

E. SANDER.
FIRE EXTINGUISHER.

No. 95,840.

Patented Oct. 12, 1869.

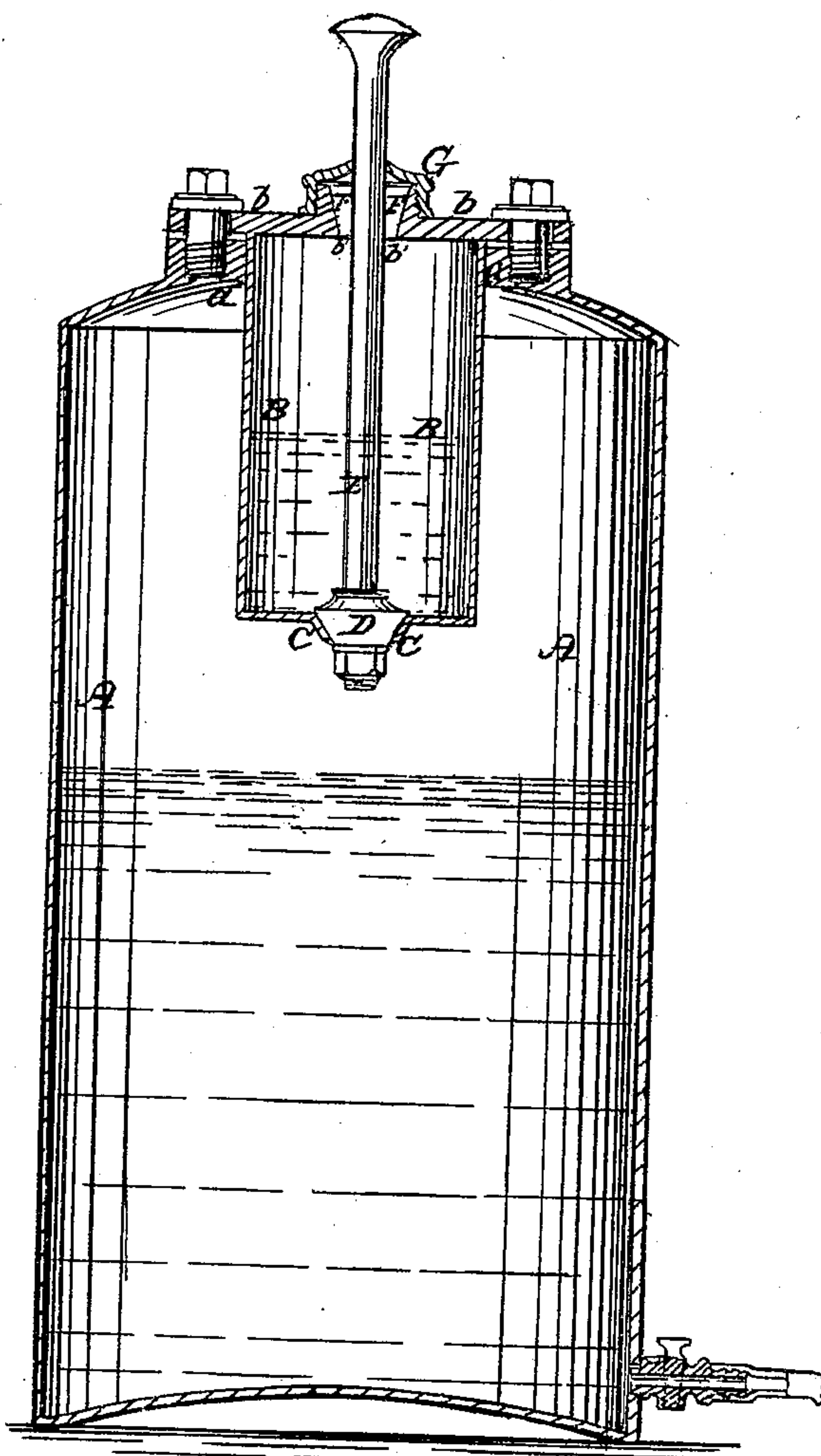
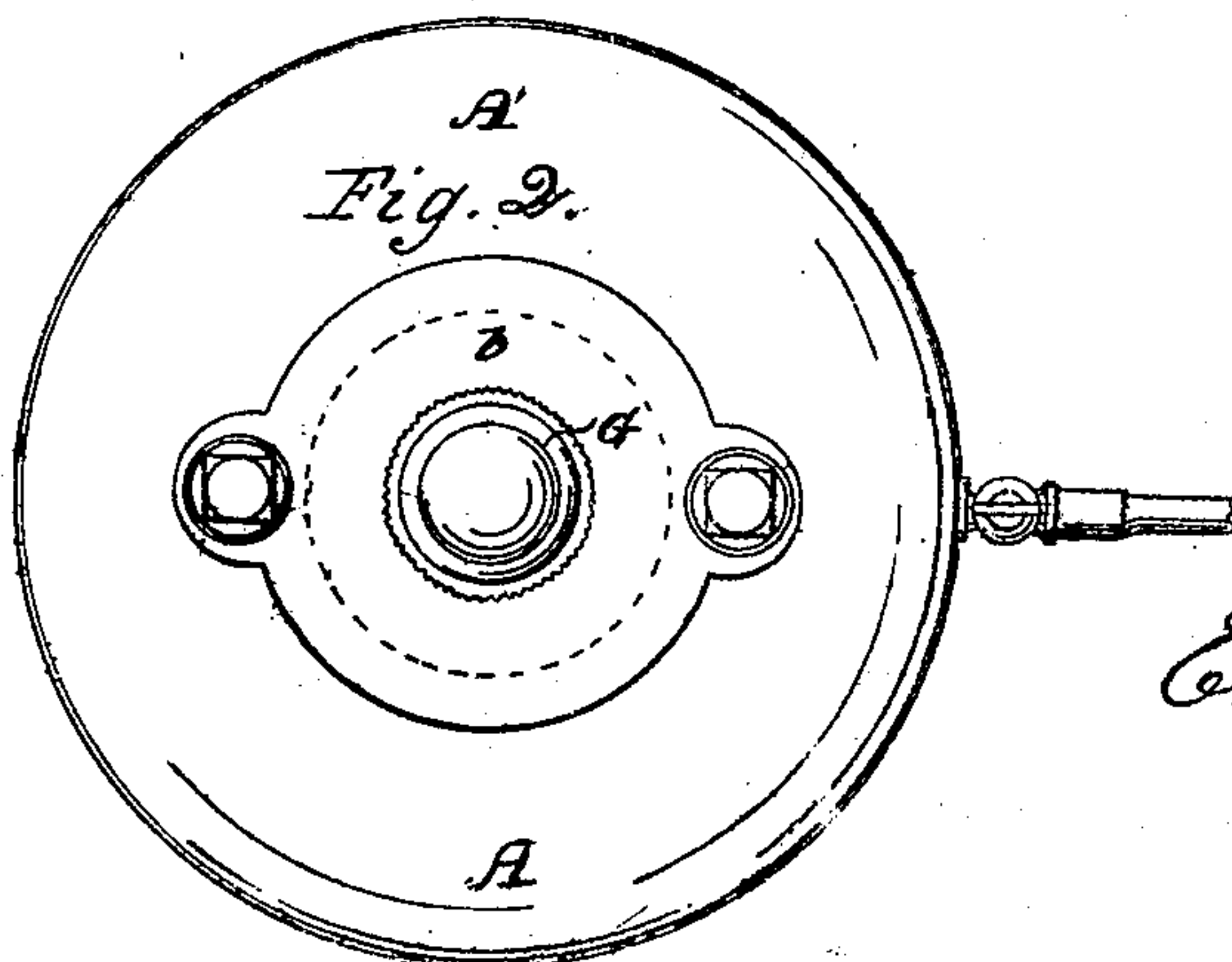


Fig. 1



A
Fig. 2.

Witnesses.
William G. Heithel

Robert Burns.

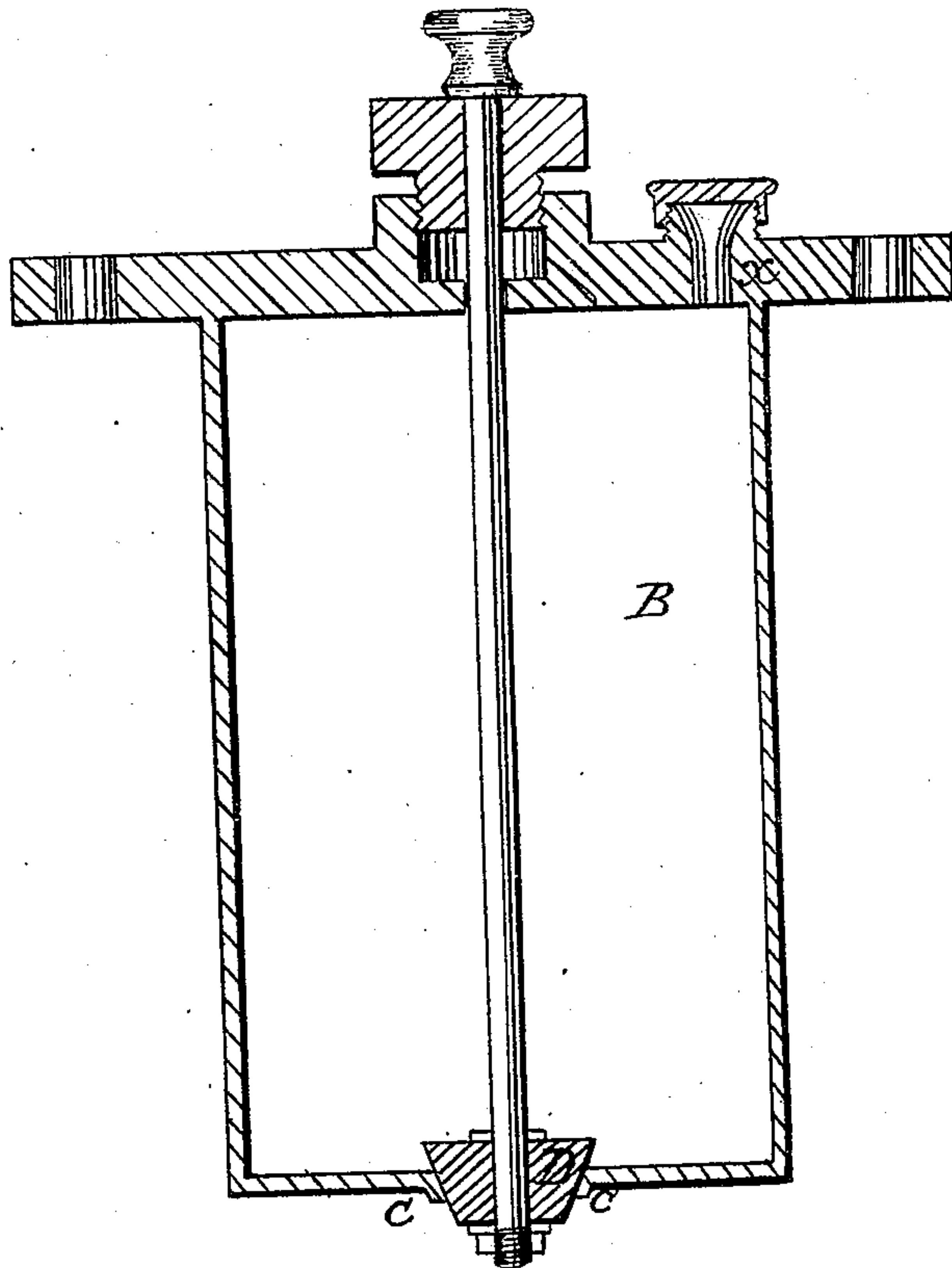
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Fig. 3.



Witnesses.

C. F. Brown.
Fred Thomas

Inventor

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United States Patent Office.

ENNO SANDER, OF ST. LOUIS, MISSOURI.

Letters Patent No. 95,840, dated October 12, 1869.

IMPROVED DEVICE FOR EXTINGUISHING FIRES.

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, ENNO SANDER, of St. Louis, in the county of St. Louis, and State of Missouri, have made certain new and useful Improvements in Devices for Extinguishing Fires, and for similar purposes; and I do hereby declare the following to be a full and true description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

It is well known that in the usual machines for extinguishing fires, and similar purposes, carbonic acid is generated so as to be under great pressure. In order to accomplish said purpose, I use sulphuric acid and bicarbonate of soda, or other chemically equivalent substances; and with regard to the manner of use of said carbonic-acid generators, the nature of this invention, which is an improvement on the patent of Carlier & Vignon, April 13, 1869, is in the construction of a vessel for holding the sulphuric acid, and in the manner of operating the acid-discharging valve of said vessel, so that at the proper time, the sulphuric acid may be thrown upon the alkaline salt. The construction of said acid-receiver and holder is, moreover, such that the sulphuric acid may readily and safely be filled therein, without risk of premature violent generation of carbonic acid, or of waste of sulphuric acid, and danger from this acid dispersed and thrown upon contiguous objects.

To enable those herein skilled to make and use my said improvements, I will now more fully describe the same, referring herein to the accompanying

Figure 1 as a sectional elevation; to

Figure 2 as a plan showing my said apparatus in one of its ordinary forms, as applicable for extinguishing fires; and to

Figure 3 as a sectional elevation of the inner jar, showing the cap.

A represents the outer vessel, for containing the salt-solution, upon which sulphuric acid is to be precipitated, and in which, thereupon, the generation of carbonic acid takes place. Said vessel will usually be formed of copper, with a lead lining.

The same supports, at the top, the acid-jar or vessel B, this being similarly formed of copper, with lead (or other non-corrosive) lining, and having an upper flange, *b*, by which it rests upon the flange *a* of the vessel A. Rubber, or similar packing, is placed between said flanges, and the joint made secure by screws, generally as shown in the figures.

In the bottom of said vessel B, I arrange a proper valve-seat, *O*, the valve-opening being filled by the rubber (or similar non-corrosive) valve *D*, which opens upward.

Said valve is secured upon the valve-rod *E*, which passes above the vessel B, to be within reach of the operator.

Where the rod *E* passes through the cap-flange *b*, I arrange a conical rubber stuffing, *F*, and the joint will be made more perfect by the cap-nut *G* surrounding the neck of the cap *b*. The nut, in being screwed tightly, will force the conical stuffing to a tight fit, both against the cap and against the rod.

About one pound of sulphuric acid (ordinary mercantile) will be placed in the vessel B. Said vessel may have a separate feed-spout, *x*, in the cap *b*, therefore, as shown in fig. 3, the opening being then properly capped, or the operator will pour in the acid at the neck-opening *b'*.

To do this, it is only necessary to unscrew the nut *G*, move it and the stuffing-piece *F* upon the rod *E*, thus exposing the annular opening around said rod. The rod *E* must be carefully placed to cause the valve *D* to remain closed, whereupon the acid is inserted, the parts replaced and secured. The carbonate of soda will be put into the vessel A by lifting the vessel B off, after releasing the securing-nuts. About one and one-half pound of bicarbonate of soda (or similar salt) will be used in, say, twenty times its weight of water.

The vessel A has a discharging-tube or hose, properly arranged with a stop-cock, in the usual manner. When the device thus described is to be used, the valve-rod *E* will be drawn out, thus opening the valve *D*, and dropping the sulphuric acid upon the carbonate solution below, causing a violent generation of carbonic acid, which, with the water in the vessel A, is directed upon a fire, in the usual manner, for extinguishing the same. It is plain, that the elastic packing *F*, about the valve-rod *E*, not only prevents the escape or spilling of the sulphuric acid when the rod *E* is suddenly pulled up, but, by the inner pressure, due to the gas-generation, the packing will be tightened to a perfect joint.

The material of which the inner surfaces of the vessels and the contact surfaces with the acids of all parts here used, is made, must be non-corrosive; otherwise, the form of the parts is in the discretion of the constructor, except as hereinbefore especially limited. The valve *D* opens inward, and is made in the form of an inverted cone, while the valve-seat *O* is of a corresponding form, so that the acid contained in the jar B exerts a continual downward pressure thereon, which forces the valve firmly against its seat, and effectually precludes the leakage of the acid from the jar B into the outer vessel A. In the Carlier & Vignon patent, however, the valve is situated below its seat, opens downward, and is of an upright, cone-shape, so that by reason of the pressure from the acid above, it is impossible to prevent a greater or less quantity from leaking into the alkaline solution beneath, the bad effects of which will readily be perceived; for example, the constant formation of car-

bonic-acid gas, waste of material, and the constant strain on the vessel, which are entirely obviated by my device. Moreover, by the construction of the valve in the Carlier & Vignon patent, it would be impossible to use liquid acid, for the reason above stated, dry acid being necessary; while the facility with which I employ liquids, and the superior effects arising therefrom, will be obvious.

Having thus fully described my invention,

What I claim, is—

1. The jar B, provided with the inverted cone-shaped valve D, the same opening upward, as described.
2. The feed-spout α with its cap, when arranged and operated substantially as described.

ENNO SANDER.

Witnesses:

WILLIAM W. HERTHEL,
ROBERT BURNS.