

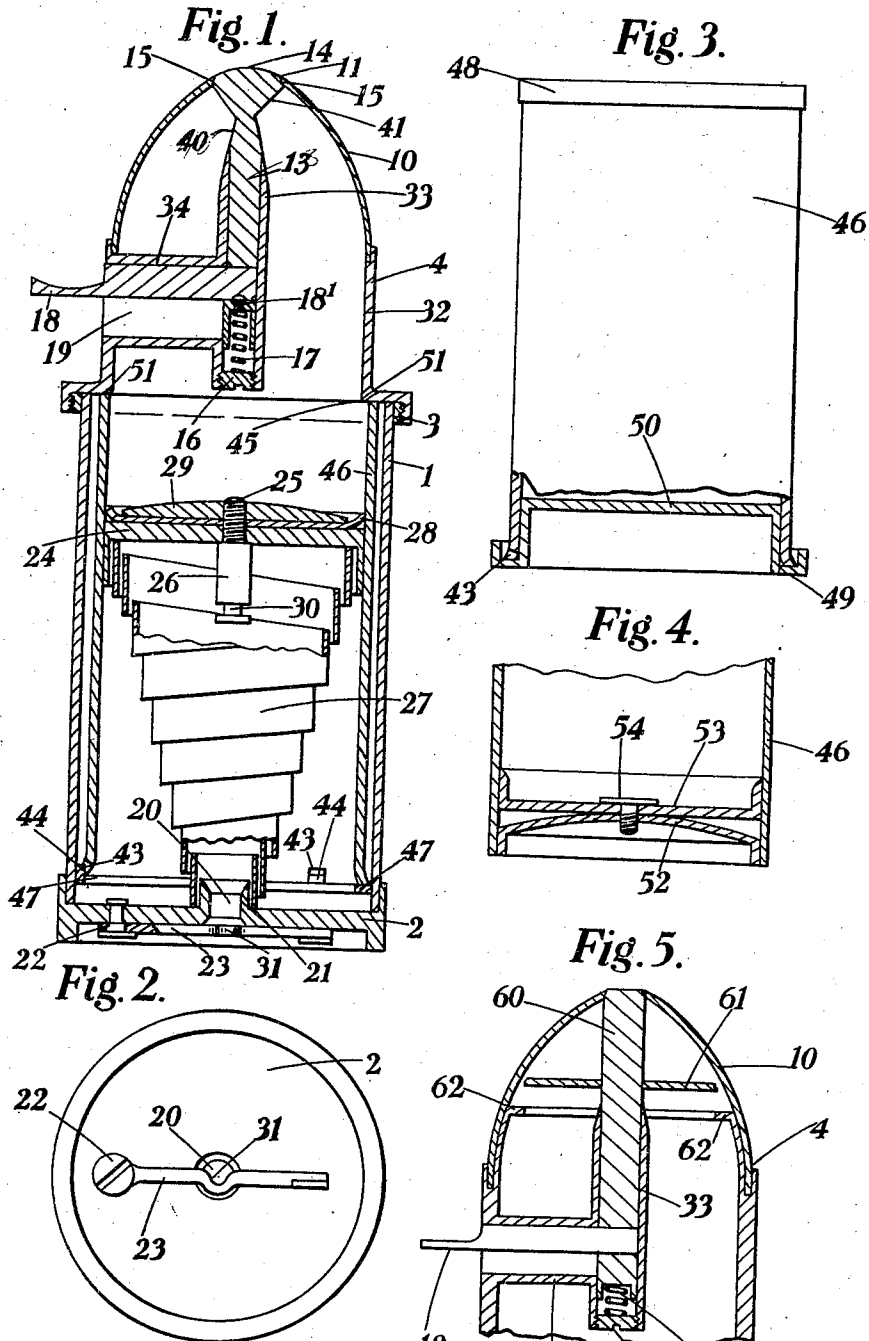
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G. E. ARMSTRONG

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CONTAINER FOR VISCOUS SUBSTANCES

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INVENTOR
G. E. ARMSTRONG

BY *Johnnie*
ATTORNEY

UNITED STATES PATENT OFFICE

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CONTAINER FOR VISCOUS SUBSTANCES

Guy Edmund Armstrong, Hallow, England

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This invention relates to containers for pastes, viscous liquids and the like.

It is an object of the invention to provide an improved container for pastes and the like having means constantly tending to cause the extrusion of the pastes and means to control the extrusion.

It is a further object of the invention to provide a container having means constantly tending to cause the extrusion of pastes or the like from a removable refill container situated within the container proper and means to control the extrusion. It is also an object to provide removable refill containers for use in such containers.

A still further object of the invention is to provide a container for pastes and the like having means tending constantly to extrude the pastes through an exit orifice and a valve controlling the extrusion at the orifice and provided with means adapted to regulate the amount of paste delivered upon each actuation of the valve.

Various other objects and advantages will be apparent from the following descriptions of embodiments of the invention, and the novel features will be particularly pointed out in connection with the appended claims.

In the accompanying drawing:

Figure 1 is a sectional elevation of a complete container,

Figure 2 is an underneath view thereof,

Figure 3 is an elevation, partly in section, of the liner or inner container shown in Figure 1,

Figure 4 is a sectional elevation of part of a liner showing a modification, and

Figure 5 is a sectional elevation of a modified form of head and valve.

As shown, the container comprises a hollow cylindrical body 1 having a metal base member 2 secured to it at one end. A threaded metal ring 3 is secured to the cylinder at the other end and is adapted to receive a head 4, which screws down on to the container. The head 4 is shaped to form a tube 32 concentric with the head; this tube is provided with a cap 10, the tube and cap being so shaped that the exit from the container by way of them is initially wide and gradually narrows toward an orifice 11 in the cap, as shown in Figure 1.

A valve is provided to cooperate by its head portion 14 with a seating 15 at the outlet 11. The valve has a cylindrical barrel portion 13 which is joined to the head portion by opposed frusto-conical portions 40 and 41 and is guided in a tube or sleeve 33 carried concentrically to the tube 32 by a portion 34 integral therewith. As shown, the tube 33 is of upwardly tapering form as to its outer surface. A plug 16 is screwed into the lower end of the tube 33, and between it and the barrel 13 of the valve is mounted a spring 17 which constantly tends to keep the valve closed on its seating. A trigger 18 inserted into a hole in the barrel of the valve and secured by a screw 18'

projects through a slot 19 in the portion 34, whereby the valve may be opened against the action of the spring by depression of the trigger.

The base member 2 has a central hole 20, and a short tube 21, the bore of which forms a continuation of the hole, projects upwardly from the base member. As shown in Figure 1, the edge of the hole and the extremity of the bore of the tube 21 are flared. The base member further carries a pin 22 upon which a clip 23 is pivotally mounted.

In order to fill the container, the head 4 is removed and an inner container or liner 46 open at both ends, shown separately in Figure 3, is inserted within the body 1 until its lower end contacts with a ring 47 secured within the body near the lower end thereof.

As shown, upwardly projecting portions 44 are formed on the ring 47 (two are shown in Figures 1 and 2) and corresponding slots or depressions 43 are formed in the lower edge of the wall of the liner 46. This ensures that only liners having the correct arrangement of slots 43 can be used in the container.

A sleeve piston 24 of diameter equal to the internal diameter of the liner is arranged for upward and downward movement within the container, and is tapped centrally for the reception of the threaded portion 25 of a rod 26. The piston is forced upwardly by means of a volute spring 27, anchored at one end to the outside of the tube 21, and is provided with a washer 28 of rubber, leather, or other suitable material. The washer is of greater diameter than the piston and is confined against the upper surface of the latter by means of a plate 29 having a flat bottom surface and a concave upper surface as shown in Figure 1; the plate 29 is tapped at the centre and screwed down on to the threaded portion of the rod 26.

During the insertion of the liner 46, the piston is maintained, against the action of the spring 27 at the lower end of its stroke by means of the clip 23, a notch 31 in which engages an annular groove 30 formed in the lower end of the rod 26 which projects through the hole 20. The lower end of the liner is flared outwardly as shown so that upon the liner being pushed down until it contacts with the ring 47, the piston and washer are guided into the interior of the liner.

In Figure 3 the liner is shown separately, and from this figure it will be seen that top and bottom caps 48 and 49 respectively are provided which must be removed before the liner is inserted within the body 1 of the container. The bottom cap 49 is provided with a central portion 50 extending upwardly into the liner a distance equal to that which the piston and washer extend into the liner when the latter is fully inserted

within the container and the piston is held down by the clip 23.

When the liner is in position, the cap 4 is screwed down, and a shoulder 51 on it contacts with the top of the liner holding the latter firmly and forming a tight seal. The piston is then released by swinging of the clip 23, whereupon the substance within the container is subjected, through the piston, to the force of the spring 27 and flows to fill the head 4, whence it is extruded by way of the orifice 11 whenever the trigger 18 is depressed, so long as the piston has not reached the end of its travel.

As shown the head 4 commences to reduce its internal diameter, at the shoulders 51, by means of convex surfaces 45, whilst later the cap portion 10 gradually narrows toward the exit orifice 11 by means of concave surfaces.

The shapes of the interior of the head 4 and of the valve and associated parts are such that the substance to be extruded is so guided as to ensure its flow with very little obstruction, so that even highly viscous substances can be extruded with the help of a relatively weak spring.

Figure 4 illustrates a modified form of liner wherein the removable bottom cap 49 in the form previously described is replaced by a closure member 52 in the form of a plunger to which a rubber washer 53 is secured by a stud 54. When such a liner is used, the piston in the container proper is dispensed with, the plunger 52 being operated upon by the spring 27 to cause the extrusion of the substance. Such an arrangement avoids any contact of fingers or air with the bottom of the substance within the liner, and should be especially suitable for use with medicinal substances.

If desired, the use of liners or inner containers may be dispensed with, the substance being stored directly within the container body 1. In such a case the ring 47 is not present and the piston 24 fits with as little clearance as possible within the body. To fill the container the top is removed and the substance is introduced from the top, the piston being held down by the clip.

In Figure 5 there is shown a modified construction of head and valve, which is particularly suitable for use in the dispensation of condiments and which may be substituted in any of the containers previously described. In this form the valve has a cylindrical stem 60 provided with a collar or flange 61, which is adapted, after a small interval, upon depression of the trigger controlling the valve to contact an internal annular flange 62 carried by the head; this has the effect of blocking all egress from the container. When the trigger is released, the flange on the valve stem leaves the internal flange and a predetermined quantity of condiment is delivered during the return of the valve to closed position.

The diameter of the flange is such that when the valve is in the closed position there is sufficient space round the flange for condiment to flow past it under the action of the plunger spring ready for the next delivery and to allow for surging of the condiment when the trigger is depressed.

The inner and outer containers may of course be made of any suitable material, metal and glass being two which might be employed.

I claim:—

1. A container for viscous substances such as pastes, comprising a hollow body, an outlet passage from said hollow body having an exit orifice,

said outlet passage being initially wide and narrowing gradually to said exit orifice, a piston mounted within said hollow body, a spring acting upon said piston to cause it to move to extrude the viscous substance through said exit orifice, means to control the extrusion, and means to hold said piston against the action of said spring.

2. A container for viscous substances such as pastes, comprising a hollow body, an outlet passage from said hollow body having an exit orifice, said outlet passage being initially wide and narrowing gradually and uniformly to the outlet orifice without substantial obstruction, means constantly tending to extrude the substance through the outlet orifice, valve means mounted in said outlet passage to control the extrusion, and means mounted upon the valve for limiting the amount extruded upon each actuation thereof.

3. A container for viscous substances such as pastes, comprising a hollow body, a detachable head piece forming an outlet passage for said hollow body, an inner open-ended container within said hollow body outwardly flared at one end, said outwardly flared end having depressions therein, an abutment on the inner surface of said hollow body adjacent the end thereof opposite to that at which the head piece is attached, upstanding portions on said abutment corresponding to the depressions in the end of said inner container, spring-pressed means constantly tending to extrude the contents of said inner container by way of said outlet passage, and means to control the extrusion.

4. A container for viscous substances, comprising a hollow body formed at one end with a valve controlled outlet, the opposite end of the body having a closure formed with a central opening, a spring-pressed plunger movable in the body and having a central pin designed to be projected through the opening in the end closure of the body when the spring is substantially fully compressed, means on the end closure for cooperating with the pin to hold the spring in its substantially compressed position and the plunger fully retracted, a refill container to be seated in the body and corresponding in internal diameter to the diameter of the plunger, and means on the body for holding said refill container fixed against relative movement with respect to the body.

5. A container for viscous substances, including a hollow body, a detachable head piece formed with an outlet for the container, an end closure for the hollow body, a refill container to be inserted in the body, means interior of the body to support the lower end of the refill container, the head piece being formed at the end to be connected to the body to overlie the upper edge of the refill container and fix the same in position within the body and below the head piece, a plunger operative within the refill container when in position in the body, a spring for moving the plunger toward the outlet opening, and means on the hollow body to hold the plunger in retracted position during application of a refill container.

6. A construction as defined in claim 5, including a valve for controlling the outlet and means extending laterally through the head piece above the connection of the head piece and hollow body for operating the valve.

GUY EDMUND ARMSTRONG.