

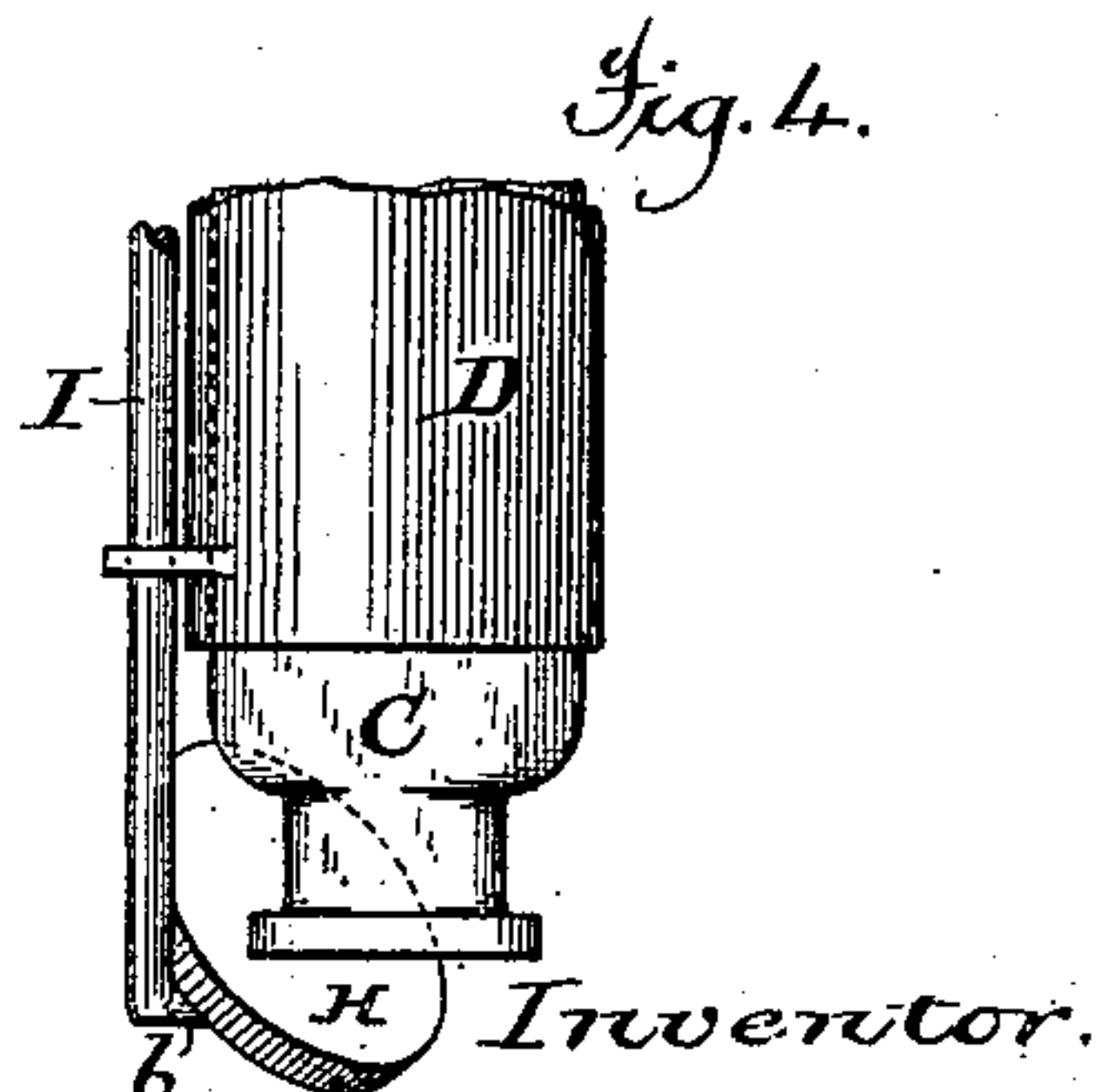
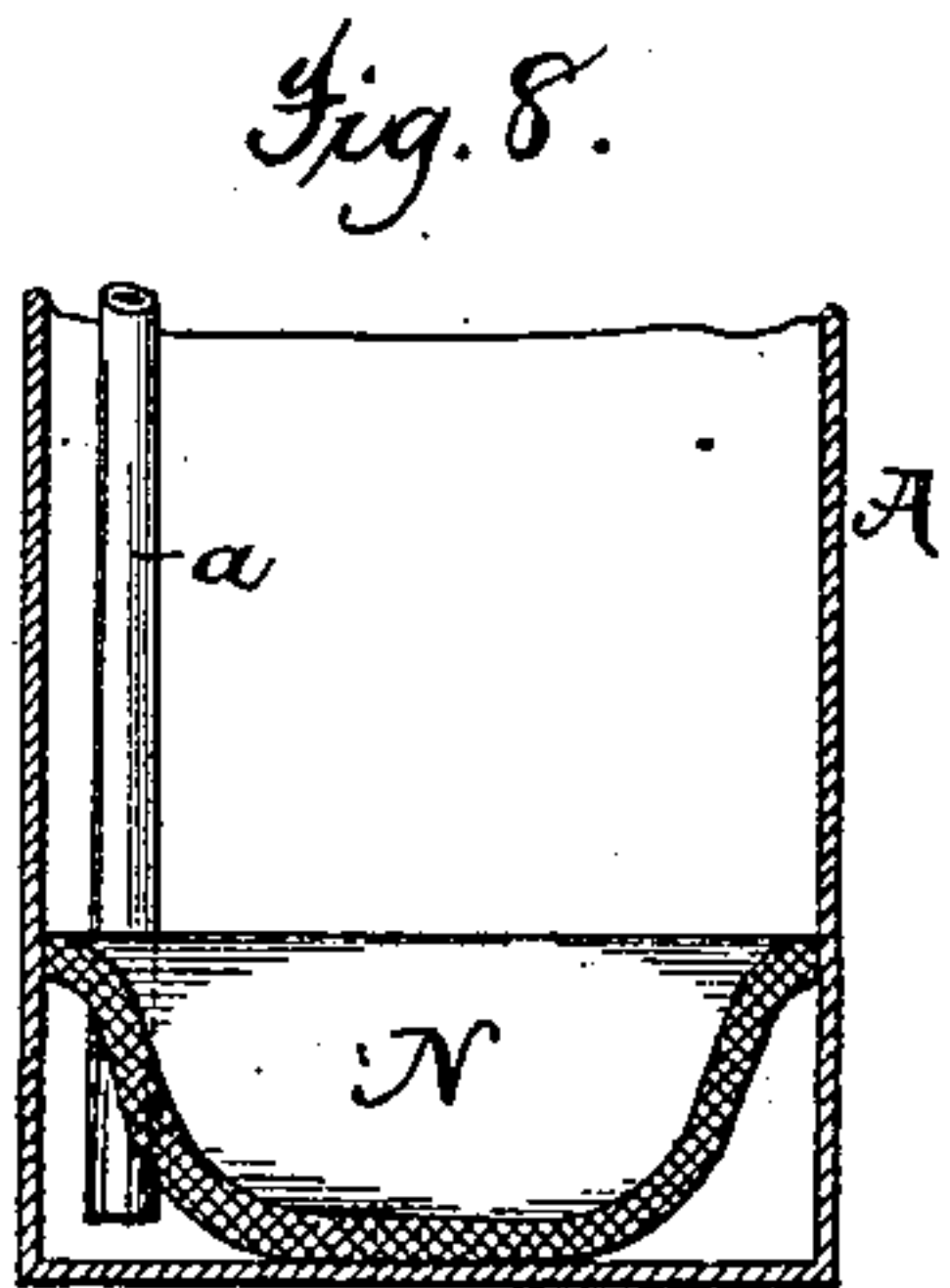
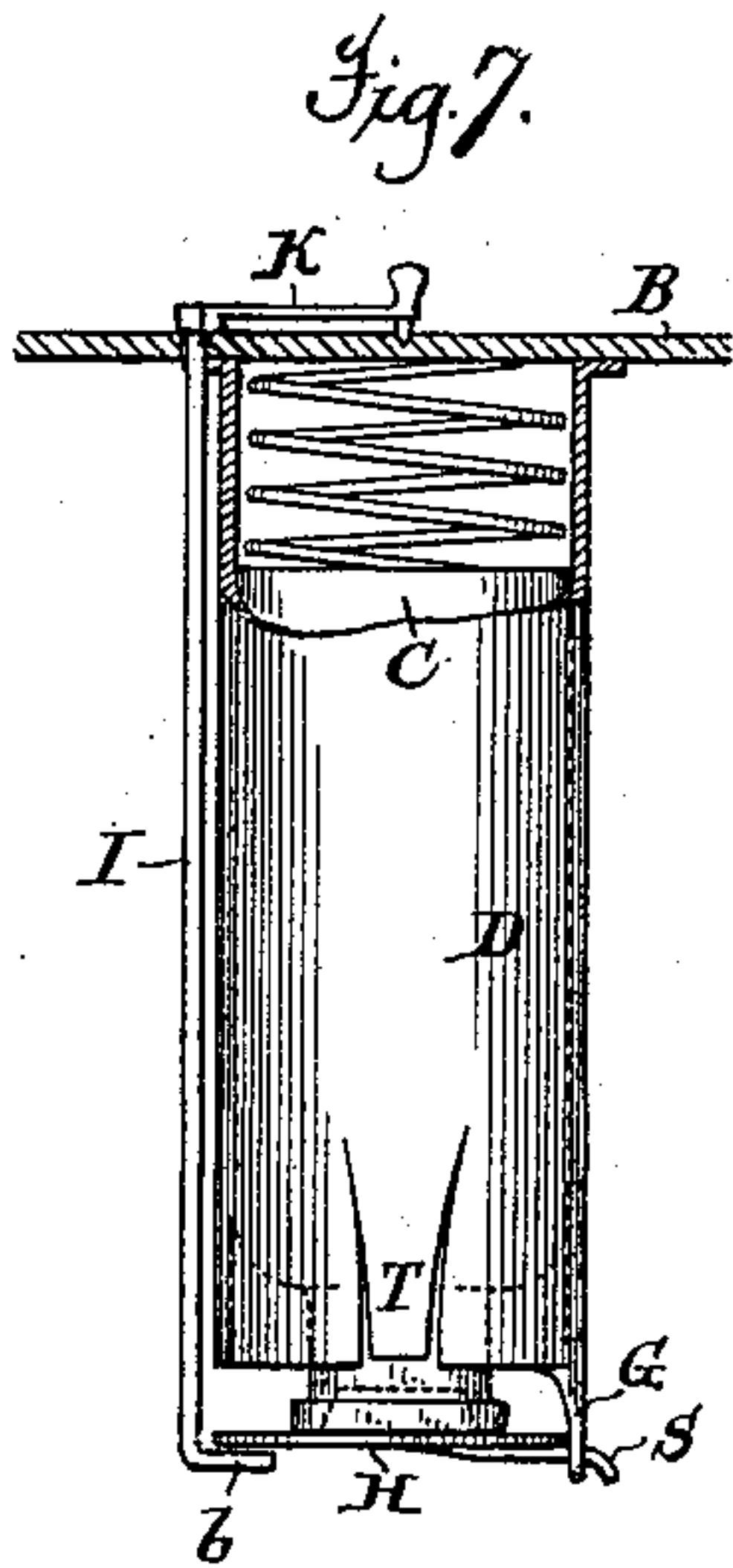
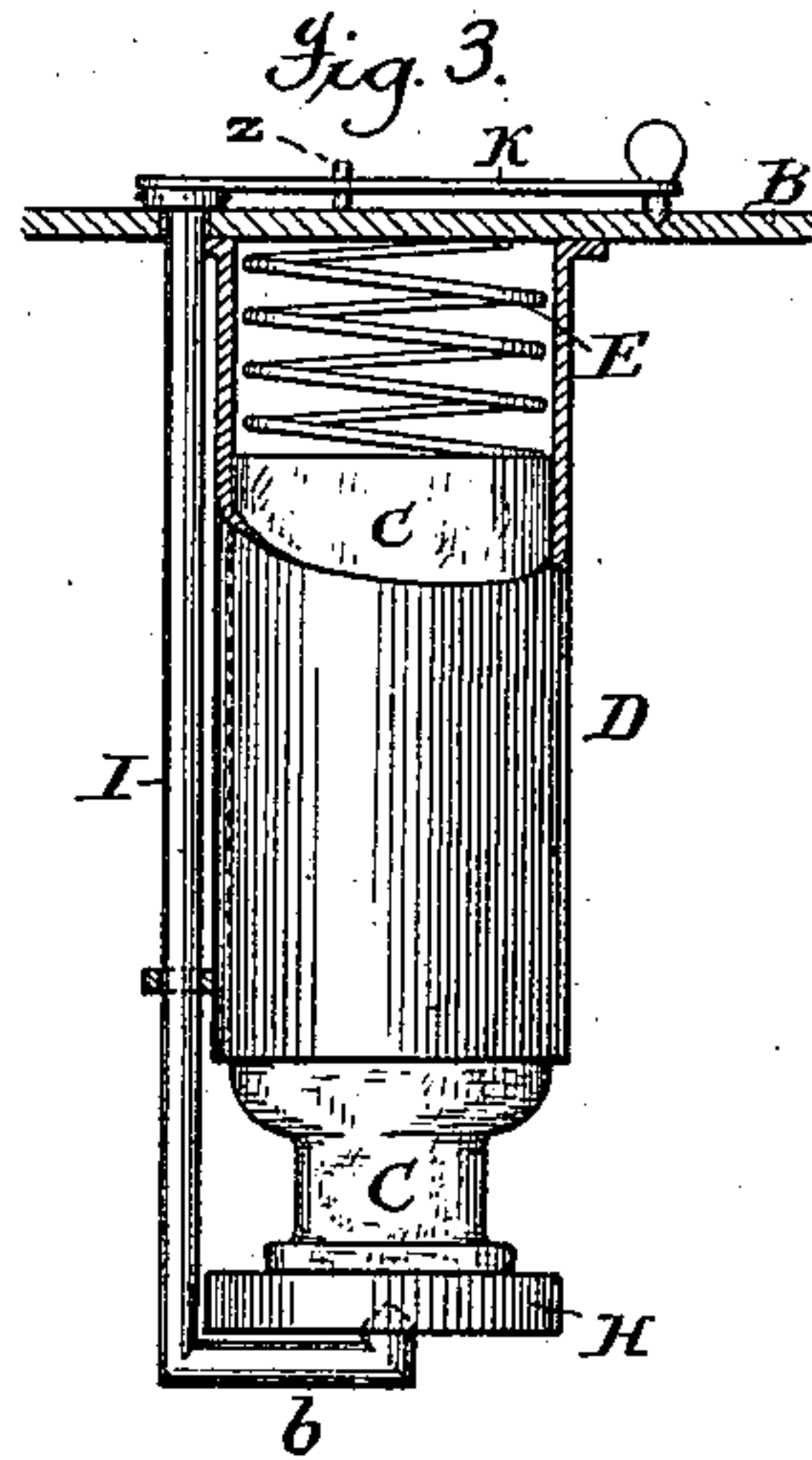
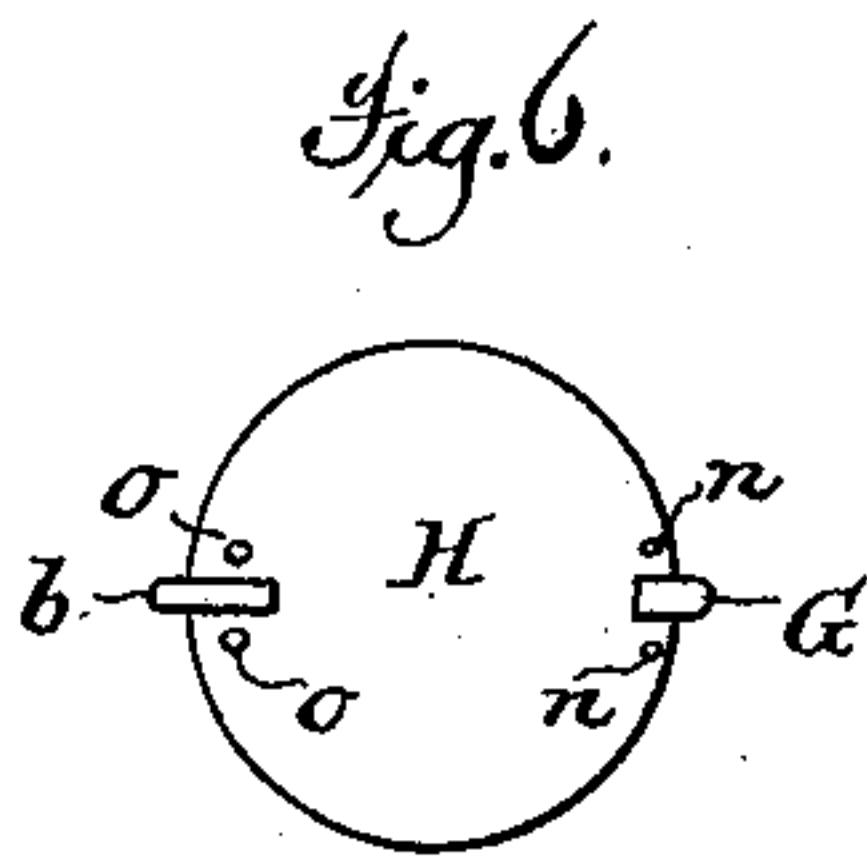
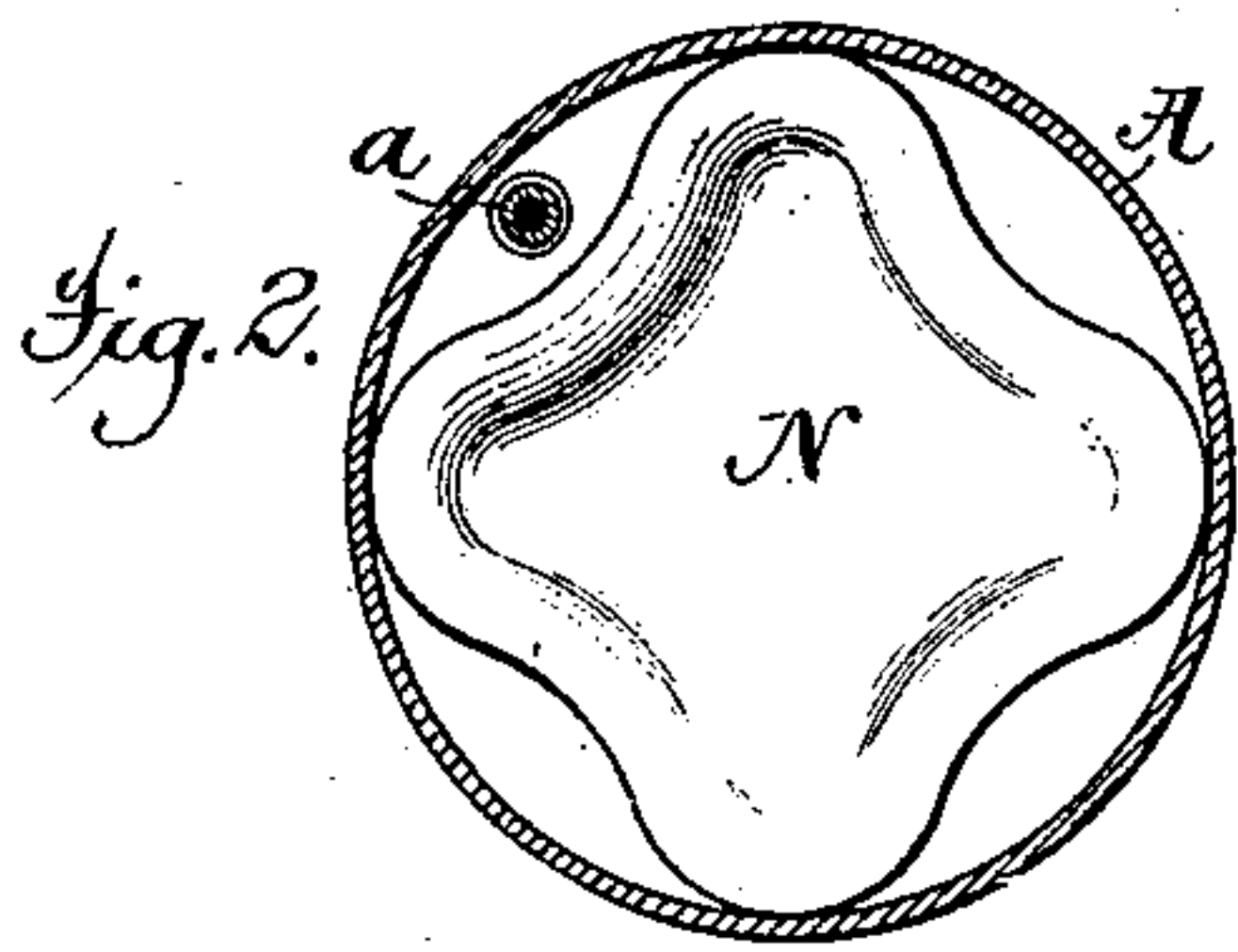
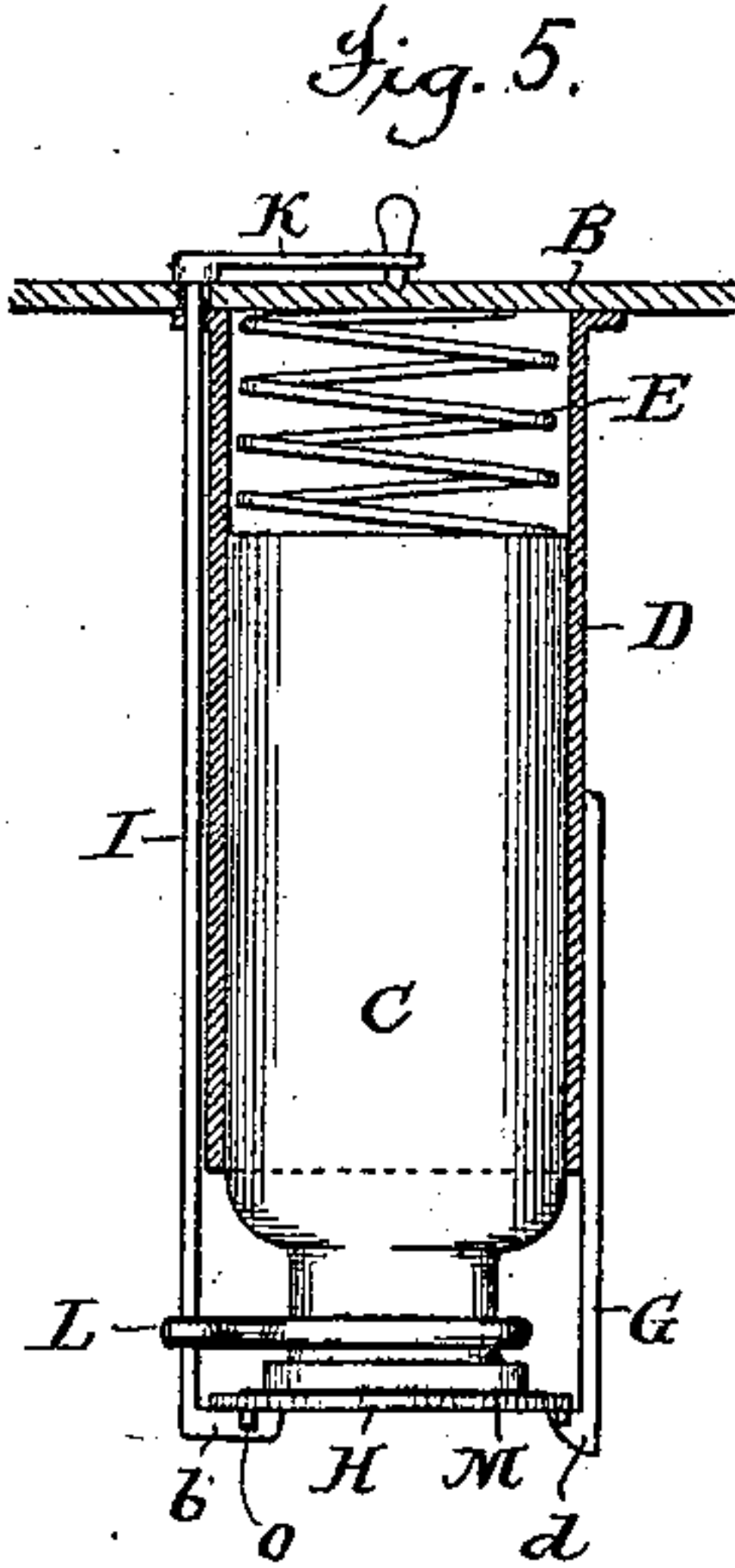
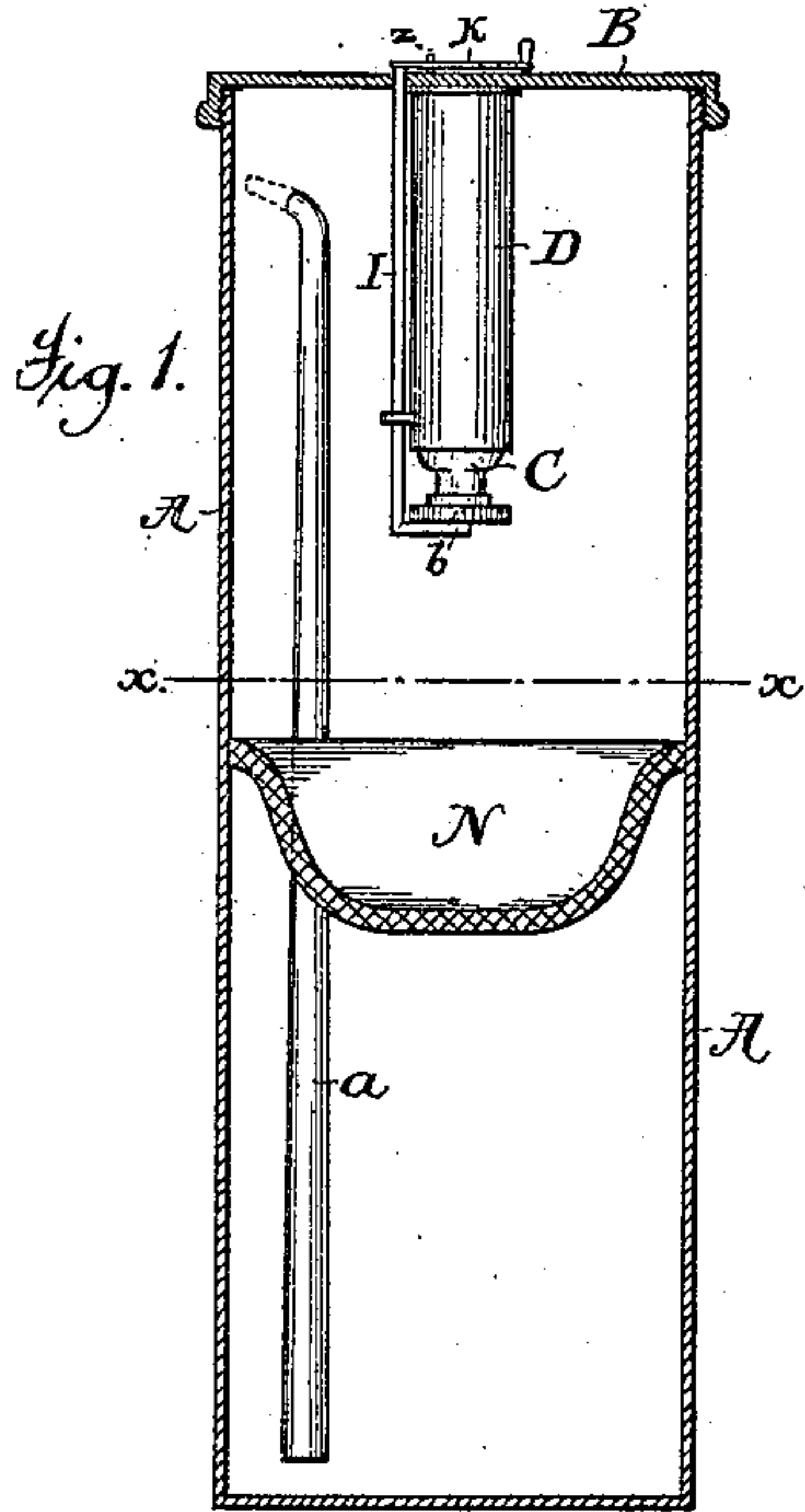
(No Model.)

T. G. TURNER.

CHEMICAL FIRE EXTINGUISHER.

No. 333,177.

Patented Dec. 29, 1885.



Attest:

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att'y.



# UNITED STATES PATENT OFFICE.

THOMAS G. TURNER, OF NEW YORK, N. Y., ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO THE NEW YORK FIRE EXTINGUISHER COMPANY OF NEW YORK.

## CHEMICAL FIRE-EXTINGUISHER.

SPECIFICATION forming part of Letters Patent No. 333,177, dated December 29, 1885.

Application filed January 14, 1885. Serial No. 152,927. (No model.)

*To all whom it may concern:*

Be it known that I, THOMAS G. TURNER, a citizen of the United States, residing in the city, county, and State of New York, have invented certain new and useful Improvements in Chemical Fire-Extinguishers, of which the following is a specification.

My invention relates to improvements in chemical fire-extinguishers; and it consists, first, in a novel arrangement of mechanism for removing the cork, cap, or stopper from the mouth of the acid-receptacle; second, in combining with the generating-vessel a separate cup or receptacle for holding the alkali; and, third, in various details of construction hereinafter described and claimed.

In the accompanying drawings, which form a part of this specification, Figure 1 is a vertical transverse section of a chemical fire-extinguisher embodying my invention. Fig. 2 is a cross-section on line *xx* of Fig. 1. Fig. 3 is an enlarged view, partly in section, of the mechanism for opening the mouth of the acid-receptacle. Fig. 4 is an enlarged view showing the stopper removed from the mouth of the acid-receptacle. Figs. 5 to 7 illustrate modifications of my invention, of which Fig. 6 is a bottom view of Fig. 5. Fig. 8 represents a modification of a part of the invention shown in Fig. 1.

Referring to the drawings, the generating-vessel A is of cylindrical form, and is provided with the discharge-pipe *a*. It is closed by a cap, B, to which the mechanism for holding and opening the acid-receptacle C is attached. Said mechanism consists of a support or guide in the form of a cylindrical case or tube, D, secured to the under side of said cap, of a diameter slightly larger than the said acid-receptacle, so that the latter may easily slide or move longitudinally within the same. As this case or tube serves as a guide, any means that will serve the same purpose I consider the equivalent thereof. A strong spring, E, preferably in spiral form, is attached to or rests against the under side of the cap, and also bears against the bottom of the acid-receptacle, pressing the latter outward. Any construction or arrangement of spring that

will accomplish the same end I consider within the scope of my invention. A rod or shaft, I, passes through a cylindrical aperture provided with suitable packing in the cap or cover B, and carries, outside of the generating-vessel, a convenient operating-handle, K. The said rod passes through an aperture in a lug secured to the case D, to retain it in place, and is provided with an arm, *b*, having a conical or rounded and upwardly-turned end, which fits a similarly-formed depression or seat in the under side of the cap or flat stopper H. The latter is preferably disk-shaped, and is held against the mouth of the acid-receptacle by the action of the spring E and arm *b*—that is to say, the receptacle and stopper are pressed together by the action of said parts. As the stopper is centrally supported on the end of the arm or support *b*, and as this support is in line with the longitudinal axis of the acid-receptacle when the parts are in normal position, therefore the said stopper can readily adjust itself to the mouth of said receptacle, so as to bear with equal pressure at all points, and thus securely close said mouth.

To discharge the contents of the acid-receptacle, the handle K is turned until it abuts against one of two stops, *z*, which are secured to the cap so as to indicate the distance the said handle should be turned in either direction. This movement of the handle shifts the support from its central position (relatively to the acid-receptacle) to a position to one side of the center to a sufficient extent to enable or allow the spring to act, through the medium of the acid-receptacle, to tilt the stopper on its support, and thus complete the opening of the mouth of the acid-receptacle.

The stops on the cap may be so placed that when the handle abuts against the same the stopper will assume the angular position shown in Fig. 4, and be held between its support and the acid-receptacle, thus preventing the latter from escaping from the case D. In this position the stopper may be returned to normal position, to close again the said receptacle, by merely reversing the movement of the handle. The said stops may also be so placed as to



allow a slightly greater movement of the handle than above, so that the stopper can assume (when the handle abuts against the stop) a position substantially parallel with the acid-receptacle and still be clamped between the latter and the stopper-support, so as to prevent the falling of the acid-receptacle into the generating-vessel. In this latter, case, however, the stopper cannot be returned to normal position by the handle. The handle K may be formed of spring metal and provided with a projection for engagement with a depression in the cap, to retain the handle in its normal position and prevent its accidental movement or displacement.

In order to prevent any leakage, I dip or coat the upper surface of the stopper with any kind of material (indicated by the letter M in Fig. 5)—as, for instance, beeswax—that will resist the action of acid, and I may also similarly treat the mouth of the acid-receptacle, or the latter only. This will effectually prevent leakage, and will at the same time cause only a moderately-strong adhesion between the said parts, so that they can be readily separated by the mechanism described. The acid-receptacle is preferably constructed of annealed glass, and when the apparatus has been used the said receptacle can be refilled, the same stopper applied, and the mechanism adjusted ready for further operation.

To prevent the alkali from being forced into the discharge-pipe *a*, I provide a separate cup or receptacle, N, in which I place said material, and I attach said cup preferably to the bottom of the generating-vessel, as shown in Fig. 8; but it may be placed as indicated in Fig. 1. Said vessel is of a shape so that the fluid in the generating-vessel can pass by the same.

In the modification shown in Figs. 5 and 6 a downwardly-projecting rod or bar, G, provided with a hook or projection, *d*, is attached to or formed integral with the case or tube D, and on this hooked end *d* rests one edge or side of the flat plate or disk H, preferably of metal, which serves as a cap or stopper for the acid-receptacle. The opposite edge or side of said cap or stopper H is held up against the mouth of the acid-receptacle by a projection or arm, *b*, on the vertical rod I, which rod passes through the cap or cover B and carries the operating-handle K. The stopper H is provided on its under side with four projections, *n n* and *o o*, the former acting to prevent the accidental lateral displacement or escape of the stopper from the hook *d*, which otherwise might take place occasionally when the extinguisher is roughly handled—as, for instance, in transportation. The other projections, *o o*, of the stopper are acted upon by the projection *b* of the operating rod I when the latter is rotated by its handle K, and this action of said projection *b* on either of said pins *o* slides the stopper over the mouth of the bottle until its further edge escapes from the hook *d*, at which moment the spring E,

now unrestrained, forces the acid-receptacle outward, and as the opposite edge of the stopper is still supported by the projection *b*, which has not yet passed beyond the said edge, the said stopper is tilted by the outward movement of the acid-receptacle, and thus removed from the mouth of the same, so that its contents may be discharged. As soon as the stopper is tilted, it falls by the action of gravity, sliding off the projection *b*, which continues to move away from under the stopper by the further movement of the handle. Instead of two projections *o*, only one may be used; but in this case the handle must be turned in only one direction. To prevent the acid-receptacle from falling into the generating-vessel, I attach the former to the operating-rod I by a wire or strap, L, encircling the neck of said receptacle, and also the said rod. On the removal of the stopper the bottle descends until the strap L strikes the projection *b*, when its motion is arrested.

In the modified construction shown in Fig. 7 the stopper does not slide, but is caused by the spring E, acting through the acid-receptacle, to swing on its hinge S, when the arm or projection *b* has been swung from under the same. The said stopper is hinged or pivoted by means of a curved projection which works in a hole formed in a projection of the case. It may be loosely hinged, so as to fall when swung aside, or it may be permanently hinged, as it may be found in practice most desirable. The stopper in this modification may consist of a disk to which a tapering stopper of suitable material is fixed. To prevent the acid-receptacle from dropping into the generator, the casing D is made longer than in Fig. 1, and two or more lips, T, are formed thereon and bent inwardly, which prevent the dropping of said receptacle beyond a specified distance.

In the several constructions shown and described the operating rod or shaft is connected with the stopper either directly by means of an arm or lateral extension operating in connection with a cavity in or a projection on the stopper, as shown in Figs. 1, 3, 4, 5, and 6, or connected by mere contact of the stopper and arm of the rod, as shown in Fig. 7; and I desire it to be understood that wherever in the claims I refer to the rod as connected with the stopper said word "connected" is to be interpreted as broadly as herein defined.

I am aware of the patent granted September 2, 1873, to A. E. Hughes, No. 142,340, in which an acid-receptacle is removed from its stationary stopper against the pressure of a spring which is compressed by an operating-rod when the latter is forced inwardly. I am also aware of the patent granted May 12, 1874, to C. H. Thompson, No. 150,730, in which several alkali-cylinders, each provided with a piston for discharging its contents, are placed over a circular plate which touches the open bottoms of said cylinders, said plate having a circular opening, and arranged to be rotated by a shaft



and friction wheel, to bring said opening under the lower end of either one of the several cylinders; and to the constructions shown and described in said patents I lay no claim.

5 The essence of my invention consists in combining with the stopper of the acid-receptacle an arm which passes under the same, acts to support said stopper, and when moved a sufficient distance permits the spring behind  
10 the acid-receptacle to act so as to force said receptacle forward and fully remove the said stopper from the mouth thereof. The particular means for giving the necessary motion to this arm may be varied to a great extent  
15 without necessitating any change in the essential features of my invention; and I do not, therefore, desire to limit myself to the particular construction shown in Fig. 3.

20 Having fully described my invention, what I desire to claim and secure by Letters Patent is—

1. The combination, with the inverted liquid-acid receptacle, of the stopper closing the mouth of the same, a normally-compressed  
25 spring pressing against the acid-receptacle, an arm loosely connected with said stopper, and an operating rod or shaft connected with said arm, substantially as described.

2. The combination, with the inverted liquid-acid receptacle, of the flat stopper closing the mouth of the same, a normally-compressed spring, an arm loosely connected with said  
30 stopper, and an operating rod or shaft connected with said arm, substantially as described.

3. The combination, with the inverted acid-receptacle and the guide in which it moves, of the stopper, the normally-compressed spring acting directly on the acid-receptacle, an  
40 arm extending under the stopper, and a rod or shaft passing through the generating-vessel and connected with said arm, substantially as described.

4. The combination, with the inverted acid-receptacle and the guide in which it moves, of the flat stopper, the normally-compressed spring pressing against the bottom of the acid-receptacle, an arm extending under the stopper, and a rod or shaft passing through the  
50 generating-vessel and connected with said arm, substantially as described.

5. The combination, with an acid-receptacle, of a support or guide therefor, a spring arranged to act on said receptacle, a stopper provided  
55 with a rounded or conical depression in its under side, and an operating rod or shaft extending through the cap, arranged to be rotated, and provided on its inner end with an arm which engages with the depression in said  
60 stopper, substantially as described.

6. In a chemical fire-extinguisher, the combination, with the acid-receptacle, of a guide or support therefor, a stopper, a spring arranged to act on said receptacle and operating  
65 to tilt the stopper when the operating-handle is rotated to abut against its stop, a rod extending through the cap and provided on its

inner end with an arm connected with the stopper, and a stop located on the cap and placed at such distance from the normal position of the operating-handle that when the  
70 latter is turned to abut against the same the stopper will be held between the acid-receptacle and the arm of the rod, so as to prevent the said receptacle from falling into the generating-vessel, substantially as described. 75

7. In a fire-extinguisher, the combination, with the generating-vessel and its discharge-tube, of an alkali-receptacle placed below the acid-receptacle and having an imperforate  
80 bottom and open top, for preventing the passage of the alkaline substance through the discharge-tube, substantially as described.

8. In a chemical fire-extinguisher, the combination, with the generating-vessel, of an alkali-receptacle having an imperforate bottom and open top, and placed in or secured to the bottom of said vessel, and a discharge-tube, the inner end of which projects below the upper edge of said alkali-receptacle, for preventing the passage of the alkaline substance through the discharge-tube, substantially as described. 90

9. In a chemical fire-extinguisher, the combination, with an acid-receptacle and a guide or support therefor, of a stopper held to close the same, an operating rod or shaft extending through the case and pivoted therein so as to rotate, an arm connected with said rod and extending under said stopper, and a spring arranged to force the acid-receptacle forward when the handle is operated, so as to remove the stopper from the mouth of said receptacle, substantially as described. 95

10. The combination, with an acid-receptacle, of a support therefor, a spring arranged to act directly on said receptacle to move it forward, a movable stopper held to close the same, a rod or shaft extending through the case and pivoted therein so as to rotate, and  
110 an arm connecting said rod with the stopper, whereby when the handle is operated the relative positions to each other of the said receptacle and the supporting means for the stopper are altered, so that the spring may act to tilt the stopper, substantially as described. 115

11. The combination, with an acid-receptacle, of a support or guide therefor, a spring arranged to act directly on said receptacle, a flat stopper held against the mouth of the same, and a rod extending through and pivoted in the cap so as to be capable of rotation, and provided on its lower end with a rigid arm directly connected with the stopper, so that  
125 when said rod is operated the stopper is caused to slide laterally on the mouth of the acid-receptacle, substantially as described.

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

THOMAS G. TURNER.

Witnesses:

P. E. RASOR,

ISIDORE MYERS.