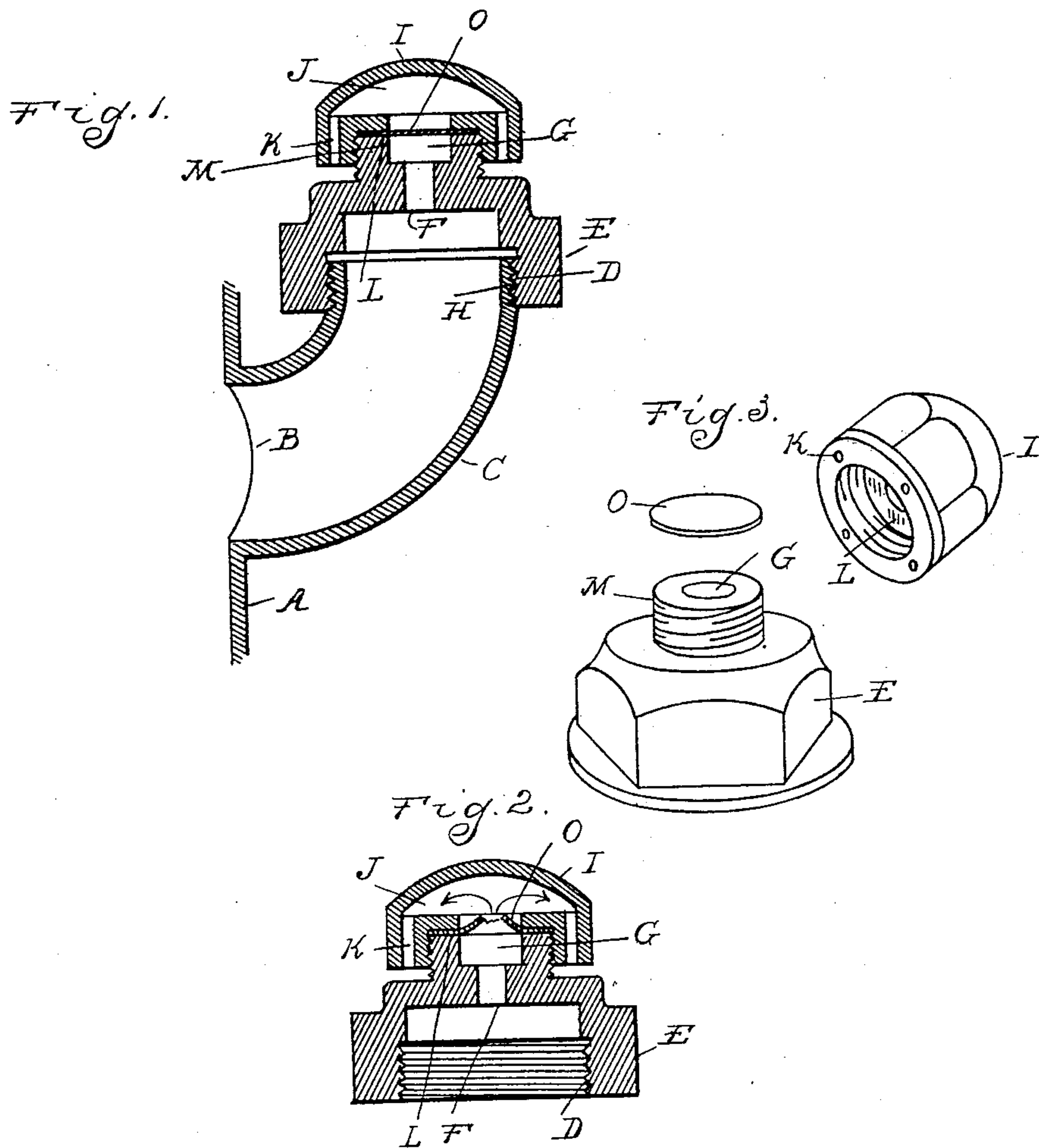


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PATENTED JULY 7, 1903.

F. B. JOY.  
SAFETY CAP OR CLOSURE FOR RECEPTACLES.  
APPLICATION FILED JULY 22, 1902.

NO MODEL.



Witnesses  
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# UNITED STATES PATENT OFFICE.

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## SAFETY CAP OR CLOSURE FOR RECEPTACLES.

SPECIFICATION forming part of Letters Patent No. 733,213, dated July 7, 1903.

Application filed July 22, 1902. Serial No. 116,516. (No model.)

*To all whom it may concern:*

Be it known that I, FRANCIS B. JOY, a citizen of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Safety Caps or Closures for Receptacles, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention has reference generally to vessels or similar devices adapted to contain liquids, gases, or vapors under pressure; and it consists, essentially, of a removable safety cap or closure adapted to cover the fill, discharge, or vent opening of the receptacle, said closure being of such construction as to automatically relieve excessive pressure within the vessel.

The invention further consists in the peculiar arrangement and combination of the various parts of the cap or closure, as will be more fully hereinafter set forth and illustrated.

In the drawings, Figure 1 is a vertical central section through an embodiment of my invention. Fig. 2 is a similar section illustrating the ruptured diaphragm, and Fig. 3 is a perspective view of the parts of the closure detached.

The reference-letter A designates a receptacle or vessel of any approved construction, provided in this case with a fill-opening B, around which is preferably fitted a suitable nipple or flange C. As a matter of preference the flange or nipple is in the form of an elbow and has a thread D formed upon the exterior of its upturned end.

The cap or closure which is adapted to cover the opening in the receptacle is formed, preferably, in two sections, the lower section E being centrally apertured at F and counter-bored at G. A screw-thread H is formed upon the interior of the section, which engages the thread D upon the nipple in the manner indicated in Fig. 1.

I is the upper and complementary cap-section, having a chamber J formed therein and provided with marginal vent-openings K, leading from the interior of the chamber to the outside atmosphere. An annular shoulder L is provided for this section, which is adapted to cover the outer face of the nipple M upon the section E.

O is an imperforate diaphragm of any suitable material, preferably metal, having a known bursting limit. This is arranged upon the nipple M and is clamped thereon by the upper cap-section, which fits tightly over the nipple and has a threaded engagement therewith, forming a tight joint.

The safety-cap carrying the diaphragm clamped between the sections is applied as an entirety to the fill-opening after the receptacle has been filled and hermetically seals the latter. The diaphragm is so constructed that it will not rupture until the pressure within the receptacle is excessive. When the pressure increases beyond a determined point, the diaphragm is ruptured and relief is effected through the marginal vent-apertures within the upper section of the cap which communicate with the interior of the latter and through the lower section with the interior of the receptacle.

What I claim as my invention is—

1. In combination with a vessel having an opening formed therein, of a removable safety-closure for said opening formed of complementary members, comprising a lower section, and a cap extending thereover, each provided with an inlet and discharge passage, and a rupturable diaphragm clamped between the members and protected by the cap.

2. In combination with a vessel having an opening and a flange or nipple about said opening, of a removable safety-closure therefor, comprising a lower section detachably connected to the nipple or flange, a cap-section covering the lower section and detachably connected thereto, the sections being each apertured, and a rupturable diaphragm clamped between the sections.

3. In combination with a vessel having a fill-opening and a nipple or flange about said opening, of a removable sectional safety-closure upon the nipple, comprising a lower apertured section detachably connected to said nipple, a complementary cap-section covering and having a threaded engagement with the lower section and provided with a vent-opening leading outwardly from its interior, and an imperforate diaphragm, adapted to be ruptured by excessive pressure within the vessel, clamped tightly between the sections.

4. In combination with a vessel having a fill-



opening and an upturned threaded nipple  
about said opening, of a removable sectional  
safety cap or closure therefor, comprising a  
lower section, centrally apertured and coun-  
5 terbored and engaging the nipple-thread, an  
upper complementary section detachably se-  
cured to the lower section and having a cham-  
ber therein and marginal vent-openings lead-  
ing outwardly therefrom, and an imperforate

rupturable diaphragm clamped tightly be- 10  
tween the cap-sections.

In testimony whereof I affix my signature  
in presence of two witnesses.

FRANCIS B. JOY.

Witnesses:

H. C. SMITH,

M. B. O'DOHERTY.