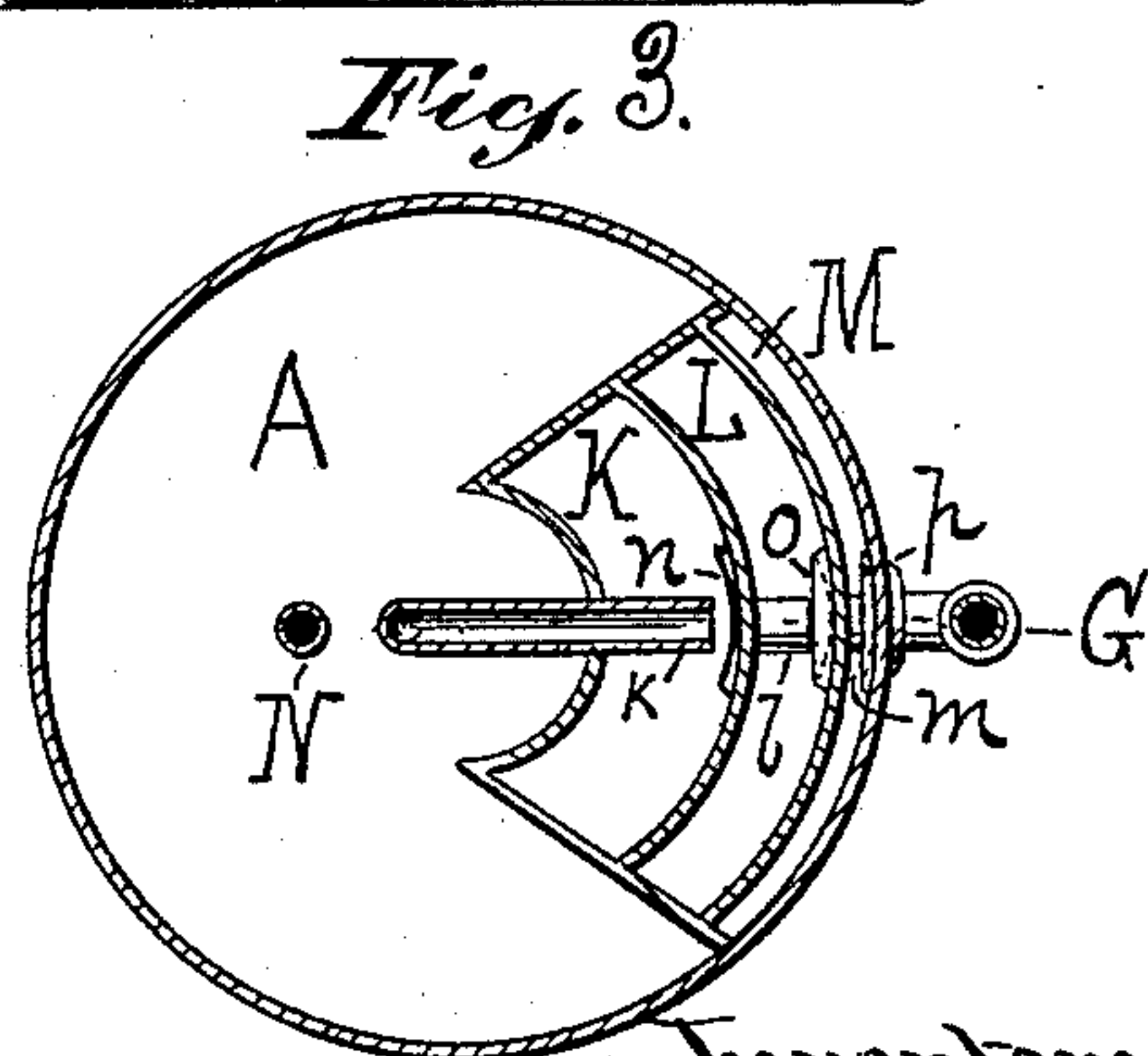
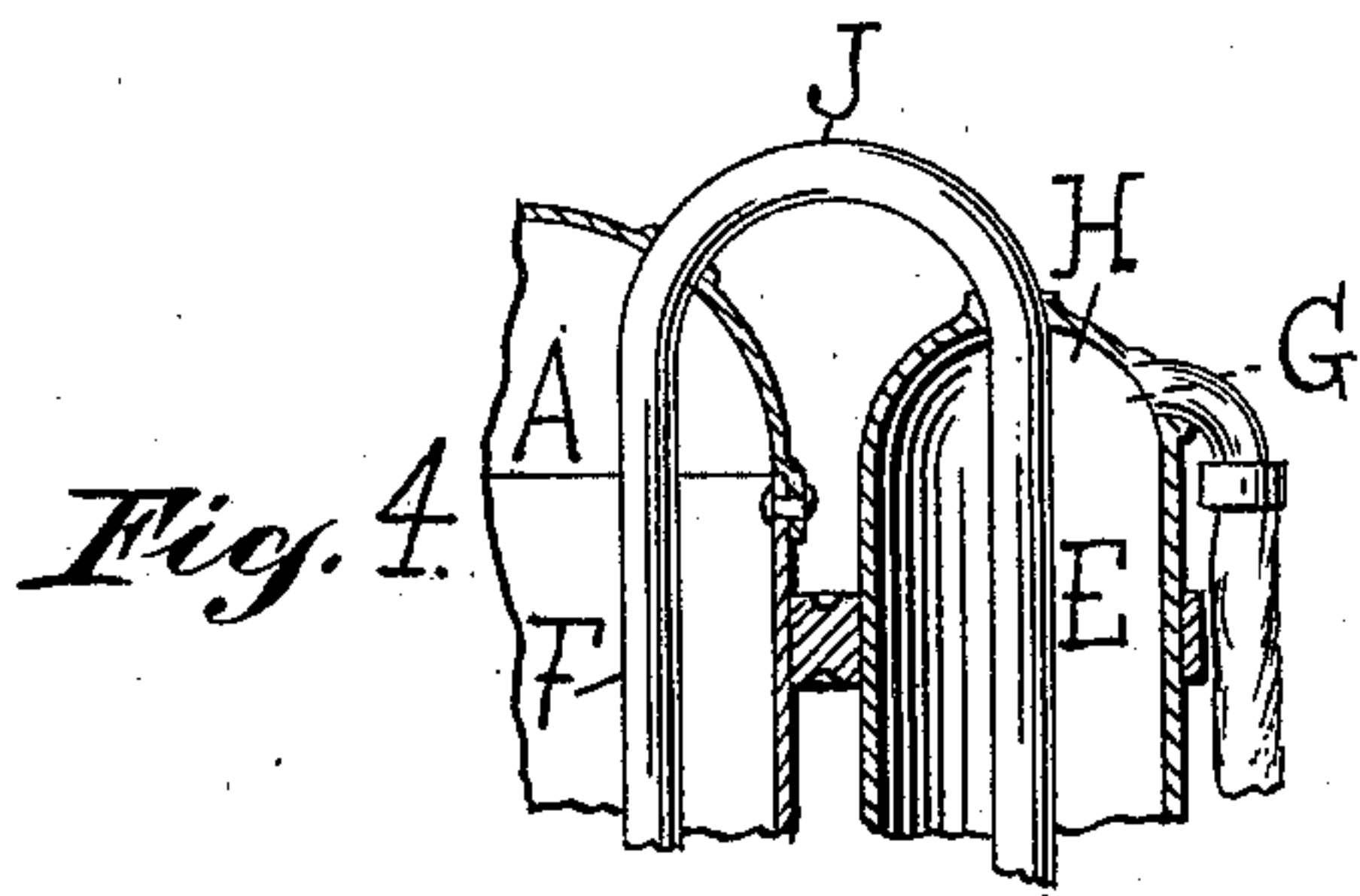
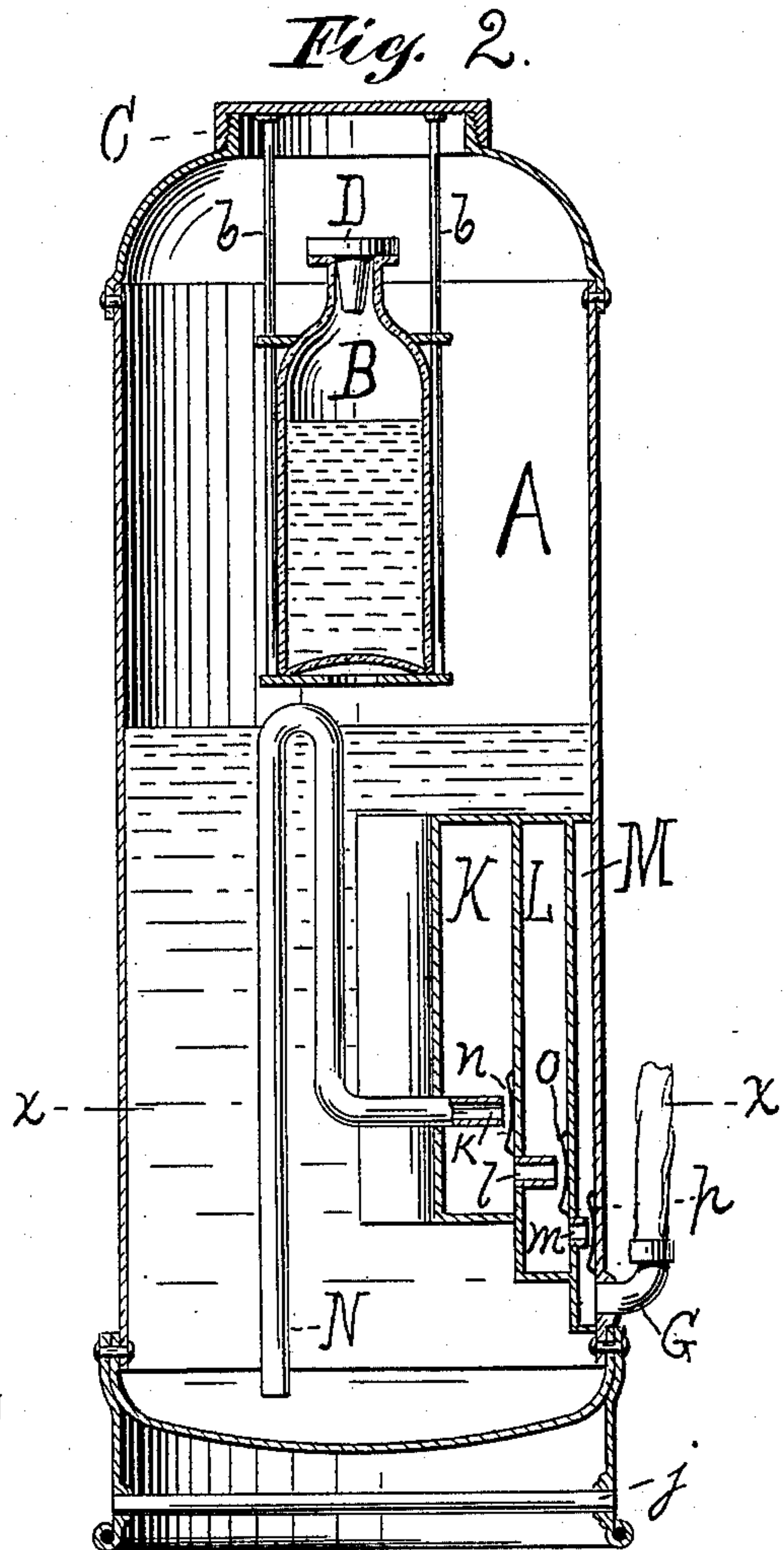
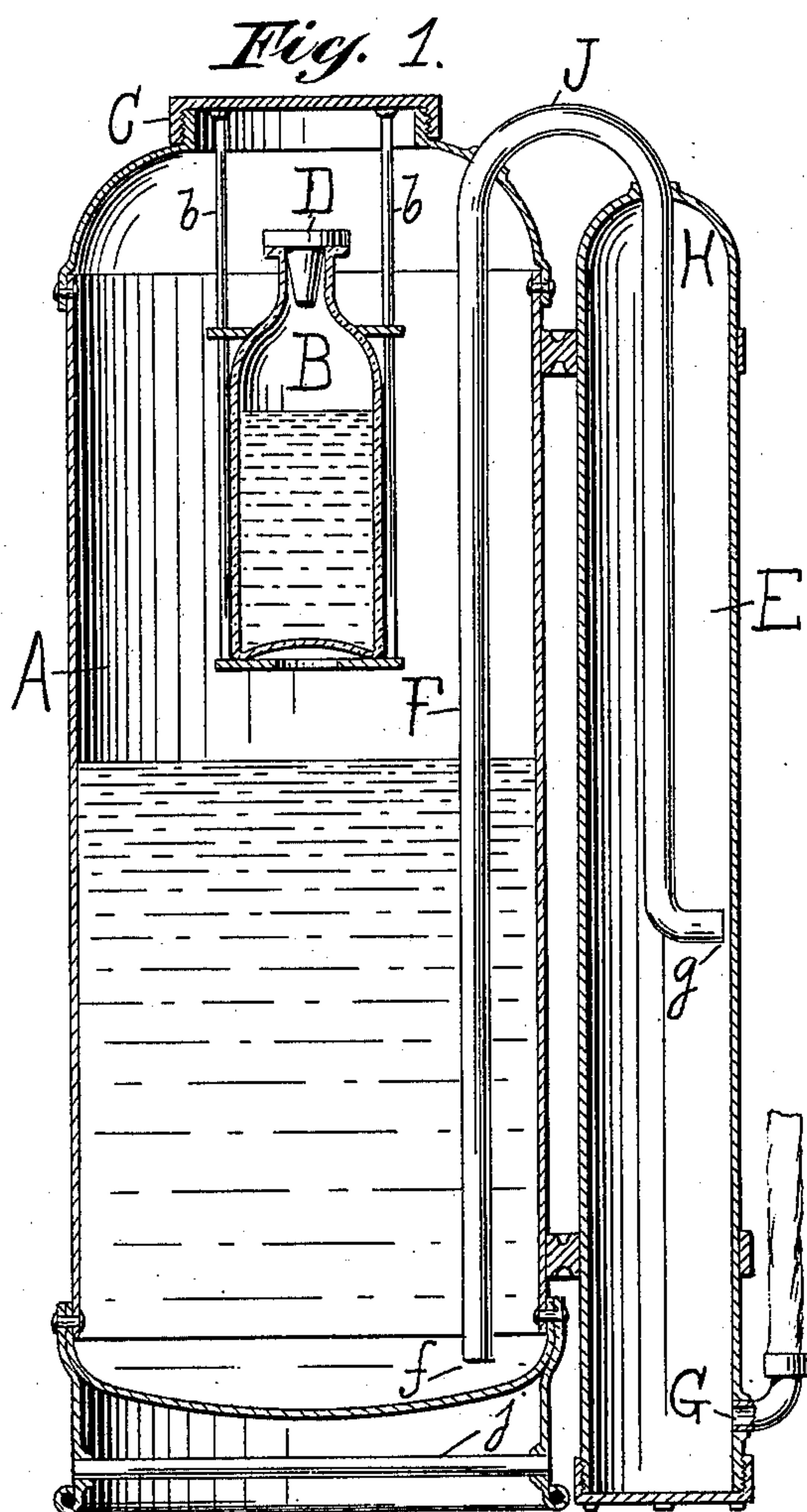


(No Model.)

A. C. ROWE.  
FIRE EXTINGUISHER.

No. 596,622.

Patented Jan. 4, 1898.



Witnesses:  
D. W. Gardner.  
May 7, 1898. J. M. Gallagher.  
Arnold W. Sherman

Inventor:  
Arthur C. Rowe  
by  
J. S. Clark  
his attorney.



# UNITED STATES PATENT OFFICE.

ARTHUR C. ROWE, OF NEW YORK, N. Y.

## FIRE-EXTINGUISHER.

SPECIFICATION forming part of Letters Patent No. 596,622, dated January 4, 1898.

Application filed September 25, 1896. Serial No. 606,994. (No model.)

*To all whom it may concern:*

Be it known that I, ARTHUR C. ROWE, of the city, county, and State of New York, have invented certain new and useful Improve-  
5 ments in Fire-Extinguishers, of which the following, taken with the accompanying drawings, is a description.

My invention relates to chemical fire-extinguishers in which certain chemicals are  
10 placed ready to be combined at the time of the fire to produce a flame-extinguishing gas or combination of gas and liquid. There have been heretofore two kinds, one in which the gas is thrown mingled with water, the  
15 water acting primarily as a vehicle to carry the gas to the fire, and the other in which a stream of gas only is thrown. In the latter kind, useful especially around electrical switchboards and delicate machinery, a sec-  
20 ondary or drying chamber is necessary to rid the gas of the watery vapor or spray which issues with it from the commotion of the generating-chamber; but it frequently occurs at a fire around electrical apparatus  
25 that it is desirable to first throw a stream of dry gas and afterward throw water and gas upon another part of the fire. The latter carries farther and is more effective upon burning wood. To do this heretofore, it has  
30 been necessary to have two machines, one of each kind, each with its separate charge.

The main object of my invention is to provide a single machine which can be made to throw a stream of dry gas and then by simply reversing it instantly change this to a  
35 stream of water and gas, all from the same charge. Thus the same machine and the same charge can be used either as a wet or dry machine until the charge is exhausted, and  
40 can also be made to change from one to the other instantly as the necessity arises.

It consists, substantially, of two separate compartments, a generating and a drying chamber, affixed to each other and capable  
45 of reversal together and with the outlet from the generating into the drying chamber and the outlet from the latter into the outer air so arranged that in one position they are above the level of the liquid in their respec-  
50 tive chambers and in the reversed position are below that level, so as to throw gas in the

first position and mingled water and gas in the second position.

In the accompanying drawings, in which the same letters indicate like parts, Figures 55 1 and 2 are vertical sections of two varieties of the machine, each capable of use for dry carbonic-acid gas or combined gas and water. Fig. 3 is a cross-section on line *x x* of Fig. 2. Fig. 4 is an alternative variation of the upper  
60 part of Fig. 1 when used for one purpose.

A is the first compartment. For producing carbonic-acid gas this is to be filled about one-half full of water and bicarbonate of soda  
65 added until it reaches saturation.

B is the acid-receptacle, suspended by rods *b* from the screw-cap C.

D is the lead stopper, placed loosely over the mouth of B.

E, the second compartment, Fig. 1, is a ves-  
70 sel about one-third the size of compartment A, rigidly attached to it, having as its inlet from A the pipe F and its outlet at the point G, at which any suitable hose-pipe and nozzle  
75 may be attached.

The pipe F, which forms the communication between the two chambers, starts from near the bottom of the first compartment A and terminates in the second compartment E at a point some distance from the top H there-  
80 of and with its mouth near to and directed substantially at right angles against the interior surface of the compartment. The bend in the pipe F at J forms a handle, (in case of a portable machine,) and the bar *j* at the other  
85 end serves as a handle when it is reversed.

The operation as a dry carbonic-acid-gas machine is as follows: The compartment A having been charged with the water and bi-  
90 carbonate of soda and the receptacle B with the acid, the whole machine (both compartments) is reversed, the lead stopper D falls out, the acid mingles with the solution, and carbonic-acid gas is evolved. In this position the liquid stands below the mouth *f* of the  
95 exit-pipe F. The chemical action is so quick and violent that the entire space in the machine not filled with liquid is filled with spray or watery vapor floating in the carbonic-acid gas. As the machine stood before reversal  
100 the liquid filled the pipe F up to the same level as in the rest of the compartment. Upon



reversal of the machine and the evolving of the gas this liquid in the pipe F is forced into the second compartment E, but falls by gravity to the end H thereof, and so cannot issue 5 onto the fire. The carbonic-acid gas, laden with the watery vapor, follows through the pipe F under pressure and strikes the interior surface of the compartment E forcibly. This forcible directing of the stream against 10 a solid surface has the effect of separating the watery vapor from the gas, the particles of water or liquid clinging to the surface and dropping thence by gravity to the bottom H (top before reversal) of the chamber E, while 15 the gas under the pressure passes on to the exit. The first discharge, being of liquid, completely wets the surface opposite the end *g* of the pipe F, and thereafter all the particles of moisture are forced by the blast against 20 this wet surface and, uniting with the body of liquid there, run off into the receiver or pocket by gravity. The second compartment not only serves as a comparatively quiet place away from the generating-chamber, where 25 this depositing of the particles of vapor may go on, but it also serves as a receptacle or pocket, as it were, for holding the condensed (collected) vapor as well as the liquid discharged at the start from the pipe F and preventing any of it reaching the flames. 30

The same machine may be used as a wet extinguisher, delivering combined gas and water by simply reversing it (turning it top end up again) after the acid has run out of 35 the bottle B. The end *f* of the pipe F then again comes below the surface of the liquid, and it is liquid-charged with the gas, which is forced through the pipe F and the compartment E to the outlet G. Thus if after 40 putting out a fire on a switchboard there is some of the charge left the same machine may be reversed and used elsewhere on an ordinary fire the same as other extinguishers; or by the same process the entire charge may 45 be used upon an ordinary fire, throwing the liquid charged with gas, as in the case of extinguishers now in use.

It is evident that a third or fourth condensing-chamber may be used to extract more of 50 the vapor, if desired. Different degrees of dryness are essential for different situations.

Figs. 2 and 3 show the same principle, but with three separate condensing or drying chambers, all arranged within (and in series with) the generating-chamber A. K, L, and 55 M are the three successive condensing-chambers, the only inlet into each being a pipe *k*, *l*, and *m*, which delivers the stream of gas against a concave surface *n o p*. These are shown in cross-section in Fig. 3. The second compartment 60 K should be much the larger, as it will receive the bulk of the liquid. The compartments K, L, and M must be placed above the level at which the liquid stands before use; or the same result may be accomplished, as 65 shown in the drawings, by leading the outlet-pipe N above the level of the liquid before it enters the first drying-chamber K.

I claim as my invention—

1. A reversible chemical fire-extinguisher 70 to throw gas or liquid from the same charge at will, consisting of a generating-chamber containing an acid-receptacle, and a separate drying-chamber, affixed to each other in parallel positions and reversing together; the outlets from the first to the second, and from the 75 second to the outer air being placed in such positions in their respective chambers that they will both be above the level of the liquid therein, in one position of the machine, and 80 below that level in the reversed position; and the inlet into the drying-chamber being situated close to and directed against the perpendicular side of the chamber.

2. A chemical fire-extinguisher to throw 85 dry gas, consisting of a generating-chamber and a separate drying-chamber; the outlets from the first to the second and from the second to the outer air being placed in such positions in their respective chambers as to be 90 above the level of the liquid therein; and the inlet into the drying-chamber being situated close to, and directed against the perpendicular side of the chamber.

In witness whereof I have signed my name 95 to this specification, in the presence of two subscribing witnesses, this 23d day of September, 1896.

ARTHUR C. ROWE.

Witnesses:

MARX E. HARBY,  
SALTER STORRS CLARK.