ice-cream and similar goods from a container for service to customers without liability of contamination of the contents by the touch of human hands nor by engaging parts of the machine with the material which is being served, thereby making it possible to dispense goods of this character in the most sanitary manner.

I claim as my invention:—

1. An apparatus for removing ice-cream or other contents from a container having a tubular body and a bottom removably engaging said body, comprising a support for said body, a gripper adapted to take hold of said bottom, a plunger adapted to engage said bottom on the outer side of the same, and means for first engaging said gripper with said bottom, then engaging said plunger with said bottom, then moving said gripper and plunger simultaneously toward said body for pushing the bottom inwardly at the lower end of the body and the contents outwardly at the upper end of the same, and then continuing the inward movement of the plunger independently of the gripper for detaching the bottom from the contents which are being ejected from the body.

2. An apparatus for ejecting ice-cream or the like from a container having a body and a bottom comprising means for engaging and supporting the body at its lower end, and an ejecting device adapted to engage said bottom and push the same together with the contents of the body toward the upper end of the same and also maintaining a hold on said bottom.

3. An apparatus for ejecting ice-cream or the like from a container having a body and a bottom, comprising a support having a ring adapted to receive the lower end of the body, clamping means adapted to engage the inner side of the end of said body and press the same outwardly against said ring, and a plunger adapted to engage said bottom and push the same inwardly.

4. An apparatus for ejecting ice-cream or the like from a container having a body and a bottom, comprising a support having a ring adapted to receive the lower end of the body, clamping fingers movably mounted on said ring and adapted to engage said body on the inner side of its lower end and press the same outwardly against said ring, and a plunger adapted to engage said bottom and push the same inwardly.

5. An apparatus for ejecting ice-cream or the like from a container having a body and a bottom, comprising a support having a ring adapted to receive the lower end of the body, clamping fingers pivoted at their upper ends to said ring and adapted to press their lower ends outwardly against the inner side of said body at the lower end thereof, springs for moving said fingers inwardly, and a plunger adapted to press said fingers outwardly and to push said bottom longitudinally inward relatively to said body.

6. An apparatus for ejecting ice-cream or the like from a container having a body and a bottom, comprising means for holding the body, a plunger adapted to engage the bottom, a gripper adapted to grasp said bottom, and means for actuating said plunger and gripper so as to engage the gripper with said bottom and move the plunger into engagement with said bottom while the gripper is relatively stationary.

7. An apparatus for ejecting ice-cream or the like from a container having a body and a bottom, comprising means for holding the body, a hollow plunger adapted to press against the outer side of said bottom, and a gripper arranged within the plunger and including two jaws adapted to grasp the bottom on the underside thereof.

8. An apparatus for ejecting ice-cream or the like from a container having a body and a bottom, comprising means for holding the body, a hollow plunger adapted to press against the outer side of said bottom, a gripper arranged within the plunger and including two jaws adapted to grasp the bottom on the underside thereof, a reciprocating bar carrying said plunger, and a reciprocating bar on which said jaws are pivotally mounted.

9. An apparatus for ejecting ice-cream or the like from a container having a body and a bottom, comprising means for holding the body, a hollow plunger adapted to press against the outer side of said bottom, a gripper arranged within the plunger and including two jaws adapted to grasp the bottom on the underside thereof, a pair of arms carrying said jaws, a reciprocating bar on which said arms are pivoted, springs interposed between said arms and tending to spread said jaws, and cooperating cam surfaces on said plunger and arms for closing said jaws.

10. An apparatus for ejecting ice-cream or the like from a container having a body and a bottom, comprising means for holding the body, a hollow plunger adapted to press against the outer side of said bottom, and a gripper arranged within the plunger and in-

cluding two jaws adapted to grasp the bottom on the underside thereof, said plunger provided with notches arranged on a line at right angles to the opening and closing movement of said jaws.

11. An apparatus for ejecting ice-cream and the like from a container having a body and a bottom, comprising a holder for supporting said body, a hollow plunger adapted to engage said bottom and push the same inwardly, a gripper arranged within the plunger and adapted to grasp said bottom, a reciprocating plunger shifting bar carrying said plunger, a reciprocating gripper shifting bar carrying said gripper, and means for moving said bars at times in unison and at other times moving said plunger shifting bar independently of said gripper shifting bar.

12. An apparatus for ejecting ice-cream and the like from a container having a body and a bottom, comprising a holder for supporting said body, a hollow plunger adapted to engage said bottom and push the same inwardly, a gripper arranged within the plunger and adapted to grasp said bottom, a reciprocating plunger shifting bar carrying said plunger, a reciprocating gripper shifting bar carrying said gripper, and means for moving said bars at times in unison and at other times moving said plunger shifting bar independently of said gripper shifting bar, comprising plunger and gripper gear racks arranged on said shifting bars, respectively, and a gear wheel having a continuous set of teeth meshing with said plunger gear rack, and a mutilated set of teeth meshing with said gripper gear rack.

13. An apparatus for ejecting ice-cream and the like from a container having a body and a bottom, comprising a holder for supporting said body, a hollow plunger adapted to engage said bottom and push the same inwardly, a gripper arranged within the plunger and adapted to grasp said bottom, a reciprocating plunger shifting bar carrying said plunger, a reciprocating gripper shifting bar carrying said gripper, and means for moving said bars at times in unison and at other times moving said plunger shifting bar independently of said gripper shifting bar, comprising plunger and gripper gear racks arranged on said shifting bars, respectively, and a gear wheel having a continuous set of teeth meshing with said plunger gear rack, a mutilated set of teeth meshing with said gripper gear rack, and means for locking said gripper shifting bar against movement while not in mesh with said gear wheel.

14. An apparatus for ejecting ice-cream and the like from a container having a body and a bottom, comprising a holder for supporting said body, a hollow plunger adapted to engage said bottom and push the same inwardly, a gripper arranged within the plunger and adapted to grasp said bottom, a reciprocating plunger shifting bar carrying said plunger, a reciprocating gripper shifting bar carrying said gripper, and means for moving said bars at times in unison and at other times moving said plunger shifting bar independently of said gripper shifting bar, comprising plunger and gripper gear racks arranged on said shifting bars, respectively, and a gear wheel having a continuous set of teeth meshing with said plunger gear rack, and a mutilated set of teeth meshing with said gripper gear rack, a support on which said shifting bars are guided, and means for locking said gripper shifting bar against movement while not in mesh with said gear wheel, including a locking latch movably mounted on said support, locking notches arranged on said gripper shifting bar and adapted to be engaged by said latch, and a cam arranged on said plunger shifting bar and controlling the engagement of said latch with said notches.

15. An apparatus for ejecting ice-cream and the like from a container having a body and a bottom, comprising a holder for supporting said body, a hollow plunger adapted to engage said bottom and push the same inwardly, a gripper arranged within the plunger and adapted to grasp said bottom, a reciprocating plunger shifting bar carrying said plunger, a reciprocating gripper shifting bar carrying said gripper, and means for moving said bars at times in unison and at other times moving said plunger shifting bar independently of said gripper shifting bar, comprising plunger and gripper gear racks arranged on said shifting bars, respectively, and a gear wheel having a continuous set of teeth meshing with said plunger gear rack, and a mutilated set of teeth meshing with said gripper gear rack, a support on which said shifting bars are guided, and means for locking said gripper shifting bar against movement while not in mesh with said gear wheel, including a locking latch movably mounted on said support, locking notches aranged on said gripper shifting bar and adapted to be engaged by said latch, a cam arranged on said plunger shifting bar and controlling the engagement of said latch with said notches, and a spring for yieldingly moving said latch toward said bars.

16. An apparatus for ejecting ice-cream and the like from a container having a body and a bottom, comprising a holder for supporting said body, a hollow plunger adapted to engage said bottom and push the same inwardly, a gripper arranged within the plunger and adapted to grasp said bottom, a reciprocating plunger shifting bar carrying said plunger, a reciprocating gripper shifting bar carrying said gripper, and means for moving said bars at times in unison and at other times moving said plunger shifting bar independently of said gripper shifting bar, comprising plunger and gripper gear racks arranged on

said shifting bars, respectively, and a gear wheel having a continuous set of teeth meshing with said plunger gear rack, a mutilated set of teeth meshing with said gripper gear rack, means for locking said gripper shifting bar against movement while not in mesh with said gear wheel, comprising a locking block arranged on said gripper shifting bar and provided with a plurality of locking notches, said plunger shifting bar being provided with a slot which receives said block and with a cam adjacent to said notches, a support on which said bars are guided, and a spring pressed latch mounted on said support and adapted to engage said notches and controlled by said cam.

In testimony whereof I hereby affix my signature.

WILLIAM J. BAYNES.