

No. 724,440.

PATENTED APR. 7, 1903.

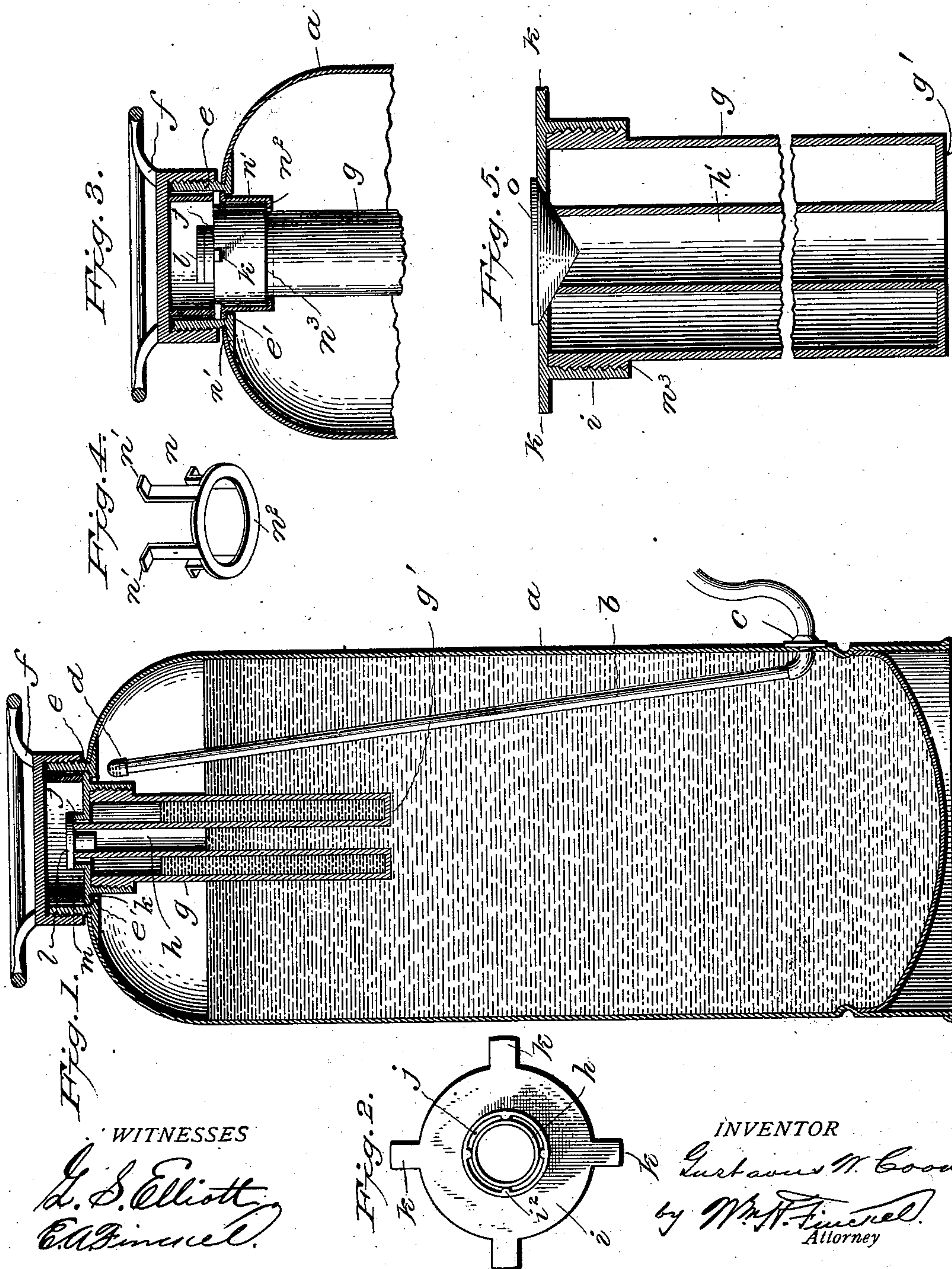
G. W. COON.

CHEMICAL FIRE EXTINGUISHER.

APPLICATION FILED OCT. 22, 1898. RENEWED JULY 9, 1902.

NO MODEL.

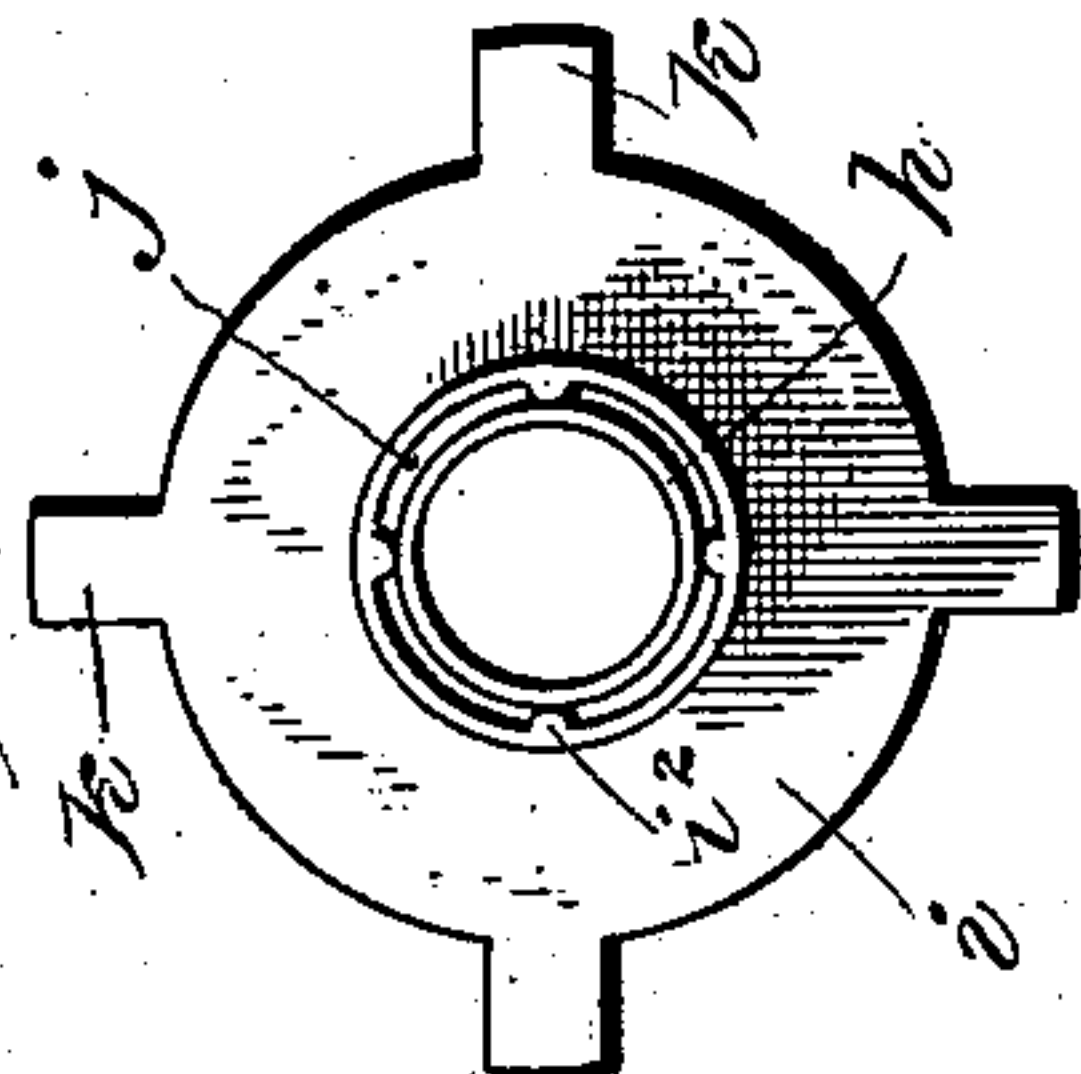
2 SHEETS—SHEET 1.



WITNESSES

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Fig. 2.



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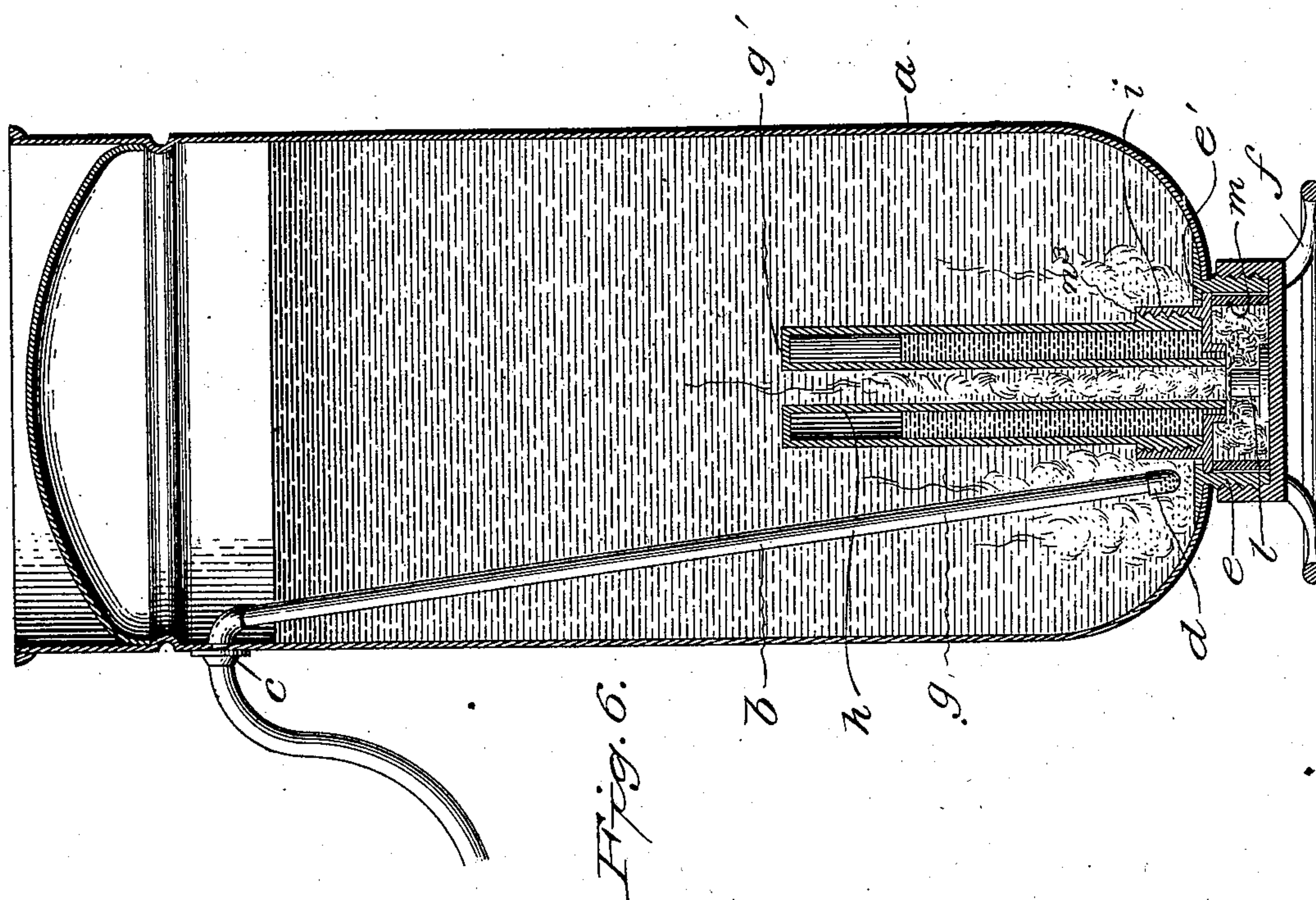
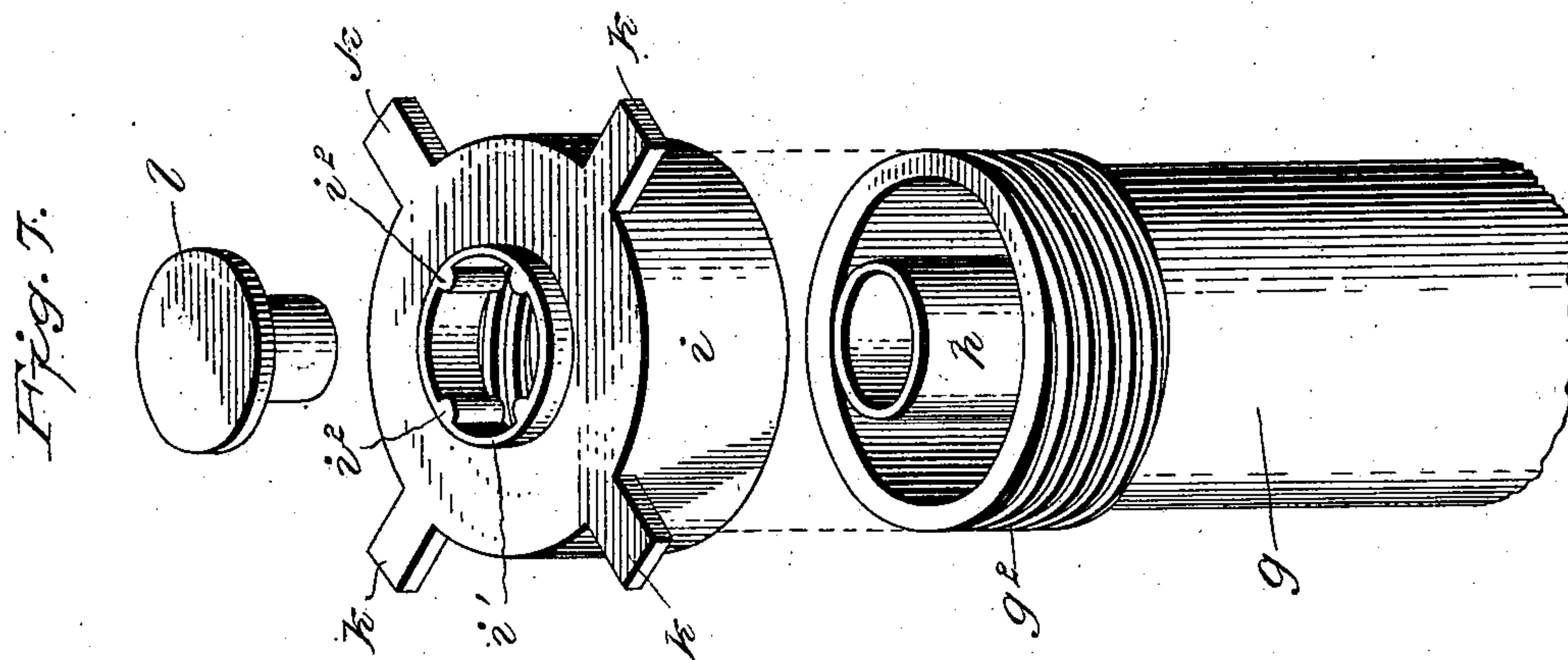
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G. S. Elliott.
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INVENTOR

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UNITED STATES PATENT OFFICE.

GUSTAVUS W. COON, OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNOR,
BY MESNE ASSIGNMENTS, TO F. S. BRIGHT, OF WASHINGTON, DISTRICT
OF COLUMBIA.

CHEMICAL FIRE-EXTINGUISHER.

SPECIFICATION forming part of Letters Patent No. 724,440, dated April 7, 1903.

Application filed October 22, 1898. Renewed July 9, 1902. Serial No. 114,977. (No model.)

To all whom it may concern:

Be it known that I, GUSTAVUS W. COON, a citizen of the United States, residing at the city of Washington, in the District of Columbia, have invented a certain new and useful Improvement in Chemical Fire-Extinguishers, of which the following is a full, clear, and exact description.

This invention relates to that class of portable fire-extinguishers in which are used a cylinder or tank for containing alkaline water and a vessel for containing an acid, which when released into the water will generate a gas which, mingling with the water, will expel the water from the tank.

Prior to my invention the acid-containing vessel has been made of two principal forms—namely, of frangible material, to be broken so as to discharge its contents, and of non-frangible material, from which the acid is released by inverting the vessel. My invention relates particularly to this last-named class. In certain of the fire-extinguishers of this sort with which I am familiar the acid has been released in bulk and at once, with the result that the gas has been generated so rapidly as to fail to commingle with the water and has expelled the water without imparting to it the desired combination, or else in those cases where the exit has been next to the acid end of the extinguisher the gas in a practically free state has escaped, and thus the apparatus rendered useless.

The object of my invention is to provide an acid vessel from which the acid escapes slowly or retardedly and is directed into the body of the water without the possibility of its free escape, thus charging or insuring the impregnation of the water.

In carrying out my invention I employ an annular acid-container having a restricted discharge-orifice and provided with a tube open at both ends and extending from the discharge-orifice through to the other end of the container, so that not only will there be an escape for the acid and gas around the exterior of the container, but also through its center, and thus the commingling of the acid or gas and water will be insured.

In the accompanying drawings, illustrating my invention, in the several figures of which like parts are similarly designated, Figure 1 is a vertical section of one form of fire-extinguisher in normal position of disuse. Fig. 2 is a top plan view, on a larger scale, of the acid-container. Fig. 3 is a vertical section of a modification, and Fig. 4 is a perspective view of a hanger used in the modification shown in Fig. 3. Fig. 5 is a vertical section of a modified form of acid-container with the stopper in elevation. Fig. 6 is a vertical section showing the apparatus of Fig. 1 inverted and in position for charging. Fig. 7 is a perspective view showing the parts of my container detached, the lower portion of the body of the vessel being broken away.

The vessel or tank *a* for containing the alkaline water may be of any approved construction and supplied with an educt-tube *b*, having a hose-nipple *c* and a strainer *d*. This vessel also has a neck or collar *e*, provided with a flange *e'* and an external screw-thread. *f* is a screw-cap fitted to the neck or collar *e* in any suitable manner.

The acid vessel *g* may be made as a tube, with one end entirely open and the other end closed by the flange *g'* and having at its open end an external screw-thread *g*². Within this tube *g* is a second concentric tube *h*, united to the bottom *g'* by a fluid-tight joint and open at that end and also at its other end, and this other end may project above its adjacent end of the tube *g*. The open end of the tube *g* is closed in part by a screw-cap *i*, having a central orifice *i'*, which is constructed with a number of lugs *i*², which, as shown more especially in Fig. 2, come into contact with the inner tube *h*. The orifice in the cap *i* is of greater diameter than the external diameter of the tube *h* and enough greater to provide an opening *j* between the said tube *h* and the wall of the orifice in the cap *i*, as shown in Fig. 2, and this opening connects with the annular chamber formed by the tube *g* and its internal tube *h* and bottom *g'*, the said opening *j*, with the obstructions *i*² therein, constituting a retarding or slow-feed outlet for the contents of the acid-

containing vessel. The cap *i* is provided with radial lugs *k*, projecting from its diameter and cooperating with the flange *e'* to support the acid-containing vessel in the vessel *a*, the
 5 said cap being of sufficiently smaller diameter than the circular opening in the flange *e'* to afford passages from the neck of the vessel *a* into the body thereof.

l is a stopper fitted loosely in the tube *h* and
 10 having a flanged head of sufficient diameter to cover the opening *j*.

m is a ring resting upon the projections *k* and extending up into the neck and adapted to be held in place by the cap *f*, so as to hold
 15 the acid vessel in position in the extinguisher.

The vessel *a* having been supplied with the proper fluid, such as alkaline water, and the acid vessel having received a charge of suitable acid, such as sulfuric acid, and the several parts arranged as shown in Fig. 1, when-
 20 ever the extinguisher is to be used it is inverted, as in Fig. 6, and thereupon the stopper *l* falls away from the acid vessel and the acid escapes in a slow or retarded manner
 25 through the obstructed orifice or opening *j* and, mingling with the alkaline water, gas is generated, which escapes around the acid vessel into the water and also rises through
 30 the tube *h*, and thus being distributed equally and slowly through the water the water is charged or impregnated before sufficient pressure is obtained to eject it from the extinguisher. In this way all danger of escape
 35 of free gas and explosion of the vessel by too rapid generation of the gas is avoided.

My invention is susceptible of various modifications, some of which are as follows: The acid vessel may be suspended by a skeleton hanger or spider *n*, Fig. 4, which, as shown
 40 in Fig. 3, has the L-shaped arms *n'* in engagement with the flange *e'* of the collar or neck of the vessel *a*, and the ring *n²* engages the shoulder *n³*, formed by the screw-thread *g²* and cap *i*. Instead of having the tube *h'* extend beyond the tube *g* it may be substantially level with its top, and its end and the orifice in the cap may be beveled, as shown
 45 in Fig. 5, and a tapering stopper *o* may be used for temporarily closing the outlet. This
 50 construction affords a sort of knife-edge outlet through the acid vessel, which, while it restricts or retards the egress of the acid and insures a slow feed, subserves the further function of minifying the generation of gas
 55 and directing its escape through the central tube *h'*. These and other modifications are included as within my invention.

It will be observed that the central tube *h* extends entirely through the outer tube and is open at both ends, and this construction
 60 is followed in order to insure the retarding of the escape of the acid and to effect the escape of the gas in a number of directions, and thus insure the impregnation of the water, and experience has demonstrated that
 65 these results follow from the construction illustrated and described herein.

What I claim is—

1. In a chemical fire-extinguisher, an acid vessel of annular form, and having the central tube opening at both ends outside of the
 70 acid-containing chamber, a cap applied to the acid vessel with a restricted and slow-feed acid-exit surrounding one end of the central tube, and a gravity-stopper therefor, substantially as described. 75

2. In a chemical fire-extinguisher, an acid vessel comprising an outer tube open at one end and closed at the other, an inner tube
 80 extending entirely through the outer tube and open at both ends, and a cap applied to the open end of the outer tube and forming a restricted slow-feed acid-exit around the inner tube, substantially as described.

3. In a chemical fire-extinguisher, an acid
 85 vessel comprising an outer tube, and an inner tube open at both ends, the outer tube being closed at one end between itself and the inner tube and having an obstructed opening at the other end and between itself and
 90 the inner tube, substantially as described.

4. In a chemical fire-extinguisher, an acid vessel comprising an outer tube, a concentric
 95 inner tube open at both ends, the outer tube being closed between itself and the inner tube at one end, and a cap applied to the other end of the outer tube and having an obstructed orifice surrounding the inner tube, substantially as described.

5. In a chemical fire-extinguisher, an acid
 100 vessel comprising an outer tube, a concentric inner tube open at both ends, the outer tube being closed between itself and the inner tube at one end, a cap, and a loose stopper to close the acid-exit and to fall away therefrom by
 105 gravity when inverted, substantially as described.

In testimony whereof I have hereunto set my hand this 22d day of October, A. D. 1898.

GUSTAVUS W. COON.

Witnesses:

CHAS. S. BRADLEY,
 WM. H. FINCKEL.