July 22, 1969 G. D. SJOSTRAND 3,456,849

DEVICE FOR DISPENSING VISCOUS MATERIALS

Filed Oct. 1, 1965

FIG. 1

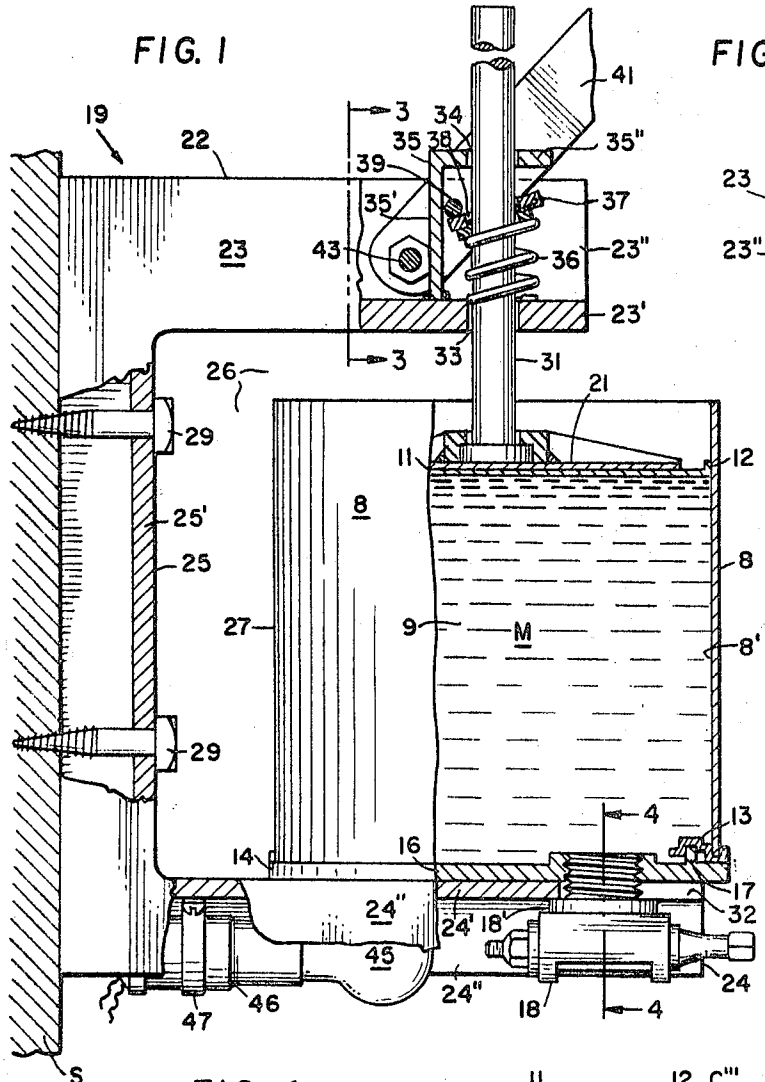


FIG. 2

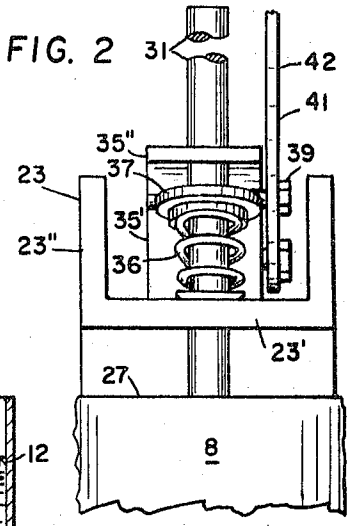


FIG. 3

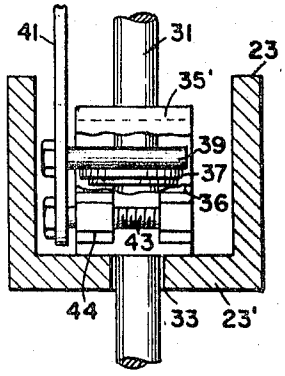


FIG. 4

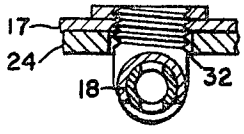
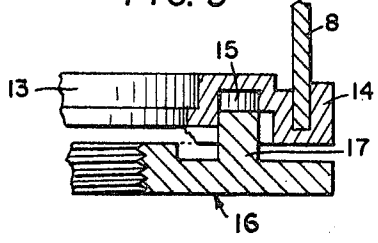


FIG. 5



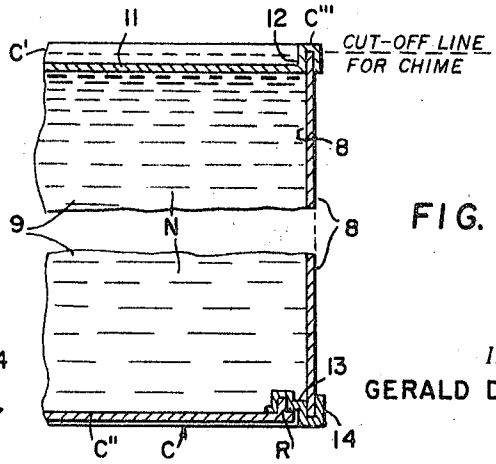


FIG. 6

INVENTOR.
GERALD D. SJOSTRAND

United States Patent Office 3,456,849
Patented July 22, 1969

3,456,849

DEVICE FOR DISPENSING VISCOUS MATERIALS

Gerald D. Sjostrand, 4478 N. Ashcroft Court,
Fresno, Calif. 93726

Filed Oct. 1, 1965, Ser. No. 492,148
Int. Cl. B67d 5/62
U.S. Cl. 222—146 1 Claim

The invention relates to a device for effecting a pressure dispensing of certain types of viscous materials from original closed containers thereof.

Recalling that homogeneous bodies of viscous materials, such as heavy lubricant greases or paste materials for filling application to roughened or dented or cracked surfaces, are customarily provided in original sealed containers of appropriate supply capacity from which charges of the materials may be successively dispensed for their use, the present invention particularly concerns the provision of a unitary device for effecting the pressure removal of such materials from original tubular containers which are originally closed at both ends, which when the container has been appropriately opened at one end, provides a means for effecting the progressive extrusion of the contained material from said container end by the pressure application of a piston axially against the exposed end of the body of contained material for effecting a suitable flow-controlled and downward dispensing of charges of the material from a valved discharge opening provided at the other container end.

A general object of the invention is to provide a means for effecting the successive extrusion of desired charges of a viscous material from within a tubular container wall having a uniform bore.

Another object is to provide a method and means for effecting the progressive pressure extrusion of a viscous material of the character described from within an original container comprising a closed tubular side wall having a uniform bore enclosing the material and sealedly retained between suitable original closures at opposite ends of the wall bore.

A more specific object is to provide a means for effecting the progressive pressure extrusion of a body of viscous material from within an original container of the character described, with one end closure member provided with a discharge opening having an openable discharge valve means associated therewith and the other closure member engaged by a piston means adapted for its controlled pressure actuation with respect to the body of material within the container side wall.

Another object is to provide a dispensing means of the character described having its material-dispensing mechanism unitarily provided by a particularly simple and effective mounting holder for the container.

A further object is to provide a device of the character described which is adapted for dispensing material which may have its viscosity lowered by heat, and unitarily includes a heating means for the material.

The invention possesses other objects and features of advantage, some of which, with the foregoing, will be set forth or be apparent in the following description of a typical embodiment thereof, and in the accompanying drawings, in which:

FIGURE 1 is a partly sectional side elevation showing an application of my device for dispensing a viscous material from an original container which has been appropriately modified for its use with the device.

FIGURE 2 is a fragmentary front elevation of the assembly of FIGURE 1.

FIGURE 3 is a sectional view taken from the line 3—3 in FIGURE 1.

FIGURE 4 is a section taken at the line 4—4 in FIGURE 1.

FIGURE 5 is an enlarged fragmentary showing of certain elements of FIGURE 1 having said elements axially separated.

FIGURE 6 is a fragmentary and broken away sectional view of a portion of an original container of a viscous material before its conditioning for the use of the present dispensing apparatus therewith.

The present dispenser for viscous fluids has been particularly designed for its use with an originally sealed packaging container of a fluid material which is adapted for its viscous flow from commercially-provided sealed containers of the can type. As particularly shown in FIGURE 6, the present device is disclosed as applied to a modified container originally comprising a commercially-provided closed can or drum C, of metal or other suitable material, containing a viscous material M to be dispensed, and having an integral end-closing member C′ fixedly provided at one extremity of a tubular side wall portion **8** having a uniform bore **8′** between the end closure C′ and a removably sealed closure element C″ at its other end. As shown, the wall **8** cooperates with the original end closures C′ and C″ to define a closed container space **9** in which a body of the viscous material M has been sealedly enclosed at the packaging point for the material, and the end of a container C at its closure C″ comprises its upper end when the container is disposed for a usual dipping of the material M therefrom, and may be so identified.

In the present usual and original container C, the end closure C′ provides an attached and out-turned axial U-section rimming chime portion C‴ which sealedly receives and grips the opposed end portion of the side wall **8**, and said container is adaptable for the use of the present dispenser apparatus therewith by freeing an interior portion **11** of the original closure C′ for its movement in and along the bore **8′** against the material M. The portion **11** is preferably provided by grinding-away, or otherwise freeing or removing, solely the bight, or bend, portion of the rimming part C‴ thereof to thus free the portion **11** of the closure C′ from the side wall **8** while said portion at least retains the attached and radially inner portion of the original U-bend portion C‴ as a transverse axial flange **12**, as indicated in FIGURES 1 and 6.

As provided in usual container C of the present character, the opposite end of the wall **8** from its end mounting the closure C′ sealedly and fixedly mounts an annular flange or ring element **13** for sealedly and removably mounting the closure C″ with said element having an out-turned peripheral U-bend or chime portion **14** which sealedly grips the received end of the wall **8** for fixedly mounting the element **13** thereon. Radially inwardly of its portion **14**, the element **13** is intermediately provided with a usual outwardly-opening coaxial groove **15** for frictionally and sealedly receiving an annular rib R provided by the removable closure C″. Unless, however, the original end closure C″ is provided with a suitably valved outlet, it would be replaced, as brought out in FIGURE 5, by a closure element **16** which provides an annular and axially directed rib **17** which is formed and adapted for its sealed engagement in the groove **15** of the container element **13** and intermediately mounts a suitable dispensing valve **18** at a discharge opening provided through it, said valve being shown as of a rotary plug type.

By specific reference to the present dispensing apparatus per se, it will now be noted that the same comprises a unitary assembly **19** for holding an appropriately conditioned container of a viscous material for dispensing the material therefrom by the use of a projectible piston member **21** of the unit. As shown, a holder portion of the apparatus comprises a rigid and generally U-shaped and

planar frame 22 having spaced opposed parallel arm members 23 and 24 integrally and rigidly connected by a member 25 to define between them a space 26 for freely receiving an appropriately conditioned container for the application of the piston 21; in the present instance, the combination of the container wall 8 and the freed flanged portion 11 of the original closure C' and the operatively applied substitute closure element 16 providing the valve 18 and the container element 13 jointly engage the contained body of the material M for a pressure application of the member 11 against the material for extruding the same through the opened valve 18 to provide a conditioned container 27 for the normally enclosed body of the material M.

As particularly illustrated, the coplanar frame parts 23 and 24 and 25 comprise integrally related members of channel cross-section having their respective webs 23' and 24' and 25' defining the space 26, and the frame 22 is adapted for its use disposal in an upright position, with its intermediate part 25 suitably attachable to an upright support such as a relatively fixed standard or wall S, as by the use of lag screws 29 applied through the frame part 25. The web 24' of the lower arm 24 provides a support seat for the closure element 16 of the container assembly 27 to provide for the application of the piston 21 against the member 11, said piston 21 being slightly smaller than the axially directed face of the member 11, and carried from and beneath the upper arm 23 on a rod 31 which mounts the piston 21 for effecting a pressure dispensing of material M through the opened valve 18 which has its body suitably attached to, or integral with, the closure element 16, as by a tubular attaching extension 18' freely disposed through an opening 32 provided in the arm 24 and preferably comprising a slot extending in the arm web 24' from the free end of the arm to facilitate a mounting and dismounting of different container assemblies 27 on the arm 24 between its flanges 24".

In the present unitary apparatus, the piston rod 31 slidably extends through a guide hole 33 provided through the web 23' of the upper arm 23 and is also engaged through an upright guide hole 34 axially spaced from the hole 33 and provided by an angle-section member 35, with the present member 35 having an upright portion 35' thereof suitably fixed at its bottom, as by welding to the web 23' of the arm 23 and extending between the arm flanges 23" in laterally opposed relation thereof while the installed piston rod 31 is guidedly reciprocable in the line of action of the piston member 21. As particularly shown, an upper portion 35" of the member 35 extends forwardly from the portion 35', and provides the hole 34 generally centrally therethrough, and a suitable means is provided for gripping and actuating the guidedly installed rod 31 to produce downward movements thereof for effecting material-dispersing depressions of the piston 21 while the valve 18 is open.

As particularly shown, the means for operatively applying the material-extruding piston 21 is arranged for its actuation to engage and grip the portion of the piston rod 31 extending between the web 23' of the arm 23 and the portion 35" of the member 35, and includes a helical compression spring 36 which is constantly and freely operative between the web 23' of the frame arm 23 and a rod-gripping element 37 to urge a raised disposal of the latter. As indicated in FIGURE 1, the element 37 comprises an annular member providing a central circular bore 38 having a diameter slightly larger than the rod-receiving holes 33 and 34, with its bore 38 having relatively sharp edges at its lower and upper ends, whereby the element 37 is normally tilted upwardly from and against a pintle member 39 overlying its rearward portion and extending laterally and intermediately from a lever member 41 which is swingably mounted on the frame arm 23 and has its handle portion 42 extending beyond the pintle 39 which normally rests on and across a rearward portion of the upper face of the element 37 to normally engage mutually oposite lower and upper end edge points of the element bore 38 with the exterior surface of the rod 31 in such slidable frictional engagement with opposite side points of the rod as to permit the lifting removal of the piston from a mounted container.

It will now be noted that the lever 41 is mounted for its swinging in a plane between the member 35 and the inner face of a flange 23" of the upper frame arm 23 in a plane parallel to the latter about a hinge pin 43 which is threadedly mounted in and between nut-like extensions 44 fixedly mounted on the rear face of the portion 35', with the pivoted end of the lever 41 mounted on the pin 43 between its extending head and the adjacent side of the member 35 and with the pintle 39 extending in parallel relation to the pin 43 and forwardly of the member portion 35' opposite the same, whereby a downward manual swinging of the lever against the resistance of the spring 36 may grippingly engage the bore 38 of the element 37 with the rod 31 for actuating the piston against the material to be extruded from the container charge by successive depressions of the lever as needed to dispense a desired quantity of material M from a container 27 through the opened valve 18. It will be understood that, by providing the rod-receiving bore 38 of the gripping element 37 centrally thereof, the latter and/or the rod 31 are rotatively adjustable for maintaining the best cooperative condition of the engageable portions of the bore edges and rod exterior, it being noted that the rod is preferably of slightly softer material then the element 37 and so may become slightly indented by repeated working engagements of the rod-gripping bore edges of the replaceable element 37 along its sides, with the operations of the working edges of the element 37 being thus preserved.

Since the composition of many viscous materials which are dispensible by pressure from original containers comprise or include substances which are softenable by heat, the present unit preferably includes a means for controlledly heating such materials to facilitate the pressure dispensing thereof. Accordingly, and as particularly disclosed in FIGURE 1, a heating element 45 is provided for the above purpose and may conveniently comprise a heat-emanating bulb replaceably mounted in a socket 46 which is suitably supported by a mounting strap 47 in the channel of the lower frame arm 24 against and beneath the valve-carrying closure 16 of the unit-carried container and be conducted to the material charge through the arm web 24' and the engaged closure 16.

From the foregoing description taken in connection with the accompanying drawings, the advantages of the present device for dispensing viscous materials will be readily understood by those skilled in the art to which the invention appertains. While I have shown and described a structure and arrangement which I now consider to comprise a preferred embodiment of my invention, I desire to have it understood that the showing is primarily illustrative, and that such changes and developments may be made, when desired, as fall within the scope of the following claim.

I claim:

1. In combination with a charge of viscous material which is adapted to have its fluidity increased by heating and is originally sealed within an original rigid tubular container having a uniform bore and an openable sealing closure at one end of its side wall and a sealing closure member at the other wall end having a disc portion peripherally and closely fitting within the container bore and originally attached to the latter wall end in sealed relation thereto by an outturned integral peripheral U-bend portion of said latter closure member radially and sealedly gripping the received container wall end, with its disc portion comprising a unitary element which has been freed by a peripheral elimination of the bight portion of said attaching U-bend of the latter closure

member and solely includes said disc portion and said integrally attached inner U-bend side to provide for its guided movement within the wall bore of the container as a dispensing pressure plate against the material charge within the wall bore; a support frame providing rigidly spaced lower and upper support members transversely defining between them a laterally open space for freely receiving the charged said container between them with the first end of the container seated on the lower frame member in fixed angular relation thereto, a piston rod supported by and depending below the upper frame member and carrying at its bottom end a piston for axial movement against said flanged pressure plate in the bore of the mounted container for forcibly advancing the flanged said plate against the opposed end of the material charge in the container to extrude the material through the opened said other end closure, a means directly cooperative between the piston rod and upper frame member to project the piston against the pressure plate for intermittently and progressively extruding the material downwardly through the container and from said opened end closure at the seated container end; the lower member of the support frame engaged by a container end seated thereon being of heat-conducting material and intermediately providing a downwardly-directed opening for delivering the material discharged through and from the

seated end of the container thereon, and is further provided on its under side with a heat-emanating means for heating the charge in the container through said lower frame member for increasing its fluidity thereat to facilitate its delivery through the said opened end closure.

References Cited

UNITED STATES PATENTS

1,476,227	12/1933	Scott	222—327
1,977,831	10/1934	Marshall et al.	222—146
2,090,111	9/1937	Creveling	222—327 X
2,252,101	8/1941	Tyeter.	
2,512,178	6/1950	Sherbondy	222—327
2,582,156	1/1952	Peterson	222—391 X
2,602,571	7/1952	Sherbondy.	
2,758,758	8/1957	Schimpf	222—387 X

FOREIGN PATENTS

878,456	9/1961	Great Britain.

ROBERT B. REEVES, Primary Examiner

K. N. LEIMER, Assistant Examiner

U.S. Cl. X.R.

222—181, 327, 391