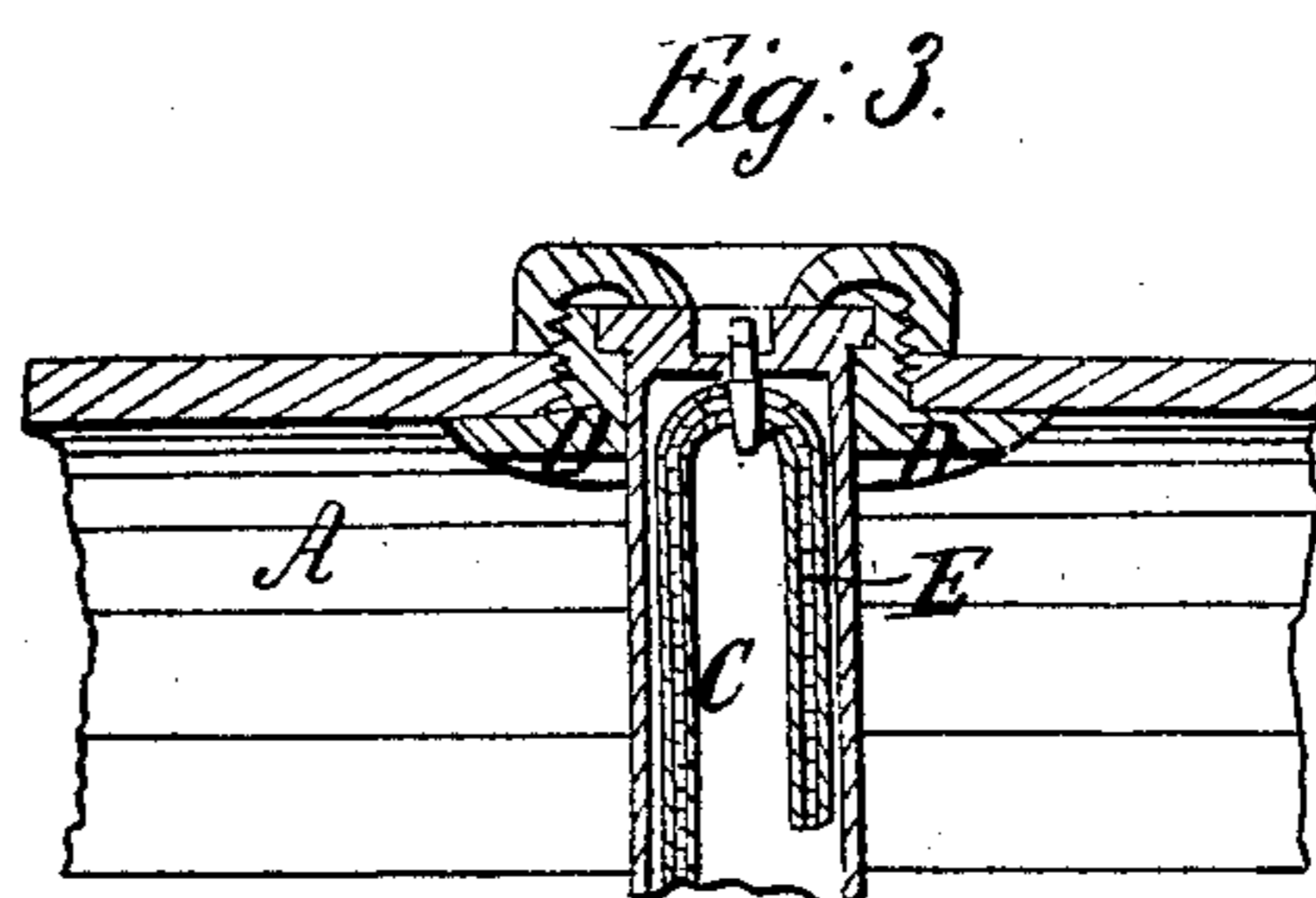
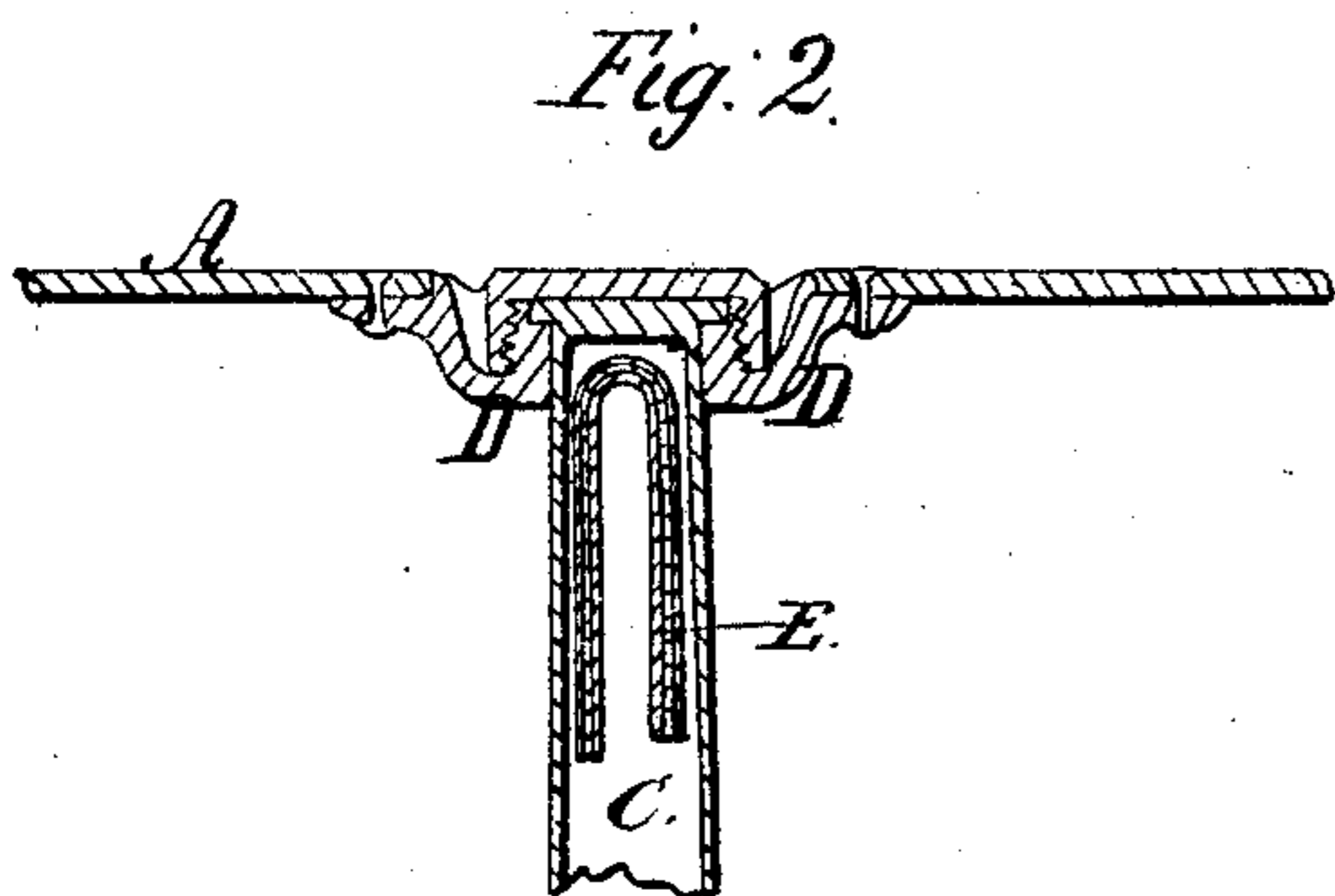
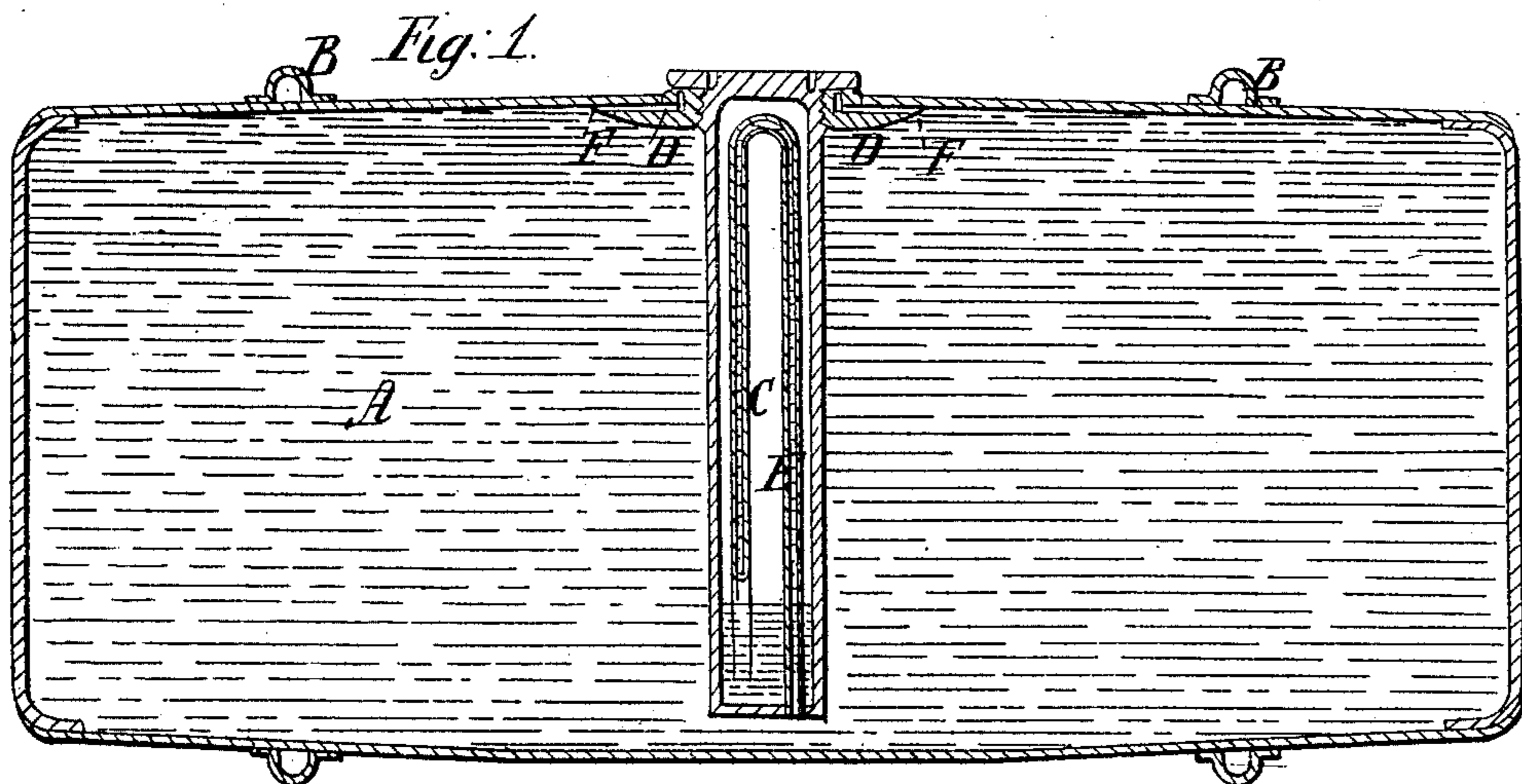


*E. H. Knight,*

*Oil Tank.*

*No 61,213.*

*Patented Jan. 15, 1867.*



*Witnesses;*  
*Chas. D. Smith*  
*Jas. L. Ewing*

*Inventor;*  
*Edward H. Knight*

# United States Patent Office.

EDWARD H. KNIGHT, OF WASHINGTON, DISTRICT OF COLUMBIA.

*Letters Patent No. 61,213, dated January 15, 1867.*

## IMPROVED SAFETY CHAMBER FOR OIL TANKS, &c.

*The Schedule referred to in these Letters Patent and making part of the same.*

### TO ALL WHOM IT MAY CONCERN:

Be it known that I, EDWARD H. KNIGHT, of the city and county of Washington, and District of Columbia, have invented a new and useful Safety Chamber for Tanks, Barrels, &c.; and I do hereby declare the following to be a full, clear, and exact description of the same, sufficient to enable one skilled in the art to which the invention appertains to make use of it, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a central vertical longitudinal section.

Figure 2 is a section showing a modification in the mode of securing the chamber in the tank.

Figure 3 is another modification in the mode of attachment.

The object of this safety chamber is to enable tanks, barrels, &c., to be completely filled with petroleum, coal oil, &c., without danger of bursting by expansion. The liquid is allowed to expand into a chamber, condensing the air therein, and returning to the tank as its contents contract. The chamber can be applied to any vessel, whether metallic or wooden, and can be attached or removed at pleasure, in this respect differing from that described in United States Letters Patent granted to M. C. C. Church and myself, bearing date the 11th day of September, 1866. The chamber may be inserted into or connected to the tank in different ways. The illustrations show it as a tube inserted into the inlet opening of a tank, or the bung-hole of a cask, the means of communication between the tank and the chamber being a bent pipe, whose open ends are exposed to the liquid in the respective chambers.

In the drawings, A represents a metallic tank, which has an opening at its upper side for the admission of the liquid, the diameter being somewhat larger in the middle than at the ends. The hoops B are added to enable it to be more readily rolled upon an even surface without careening. The chamber C is inserted at the aperture, and secured therein by securing it into the collar or bushing, D, as in fig. 1, or by a coupling-cap, figs. 2, 3, or in any other effective manner. The mode shown in fig. 2 brings the cap flush with the periphery or surface of the tank. Fig. 3 indicates a mode of securing the chamber C in the bung-hole of a barrel, by a flanged bushing on the inside and a screw-cap on the outside. The chamber C, fig. 1, has but one opening, and this is at the lower end of the longer leg of the bent pipe E, whose shorter end is also open, and comes nearly to the bottom of the chamber C.

When in operation, a small quantity of the liquid is placed in the chamber C, which is then thrust into the nearly-filled tank or barrel. If the quantity in the tank A be just such as to fill it completely when the chamber C is inserted, the latter is fastened down by screwing it into the bushing or screwing down the cap. As a mode of filling the tank completely, openings, F, in the bushing D are made, through one of which the liquid may be introduced, while the air escapes at the other. As soon as full, the holes are plugged and all made tight, or the small amount of air in the bulge of the cask may be disregarded at the option of the party. It is desirable that the tank or barrel should be full, as it thereby becomes a measure of quantity for commercial and internal revenue purposes, and also prevents the swashing of the liquid.

In the patent of Church and Knight, above referred to, a similar provision is made of a safety chamber, but it is represented and referred to as a fixture, while the safety chamber, the subject of this specification, is removable, and can be applied through any aperture of sufficient size in vessels not originally intended for it, as well as to vessels whose inlet apertures are bushed or otherwise specially adapted for the purpose. When the contents of the tank or barrel thus provided expand by an increase of temperature, the liquid in tank A rises through the pipe E and flows into chamber C, condensing the air therein. As the temperature decreases, the liquid contracts and flows back from chamber C to the tank by the same pipe, so that no air leaves chamber C, if the precaution has been taken to have the pipe filled, and a little in the chamber so as to start right. In rolling the barrel over and over, some of the air may possibly escape into the tank, and as a means of checking this, fig. 3 shows a spigot in the bend of the pipe, which may be turned by a wrench from the outside to shut off the communication while the barrel is moved, and opened as soon as the barrel reaches a position where it is intended to remain. As some liquids expand below a certain temperature, this safety chamber may be used under such circumstances to prevent rupture from such expansion, whether freezing does or does not ensue. I have shown three somewhat distinct modes connecting the chamber to the containing vessel. It is manifest that devices for this purpose may be varied, and I do not attempt to anticipate them all.

Having described my invention, what I claim therein as new, and desire to secure by Letters Patent, is—

The safety chamber, operating substantially as described, and so arranged as to be attached to and removed from the tank or barrel as required.

EDWARD H. KNIGHT.

Witnesses:

GEO. W. ROTHWELL,