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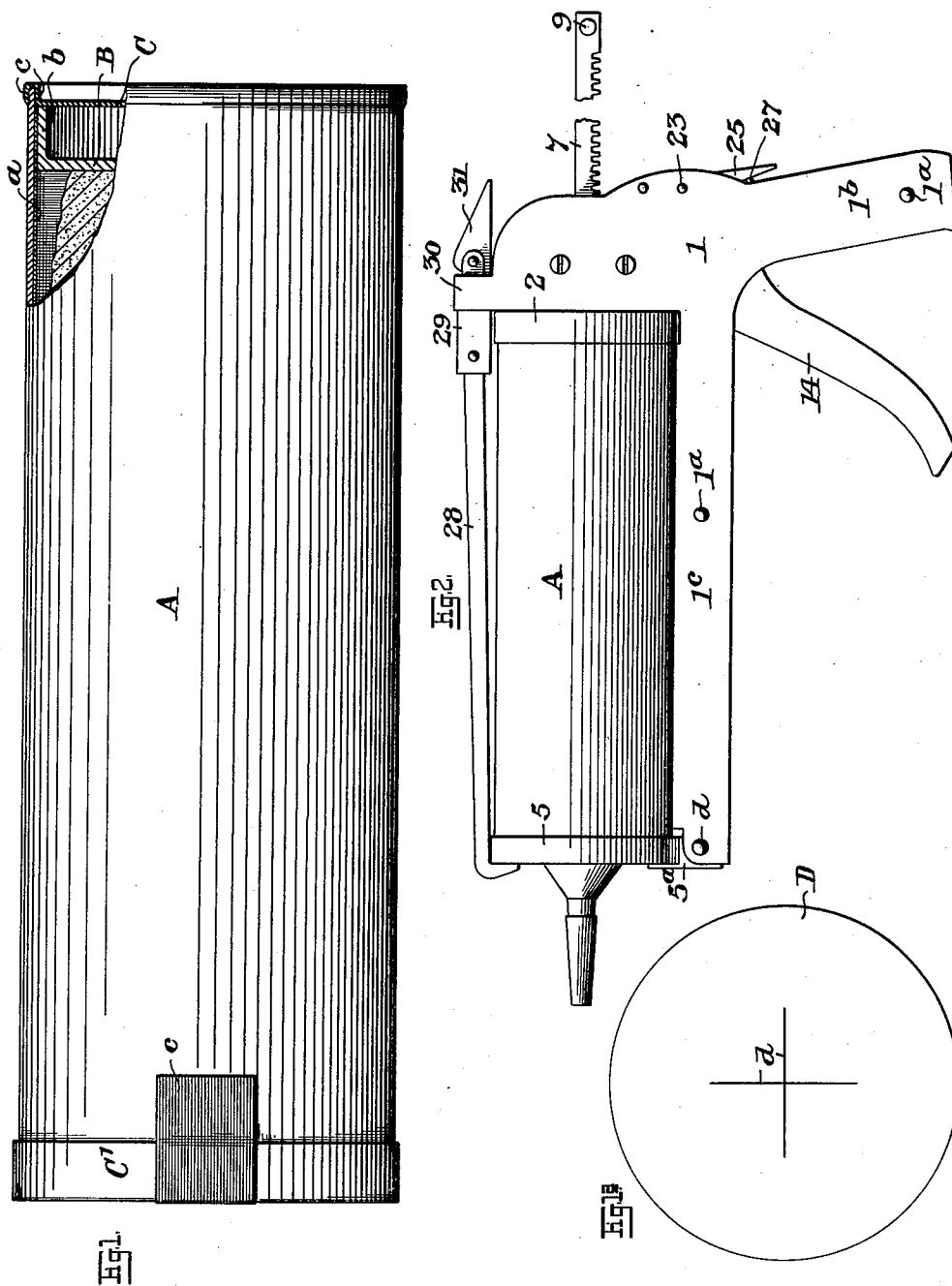
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CALKING GUN

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CALKING GUN

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This invention relates to apparatus of the type generally known as calking or grease guns, and comprises a structure or frame of skeleton type having a pistol grip stock particularly designed for use with a cylindrical cartridge or container in which various putties, paints, etc., or grease or other oleaginous material, may be packed for shipment; such container or cartridge being adapted for association with co-acting mechanism, manually operated, or otherwise, carried by or cooperating with the skeleton frame whereby the contents of said container or cartridge may be ejected in a controlled manner.

One object of this invention is to provide a skeleton frame for supporting a cartridge or container for material of a fluent nature, plastics or other compounds, greases and the like, and means, manually operated or otherwise, whereby such fluent material may be expelled or extruded from the container or cartridge at the will of the operator.

A further object of this invention is to provide a cartridge or container which may be manufactured cheaply from light metal, or from non-metallic material; that is, water- and grease-proof material, or from non-metallic material having a water- or grease-proof lining or coating to protect the container body from deterioration by reason of chemical action or capillary attraction of its contents. This cartridge or container carries a piston whereby its contents may be ejected, such piston being inserted in operative position at one end of the cartridge after the latter is filled, the opposite end of the container having been closed by a thin cellulosic disk cemented integral with the container body prior to the coating operation. Suitable closure means are provided to cover the ends of the cartridge or container for safe transportation, which means may include a seal to prevent unauthorized opening. A container of this type will keep the contents free from extraneous material which would injure its efficiency, and the construction permits delivery of the contents directly from the container without transfer to separate expelling or extrusion means. The use of such cartridge or container prevents the usual waste of material which occurs when shipped in bulk and subsequently transferred to an applying means. Furthermore, there is no loss due to oxidation which results in the formation of a skin on compounds shipped in bulk containers.

And a further object of this invention is to provide a form of cartridge or container that may

be quickly and easily inserted in the expelling means, and be immediately ready for use.

The advantages of this invention will be readily apparent to those skilled in the art, as herein-after set forth; reference being had to the accompanying drawings:—

Figure 1 is a side elevation, partly in section, of one form of cartridge or container for fluent material.

Fig. 1^a is a view of a disk employed therewith.

Fig. 2 is a side elevation of cooperative extruding means embodying features of this invention, and with which a cartridge containing fluent material of the type shown in Fig. 1 may be employed.

Fig. 3 is a longitudinal sectional elevation of the structure, on the line III—III, Fig. 4, showing the assembly locked for operation.

Fig. 4 is a rear view looking in the direction of the arrow *a*, Fig. 3.

Fig. 5 is a front view looking in the direction of the arrow *b*, Fig. 3.

Fig. 6 is a section taken on line VI—VI, Fig. 3.

Fig. 7 is a fragmentary plan view of a portion of the structure shown in Fig. 3.

Fig. 8 is an enlarged view of one of the receptacles or seats for the ends of the container, and

Fig. 9 is a perspective view of a detent release forming part of the mechanism of the extruding structure.

This invention comprises certain improvements in tubular containers or cartridges for fluent material and apparatus in which such containers may be mounted in order that their contents may be expelled or extruded under pressure.

The container or cartridge filled with fluent material, to be ejected or extruded by the operation of the apparatus hereinafter described, is shown in Fig. 1. This container is tubular in character, comprising a shell *A*, and it is of a longitudinal dimension that will make a tight fit between supporting means forming part of the extruding structure. It contains within the same and disposed at one end a cup-shaped member *B*, which functions as a piston when the contents are extruded; such piston member having an annular flange *b* exactly fitting within the interior of such container or cartridge. This end of the container may be closed by a metal cap *C* of usual type having annular flanges *c* between which the wall of the container is held. It will be understood, of course, that when the container is assembled with the extruding means, the cap *C* will be removed so that cooperative mechanism can engage the piston. In practice, a thin disk

of suitable material not affected by the contents of the containers is placed over the opening at one end of the cartridge; the disk having been scored or slightly perforated to permit easy rupture under piston pressure and the scoring or perforation being temporarily sealed. A cap is then placed over this end of the cartridge. After the cartridge has been filled, the piston B is inserted and the end receiving the piston may be closed by a suitable cap C', of a type that may be readily removed, and this cap may be sealed, as indicated at c', to insure against tampering with its contents.

These containers are of a character that may be destroyed after their contents have been ejected and to that end they may be constructed of relatively inexpensive material, which may be a light metal, or card-board, of a weight that will support the contained material and will withstand the pressure exerted by the piston-impelling member, as hereinafter described, to extrude the contained material. The inner wall of the container may be treated with a suitable grease or water resistant agent, particularly when such wall is of paper or similar cellulosic material; such agent being applied in the form of a lining or coating unaffected by the contents, and indicated at a, Fig. 1.

The extruding apparatus forming the subject of this invention comprises a skeleton frame including a body portion having a pistol grip stock and forwardly projecting members constituting a support. The frame carries a pair of cupped receptacles, seats, or flanged abutments, receiving the ends of the tubular container or cartridge filled with a fluent material and whose contents are to be ejected. In order that such container may be properly positioned and operatively held in the skeleton frame, one of the receptacles or seats is fixed to the body while the opposite seat, which is centrally apertured, is pivotally mounted at the ends of the projecting members and is movable with respect thereto on such pivotal connection to permit insertion and removal of a container or cartridge. A locking bar hinged to the body portion of the frame extends over the container, substantially parallel with respect to the forwardly projecting members, and has a hook at its end which engages and holds the pivotally mounted receptacle or seat in position against one end of the tubular container; such action firmly clamping the opposite end of such tubular container in the fixed receptacle or seat.

The tubular containers or cartridges for use with the improved extruding means, carry at one end a piston or movable wall B for forcing the fluent contents of the same out through the opposite end and through the aperture in the movably mounted receptacle or seat, and the frame of such extruding means supports a piston-impelling member. This piston-impelling member is carried by a rack-rod which passes through the fixed receptacle or seat, and the handle portion of the frame body is provided with a trigger member operatively associated with a pinion in engagement with said rack-rod whereby the latter may be moved to cause the piston-impelling member to act upon the piston within the container to extrude the contents of the same. This trigger member carries a pawl in operative engagement with a ratchet wheel which, in turn, is in operative association with said pinion so that movement of the ratchet wheel by the action of the pawl, which is usually step-by-step

when the trigger is moved, will actuate the pinion through its connection with the ratchet wheel.

The skeleton frame or support for the tubular containers or cartridges may be constructed of two pieces or sections 1, 1, which sections may be of pressed metal of the same size and shape, but of right and left contour, and these sections may be riveted or otherwise secured together, as indicated at 1^a. The body of the frame has a pistol grip or handle 1^b, and at its inner end and substantially directly above this pistol grip a flanged disk 2 is mounted; such disk constituting a fixed receptacle, seat or abutment for the end of a tubular container or cartridge such as that shown in Fig. 1, filled with fluent material to be ejected by pressure applied to the movable piston within such container or cartridge.

The disk 2 constituting the fixed receptacle or seat is circular in contour and preferably of pressed metal. It may be secured to the sections 1, 1, of the frame by means of lugs 3 carried by the latter which pass through openings in said disk and are riveted or upset over the inner surface of the same. The flange of the disk 2, indicated at 2^a, is tapered so that the end of the container or cartridge may readily enter the same and be firmly seated therein when the container is locked in position. The preferred form of flange is indicated in the enlarged view, Fig. 8, wherein it will be noted that it flares outwardly to afford free entrance for the end of the container, while its inner portion is substantially the diameter of the container, preferably very slightly less so that, when it is seated, there will be a tight fit between the inner portion of such flange and the wall of the container.

At the opposite end of the frame, a combined nozzle and receptacle or seat receiving the open end of the container or cartridge is mounted, such seat being indicated at 5 and having a depending lug 5^a which is pivotally connected to the forwardly projecting portions 1^c of the frame by means of a pin 6. This receptacle or seat is centrally apertured, as indicated at 5^b, with an internally tapered throat, and it has a flange with a tapered surface of a character like that illustrated in Fig. 8.

A rack-rod 7 passes through an opening 7^a in the fixed receptacle or seat 2, and carries a piston-impelling member or plate 8 adapted to engage the piston B in the container or cartridge, the opposite and free end of the rack-rod being provided with a cross-piece 9 for retracting the same to starting position when a container or cartridge has been emptied.

In order that the piston-impelling member 8, carried by the rack-rod 7 and arranged to act upon the piston within the cartridge or container, may be operated, the following means may be employed:

A rotatable sleeve 10 is carried by a cross-pin 10^a secured to the walls of the frame, and this sleeve carries a pinion 11 associated in fixed relation with a ratchet wheel 12. The ratchet wheel and pinion may turn on or with the sleeve, and these rotatable elements are so positioned that the pinion is in operative engagement with the rack-rod. In order that the latter may be held in operative position with respect to said pinion, a guide roller 13 is mounted between the sections of the frame and overlies the rack-rod. Journaled on the sleeve 10 is a trigger structure or actuator for the pinion in engagement with the rack-rod. This may comprise a suitably

shaped member 14 with side extensions 14^a, one disposed at the side of the ratchet wheel and the other at the side of the pinion. This trigger element carries a pawl 15, pivotally mounted upon a pin 16, and held in operative engagement with the ratchet wheel by means of a spring 17, and it will be understood that movement of the trigger toward the pistol grip 1^b or in the direction of the arrow *x* will serve to effect movement of the ratchet wheel, which, in turn, moves the pinion and actuates the rack-rod. This movement is step-by-step, and if desired, it may be so arranged as to be limited to a single tooth of the rack-rod. In order that the trigger may be retracted to operative position after each movement to actuate the pinion, a spring 18 is provided, one end of which is connected to the trigger while the opposite end is anchored to a cross-pin which may be one of the rivets 1^a connecting together the forwardly projecting extensions 1^c of the frame.

A locking detent 22 is carried by the pistol grip portion of the frame, being preferably mounted on a pin 23, secured to the side walls thereof and held in operative position with respect to the ratchet wheel 12 by means of a spring 24. This detent serves to prevent backward rotation of the ratchet wheel when the pawl 15 is moved to a fresh position with respect to the same.

A detent release, indicated at 25, may be pivotally mounted on the pin 23, and this release is provided with a lug 26 which underlies said detent 22. Movement of the member 25 in the direction of the arrow serves to disengage said detent from the ratchet wheel. In addition, this release carries a projection 27 extending from the under-side of the same toward the free end of the pawl 15 so that, when the release member 25 is moved to disengage the detent 22, such projection will also release the pawl 15 from the ratchet wheel when it is desired to return the rack-rod to loading position.

A locking bar 28 to hold the movable receptacle or seat 5 in position against the open end of the container may be hinged to a yoke 29 disposed between the upwardly projecting ears 30 of the frame, the opposite end of such yoke being connected to a cam 31 which, when turned in engagement with said ears, effects a pull on said rod whereby its hooked end firmly engages the receptacle or seat 5.

It is essential that the ends of the container or cartridge be sealed in the receptacles or seats, and for this purpose, the walls of the annular flanges of said seats are tapered, as indicated, so that, when the tubular container is locked to said seats, the ends of the same will be wedged in place.

To load the structure after the piston impeller 8 has been retracted to a point adjacent the seat 2, the sealing caps C and C' on both ends of the cartridge are removed and then the cartridge is placed in the frame with the end containing the piston fitting within the fixed receptacle or seat 2. Then the opposite receptacle or seat 5 is closed upon the opposite end of the container, and the locking bar 28 brought into position whereby its hooked end may engage such seat 5, after which such bar is locked in position by turning the cam 30. The position of the disk D over the material at the open end of the container or cartridge protects the seat 5 from receiving any of the contents. This disk is provided with scored cross-slits *d* or perforation at

its centre so that, when pressure is applied to the piston at the opposite end of the container, the material may readily flow through such slits or perforation and into the nozzle 5^b which may form part of such seat 5. The nozzle may receive various forms of outlets, one of which is shown in Fig. 2.

In view of the fact that many compounds available for extrusion by the use of a structure of this type have a great amount of elasticity, it is desirable, when a determined part of a calking or other operation has been completed, that the back pressure upon the contained material be relieved, and this may be effected by actuating the detent release for partial or full relief of the back pressure, depending upon the position of the trigger at the time such detent release is actuated.

What is claimed as the invention and desired to be secured by Letters Patent, is:

1. The combination of a skeleton frame having a fixed abutment providing a seat, a hinged seat having an aperture carried by said frame opposite the fixed abutment and movable into alignment with the same; said seats being adapted to receive between them an open-ended tubular container and having annular flanges with tapered or beveled surfaces against which the ends of the container may be wedged, means for locking the container between said seats, a piston within said container, and means for acting upon the contents of said container to discharge the same through said apertured seat; said latter means including a rack rod passing through the fixed seat for operative engagement with said piston, a pinion engaging the rack rod, a ratchet wheel operatively connected to and concentrically mounted with respect to said pinion, a trigger pivotally mounted in the stock member, a pawl carried by said trigger in engagement with the ratchet wheel, a detent mounted in the stock member for engagement with the ratchet wheel to prevent retractive movement of the same and the pinion, and means mounted in the stock member and operative to release the pawl and detent from the ratchet wheel to permit retraction of the rack rod.

2. A calking gun comprising a skeleton frame including a pistol grip stock member having a forwardly extending arm, a cupped receptacle or seat secured in fixed position to said stock member, an apertured receptacle or seat of cupped form hinged to the arm and movable into alignment with the fixed seat; said seats being adapted to receive between them a tubular open-ended container having a piston, pivotally mounted means operatively connected to the stock member and in substantial parallelism with said arm for engaging the hinged receptacle or seat to lock the container in position, means movably mounted with respect to the stock member for discharging the contents of the container through the aperture in the hinged seat or receptacle; said latter means including a racked piston rod passing through the fixed seat for operative engagement with said piston, a pinion engaging the rack rod, a ratchet wheel operatively connected to and concentrically mounted with respect to said pinion, a trigger pivotally mounted in the stock member, a pawl carried by said trigger in engagement with the ratchet wheel, a detent mounted in the stock member for engagement with the ratchet wheel to prevent retractive movement of the same and the pinion, and means mounted in the stock member and operative to

release the pawl and detent from the ratchet wheel to permit retraction of the rack rod.

3. A calking gun comprising a skeleton frame including a pistol grip stock member having a forwardly extending section, a receptacle or seat of cupped form fixed to the stock member, an apertured receptacle or seat of cupped form hinged to said extended section opposite the fixed receptacle or seat and movable into alignment therewith; said receptacles or seats being adapted to receive between them an open-ended tubular container having a piston, means operatively connected to the stock member for engaging the hinged receptacle or seat to lock said container in position, means mounted in the stock member for discharging the contents of the container through the aperture in the hinged receptacle or seat; said latter means including a rack rod passing through the fixed receptacle or seat for operative engagement with said piston, a pinion engaging said rack rod, a ratchet wheel operatively connected to said pinion, a trigger pivotally mounted in the stock member, a pawl carried by said trigger in engagement with the ratchet wheel, a detent in engagement with the ratchet wheel to prevent retractive movement of the same and the pinion, and means mounted in the stock member and operative to release the pawl and detent from the ratchet wheel to permit retraction of the rack rod.

4. A calking gun comprising a skeleton frame including a pistol grip stock member having a forwardly extending section, a receptacle or seat of cupped form fixed to the stock, an apertured receptacle or seat of cupped form hinged to said extended section opposite the fixed receptacle or seat and movable into alignment therewith; said receptacles or seats being adapted to receive between them an open-ended tubular container having a piston, pivotally mounted supporting means operatively connected to the stock member for engaging the hinged receptacle or seat to lock the container in position, means mounted in the stock member for discharging the contents of the container through the aperture in the hinged receptacle or seat; said latter means including a rack rod passing through the fixed seat for operative engagement with said piston, a pinion engaging the rack rod, a ratchet wheel operatively connected to and concentrically mounted with respect to said pinion, a trigger pivotally mounted in the stock member, a pawl carried by said trigger in engagement with the ratchet wheel, a detent mounted in the stock member for engagement with the ratchet wheel to prevent retractive movement of the same and the pinion, and a lever pivotally mounted in the stock member and operative to release the pawl and detent from the ratchet wheel to permit retraction of the rack rod.

5. A skeleton frame calking gun comprising a pistol grip stock member having a forwardly extending channel member, a receptacle or seat of cupped form rigidly mounted on the stock member, an apertured receptacle or seat of cupped form hingedly mounted at the end of the channel member opposite the rigidly mounted receptacle or seat; said seats being adapted to receive between them an open-ended tubular container filled with plastic material and having a piston, pivotally mounted means carried by the stock member and engaging the hinged receptacle or

seat for locking the container in position, means mounted in the stock member for manual operation to effect discharge of the contents of the container through the apertured receptacle or seat; said latter means including a racked piston rod passing through the rigidly mounted receptacle or seat for operative engagement with the piston in said container, a pinion engaging the racked piston rod, a ratchet wheel operatively connected to and concentrically mounted with respect to said pinion, a trigger pivotally mounted in the stock member, a pawl carried by said trigger in engagement with the ratchet wheel, a detent mounted in the stock member for engagement with the ratchet wheel to prevent retractive movement of the same and the pinion, and means mounted in the stock member and operative to release the pawl and detent from the ratchet wheel to permit retraction of the rack rod.

6. A skeleton frame calking gun comprising a pistol grip stock member having a forwardly extending portion, a receptacle or seat of cupped form rigidly secured to the stock member, a movable receptacle or seat of cupped form and having an aperture pivotally mounted at the end of the forwardly extending portion of the frame opposite the fixed receptacle or seat; said seats receiving between them an open-ended tubular container having a piston, means carried by the stock member for engaging the movable seat to lock the container to said seats, a movable racked rod passing through the rigidly mounted seat for operative engagement with the piston in the tubular container, manually operable means mounted in the stock member for actuating said rod to discharge the contents of the container through the apertured seat; said latter means including a pinion engaging the racked rod, a ratchet wheel operatively connected to and concentrically mounted with respect to said pinion, a trigger pivotally mounted in the stock member, a pawl carried by said trigger in engagement with the ratchet wheel, a detent mounted in the stock member for engagement with the ratchet wheel to prevent retractive movement of the same and the pinion, and a lever pivotally mounted in the stock member and operative to release the pawl and detent from the ratchet wheel to permit retraction of the rack rod.

7. A skeleton frame calking gun comprising a pistol grip stock member having a forwardly extending portion, centrally apertured seats oppositely disposed for removably receiving between them a tubular container; one of said seats being fixed to the stock member and the other hinged to the forwardly extending portion of the frame, means movably connected to the stock member for locking the container between said seats; said container having a piston closure movable through the same in one direction, a rod passing through the aperture in the seat fixed to the stock member for operative engagement with said piston, manually operable means carried by the stock member for effecting movement of said rod against the piston for the purpose of discharging the contents of said tubular container through the other apertured seat, said latter means including a detent for the rod-actuating means, and a detent release operable to permit retraction of said rod.

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