

No. 682,069.

Patented Sept. 3, 1901.

T. F. HANDLY.  
FIRE EXTINGUISHER.  
(Application filed Oct. 1, 1900.)

(No Model.)

Fig. 1.

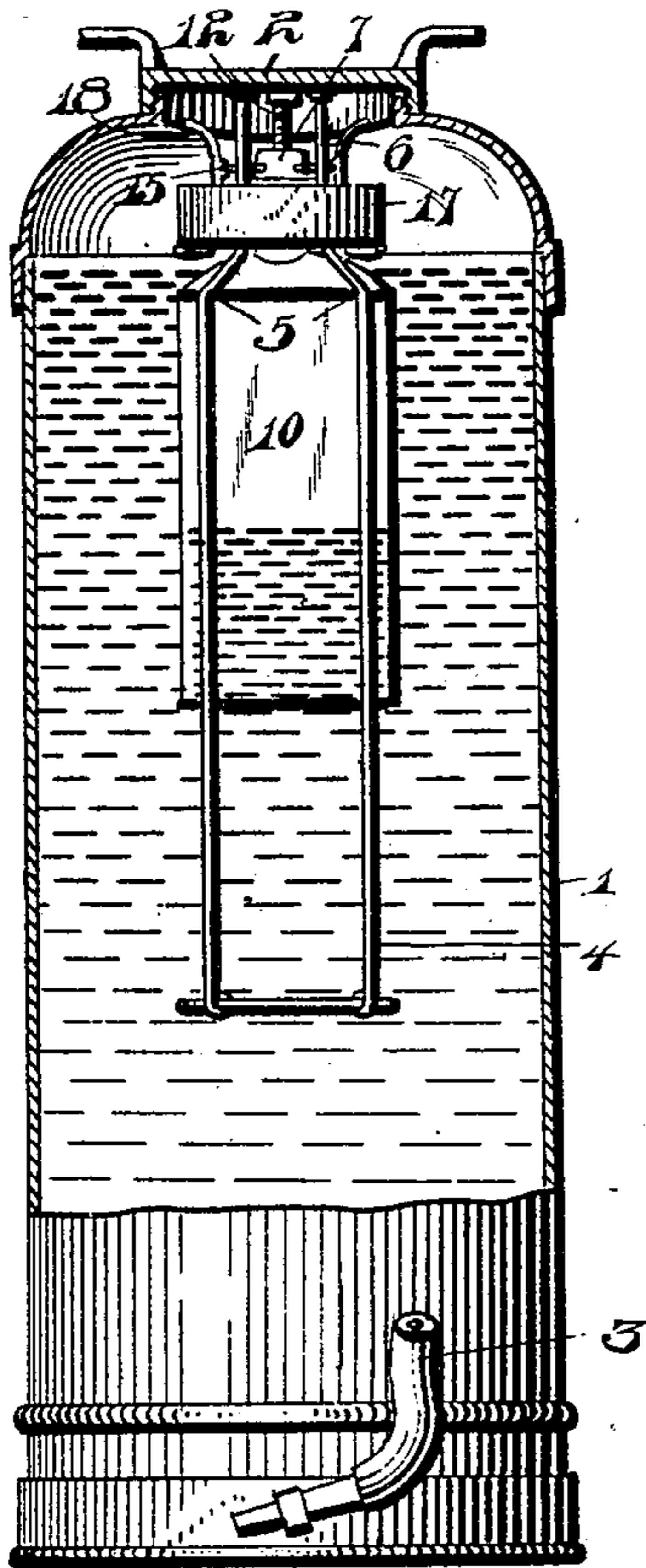


Fig. 2.

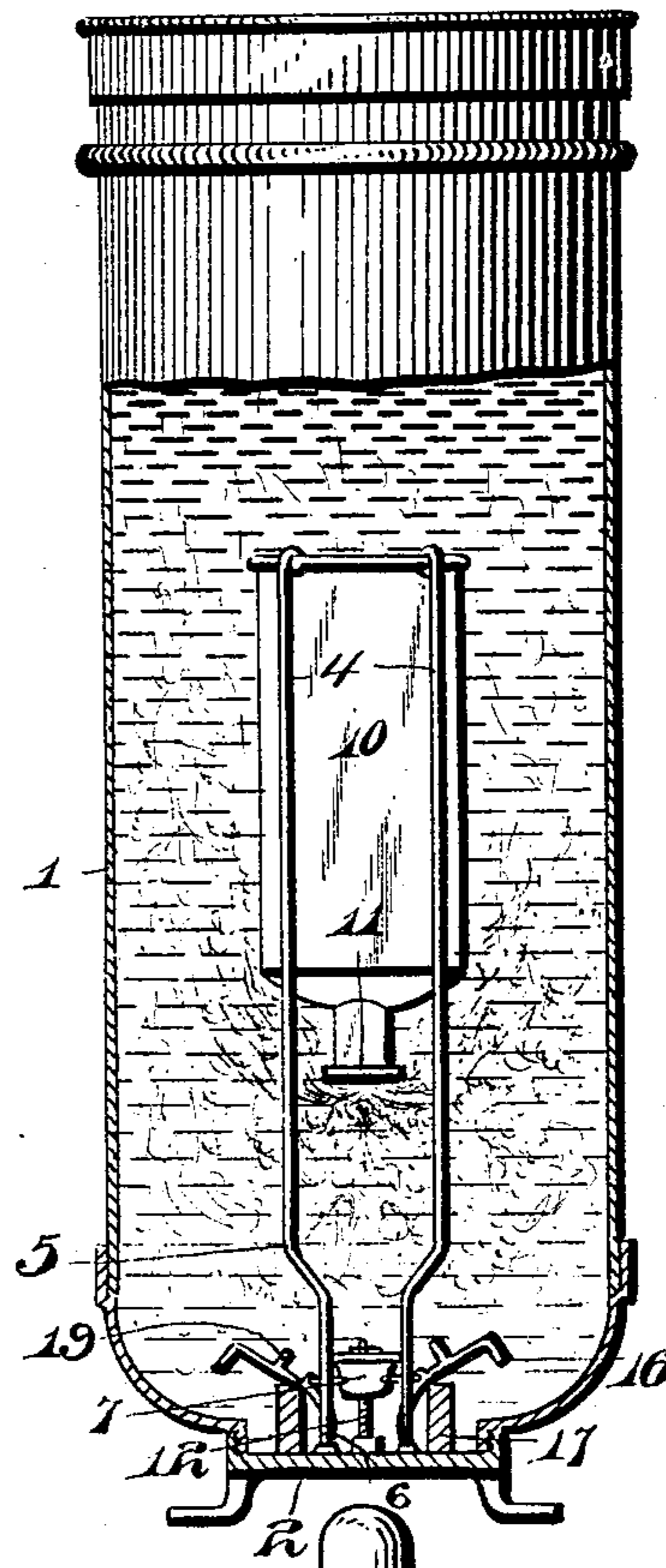
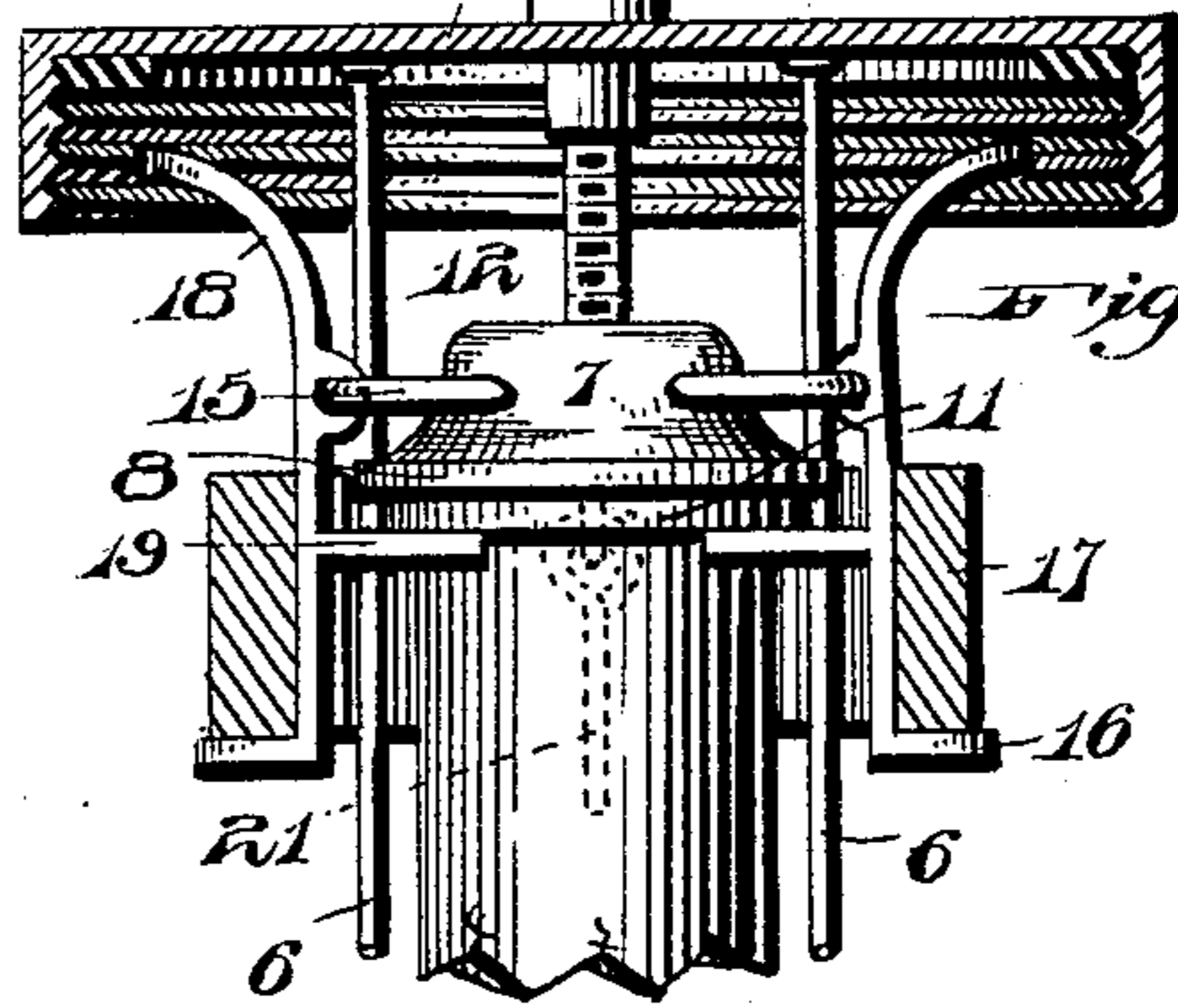
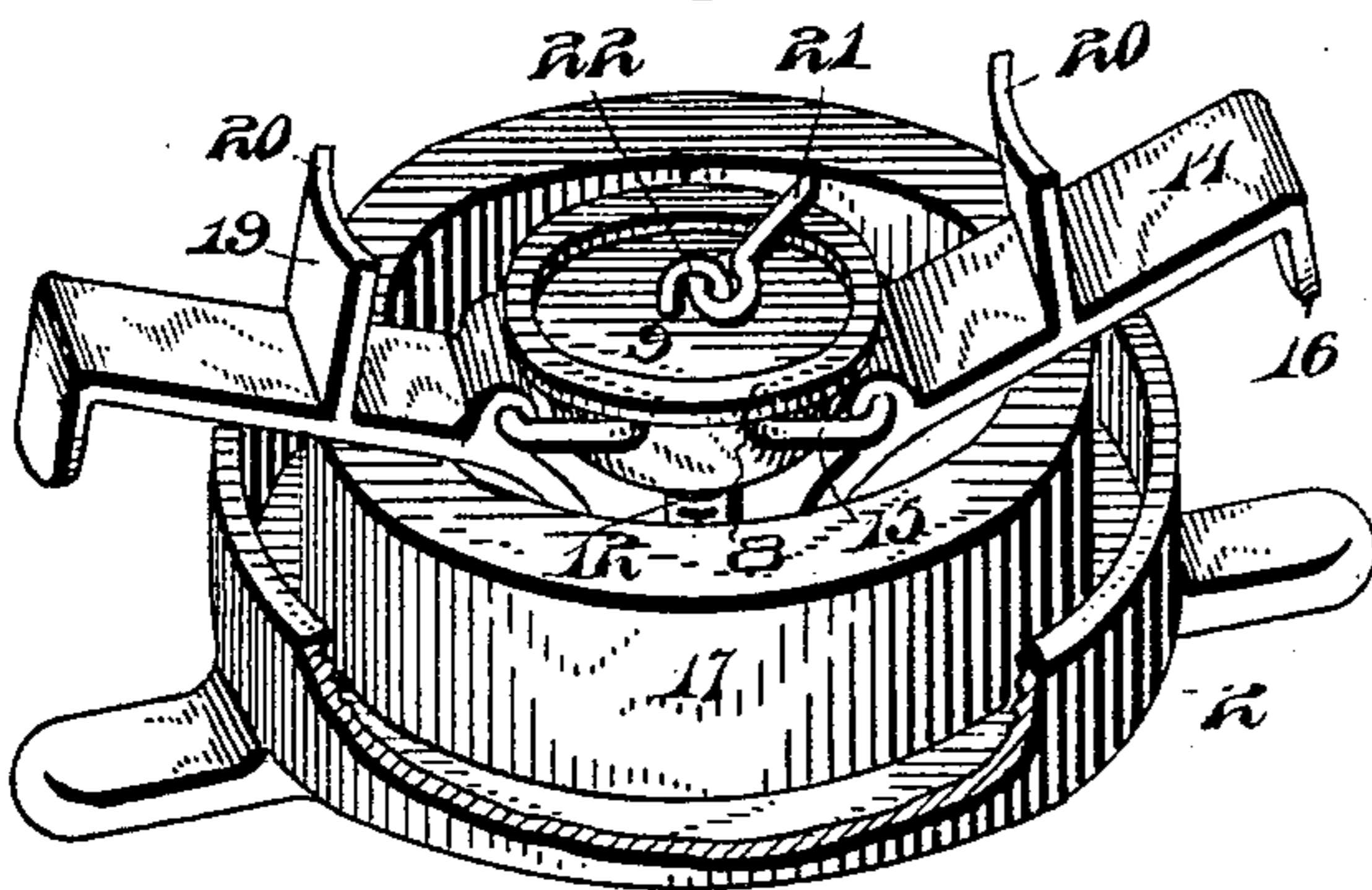


Fig. 3.



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# UNITED STATES PATENT OFFICE.

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## FIRE-EXTINGUISHER.

SPECIFICATION forming part of Letters Patent No. 682,069, dated September 3, 1901.

Application filed October 1, 1900. Serial No. 31,679. (No model.)

*To all whom it may concern:*

Be it known that I, THOMAS F. HANDLY, a citizen of the United States of America, residing at Allegheny, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Fire-Extinguishers, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to certain new and useful improvements in fire-extinguishers, and has for its object to construct an extinguisher wherein the maximum neutralization of the acid with the liquid may be obtained, 15 the acid contained within the acid-receptacle being discharged into the liquid at a point some distance from the liquid-outlet and a thorough mixing of the acid and liquid attained.

20 Briefly described, the invention comprises, in connection with the liquid-receptacle, which may be of the usual form, a cage which is supported from the closure-cap of the liquid-receptacle, an acid-receptacle arranged within the cage and adapted to float upwardly 25 within the same when the receptacle is inverted, a seal suspended from the closure-cap of the receptacle and depending within the cage to seal the acid-receptacle when in an upright position, and a gravity-lock which 30 holds the acid-receptacle in the sealed position while the extinguisher as a whole is in the upright position, but which breaks the seal or permits the disengagement of the 35 mouth of the acid-receptacle from its sealing engagement with the seal and the acid-receptacle to float upwardly in the receptacle, discharging its contents as it floats when the extinguisher is inverted. Means is also pro- 40 vided for preventing the resealing of the acid-receptacle with the sealing-cap as the contents of the extinguisher are discharged and the acid-receptacle settles upon its seal, all of which construction, with the various other 45 details entering into my invention, will be hereinafter specifically described and then particularly pointed out in the claims.

50 This application should be considered in connection with a companion application filed by me, Serial No. 683,552, for which Letters Patent were granted November 6, 1900, Patent No. 661,215.

In describing the invention in detail reference is had to the accompanying drawings, forming a part of this specification, and where- 55 in like numerals of reference indicate corresponding parts throughout the several views, in which—

Figure 1 is a side view of an extinguisher, partially in vertical section, showing the acid- 60 receptacle in the sealed position. Fig. 2 is an inverted side elevation, partially in vertical section, showing the seal broken, the acid-receptacle having floated upwardly in the cage and in the act of discharging its con- 65 tents into the solution within the receptacle. Fig. 3 is a detail perspective view of the gravity-lock and seal for the acid-receptacle, together with the closure-cap for the receptacle, the latter being partly broken away to 70 better illustrate the position of the gravity-lock. Fig. 4 is a vertical sectional view of the closure-cap of the receptacle and of the gravity-lock, showing the latter sealing the acid-receptacle, which is partly broken away. 75

In the adaptation of my improvements to fire-extinguishers of this type I make no change in the ordinary construction of the liquid-receptacle 1, the closure-cap 2, and discharge hose and nozzle 3, which parts I have 80 shown to better illustrate the operation of the device.

Rigidly secured to the underneath face of the closure-cap 3 is a cage 4, which in the form herein shown is constructed of four 85 wires connected at their lower ends to a ring or other suitable base and at a point near their upper ends contracted toward a common center, so as to form the offset or shoulder 5, and the wires extended vertically from 90 this inclined offset or shoulder to the closure-cap to form the neck 6 of the cage.

It will of course be evident that I do not confine myself to the construction of a cage made of wires, as described. In practice I 95 have found such form of cage a cheap, simple, and practical one, and therefore illustrate this form in this application.

My improved seal for the acid-receptacle and the gravity-lock for maintaining the seal 100 until such time as the extinguisher is inverted consists of a sealing-disk 7, somewhat in the form of a frustrated cone, provided with an annular flange 8, extending below the sealing-

face 9 of the disk, so as to engage with the periphery of the neck of the acid-receptacle 10. This acid-receptacle 10 is arranged within the cage 4 and is ordinarily in the form of a common bottle, in which event the annular flange 11, usually provided at the top of bottle-necks, will be peripherally engaged by the annular flange 8 of the sealing-disk. The sealing-disk is suspended from the closure-cap 2 by means of a centrally-arranged post 12, secured to the closure-cap centrally thereof and screwed into or otherwise engaging the sealing-disk 7. The acid-receptacle is held in the sealed position during the time the extinguisher is in an upright position by means of a pair of pivoted clamping-arms 14 and a gravity-operating annulus, ring, or collar. The clamping-arms 14 are secured by links 15 to opposite sides of the sealing-disk and are each provided at their lower ends with lugs 16, extending outwardly at right angles to the arms proper to form a seat and support for the ring or collar 17. The pivotal connection of the links 15 with these arms is at a point slightly above the central line of their length, and the arms are curved outwardly, as at 18, so as to be engaged by the ring or collar 17 when the extinguisher is inverted, the curved ends of the arms when thus engaged by the ring or collar 17 being forced inwardly between the wires or bars of the cage. The arms also carry on their inner faces, at a point slightly below the connection of the links 15 therewith, clamping-lugs 19, having their free ends 20 concave, as shown, so as to fit neatly around or partially around the neck of the acid-receptacle, which, when the bottle form of receptacle is employed, they engage at a point directly below the annular flange 11 of the bottle-neck.

In order to prevent sealing of the acid-receptacle at a time when the contents of the extinguisher have been almost discharged and the acid-receptacle has been lowered with the lowering of the solution until its mouth reaches the sealing-disk, I provide a link or pin 21, which is pivotally connected to an eye 22, secured centrally of the sealing-face 9 of the disk 7. This arm or link when the acid-receptacle is sealed, the extinguisher being in the upright position, depends or hangs downwardly into the neck of the acid-receptacle, as shown in dotted lines in Fig. 4 of the drawings, and is of a length sufficient to permit its lying upon the annular flange 8, which position it will assume upon the inversion of the receptacle, as shown in Fig. 3 of the drawings.

In operation the receptacle containing the solution is filled to the desired height. The acid-receptacle has been placed within its cage, which is secured to the closure-cap 2, together with the gravity-lock and the seal, the latter engaging the mouth of the acid-receptacle, where it is held by the gravity-lock, the annulus, ring, or collar 17 resting upon the lugs 16 and holding the clamping-lugs 19

in engagement with the neck of the acid-receptacle, as shown in Figs. 1 and 4 of the drawings, with the pivoted arm or link 21 extending down into the neck of the acid-receptacle. The acid-receptacle is thus held sealed as long as the extinguisher remains in the upright position, but upon the inversion thereof the ring or collar 17 falls by gravity into engagement with the curved ends 18 of the arms 14, forcing these curved ends inwardly and the lugs 16 outwardly, withdrawing the clamping-lugs 19 from their engagement with the neck of the acid-receptacle and permitting the acid-receptacle to rise or float upwardly in the cage, discharging its acid as it floats and continuing the discharge of the acid into the solution until such time as the acid-receptacle is emptied.

The position which the elements comprising the gravity-lock assume when the extinguisher is in the inverted position is clearly shown in Figs. 2 and 3, and the position of the same, together with the position of the acid-receptacle when the latter is sealed, is clearly shown in Figs. 1 and 4 of the drawings, and it is thought a further detailed description of the operation is unnecessary.

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

1. In a fire-extinguisher, a liquid-receiving receptacle having a closure-cap, and a cage suspended from said cap within the liquid-receptacle, combined with a floating acid-receptacle, a sealing device suspended from the closure-cap within the cage to engage the mouth of the acid-receptacle and seal the same when the extinguisher is in an upright position, and a gravity-lock for maintaining the seal between the sealing device and the acid-receptacle when the extinguisher is in the upright position, and adapted upon the inversion of the extinguisher to break the seal and permit the acid-receptacle to float upwardly within the cage, substantially as described.

2. In a fire-extinguisher, a liquid-receptacle, a closure-cap for the liquid-receptacle, and a sealing device carried by the closure-cap, combined with a floating acid-receptacle, and means adapted to hold the acid-receptacle in a sealed position while the extinguisher is in an upright position, and to automatically break the seal to permit the acid-receptacle to float upwardly in the liquid-receptacle upon the inversion of the extinguisher, substantially as described.

3. In a fire-extinguisher, a liquid-receptacle having a closure-cap, and a sealing device carried by said cap, combined with a floating acid-receptacle, gravity means adapted to retain the acid-receptacle in engagement with the sealing device while the extinguisher is in an upright position, said means being adapted to automatically break the seal and release the acid-receptacle upon the inversion of the extinguisher, and means carried

by the sealing device to prevent the reengagement of the acid-receptacle therewith as the solution is being discharged from the receptacle.

4. In a fire-extinguisher, the combination with the liquid-receptacle having a closure-cap, a cage carried by said cap and provided with a neck portion, a floating acid-receptacle within the cage, a seal suspended from the cap within the neck portion of the cage, a pair of clamping-arms pivotally connected to opposite sides of said seal, said arms having curved upper ends and provided at their lower ends with outwardly-extending lugs, a ring surrounding the neck portion of the cage and resting upon the lugs at the lower ends of the arms when the extinguisher is in an upright position to hold the clamping-lugs in engagement with the floating acid-receptacle, said ring being adapted upon the inversion of the receptacle to engage the curved ends of the arms and release the clamping-lugs from engagement with the acid-receptacle, substantially as described.

5. In a fire-extinguisher, the combination with the liquid-receptacle having a closure-cap, of a floating acid-receptacle, a seal suspended from the closure-cap, a pair of clamping-arms pivotally supported from said seal, and a ring engaging said arms for holding the same in engagement with the acid-receptacle while the extinguisher is in an upright position, said ring adapted upon the inversion of the extinguisher to automatically release the arms from engagement and permit the acid-receptacle to float upwardly in the liquid-receptacle and discharge its contents as it floats, substantially as described.

6. In a fire-extinguisher, a liquid-receptacle, a closure-cap carried thereby, and a sealing device carried by said cap, combined with an acid-receptacle, clamping-arms pivoted to the sealing device, clamping-lugs carried by said arms for engagement with the acid-receptacle to hold the latter in sealed engagement with the sealing device, and a weight normally supported by the clamping-arms for holding the clamping-lugs in engagement, said weight adapted, upon the inversion of the extinguisher, to break the seal of the acid-receptacle, substantially as described.

7. In a fire-extinguisher, a liquid-receptacle and a closure-cap suspended from the sealing device of the liquid-receptacle, combined with an acid-receptacle, pivoted clamping-arms adapted to engage the acid-receptacle and hold the same normally in engagement with the sealing device, and a weight adapted, upon the inversion of the extinguisher, to disengage the clamping-arms from the acid-receptacle to break the seal of the latter, substantially as described.

8. In a fire-extinguisher, the combination with a liquid-receptacle having a closure-cap, of an acid-receptacle, a sealing device, clamping-arms pivoted to the sealing device and adapted to hold the acid-receptacle normally

in sealed engagement with said sealing device, and a weight supported by the clamping-arms while the extinguisher is in an upright position for holding the acid-receptacle in sealed engagement with the sealing device, substantially as described.

9. In a fire-extinguisher, the combination with a liquid-receptacle having a closure-cap, of a floating acid-receptacle, a sealing device, pivotally-supported clamping-arms having clamping-lugs for engagement with the acid-receptacle to hold the latter in sealed engagement with the sealing device when the liquid-receptacle is in the upright position, and a weight normally supported by the arms and adapted, upon the inversion of the extinguisher, to disengage the arms from the acid-receptacle, breaking the seal of the latter and permitting the same to float upwardly in the liquid-receptacle, substantially as described.

10. In fire-extinguishers, the combination with the liquid-receptacle having a closure-cap, and the sealing device suspended from the closure-cap, an acid-receptacle, clamping-arms pivotally connected to the sealing device and provided with lugs to engage the acid-receptacle, a weight surrounding said arms for holding the lugs of the clamping-arms normally in engagement with the acid-receptacle, and means carried by the arms for supporting said weight when the extinguisher is in the upright position, substantially as described.

11. In fire-extinguishers, the combination with the liquid-receptacle, the acid-receptacle, and the sealing device, of pivotally-supported clamping-arms for engagement with the acid-receptacle to hold the latter normally in engagement with the sealing device, and gravity means adapted upon the inversion of the extinguisher to actuate the clamping-arms and disengage the latter from the acid-receptacle, as and for the purpose described.

12. In fire-extinguishers, the combination with the liquid-receptacle, the acid-receptacle, and a sealing device, of pivoted clamping-arms engaging the acid-receptacle to hold the latter normally in engagement with the sealing device, and gravity means adapted when the extinguisher is in the upright position to hold the clamping-arms in locked engagement with the acid-receptacle, and, upon the inversion of the extinguisher, adapted to actuate the clamping-arms to disengage the same from the acid-receptacle, and break the seal, substantially as described.

13. In fire-extinguishers, the combination with the liquid-receptacle, the acid-receptacle, and a sealing device, of pivoted clamping-arms engaging the acid-receptacle to hold the latter normally in engagement with the sealing device, gravity means supported normally by the arms to hold the latter in locked engagement with the acid-receptacle when the extinguisher is in an upright position, said gravity means adapted upon the inversion of the extinguisher to actuate the arms

to disengage the same from the acid-receptacle and break the seal, and means carried by the sealing device to prevent the resealing of the acid-receptacle with the sealing device during the time of discharge of the acid from the acid-receptacle.

14. In fire-extinguishers, the combination with the liquid-receptacle, the acid-receptacle, and the sealing device, of pivoted clamping-arms for engagement with the acid-receptacle to hold the same normally in sealed engagement with the sealing device, and gravity means supported normally on the said arms for maintaining the normal engagement of the arms with the acid-receptacle, said means adapted upon the inversion of the extinguisher to actuate the arms and disengage the latter from the acid-receptacle, as and for the purpose specified.

15. In fire-extinguishers, the combination with the liquid-receptacle, the floating acid-receptacle, and the sealing device, of pivoted clamping-arms for engagement with the acid-receptacle to hold the same normally in sealed engagement with the sealing device, gravity means supported normally on the lower ends of said arms for maintaining the normal engagement of the arms with the acid-receptacle, said means adapted upon the inversion of the extinguisher to engage the opposite ends of the arms and actuate said arms to disengage the same from the acid-receptacle, whereby the latter will be free to float upwardly in the liquid-receptacle, and means whereby the reengagement of the mouth of

the acid-receptacle with the sealing device during the discharge of the acid is prevented.

16. In fire-extinguishers, the combination with the liquid-receptacle, a floating acid-receptacle, and a sealing device for said acid-receptacle, of clamping-arms for engagement with the acid-receptacle, and gravity means adapted to normally hold said clamping-arms in engagement with the acid-receptacle, said gravity means adapted upon the inversion of the extinguisher to actuate the arms and disengage the same from the acid-receptacle, as and for the purpose specified.

17. In fire-extinguishers, the combination with the liquid-receptacle, a floating acid-receptacle, and a sealing device for said acid-receptacle, of pivoted means for engagement with the acid-receptacle to support the same, and gravity means for maintaining the engagement of the pivoted means with the acid-receptacle when the extinguisher is in its normal position, said gravity means adapted upon the inversion of the extinguisher to actuate the pivoted means and disengage the same from the acid-receptacle whereby the said receptacle will be free to float upwardly in the liquid-receptacle, substantially as described.

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

THOMAS F. HANDLY.

Witnesses:

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