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VALVED DISPENSER

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FIG. 1.

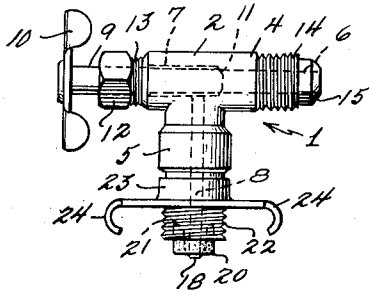
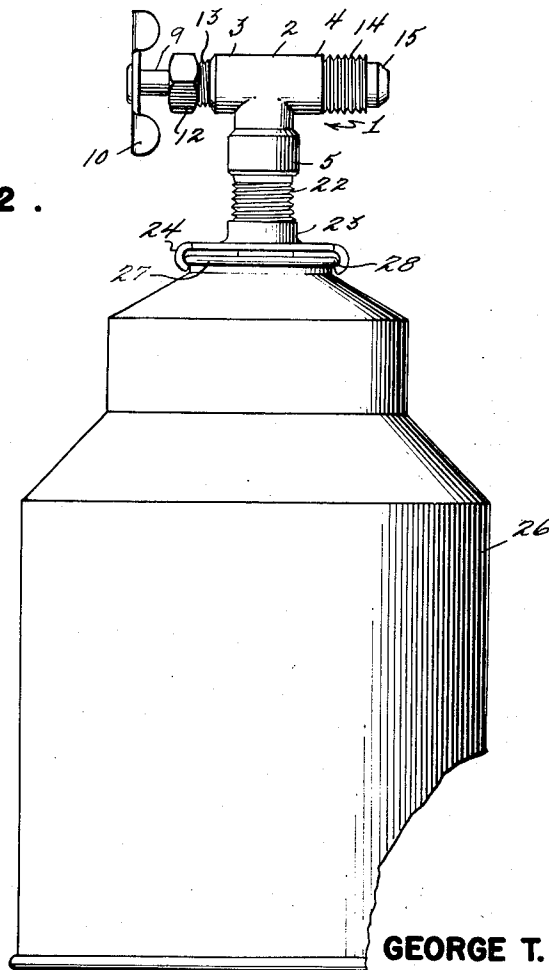


FIG. 2.



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VALVED DISPENSER

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7 Claims. (Cl. 222—5)

The present invention relates to dispensing valves and more particularly to a valved release mechanism for pressurized gases held within can-like containers.

Fumigants, aerosol insecticides, inert propellants, refrigerants and liquefied hydrocarbon fuels are but a few of the pressurized gases now commercially available. The heavy walled cylinder of large volume is still in favor where large quantities of material are being utilized regularly. At the same time, however, there is a growing demand for the can-type container of small capacity in which many pressurized gases can be charged and held without trouble. Automatic loading equipment is available to fill cans with unit charges of liquefied gas and apply sealing caps thereto. These smaller can-type containers are inexpensive and yet they pass all of the I. C. C. specifications with regard to the packaging of inflammable substances.

The subsequent handling of the charged, sealed containers has occasioned some difficulties, particularly in the release or controlled dispensing of the contents thereof. While the cans may be refrigerated to insure the gaseous contents to be in liquid state for transfer to a suitable dispenser such procedure is not practicable in most instances. It is also possible to provide each can with a dispensing valve but a modification of this type would make the container much more expensive to manufacture and would also create a potential point of weakness therein.

Briefly stated, the present invention contemplates a dispensing valve which is readily secured to the top cap seal of a can-type container of pressurized gas and placed in communication with the interior of said container by means of a self-contained tubular cutter adapted to penetrate the top cap seal while establishing a sealed engagement therewith.

A primary object of my invention is to provide a dispensing valve which will enable the expeditious handling of pressurized gases in sealed can-type containers.

A second object of the invention is the provision of a dispensing valve which embodies an opening cutter designed for fluid tight penetration of the top cap seal of a can-type container for pressurized gas.

A further object of the present invention is to provide a dispensing valve which can be readily attached to and removed from can-type containers for pressurized gas and which enables a complete control of the rate of discharge of the contents of said containers.

Another object of the present invention is to provide a dispensing valve which has clamping means enabling retentive attachment to variously sized top cap seals of can-type containers for pressurized gas.

Other objects and advantages of the present invention will be readily apparent from the following detailed description of a preferred embodiment thereof when taken in conjunction with the accompanying drawing, wherein:

Fig. 1 is a side elevational view of a dispensing valve embodying the principles of my invention; and

Fig. 2 is a side elevational view of the dispensing valve

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in position to open a can-type container of pressurized gas.

Turning to the drawing, the dispenser valve 1 comprises a body 2 of forged or cast metal which is substantially of T-shape having outwardly projecting, opposed arms 3 and 4 and a lateral extension or leg 5 intermediate thereof, said arms and leg containing axial passages 6, 7, and 8 extending inwardly thereof and joining centrally of the body 2.

The dimensions of the body 2, are of no particular significance and may be varied as desired or required to facilitate production thereof. Normally, however, arm 3 is shorter than arm 4 while leg or conduit 5 is longer than either arm 3 or 4 in order to provide clearance for mounting and use of the device. Ordinarily the diameter of the passage 6 will be greater than that of the passage 8 for free flow of fluids therethrough while the passage 7 is of still larger diameter and in addition extends beyond the center line of the leg 5.

The arm 3 is threaded internally to receive a valve stem 9, threaded along an intermediate portion of its length for engagement therewith. The stem 9 carries at its outer extremity a handle 10 suitably secured thereto, and extends inwardly of the arm 3 through the passage 7 a distance sufficient to engage a seat 11 formed at the inner terminal of the passage 6, at its juncture with passage 7 and to effect a closure of said passage 6. The seat 11 is preferably provided with a conventional plastic wear insert. The valve stem 9 is sealed at its outer end by a packing washer or gland (not shown) maintained in position at the end of the arm 3 by a packing nut 12, secured upon an exteriorly threaded portion 13 of the arm 3.

The arm 4 is provided with a threaded boss 14 having a chamfered face 15 to which a suitable delivery tube or spray nozzle (not shown) may be connected.

The leg 5 carries a hardened steel tubular cutter 18 secured inwardly of the passage 8 with a portion of said cutter projecting beyond the end of the leg 5. A composition gasket 20 of a suitable material such as a plasticized synthetic resin or rubber surrounds the leading end of the cutter 18 and is seated in a suitable chamber 21 provided in the extreme end of the leg 5. While the inner diameter of the tubular cutter may be somewhat less than that of the passage 8 said cutter does not block that passage against the free flow of fluids therethrough.

The leg 5 is also threaded exteriorly as at 22 for a considerable distance along its length and a clamping collar 23 is mounted thereon for rotatable movement along said threaded portion 22. The collar or anchor 23 is provided with a plurality of projecting fingers 24, the ends of which turn back upon themselves to form hook-like members. At least two of the projecting fingers are substantially diametrically opposed while a third finger is positioned between them, leaving slightly more than one half of the periphery of the collar free of obstruction. This arrangement of the fingers 24 and their slight inherent resilience permits the collar to be fitted onto the neck of a can 26 of pressurized gas. The can 26 is sealed with a metal top cap seal 27 which has a rolled rim 28 adapted to fit over the neck rim of the can 26 and to be sealed thereto in the conventional manner.

After the collar 23 is attached to the can 26 and correctly aligned over the cap 27, the valve per se is rotated and the leg 5 advanced towards the cap. This advance causes the gasket 20 to be forced against the cap 27 and compressed as the cutter 18 continues to move downwardly and finally to cut a small hole in the cap 27 establishing communication with the contents of the can. The gasket 20 produces a fluid tight peripheral seal for the cutter 18 and prevents loss of pressurized gas at the point of penetration of the cap 27. The valve stem 9

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may be retracted by rotation thereof and the pressurized gas discharged through the passage 6. After the can-type container 26 has been emptied, reverse rotation of the valve body 2 raises it from engagement therewith. The collar 23 can then be removed from the can and placed upon a new filled can. Since there has been a reasonable standardization in can neck sizes, the same collar will fit cans of different capacities. Additionally, however, collars of different diameters for cans having necks of different sizes may be used interchangeably with a standard dispensing valve body.

In some instances where it is desired to combine different gases and liquids for simultaneous delivery of a mixed product, the discharge ends 4 of a plurality of valve bodies 2 may be secured in any suitable fashion in spaced relation along a common header provided with a unitary discharge orifice. Under such arrangement, the amounts of different gases released from individual cans 26 may be controlled by adjustment of the several valve elements therefor and/or a larger total volume of gas may be dispensed in a single operation without an interruption in feed.

Other modifications in the form of the component elements of my apparatus, their composition and arrangement are, of course, possible without departing from the spirit of the invention or the scope of the appended claims.

What I claim is:

1. In combination with a high pressure fluid container having one or more exposed and sealed ends, a dispenser assembly including: a fluid dispensing conduit having intake and exhaust extremities and an anchor member peripherally engaging a sealed end of the container interlocking the conduit and container, said conduit including gasket means seated within the intake extremity for sealing compression on a sealed end of the container and a rigid tubular cutter mounted in extension of the intake end of said conduit, said cutter being encompassed by said gasket proximate the exposed end of said cutter, and conduit reciprocating means joining conduit and anchor to progressively move the conduit against the container to effect complementary simultaneous cutting and sealing into the interior of the container in dispensing.

2. In combination with a high pressure fluid container having at least one sealed cap end, a fluid dispensing conduit having intake and exhaust extremities and an anchor member slidably engageable with the periphery of the cap end of the container adjustably interlocking the conduit and container, said conduit including com-

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pressible gasket means seated concentrically within the conduit at its intake extremity and a tubular cutter mounted in operable connection with the intake end of said conduit and in extension thereof, said cutter being intimately encompassed by said gasket up to a cutting extremity of the cutter, the conduit and anchor being threadedly connected for counter-action whereby upon rotation of the conduit the anchor is more firmly seated upon the cap as the cutter is moved into the interior of the container compressing the gasket for sealed dispensing of the fluid.

3. A dispenser-adaptor for compressed fluids which are contained within externally cap sealed can-type containers comprising clamping means slidably engageable with a container-cap periphery, a fluid conduit engaging the clamping means in friction locking reciprocal contact, tubular cutting means rigidly disposed concentrically within the interior of said conduit and in extension thereof, and compressible gasket means intimately encompassing the cutter and abutting the conduit whereby upon reciprocation of the conduit the clamp is forcibly anchored to the container while the cap seal is simultaneously cut for sealed conduction of compressed fluids from the container.

4. The device according to claim 3, said cutting means including a truncated conical cutting end extending beyond an exposed end of the gasket.

5. The device according to claim 3, in which the conduit is in threaded contact with the clamping means.

6. The device according to claim 5 in which the clamping means comprises at least two opposed inwardly curved flanges engageable with container cap periphery.

7. A valved dispenser as defined in claim 3, in which the collar mounting is provided with a plurality of projecting fingers for engagement with said cap seal, two of said fingers being substantially diametrically opposed and a third finger is positioned between them for proper indexing between the collar and said top cap seal.

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