No. 696,983. Patented Apr. 8, 1902.

G. A. LOGAN.

GAS CAPSULE.

(Application filed Feb. 8, 1901.)

(No Model.)

Fig. 1.

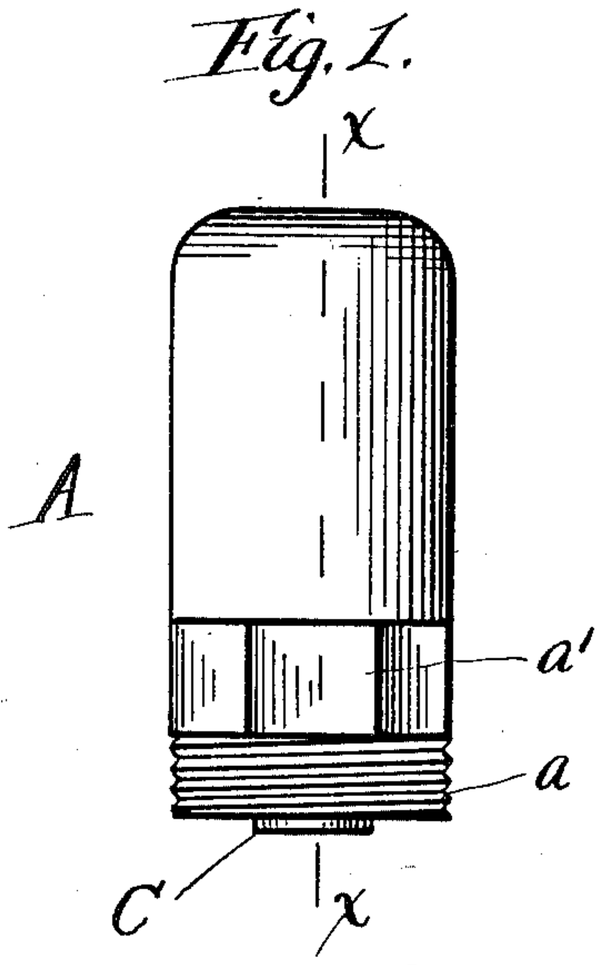


Fig. 2.

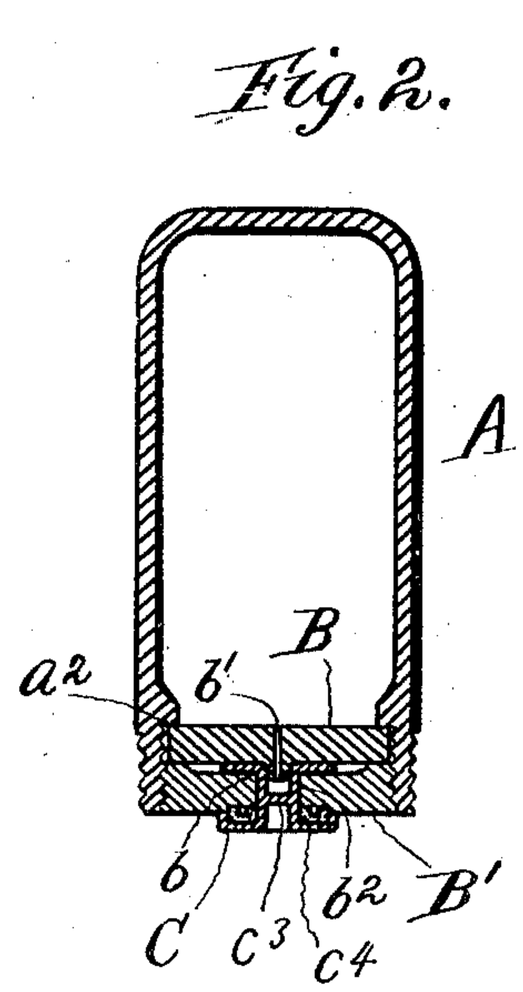


Fig. 3.

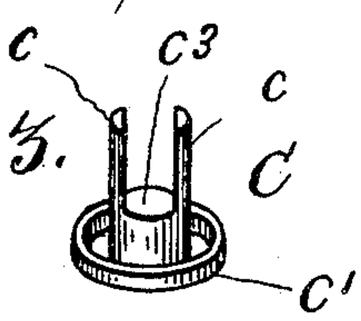


Fig. 4.

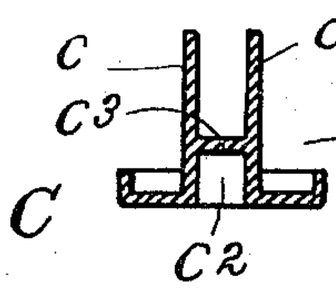


Fig. 5.

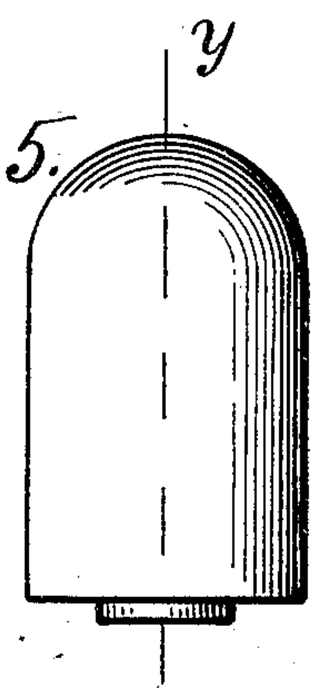


Fig. 6.

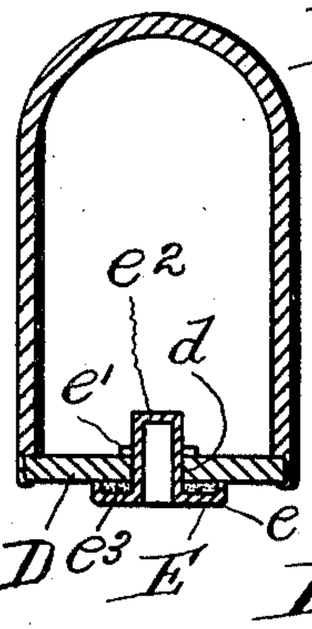


Fig. 7.

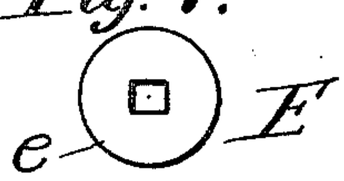


Fig. 9.

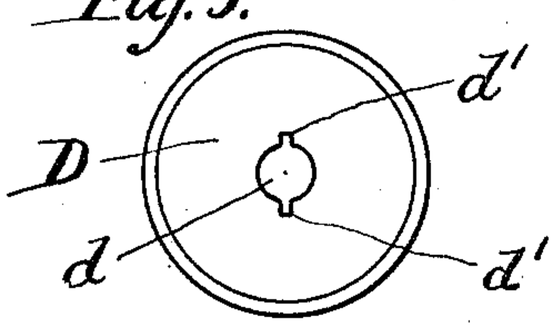
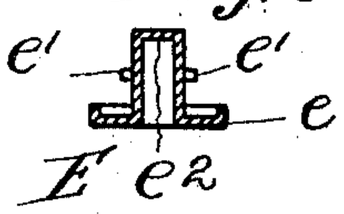


Fig. 8.



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UNITED STATES PATENT OFFICE.

GEORGE A. LOGAN, OF CHICAGO, ILLINOIS.

GAS-CAPSULE.

SPECIFICATION forming part of Letters Patent No. 696,983, dated April 8, 1902.

Application filed February 8, 1901. Serial No. 46,512. (No model.)

To all whom it may concern:

Be it known that I, GEORGE A. LOGAN, a citizen of the United States, residing at Chicago, county of Cook, State of Illinois, have invented a certain new and useful Improvement in Gas-Capsules, of which the following is a specification.

My invention relates to a form of metallic capsule capable of containing compressed gas and adapted for use in charging or aerating the fluid contents of a bottle or other receptacle.

The objects of my invention are to provide a simple and inexpensive capsule which can be readily applied to the bottle, and particularly to provide a capsule which can be readily refilled.

To the foregoing and other useful ends I provide the capsule with threaded and polygonal portions, whereby the capsule can be screwed into a threaded socket in the bottle-head, so as to puncture the capsule and permit the gas to escape into the bottle, and, furthermore, I provide the capsule with a removable puncturable seal, whereby the capsule can be refilled and used again. The construction and manner of using my improved capsule will, however, hereinafter more fully appear.

In the accompanying drawings, Figure 1 is a side elevation of a gas-capsule involving the principles of my invention. Fig. 2 is a vertical section on line $x\,x$ in Fig. 1. Figs. 3 and 4 are respectively a perspective and a section of the seal for closing the opening in the end of the capsule. Fig. 5 is a side elevation of a modified form of capsule. Fig. 6 is a section on line $y\,y$ in Fig. 5. Fig. 7 is a plan, and Fig. 8 a section, of the seal used in said modified form of capsule. Fig. 9 is a plan of the lower end of the capsule shown in Fig. 5, the opening being unsealed.

As illustrated by Figs. 1, 2, 3, and 4, the capsule A is preferably oblong and provided with threaded and polygonal portions a and a'. Thus formed the capsule can be screwed into a threaded socket in the bottle-head, the polygonal portion permitting the application of a wrench. In this way the capsule can be applied and screwed down until its end is pierced by the puncturing point or needle. As a simple and effective arrangement for sealing the capsule the plates B and B′ are provided, the former being seated against a shoulder a^2. The plate B′ is threaded and screwed into the capsule and holds the plate B in place. Plate B is provided with a projection b and an opening b'. Plate B′ is provided with an opening b^2. The gas is forced into the capsule through these openings, and the capsule is then sealed by driving or forcing the seal C into the opening b^2. The said seal is preferably in the form of a metal plug, as shown in Figs. 3 and 4. When driven into the capsule, the prongs or legs c of the plug are deflected outwardly by the projection b and are thereby clenched on the under side of plate B′, the plate B in this way providing a sort of abutment or deflecting-surface for spreading or expanding the inner end of the plug. The outer end of the plug is preferably formed with a head c' and an opening c^2. As a result of such formation the plug has a diaphragm or thin portion c^3, which can be readily punctured and which is pierced by the puncturing point or needle of the bottle-head. A rubber washer c^4 is preferably interposed between the plate B′ and the head of the sealing-plug. Thus constructed the capsule is adapted to contain gas under pressure and to be employed in charging or aerating the liquid contents of a bottle, the capsule, as previously stated, being screwed down until the seal is pierced by the puncturing point or needle. After the capsule has been used the punctured seal can be removed, the capsule recharged, and a new seal inserted. In this way the capsules are refillable and can be used any number of times.

The modified form of capsule shown is provided with an end plate D, having an opening d, formed with notches d'. The seal E is formed with a head e, a couple of lugs e', and also with a thin or puncturable diaphragm e^2. Thus formed the seal can be inserted through the opening d and turned to bring the lugs out of register with the notches d', thereby locking the seal in place. A rubber washer e^3 can be arranged between the plate D and the head e of the seal. As in the previous case the seal E when punctured can be removed, so as to permit the capsule to be refilled. In either case, however, the seal

may be regarded as a plug having laterally-projecting portions which prevent the pressure from forcing it out of the opening and having a head limiting its insertion in said opening.

It is obvious that my invention is capable of further modification. I do not, therefore, limit myself to the constructions shown and described. Prior to my invention the capsules in use could not be refilled, and no practical or satisfactory way of overcoming this difficulty had been suggested. I claim, therefore, to be the first to provide a practical and inexpensive refillable gas-capsule for use in charging or aerating beverages in bottles.

What I claim as my invention is—

1. A gas-capsule adapted for use in charging or aerating beverages in bottles or other receptacles, said capsule being made of metal and provided with an opening, and a removable and puncturable metal sealing-plug inserted and removably secured within said opening, substantially as described.

2. A gas-capsule adapted for use in charging or aerating beverages in bottles or other receptacles, said capsule being made of metal and provided with an opening, and a removable metal sealing-plug inserted and removably secured within said opening, said plug being provided with a puncturable diaphragm, substantially as described.

3. A gas-capsule adapted for use in charging or aerating beverages in bottles or other receptacles, said capsule being made of metal and having a plate or disk secured in its open end, said plate or disk being provided with an opening or aperture, and a removable metal seal inserted in said opening, substantially as described.

4. A gas-capsule adapted for use in charging or aerating beverages in bottles or other receptacles, said capsule being made of metal and having a plate or disk secured in its open end, said plate or disk being provided with an opening or aperture through which the gas is forced into the capsule, and a metal sealing-plug inserted in said opening, said plug being provided with a head limiting its insertion in said opening, and the plug being provided with a bore or passage which is obstructed or closed by a diaphragm or wall, said diaphragm or wall being adapted and arranged in position to be engaged by a projection on the device to which the capsule is applied, and the plug being readily removable after the gas has been liberated from the capsule, whereby the latter can be refilled and used again, substantially as described.

5. A metallic capsule adapted to contain gas or fluid under pressure and provided with an opening, and a metallic sealing-plug inserted in said opening and provided with a longitudinal bore or passage, said bore or passage being obstructed or closed by a diaphragm or wall adapted to be engaged by a point or projection on the device to which the capsule is to be applied, so as to open the passage through the plug and thereby allow the gas to escape from the capsule, and said plug being readily removable after the gas has been liberated from the capsule, whereby the latter can be refilled and used again, substantially as described.

6. A gas-capsule provided with an opening, a metal plug inserted in said opening and having its inner end expanded or clenched to prevent the pressure of the gas from forcing it out, the said plug being formed with a puncturable diaphragm and being readily removable, so as to permit the capsule to be refilled and used again, substantially as described.

7. A gas-capsule formed with screw-threaded and polygonal portions and with a puncturable end and adapted for use in charging or aerating beverages in bottles, substantially as and for the purpose set forth.

8. A gas-capsule adapted for use in charging or aerating beverages in bottles and having its opening sealed by a removable metal plug having a head limiting its insertion therein and expanded or clenched at its inner end to an extent to properly seal the said opening but not to an extent to prevent the ready withdrawal of the plug for the purpose of permitting a refilling of the capsule.

9. A gas-capsule adapted for use in charging or aerating beverages in bottles and having its opening sealed by a removable plug formed with a head limiting its insertion in said opening and with laterally-projecting portions which prevent the pressure from forcing the plug out of place, substantially as described.

10. A gas-capsule adapted for use in charging or aerating beverages in bottles and constructed with a suitable opening, an abutment or deflecting-surface arranged at the inner end of said opening, a sealing-plug having a headed outer end and a bifurcated inner end, said plug being inserted in said opening and having its said inner end spread or deflected laterally by said abutment or deflecting-surface arranged at the inner end of said opening, substantially as described.

In witness whereof I hereunto subscribe my name this 15th day of January, A. D. 1901.

GEORGE A. LOGAN.

Witnesses:

ARTHUR F. DURAND,

HARVEY L. HANSON.