Nov. 3, 1953 R. L. BURCHETT 2,657,563

DETACHABLE VALVE CLOSURE

Filed June 15, 1950

Fig. 1.

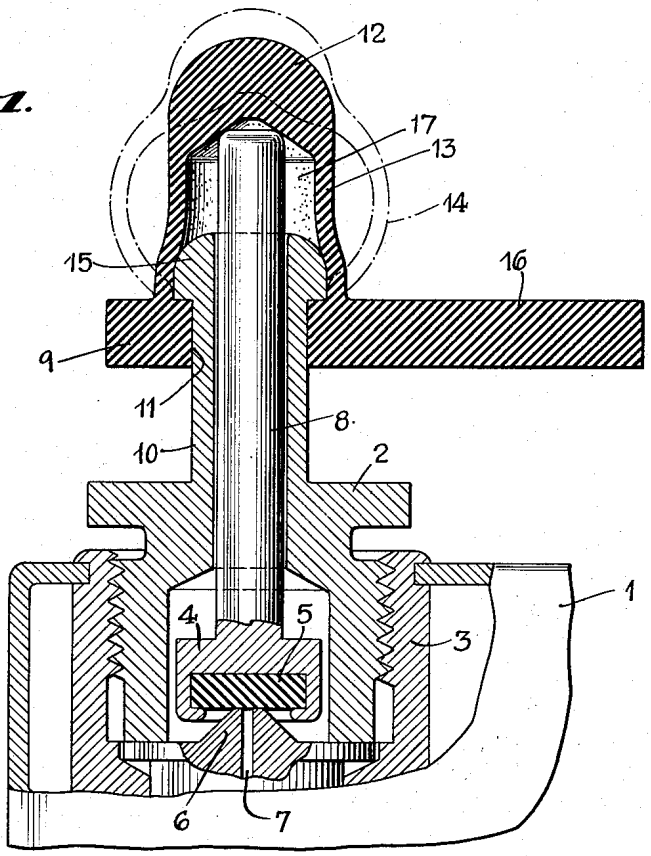


Fig. 2.

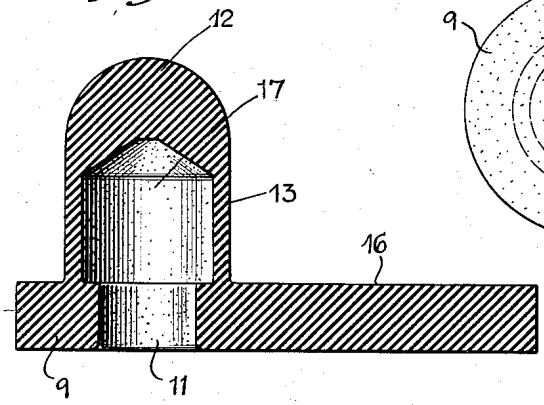
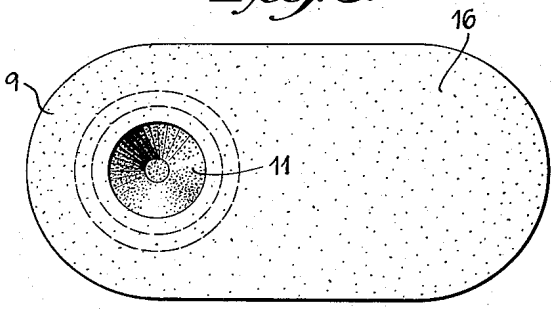


Fig. 3.



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DETACHABLE VALVE CLOSURE

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4 Claims. (Cl. 17—87)

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The invention relates to a detachable closure device to be applied temporarily during manufacture, shipment or storage, to valve mechanisms of delicate character such as may be used in connection with gas fueled cigar lighters and the like for controlling the flow of fuel to the burner, the main purpose of the closure being to insure that the valve, so long as it is not of faulty construction, will be reliably held closed without either over-straining or loosening of its parts, and also give indication to the observer when a faulty valve is causing leaks and consequent loss of gas. For example, so-called refill containers for lighters fueled by butane, propane or the like, may be equipped with closures of the above character, which remain in place until the container is to be put into service, at which time the closure will indicate whether or not gas has been lost by leakage through the valve; if not the closure is removed and the container assembled in operating relationship to the operating parts of the lighter which control the valve during service. Further features of the invention will be in part obvious and in part specifically pointed out in the description hereinafter contained which, taken in conjunction with the accompanying drawings, discloses a preferred form of closure constructed to operate in accordance with the invention; the disclosure, however, should be considered as merely illustrative of the invention in its broader aspects. In the drawings—

Fig. 1 is a vertical sectional view showing a closure constructed to operate in accordance with the invention, in operating position with respect to the valve mechanism of a container for gas under pressure.

Fig. 2 is a vertical section taken through the closure, shown detached, and

Fig. 3 is a bottom plan view of the closure shown in Fig. 2.

The invention is shown as applied to a container 1 constructed to hold gas under pressure, such as butane or propane, and provided with a burner 2 which is shown as mounted within a cylindrical fitting 3 appropriately sealed to the wall of container 1. During service it will be understood that the gas issuing from the burner 2, is ignited by appropriate mechanism, but with this phase the present invention is not particularly concerned. Flow of gaseous fuel to the burner 2 is controlled by a valve member 4 which is shown as having a sealing disk 5 of synthetic rubber or the like, which is impervious to the gas, and which seats against a valve seat member 6 mounted within the fitting 3 and having a fuel

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passageway 7 in communication (preferably through appropriate pressure reducing devices such as are known in the art) with the gaseous fuel supply in container 1. The valve 4 is shown as having an actuating member 8 in the form of a plunger extending outwardly through the mouth of the burner, the gas flowing outwardly through the space between the plunger and the burner, when the valve 4 is open. The illustrated form of valve is opened by the gaseous pressure in passageway 7 unless pressure is applied to the plunger 8 to hold the valve closed.

To hold the valve closed prior to the time when the container is placed in service, I employ a closure cap which which may be molded of elastic rubber or rubber-like material, and which has a cavity 17 therein having gas tight walls. The cap is provided with a base 9 which closely surrounds and grips the neck 10 of the burner so as to form a gas-tight seal at this point, the base 9 being provided with an opening 11 therethrough for this purpose and the walls of the cavity 17 together with the burner 2 forming a chamber which is gas tight except for the passageway 7. When the cap is in operating position, its head 12 bears against the outer end of the valve plunger 8, and the elastic sides 13 of the cap are stretched, i. e. placed under tension, so that the head 12 of the cap urges the valve 4 resiliently into sealing position with respect to its seat. This resilient pressure may readily be kept below an amount which would injure the delicate parts of the valve (which is many times enlarged as it appears in the drawings) as would be likely to happen if a rigid closing device such as a screw were employed; and, on the other hand, the elastic pressure insures against looseness which might cause leakage. Thus so long as the valve is not faulty, the closure cap remains in the condition indicated by the full lines in Fig. 1, but in case of a leaky valve, the cap tends to balloon out into the distorted shape indicated by the dotted lines 14 in Fig. 1, until eventually the cap pops off. Thus, either the absence of the cap or its ballooned condition, indicates a leaky valve, and a container which is likely to be initially deficient in gas, and leak in service. In the illustrated form the burner is provided with a head 15 under which the base 9 of the cap engages, to hold the cap against popping off or loosening its pressure on the valve plunger 8, unless the internal gaseous pressure becomes high as above referred to.

A tab 16 may be provided on the cap to assist in stretching its base over the head 15 of the burner, when installing or removing the cap.

While the invention has been disclosed as carried out by a closure of the above described specific form, it should be understood that changes therein may be made without departing from the invention in its broader aspects, within the scope of the appended claims.

I claim:

1. In combination, a gas lighter fuel container having a chamber containing gaseous fuel under pressure, a burner projecting from said container, said container also having a fuel conducting passageway leading to said burner and a valve interposed in said passageway, said valve having an actuating member exposed at the mouth of the burner, said valve actuating member being mounted to move between an inner position wherein said valve is closed and an outer position wherein said valve is open, and an elastic walled closure cap having a cavity therein, said cavity having gas tight walls and said cap being mounted with the walls of said cavity closely surrounding and in gas tight detachable engagement with the projecting portion of said burner and also surrounding said valve actuating member to form a gas tight chamber containing said projecting portion of said burner and said member, said cap having a head bearing against said valve actuating member, and the sides of the cap being in tension to resiliently urge said valve into closed position.

2. In combination, a gas lighter fuel container having a chamber containing gaseous fuel under pressure, a burner having a neck portion projecting from said container and also having an enlarged head, said container also having a fuel conducting passageway leading to said burner and a valve interposed in said passageway, said valve having an actuating plunger projecting through the mouth of said burner, said valve actuating member being mounted to move between an inner position wherein said valve is closed and an outer position wherein said valve is open, and an elastic walled closure cap having a cavity therein, said cavity having gas tight walls, said cap being mounted on and detachably engaging the projecting portion of said burner with said head and said valve plunger within said cavity and with a wall of said cavity closely surrounding and in gas tight detachable engagement with the burner neck adjacent the burner head to form a gas tight chamber containing said burner head and the projecting portion of said plunger, said cap also having a head bearing against said valve actuating plunger, and the sides of the cap being in tension to resiliently urge said valve into closed position.

3. In combination, a gas lighter fuel container having a chamber containing a gaseous fuel under pressure, a burner projecting from said container and having a mouth therein for the issuance of said fuel therefrom, said container having a fuel conducting passageway leading to said burner and a valve interposed in said passageway, said valve having an actuating member exposed at the mouth of said burner, and a closure cap having a cavity therein adapted to receive the end of said burner, said cavity having gas tight walls at least one of which is elastic and said cap having a base in gas tight, detachable engagement with said burner and being mounted with the mouth of said burner within said cavity, said walls of said cavity and said burner forming a gas tight chamber whereby gas leaking past said valve when said cap is on said burner is prevented from escaping, said cap also having means engaging said actuating member to hold said valve in closed position.

4. In combination, a gas lighter fuel container having a chamber containing a gaseous fuel under pressure, a burner projecting from said container and having a mouth therein for the issuance of said fuel therefrom, said container having a fuel conducting passageway leading to said burner and a valve interposed in said passageway, said valve having an actuating member exposed at the mouth of said burner, and a closure cap having a cavity therein adapted to receive the end of said burner and said member, said cavity having gas tight walls at least one of which is elastic and said cap having a base in gas tight, detachable engagement with said burner and being mounted with the mouth of said burner within said cavity, said walls of said cavity and said burner forming a gas tight chamber whereby gas leaking past said valve when said cap is on said burner is prevented from escaping, said cap also being mounted with a wall of said cavity in engagement with said actuating member to hold said valve in closed position.

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