Oct. 23, 1945. I. J. LUNDAL ET AL 2,387,452

PACKAGING APPARATUS

Filed May 16, 1940 4 Sheets-Sheet 1

Fig. 1.

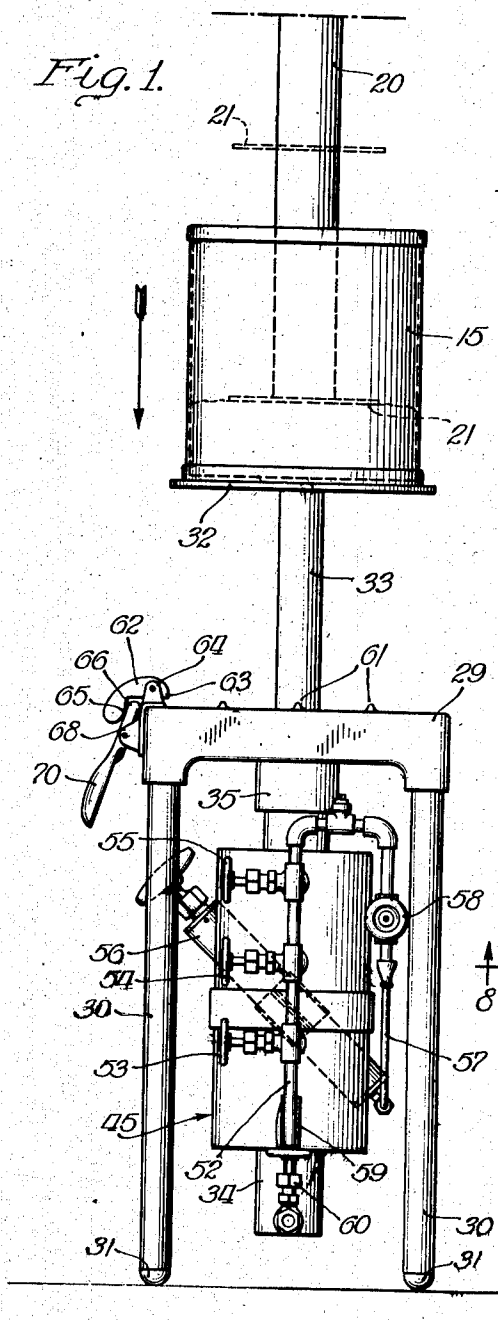


Fig. 6.

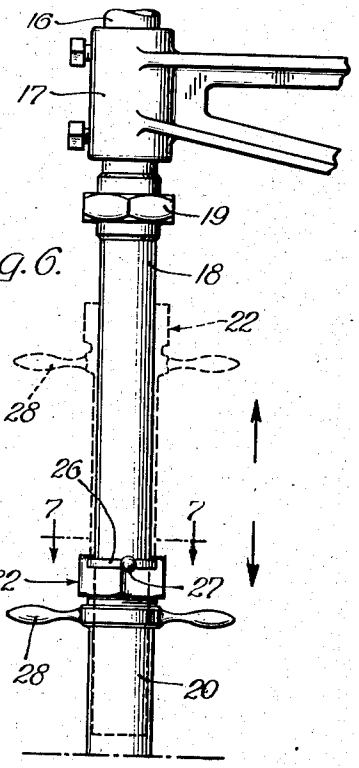
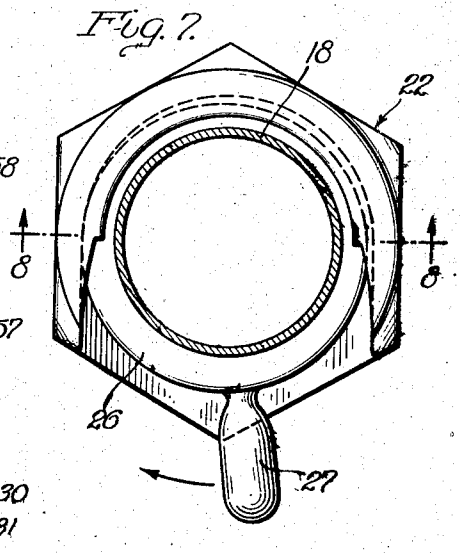


Fig. 7.



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PACKAGING APPARATUS

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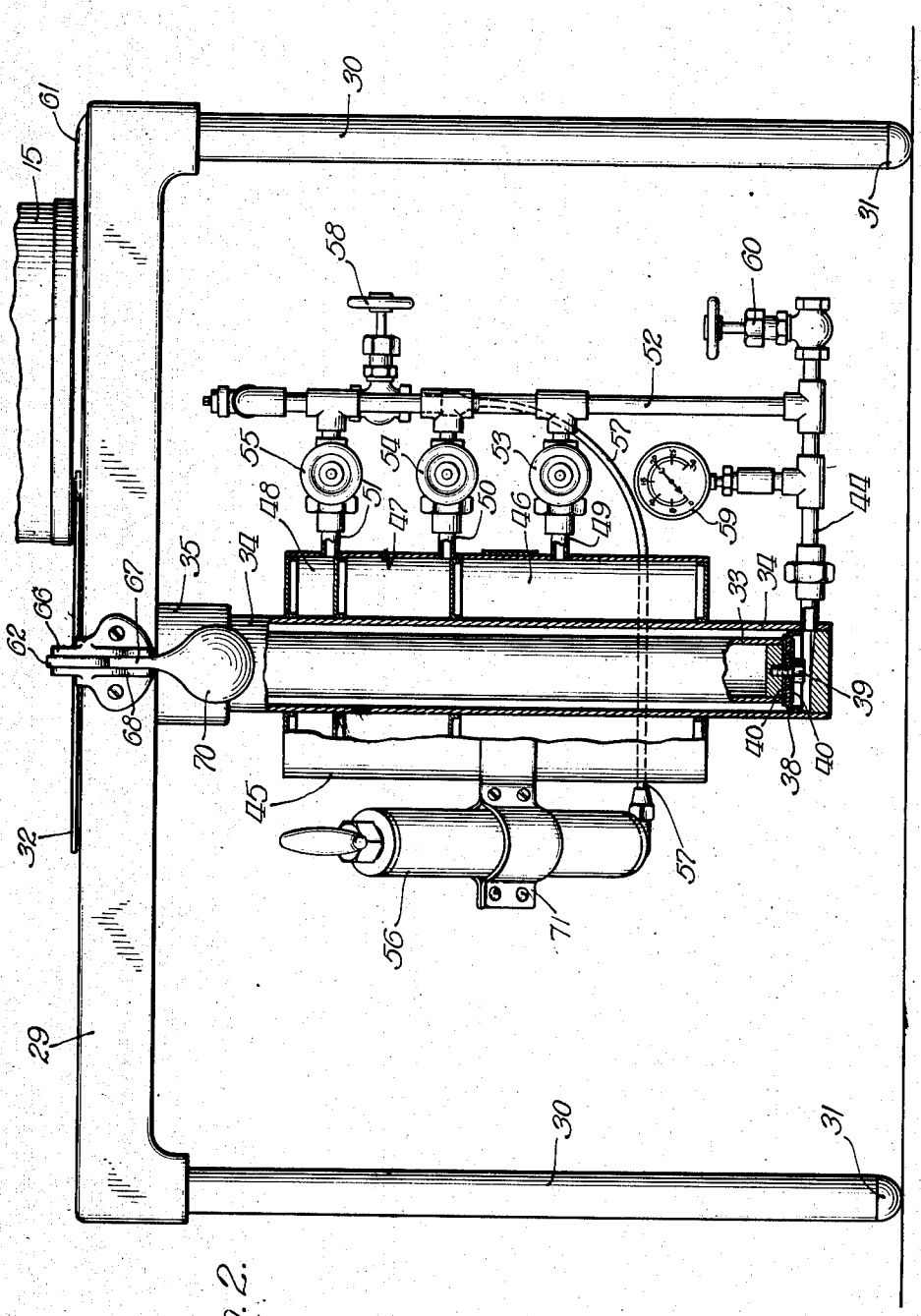


Fig. 2.

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PACKAGING APPARATUS

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Fig. 3.

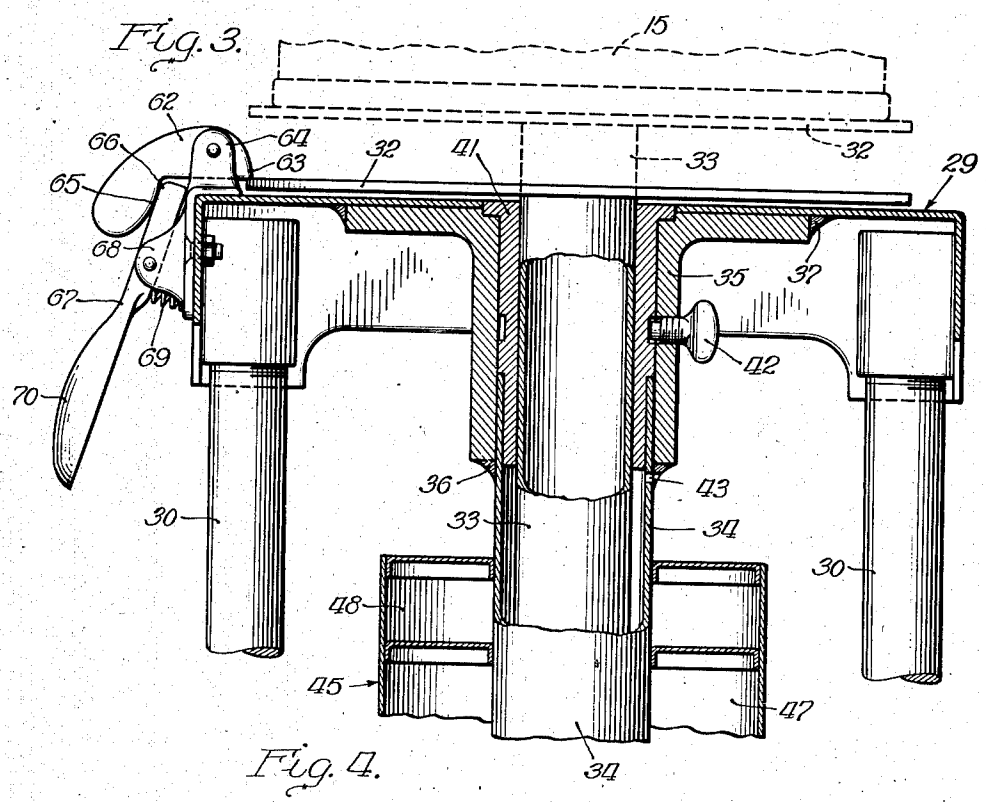


Fig. 4.

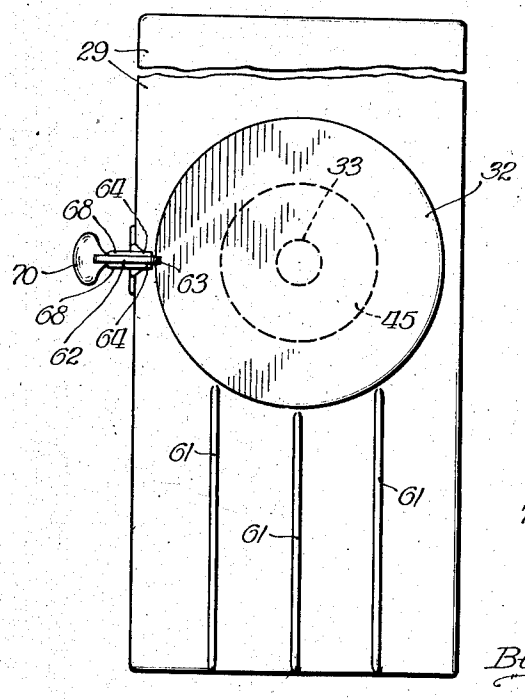
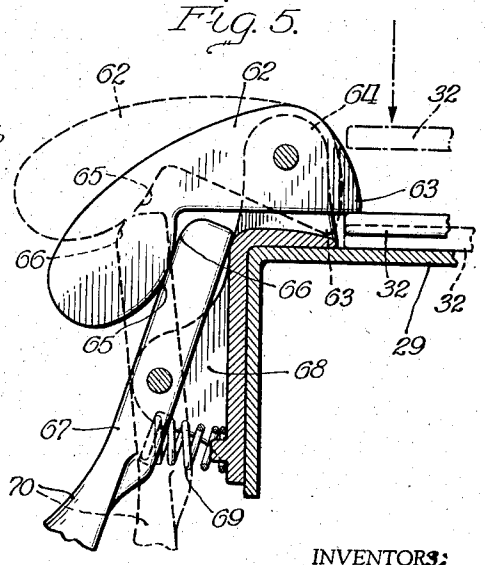


Fig. 5.



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PACKAGING APPARATUS

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Fig. 10.

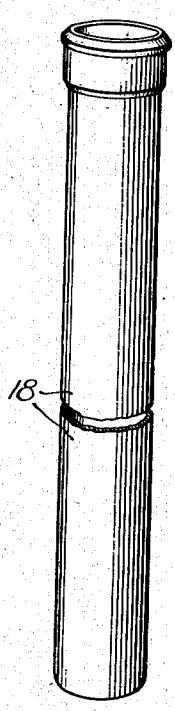


Fig. 11.

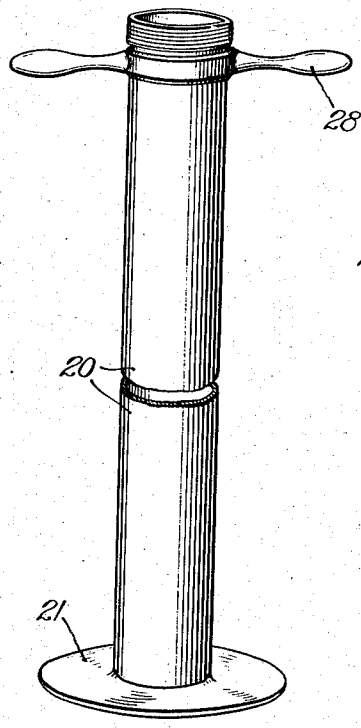


Fig. 12.

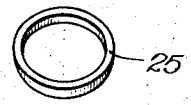


Fig. 13.

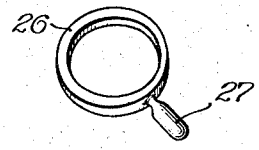


Fig. 14.

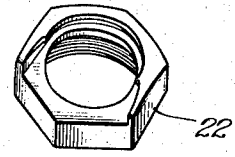
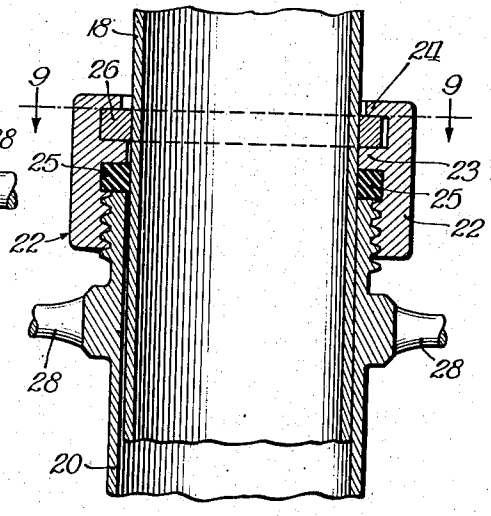


Fig. 8.



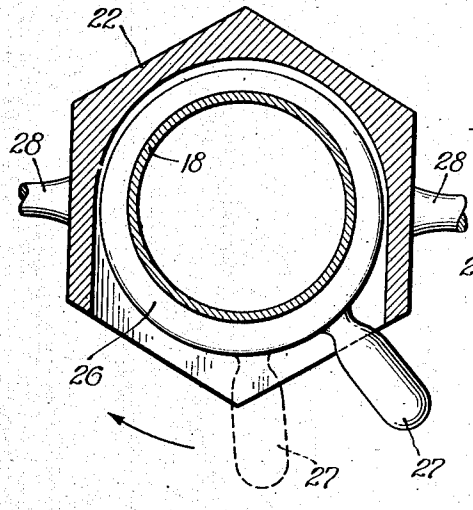


Fig. 9.

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Patented Oct. 23, 1945

2,387,452

UNITED STATES PATENT OFFICE

2,387,452

PACKAGING APPARATUS

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Application May 16, 1940, Serial No. 335,440

14 Claims. (Cl. 226—24)

This invention relates to the filling of containers or packages with partially plastic materials capable of being forced through a conduit into a container and requiring the maintenance of pressure on the material while it is being packed into the containers or packages to thereby prevent the formation of voids or air pockets in the filled product and to cause the product to conform to the shape of the container. The invention is particularly well adapted for the packaging of plastic ice cream, leaf lard, etc.

More particularly this invention relates to improvements in mechanisms of the fluid lift type for automatically lifting empty packages to a filling and packaging nozzle or head and automatically lowering the packages while they are being filled to secure a uniformly filled package, and to suitable controls and adjustments for operating the mechanism and for adapting the apparatus for operation on various sizes of packages. The present invention is particularly well adapted for use in the packaging of substantially form-retaining comestibles, such as ice cream, delivered continuously from a discharge conduit.

The aspect of the present invention disclosed primarily in Figures 6 to 14, inclusive, is discussed in detail and claimed in our co-pending divisional application Serial No. 446,442, filed June 10, 1942, and entitled "Adjustable pipe coupling."

In the packaging of substantially form-retaining ice cream which is normally sold by volumetric measure and which, due to its nature, is compressible, it is essential that the ice cream be uniformly packed into packages or containers to avoid the inclusion of large air pockets in the filled package and to secure to finished package in which the particular product is uniformly packed. To avoid the inclusion of air pockets and to secure a finished package of uniform density it is conventional practice to fill the containers from the "bottom up" and to use "spreader plates" or a filling head in the filling operation to cause the ice cream as it enters the package to be spread out over the entire width of the package, thereby assuming the general contour of the package. The uniformity of the compactness with which the product is packed into the package depends upon the uniformity of the pressure applied to the product in the package by the filling head or spreader plate as the package is being filled. Such uniform pressure must be maintained even though there is relative movement between the package and the spreader plate incidental to the normal filling operation.

In the conventional apparatus of the type contemplated by this invention it is difficult to secure the constant and uniform application of pressure to the product being filled. This is especially true in the type of packaging apparatus in which the container, as it is being filled, is raised or lowered. Obviously there are difficulties incurred, such as, for example, compensating for the gradually increasing weight of the package as it is being filled and the difficulty of adjusting the compensating mechanism for different weights incidental to filling packages of various sizes and capacities and also incidental to the filling of such packages with products of different densities or weights per unit of volume.

In most instances packaging equipment of the type contemplated by this invention is used in conjunction with continuous ice cream freezers. Obviously there is a minimum of time available for the adjustment of the packaging mechanism when changing from large packages to small packages or vice versa, especially if it is not desired to "shut down" the continuous freezer while such change is being accomplished. Consequently it is desirable to provide the necessary adjustments which enable the rapid and accurate adjustment of the packaging mechanism to accommodate different sized packages in a minimum of time and, of course, to also accomplish this in apparatus of sanitary design.

The prime objects of this invention are, therefore, to provide a material packaging apparatus of sanitary design in which is provided a normally stationary material compressing and spreading plate which is adjustably supported on quickly adjustable supports; in which the pressure upon the material is maintained substantially constant throughout the entire operation of filling a package; in which the apparatus is so constructed that the means for applying constant pressure to the product as it is being filled also applies a variable lifting force upon the package as it increases in weight while it is being filled to thereby compensate for the gradually increasing weight of the package and its contents; in which the apparatus which applies the variable lifting pressure on the package as it is being filled is readily and quickly adjustable for the lifting of a package of different weight; in which the lifting mechanism is adjustable to limit the height to which different packages of different weight may be lifted by the apparatus; in which the entire lifting apparatus may be quickly and positively adjusted for the handling of packages to be filled with a

product of higher or lower specific gravity; and in which the mechanism is so arranged as to permit the positioning thereof in a package conveying line for the substantially automatic operation of the apparatus.

These and other important novel features and advantages of the improvements in packaging apparatus will become more apparent to those skilled in the art upon the examination of the drawings, description and appended claims which clearly set forth the preferred embodiment of the invention. It should be understood, of course, that certain changes may be readily made in the embodiment of the herein disclosed invention and yet come within the scope of the claims without departing from the spirit of the invention.

The preferred embodiment of the invention is illustrated in the accompanying drawings in which:

Figure 1 is a side elevational view of the package lifting apparatus with the lifting plunger in partially raised position.

Figure 2 is an enlarged front detail elevational view of the package lifting apparatus partially in broken-away section with the package lifting plunger in completely lowered position.

Figure 3 is a detail transverse sectional view through the upper portion of the plunger cylinder showing the manner of attaching the cylinder to the table.

Figure 4 is a plan view of the package lifting apparatus.

Figure 5 is a detail side elevational view of the latch mechanism for locking the package lifting plunger in place when in its lowered position.

Figure 6 is a side elevational view of the adjustable telescoping delivery tube which supports the filling head or spreader plate. In operation the apparatus shown in Figure 6 is positioned above the apparatus shown in Figure 1.

Figure 7 is a transverse sectional view taken along line 7—7 of Figure 6.

Figure 8 is a vertical sectional view taken along line 8—8 of Figure 7.

Figure 9 is a transverse sectional view taken along line 9—9 of Figure 8.

Figure 10 is an elevational view of the inner telescoping member of the sectional delivery tube shown in Figure 6.

Figure 11 is an elevational view of the outer telescoping member of the sectional delivery tube shown in Figure 6.

Figure 12 is a perspective view of the resilient sealing gasket for sealing together the inner and outer telescoping members of the delivery tube.

Figure 13 is a perspective view of the eccentric gripping member which is provided with an eccentric aperture for telescoping over the inner section of the sectional delivery tube.

Figure 14 is a perspective view of a coupling nut provided with a guide-way for the eccentric gripping member shown in Figure 13.

In the drawings, in which like numerals are used to identify like elements, there is illustrated a package filler especially adapted to fill a container or receptacle 15 of the conventional type used for the packing and storage of ice cream.

The ice cream which is usually of form-retaining stiffness is supplied from any suitable source, such as a continuous freezer, through a conduit 16 which is rigidly supported by a bracket 17 and from which depends a sectional delivery tube having a filling head. The sectional delivery tube is comprised of an inner tubular element 18 which is connected to the supply pipe 16 by a conventional sanitary coupling 19 and which is telescopically fitted into the lower sectional element 20 of the sectional delivery tube.

The lower element 20 is provided at its lower extremity with a pressure applying and material spreading filling head or spreader plate 21. The filling head or spreader plate 21 is adapted to apply pressure to the upper surface of the material as it is being packaged in the container 15 to thereby prevent the formation of voids and to cause the material to assume the shape of the package.

The sectional elements 18 and 20 of the delivery tube are clamped one to another by a removable coupling nut 22 which is threaded onto the upper extremity of the outer section 20 of the sectional delivery tube. The coupling nut 22 is provided with an annular inwardly extending flange 23 intermediate its ends and a substantially semi-annular inwardly extending flange 24 at the upper end of a segmental extension of a portion of the wall of the coupling nut, as is clearly illustrated in Figures 8 and 14. Upon the application of the coupling nut 22 to the upper end of the section 20 a resilient seating gasket 25 is interposed between the upper extremity of the section 20 and the flange 23. Upon the tightening of the nut 22 upon the section 20 the resilient sealing gasket 25 will be compressed between the upper extremity of the section 20 and the flange 23 to thereby force the resilient sealing gasket 25 into sealing engagement with the outer periphery of the inner section 18 of the sectional delivery tube, thus sealing the sections 18 and 20 one to another.

To releasably lock or clamp the sections 18 and 20 together to thus prevent relative axial motion between the two sections, an eccentric 26 is positioned in the semi-annular bearing formed by the segmental extension of the wall of the coupling nut 22 and the upper and lower faces of the flanges 23 and 24, respectively. The diameter of the aperture in the eccentric 26 is just slightly larger than the outer diameter of the section 18 of the sectional delivery tube over which it is telescoped when in assembled position.

The outer diameter of the eccentric 26 is somewhat less than the inner diameter of the inner periphery of the upper segmental portion of the wall of the nut 22. The eccentric 26 is provided with a handle 27 so that it may be partially rotated within its bearings which have just been defined. As clearly shown in Figures 7 and 9, the possible rotation of the eccentric 26 within its bearings is limited by the ends of the segmental extension of the wall of the nut 22.

As illustrated in Figure 9, the eccentric is free from engagement with the walls of the segmental extension of the nut 22 when in the extreme position attainable by counter-clockwise rotation thereof. To cause a wedging action of the eccentric between the inner pipe 18 and the segmental extension of the wall of the nut 22, it is only necessary to partially rotate the eccentric 26 in clockwise direction until the thicker portion of the cam 26 is urged into engagement with the outer wall of the section 18 of the delivery conduit and the inner periphery of the segmental element of the wall of the nut 22. To release the clamping or locking mechanism just described it is only necessary to rotate cam 26 in a counter-clockwise direction from its clamping or gripping position until the sections 18 and 20 are free to move relative to one another. To facilitate the movement of the section 20 with respect to the

section 18, handles or grips 28 are provided immediately below the threaded upper extremity of the outer section 20.

The depending sectional delivery tube is positioned above a container supporting table 29 which rests on legs 30 provided with adjustable feet 31 whereby the elevation of the table top 29 can be conveniently adjusted into alinement with the container or package conveyor (not shown) which supplies the empty packages to the filling station and carries away the filled packages.

The table 29 is provided with a package or receptacle lifting and supporting mechanism comprised of a receptacle support 32 fixed to the upper end of a plunger 33 which extends through an aperture in the table 29 and which is adapted for vertical reciprocation in a complementary cylinder 34 in which the plunger 33 is responsive to fluid pressure in the cylinder below the plunger 33. When the packaging apparatus is in operative arrangement or position the package lifting and supporting mechanism comprised of the support 32 and plunger 33 is arranged in vertical alinement with the filling head 21 fixed to the end of the sectional delivery tube 20.

The plunger cylinder 34 is fixed to the table 29 by means of a flanged hub 35 to which it is attached in any conventional manner, such, for example, as by welds 36. The hub 35 has an aperture slightly larger than the outer periphery of the cylinder 34 and is fixed to the table 29 by welding the flange thereof to the under surface of the table as by welds 37 with the aperture of the hub in axial alinement with the aperture in the table 29 to thereby accommodate the free motion of the plunger 33.

The plunger 33 may obviously be constructed in any suitable or conventional manner. However, in the preferred embodiment thereof, it has been shown as comprised of a hollow tube 33 of appreciably smaller diameter than the inner diameter of the cylinder 34.

The plunger 33 is provided at its lower extremity with a plunger cup 38 preferably made of composition or leather. The plunger cup is fixed to the lower extremity of the shaft 33 in an inverted order, as clearly shown by the drawings, so as to be responsive to fluid under pressure introduced into the bottom of the cylinder 34 below the plunger cup 38. The plunger cup 38 is of a suitable diameter to satisfactorily engage the walls of the cylinder 34 and is also removably attached to the plunger shaft 33. The cup 38 is removably attached to the plunger shaft 33 in any conventional manner as by screw 39 and is braced for satisfactory operation by an apertured bracing disk 40 positioned above and below the laterally extending cup element and maintained in contact therewith by the screw 39.

To assure the maintenance of axial alinement between the cylinder 34 and the plunger 33, a bushing 41 is provided in the hub 35. The bushing 41 is provided with an inner aperture which closely fits the outer periphery of the plunger shaft 33 and has an outer diameter to closely fit into the upper extremity of the aperture of the hub 35 into which it is locked in position by a thumb screw 42.

As the plunger 33 is raised obviously the air entrapped between the walls of the cylinder 34, the plunger shaft 33, the bushing 41 and plunger seal 38 must escape to permit the free motion of the plunger shaft 33. To provide for such necessary escape of the so entrapped air as the plunger is raised and to also provide for the free entrance of air into this same space as the plunger is lowered, an aperture 43 is provided in the wall of the cylinder 34 immediately above the uppermost extent of the travel of the plunger leather or seal 38.

To lift the plunger 33, fluid under pressure, preferably air, is introduced into the bottom of the cylinder 34 through the conduit 44 which communicates with the lower extremity of the interior of the cylinder 34. The compressed air is supplied from a compressed air reservoir generally indicated by the numeral 45. The reservoir 45 is divided into compartments 46, 47 and 48, each of approximately one-half the capacity of the first lower numbered compartment. Each of the compartments 46, 47 and 48 is provided with a separate fluid conduit 49, 50 and 51, respectively, through which the separate compartments communicate with the fluid header 52. The header 52 communicates with the air conduit 44 which in turn communicates with the lower extremity of the plunger cylinder 34.

Each of the conduits 49, 50 and 51 is provided with an adjustable valve mechanism 53, 54 and 55, respectively, whereby any one of the compartments 46, 47 and 48 or any desired combination of these compartments may be placed in communication with the header 52. By the establishment of such desired communication between the cylinder and an individual compartment or with a combination of compartments, compressed air may be supplied to the interior of the cylinder 34 in any desired predetermined quantity and pressure. Such an arrangement provides the desired lifting and supporting power necessary to attain the desired results in the controlled lifting and supporting of packages by means of the fluid pressure actuated package lifting and supporting mechanism comprised primarily of the cylinder 34, plunger 33 and package support 32.

To provide the original supply of compressed air and to enable the replenishment thereof from time to time as the compressed air is dissipated during the normal use of the apparatus, an air pump 56 is provided. The pump 56 may be of any conventional type and size suitable for supplying the desired quantities of compressed air at the desired pressure. A conduit 57 is coupled to the discharge orifice of the pump 56 and communicates with the header 52 through the valve 58.

By opening the valve 58 and any one or more of the valves 53, 54 and 55, after locking the plunger 33 into its lowered position as hereinafter to be described, the respective compartments of the reservoir 45 thus placed in communication with the conduit 57 may be provided with a supply of compressed air of the desired pressure. Having provided the desired supply of compressed air, the pressure of which is indicated by the gauge 59 in pipe 44 communicating with the header 52, the valve 58 is again closed and, upon the closing or opening of one or more of the valves 53, 54 and 55, the package lifting apparatus is in condition for operation.

In the preferred embodiment of the invention the reservoir 45 is superimposed about the cylinder 34 which extends entirely through the reservoir through apertures in the ends and in the partitions thereof, all of which are sealed to the outer wall of the cylinder 34. The pump 56 is shown as being supported by strap 71 disposed about the reservoir 45 and clamped thereto in any suitable manner, such as by tightening screws.

Obviously the specific construction of the reservoir 45 which, as shown, is superimposed over cylinder 34 and the specific arrangement of the header 52 and pump 56 are not essential to the satisfactory operation of the present invention. In all probability other arrangements of the reservoir 45 and the pump 56 can be easily designed which will come within the scope of the present invention.

In the operation of the package lifting and supporting mechanism it is obviously desirable from time to time to handle packages of different sizes and capacities. For this purpose the compartments 46, 47 and 48 of the reservoir 45 are designed to have a capacity suitable for the handling of the various conventional sizes of packages used on a machine of the type described. However, further flexibility of the apparatus is obtainable by selectively combining two or more of the compartments 46, 47 and 48 of the reservoir 45. By such combining of the individual compartments it is possible, by opening two or more of their valves 53, 54 and 55, respectively, to thereby place the selected compartments in communication with the header 52 through which the combined supply of compressed air becomes effective upon the plunger 33.

Obviously further flexibility may also be obtained by the use of compressed air of different pressures. Such different pressures of compressed air would, of course, be selected in view of the results desired. Still further flexibility, particularly as to the performance of the apparatus when it is desired to regulate the speed of the motion of the plunger 33, may readily be obtained by so adjusting any of the valves 53, 54 and 55 to regulate the speed with which the compressed air flows from the respective compartments of the reservoir into the cylinder 34.

From time to time it may become desirable to release the compressed air from the apparatus for the purpose of draining condensed moisture which may accumulate therein. For this purpose a drain cock 60 is provided at the lower end of the header 52.

In the operation of the package filling apparatus, as described, an empty package or container 15 is moved from the elevated guide bars 61 on the top surface of the table 29 by sliding the same onto the top surface of the support 32 when said support is in its lowered position, as shown in Figure 2. The support 32 which is carried by the plunger 33, if not manually placed in its lowered position as indicated in Figures 2 and 3 and if the cylinder 34 is supplied with compressed air, may be compressed into such lowered position by the weight of a filled container 15. When the plunger reaches the lowered position, as shown in Figures 2 and 3, the support 32 engages the pivoted latch 62, one end of which is provided with a catch 63 to engage the upper surface of the support 32 and thereby prevent the rising of the support 32 as soon as it is relieved of the load of a filled container. Before the support 32 can again be raised by the pressure of the compressed air in the cylinder below the plunger 33, the latch 62 must be tripped to thereby disengage the catch 63 from the support 32.

Obviously various forms of latches may conveniently be designed. In the preferred embodiment of the invention the latch 62 comprises a short lever pivoted in an unbalanced manner intermediate its ends on bracket 64 and is provided at its forward and lighter end with the catch 63 and at its opposite and heavier end with a cam face 65. The cam face 65 facilitates the automatic engagement and disengagement of the catch 63 with the support 32 which in each instance must first pass the catch 63 while traveling downwardly to its lowered position which is accomplished by engaging the upper surface of the catch 63 and pivoting the latch 62 until sufficient clearance is allowed to permit the support 32 to pass the latch 62. As soon as the support 32 has passed the latch 62, the latch immediately returns to support-engaging position with the catch 63 positioned above the support 32.

To maintain the catch 63 of the latch 62 in engagement with the support 32 and to enable the tripping or releasing of the latch 62 a stop motion element comprised of a complementary cam face 66 on the upper and outer end of the latch operating lever 67 is provided. The latch operating lever 67 is pivoted intermediate its ends on a bracket 68 and is biased by a spring 69 into a position in which the latch 62 may engage and continue to engage the support 32. To release the support 32 it is only necessary to press inwardly on the hand grip 70 on the lower end of the lever 67 to thereby engage the cam faces 66 and 65, thus pivotally moving latch 62 to force the support 32 downwardly a trifle until the catch 63 will have rotated into position to clear the support 32, thereby releasing the same. As soon as the support 32 is thus released it may again be raised by the plunger 33. Upon releasing the pressure on the hand-piece 70 the entire latching mechanism, as just described, automatically resets itself to again grip and hold the support 32 when it again returns to its lowered position. To maintain the spring 69 in position any conventional arrangement of studs or the like over the ends of which the spring may be telescoped may be used.

In the operation of the improvements in a package filling apparatus, as just described, the ice cream or other material which normally is of form-retaining stiffness is supplied under pressure through the supply pipe 16 and through the sectional delivery tube depending therefrom into the container 15. The container 15 which is normally moved into position adjacent the package lifting apparatus table 29 by a continuous conveyor (not shown) is pushed by the pressure of adjacent packages onto the slides or skids 61 on the upper surface of the table 29.

When the support 32 is in its lowered position, a package will be pushed onto the support 32 and, when the package is in centered position on the support 32, the operator may apply an inward pressure to the hand-piece 70, thus releasing the plunger which in turn will then lift the package into filling position below the filling head 21 which extends into the package 15 to a position immediately adjacent the bottom thereof. As the ice cream or other material continues to be discharged from the sectional delivery tube through the aperture in the filling head or spreader plate 21 it will be caused to flow outwardly toward the walls of the package by the spreader plate or filling head 21 which also tends to apply pressure to the material below the plate 21 due to the fact that the plate 21 is stationary and the support 32 continually urges the package 15 upwardly.

While the package 15 is being filled, the weight of the material in the package tends to force the support 32 downwardly under a continually increasing downward pressure. This increasing

pressure is due to the increase in the weight of the material in the package as it is being filled. The increased weight is compensated for by an increase in the pressure of the fluid below the plunger 33 as the plunger moves downwardly, tending to further compress the fluid.

The diameter of the cylinder 34, the stroke of the plunger 33 and the capacity of the various reservoirs 46, 47 and 48 have been so selected that, as the package 15 is filled, a proper supply of compressed air can be supplied to the cylinder 34 to fully compensate for the weight of a filled package when the plunger 33 is in its lowered position plus the desired pressure which it is desired to apply to the upper surface of the material in the package throughout the entire filling operation, which latter pressure should be maintained substantially constant throughout the filling operation. When a package has been filled, the plunger 33 will have been forced to its lowered position, thus enabling the latch 62 to grip the support 32 by means of the catch 63 locking the support 32 in its lowered position to enable the removal of the filled container from the support 32 and the movement of an empty container into position on the support whereupon the entire filling operation may then be repeated.

As previously pointed out, due to the novel arrangement of a compartmental compressed air reservoir, each of which compartments communicates with a header through which compressed air is supplied to the plunger cylinder of the fluid lift and each of which is individually controlled by an adjustable valve, a great flexibility in the operating characteristics and capacities of the apparatus is obtainable.

Having thus described the invention and the preferred embodiment thereof, in which certain of the improved features and advantages have been particularly stressed, it is desired to point out that the preferred embodiment of the invention is probably subject to various modifications as to form and details of construction which will become apparent to those skilled in the art upon examining the specification, drawings and claims. Accordingly, it is desired to point out that this invention is not to be limited to the specific disclosure except in so far as it is necessitated by the teachings of the prior art and the spirit of the appended claims.

The invention is hereby claimed as follows:

1. A receptacle filling device comprising in combination, a material supply conduit, a dependent delivery conduit adapted to project into the open top of a receptacle, means for gradually raising a receptacle to be filled, a laterally extending member at the lower end of said delivery conduit adapted to laterally distribute the material as it accumulates beneath said member, said means comprising support means having selective capacities for supporting and lowering said receptacle to the position occupied by said receptacle prior to the raising operation as the material accumulates therein and to maintain said member in contact with the upper surface of said material at a substantially constant pressure.

2. A receptacle filling device comprising, in combination, a material supply conduit, a dependent delivery conduit adapted to project into the open top of a receptacle, means for gradually raising a receptacle to be filled, and a laterally extending member at the lower end of said delivery conduit adapted to laterally distribute the material as it accumulates beneath said member, said means having selective capacities for raising said receptacle also comprising support means for supporting and lowering said receptacle to the position occupied by said receptacle prior to the raising operation as the material accumulates therein and to maintain said member in contact with the upper surface of said material with a substantially constant pressure.

3. A device of the class described comprising, in combination, a sectional delivery conduit for delivering material and adapted to project into the open top of a receptacle, a pressure applying and material distributing member on the lower end of said delivery conduit adapted to apply pressure and laterally distribute the material as it accumulates beneath said member, means for lifting said receptacle to filling position, said means comprising mechanism for varying the speed of the lifting movement of said receptacle, means for supporting said receptacle, said first mentioned means also comprising means for selectively applying a variable lift to said supporting means while said receptacle is being filled to maintain said member in contact with the upper surface of said material with a substantially constant pressure, whereby said receptacle is lowered to unloading position solely by the combined weight of said receptacle and accumulated material.

4. A receptacle filling device including a sectional material delivery tube, clamping means for releasably maintaining the sections of said delivery tube in fixed axial position relative to one another, a movable lifter for said receptacle, means for varying the speed of movement of said lifter, a pressure applying member at the lower end of said sectional delivery tube adapted to apply pressure on accumulated material in said receptacle whereby to move said lifter and receptacle away from said member to a receptacle unloading position solely by the weight of the receptacle and material which accumulates beneath said member, and said means also comprising means for selectively applying variable pressure urging said lifter toward said member, said variable pressure applying means being adapted to apply pressure to said lifter in a manner varying in proportion to the movement of said lifter to or from said member.

5. A device for filling a receptacle comprising a support, a relatively fixed material delivery conduit positioned above said support, a movable receptacle lift mechanism on said support having fluid pressure operated means for gradually lifting said lift mechanism into operative filling position with respect to said delivery conduit, a multicompartment fluid pressure reservoir, a header communicating with said lift mechanism, a plurality of valved fluid conduits, each communicating with said header and with one of said compartments, said compartments being of different capacities, and a pressure applying and material distributing member on said delivery conduit, whereby as material accumulates in said receptacle beneath said member said lift mechanism will be moved downwardly by the weight of said accumulated material, said fluid pressure operated means being so constructed and arranged as to maintain the upper surface of said material accumulating in said receptacle in contact with said pressure applying member with a substantially constant pressure, thereby compressing the material filled into said receptacle.

6. A device for filling a receptacle comprising a support, a relatively fixed material delivery con-

duit positioned above said support, a movable receptacle lift mechanism on said support having fluid pressure operated means for controllably lifting said lift mechanism into operative filling position with respect to said delivery conduit, a multi-compartment fluid pressure reservoir, a header communicating with said lift mechanism, a plurality of valved fluid conduits, each communicating with said header and with one of said compartments, said compartments being of different capacities, a valve in said header between said fluid conduits and said lift mechanism, and a pressure applying and material distributing member on said delivery conduit, whereby as material accumulates in said receptacle beneath said member said lift mechanism will be moved downwardly by the weight of said accumulated material, said fluid pressure operated means being so constructed and arranged as to maintain the upper surface of said material accumulating in said receptacle in contact with said pressure applying member with a substantially constant pressure, thereby compressing the material filled into said receptacle.

7. A package handling apparatus comprising, in combination, a spout for delivering material into a package, a package support being vertically reciprocable beneath said spout, selective lift means for applying a variable upward lift on said package support in proportion to the weight of the accumulated material in said package, said support being so constructed and arranged as to be forced downwardly to its unloading position solely by the weight of the package and material accumulated therein during the package filling operation, said lift means being of the fluid lift type and being constructed and arranged to permit the gradual lowering of said support at a constant rate directly in proportion to the increase in weight of the material accumulated in said package, and comprising a plurality of supplies of lifting fluid under pressure, and means for selectively controlling the flow of lifting fluid to said lift means for selectively regulating the speed of the upward and downward motion of said lift means.

8. A packaging device comprising, in combination, lifting mechanism for controllably lifting a receptacle to a predetermined position, means for varying the speed and capacity of the lifting movement of said lifting mechanism, a delivery conduit adapted to project into the open end of the receptacle and deliver material thereinto, means on the delivery conduit for applying pressure to the material delivered into the receptacle, whereby to lower said receptacle during the filling operation to the position occupied by said receptacle prior to the commencement of the lifting operation while maintaining a substantially uniform pressure upon the material through the pressure applying means.

9. A filling device for a receptacle including a material supply conduit, a dependent delivery conduit adapted to project into the open top of a receptacle, a laterally extending member at the lower end of the delivery conduit adapted to laterally distribute the material as the material accumulates beneath said member in said receptacle, means having selective capacities for supporting said receptacle as the material accumulates therein, said means being adapted to maintain said laterally extending member in contact with the upper surface of said material at a substantially constant pressure as the material accumulates in said receptacle, whereby said support is depressed to a receptacle unloading position solely by the joint weight of said receptacle and the material accumulated therein.

10. A receptacle filling device comprising, in combination, a material supply conduit, a dependent delivery conduit adapted to project into the open top of a receptacle, means for controllably raising a receptacle to be filled, a laterally extending member at the lower end of said delivery conduit adapted to laterally distribute the material as it accumulates beneath said member, said means comprising support means having selective capacities for supporting and controllably lowering said receptacle to receptacle unloading position as the material accumulates therein and to maintain said member in contact with the upper surface of said material with a substantially constant pressure, said receptacle being lowered solely by the combined weight of said receptacle and accumulated material, and a latch for automatically locking said means for supporting said receptacle upon the lowering of said receptacle to its lowered position on said support means.

11. A device for filling a receptacle comprising a support, a material delivery conduit positioned above said support, a receptacle lift mechanism on said support having selective capacities in which operating fluids under selected pressures may be stored for controllably lifting said lift mechanism into operative position with respect to said delivery conduit, and a pressure applying and material distributing member on said delivery conduit, whereby as material accumulates in said receptacle beneath said member said lift mechanism is moved downwardly by the weight of said accumulated material to the position occupied by said lift mechanism before the lifting was commenced, said fluid pressure operated means being so constructed and arranged as to maintain the upper surface of said material accumulating in said receptacle in contact with said pressure applying member with a substantially constant pressure.

12. A device for filling a receptacle comprising a support, a material delivery conduit positioned above said support, a receptacle lift mechanism on said support having fluid pressure operated means for controllably lifting said lift mechanism into operative position with respect to said delivery conduit, a reservoir means for fluid under pressure, said reservoir means having selective capacities, valve means for controlling the flow of fluid from said reservoir means to said lift mechanism whereby to regulate the speed of the upward movement of said lift mechanism, and a pressure applying and material distributing member on said delivery conduit, whereby as material accumulates in said receptacle beneath said member said lift mechanism will be moved downwardly by the weight of said accumulated material to the position occupied by said lift mechanism at the commencement of said lifting operation, said fluid pressure operated means being so constructed and arranged as to maintain the upper surface of said material accumulating in said receptacle in contact with said pressure applying member with a substantially constant pressure.

13. A package handling apparatus comprising, in combination, a material delivery spout, a package support adapted to be moved up and down beneath said spout and arranged to be forced downwardly to its unloading position solely by the weight of the material accumulating in said package during the filling operation, and means

of selective capacities for selectively applying a variable upward lift on said package support in proportion to the weight of the accumulated material in said package, said means being so constructed and arranged as to permit the gradual lowering of said lift at a constant rate directly in proportion to the constant increase in weight of the accumulated material as well as to permit the gradual raising of said package when empty.

14. A package handling apparatus adapted to handle packages varying substantially in weight comprising, in combination, a material delivery spout having a spreader head, a package support capable of controlled and gradual up and down movement beneath said spout and arranged to be forced downwardly to unloading position solely by the weight of the material accumulating in said package during the filling operation, means having selective capacities for applying a variable upward lift on said package support in proportion to the weight of the accumulated material in said package, said means having selective capacities being so constructed and arranged as to permit the gradual lowering of said lift at a constant rate directly in proportion to the constant increase in weight of the accumulated material, and to maintain a head on said spout in contact with the upper surface of said material with a constant pressure throughout the filling operation.

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