

May 18, 1937.

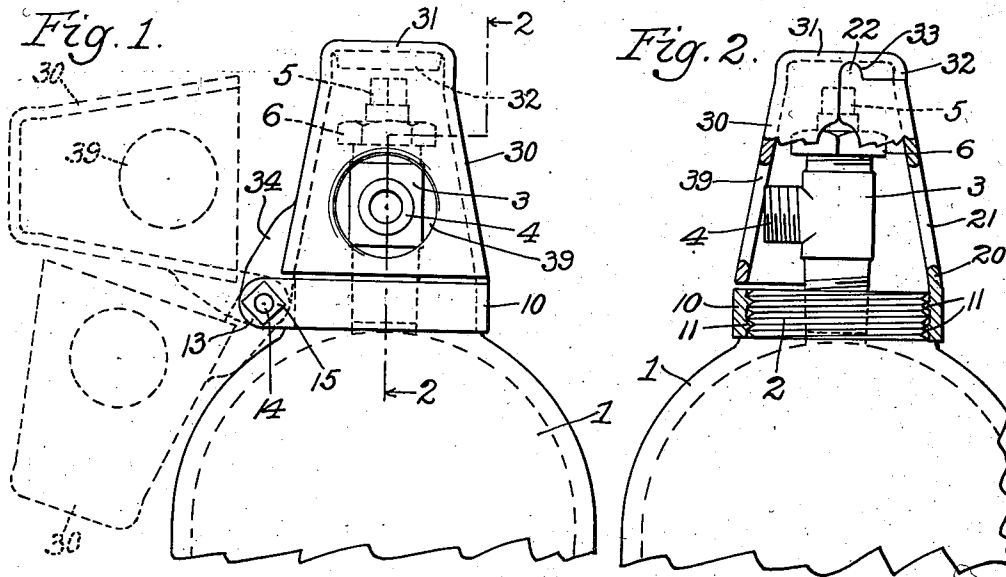
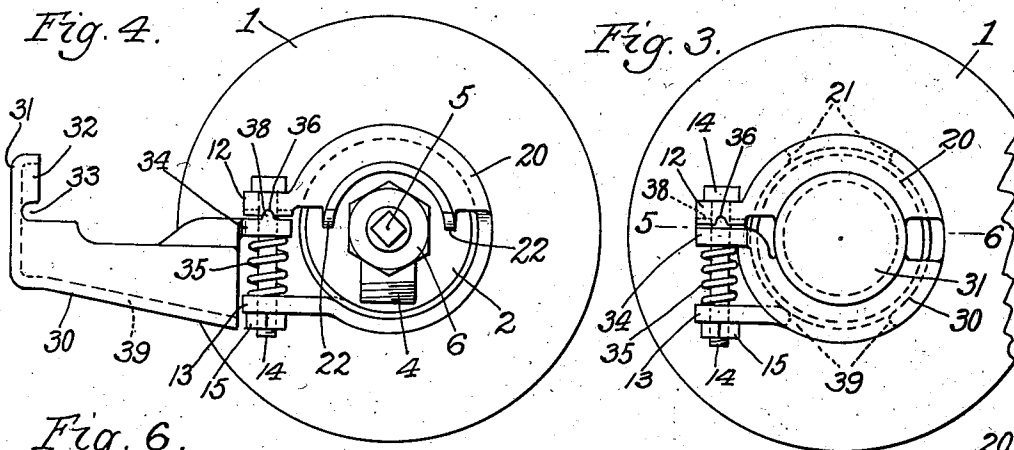
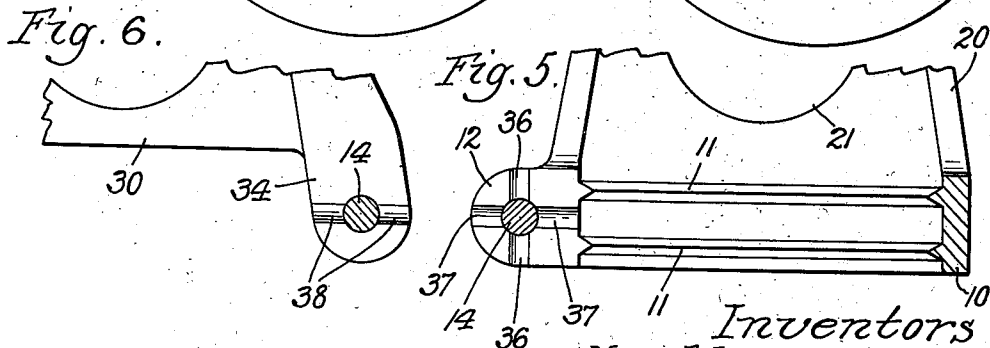
W. J. MacNEILL ET AL

2,080,728

PROTECTIVE CAP FOR GAS TANKS

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2 Sheets-Sheet 1



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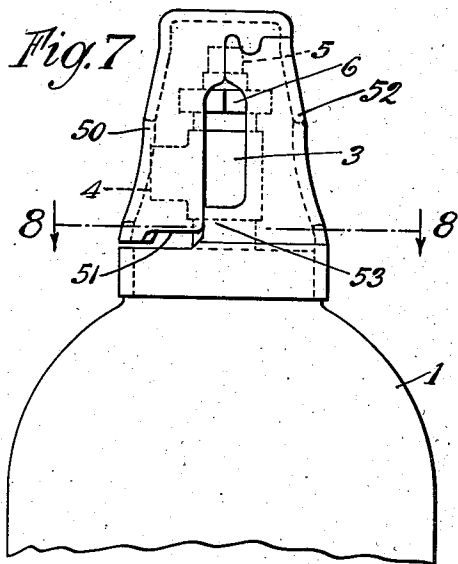
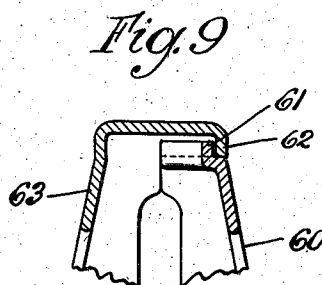
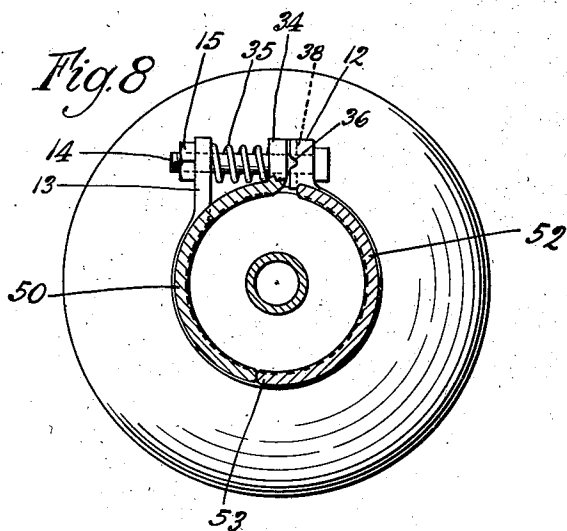
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UNITED STATES PATENT OFFICE

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PROTECTIVE CAP FOR GAS TANKS

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4 Claims. (Cl. 220—85)

Our invention relates to improvements in protector caps for gas tanks and has for one object to provide a protector cap which can be easily and conveniently assembled and disassembled from the tank but which can be opened and closed without detaching it from the tank for use.

Shipping requirements as applied to tanks for the shipment of various gases under pressure are that the valves and valve housings through which the gas is fed to and thru which it is discharged from the tank must be enclosed during shipment in a rigid supporting cap or container which will protect the valves against such breakage or distortion as might result in leakage or loss of the contents of the tank. In the past, it has been common practice to provide a protecting cap which was threaded to engage a thread on a part of the tank so that the cap could be screwed into position. Unfortunately these cast iron caps are rather bulky and comparatively expensive and when they are screwed off to permit access to the valve they are frequently lost and the threads frequently become damaged to the point of rendering the caps useless.

Our invention proposes then to provide a cap which when necessary can be completely removed from the tank but which can be opened and closed to permit manipulation of the valve without being removed from the tank. In this connection, it must be noted that it is not sufficient merely to have a cap with a hole in it so that the operator can work through the hole because that requires special tools and special skill on the part of the operator, it is essential that the whole valve be exposed when the cap is open so that any ordinary wrench may be used so that the pipes, gauges, valves and the like may be easily and conveniently attached and detached.

Other objects will appear from time to time throughout the specification and claims.

Our invention is illustrated more or less diagrammatically in the accompanying drawings, wherein—

Figure 1 is a side elevation of the end of the gas tank;

Figure 2 is a section along the line 2—2 of Figure 1;

Figure 3 is a top plan view with the cap closed;

Figure 4 is a top plan view with the top open;

Figure 5 is a section along the line 5—6 of Figure 3;

Figure 6 is a section along the line 5—6 of Figure 3, looking in the opposite direction;

Figure 7 is a side elevation showing a slightly modified form;

Figure 8 is a section along the line 8—8 of Figure 7;

Figure 9 is an elevation of the further modified interlock.

Like parts are indicated by like characters throughout the specification and drawings.

1 is a gas tank adapted to contain oxygen, acetylene or the like. At one end this tank terminates in a spud 2, which may be threaded, corrugated or smooth as the case may be. Threaded in the center of this spud is a valve housing 3, having a nipple 4, for the attachment of a filling or discharge hose. 5 is a valve stem projecting from the end of the housing, 6 a packing gland. The valve itself contained within the housing and forming no part of the invention is not here illustrated. The form of tank and valve above illustrated is standard for acetylene cylinders and is shown for illustrative purposes, other forms may be used with our invention.

When the spud 2, is threaded as is ordinarily the case, the conventional type of cast iron cap is screwed on for shipment and screwed off and placed aside where it is usually lost, when it is desired to make use of the contents of the tank.

This threaded neck or spud 2, is of course, the appropriate place for the attachment of a cap and the cap which we propose comprises a split ring 10, the inner periphery of which has two or more ribs 11. At the ends of the split ring are ears 12, 13. These ears being apertured for the passage of a bolt 14, with nut 15, so that the ring may be clamped upon the neck of the bottle 1, and rigidly held there in place, though, of course, when the nut is backed off the ring may be withdrawn.

Projecting upwardly from and integral with the ring 10, is the fixed cap member 20. This cap member, if desired, may be apertured as at 21, for lightness and is generally round in cross section and tapers upwardly away from the ring. At the top of this integral cap member are two lugs 22, which project upwardly therebeyond and serve as will hereinafter appear to lock the movable cap member in position when the cap is closed.

30 is the movable cap member. It is of substantially the same size and shape as the fixed cap member except that it is provided at the top with an integral cover plate 31, having a flange 32, adapted to be, when the cap is closed, in continuation of the member 20 and this flange has two opposed notches 33, adapted to be pene-

trated by the lugs 22. Extending downwardly from one side of the movable cover plate is the arm 34, apertured to engage the bolt 14. A spring 35, encircling the bolt forces the arm 34 over toward the lug 12 on the holding ring. This lug 12 has a plurality of radial grooves 36 and 37. These grooves are preferably at right angles to each other and one of them is parallel to the axis of the tank or bottle. The lug 34 has a single rib 38, adapted selectively to engage the grooves 36, 37.

When the parts are in the position shown in full lines in Figure 1, the ring is tight upon the bottle. The integral cap portion projects upwardly along the back side of the valve. The movable cap portion is in the closed position closing the open end of the fixed cap portion interlocking with the two lugs thereon and located in the closed position by the spring which forces the member 34 against the lug 12 and causes the rib 38 to interlock with the groove 37.

Under these circumstances the valve and its assembly is entirely protected and enclosed within the cap and the cap is strong enough and locked in place sufficiently firmly so that in shipment the operator may take hold of the cap itself and use it as a handle for manipulating the tank. The upper end of the cap being rounded is so disposed that the operator may roll the bottle if he so desires and the cap will slide or roll in his hand without discomfort.

When it is desired to charge or discharge the bottle, the operator merely takes hold of the lug 34, forcing it away from the member 12, compressing the spring 35 until the rib 38 is disengaged from the grooves 37. Then he can swing the cap to one side disengaging the lugs, 22, and notches 33, and rotating the cap into the first position shown in dotted lines in Figure 1 at which point the rib 38 will engage the notch 36 and lock the cap in position. Or if it is desired, he may swing the cap further down into the lowermost position shown in Figure 1, and this results in displacing enough of the cap so that the operator may manipulate the valve, may use his wrenches without reference to the cap but the cap is always still attached to the tank or bottle and ready for use. The cap member 30 may have the aperture 39 similar to the aperture 21 in the member 20.

The device shown in Figures 7 and 8 is much the same as the device shown in Figures 1 and 2 except that the cap member 50 in pivot relationship with the fixed cap member 52 is relieved at 51 to form a handle so that the operator may insert a tool or his hand between the two caps for the added convenience in raising the member 50 and rotating it. It will be noted also that the cap member 52 has a lug 53 adapted to abut against the movable cap member 50 adjacent the handle aperture 51. This assists in maintaining the parts in alignment and protecting them against breakage as would otherwise be likely to ensue if the lubricated corner of the cap 50 were not supported.

In the modified form shown in Fig. 9 the fixed cap portion 60 terminates in a reduced flange-like portion 61 adapted to be engaged by an annular flange 62 on the movable cap section 63

so as to provide a different and perhaps stronger type of interlock.

We claim:

1. A protecting cap for gas bottle valves and the like, comprising a fixed cap section and means for rigidly mounting it on a gas bottle adjacent the valve, a movable cap section adapted when in opposition to the fixed section to cooperate with it to entirely enclose the valve and yielding means for locking the movable section in opposition to the fixed section, the mounting means comprising a split ring integral with the fixed cap section and terminating in radially projecting lugs, a screw adapted to draw the lugs together to constrict the split ring upon the bottle, the movable cap section having a lug loosely pivoted on the screw, interlocking members on one of the lugs on the split ring and on the lug on the movable cap section and a spring encircling the screw adapted to yieldingly hold said interlocking members together.

2. A protective cap for gas bottle valves and the like comprising a split ring having two opposed parallel radially projecting lugs, an integral cap portion projecting upwardly from the plane of the ring, open at its further end and having two lugs projecting upwardly therefrom, a pivoted cap portion complementary to the fixed portion having a flanged end closure adapted to overlie the open end of the fixed cap portion, the flange being notched to interlock with the lugs on the fixed portion.

3. In combination, a gas bottle having an internally threaded neck, a valve housing threaded into and projecting from the neck, a cap comprising a split ring terminating in two opposed radial apertured lugs, a screw extending through said apertures and adapted to clamp the ring on the neck, a fixed cap portion integral with and extending upwardly from the ring, extending throughout somewhat less than half the periphery of the ring and open at its end, lugs projecting longitudinally above the upper end of the fixed cap portion, a removable cap portion generally complementary to the fixed portion having a downwardly extending lug loosely engaging the screw, the end of the removable cap portion being closed and having an extension adapted to overlie the fixed cap portion, such extension being bounded by a downwardly extending flange adapted to serve as a continuation of the fixed cap portion, notches in said flange adapted to engage the lugs on the cap portion.

4. In combination, a gas bottle having a spud, a valve projecting from the spud, a two part cap mounted on the spud and enclosing the valve, the larger portion of the cap being loosely pivoted on the support adapted to interlock with the fixed smaller portion of the cap and being mounted loosely to swing in a plane generally parallel with the axis of the bottle and being free to move laterally as it swings, yielding means adapted to hold the cap selectively in either the open or closed position comprising a spring encircling the pivot axis of the cap member.

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