

(No Model.)

A. M. GRANGER.
Fire Extinguisher.

No. 233,235.

Patented Oct. 12, 1880.

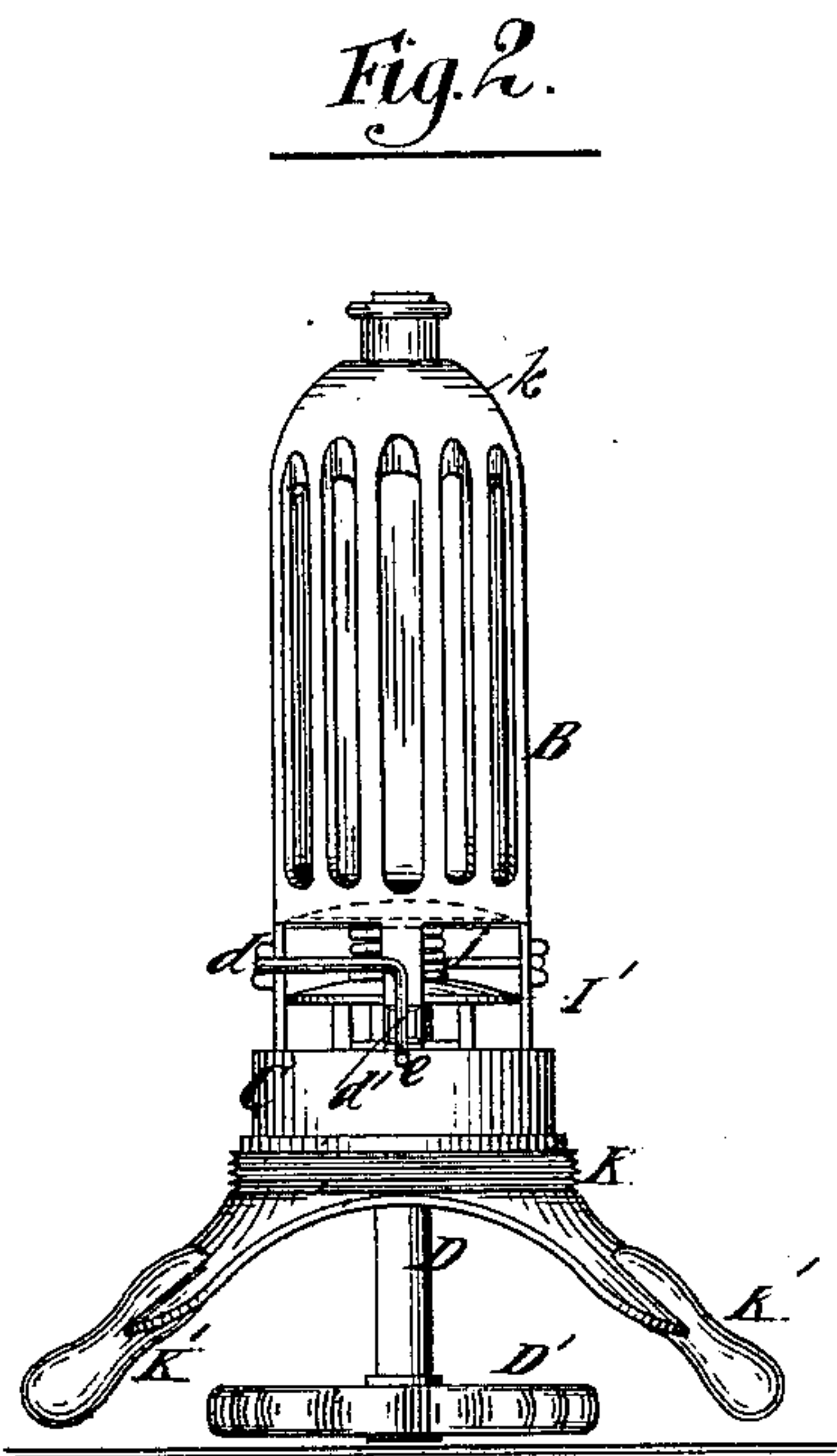
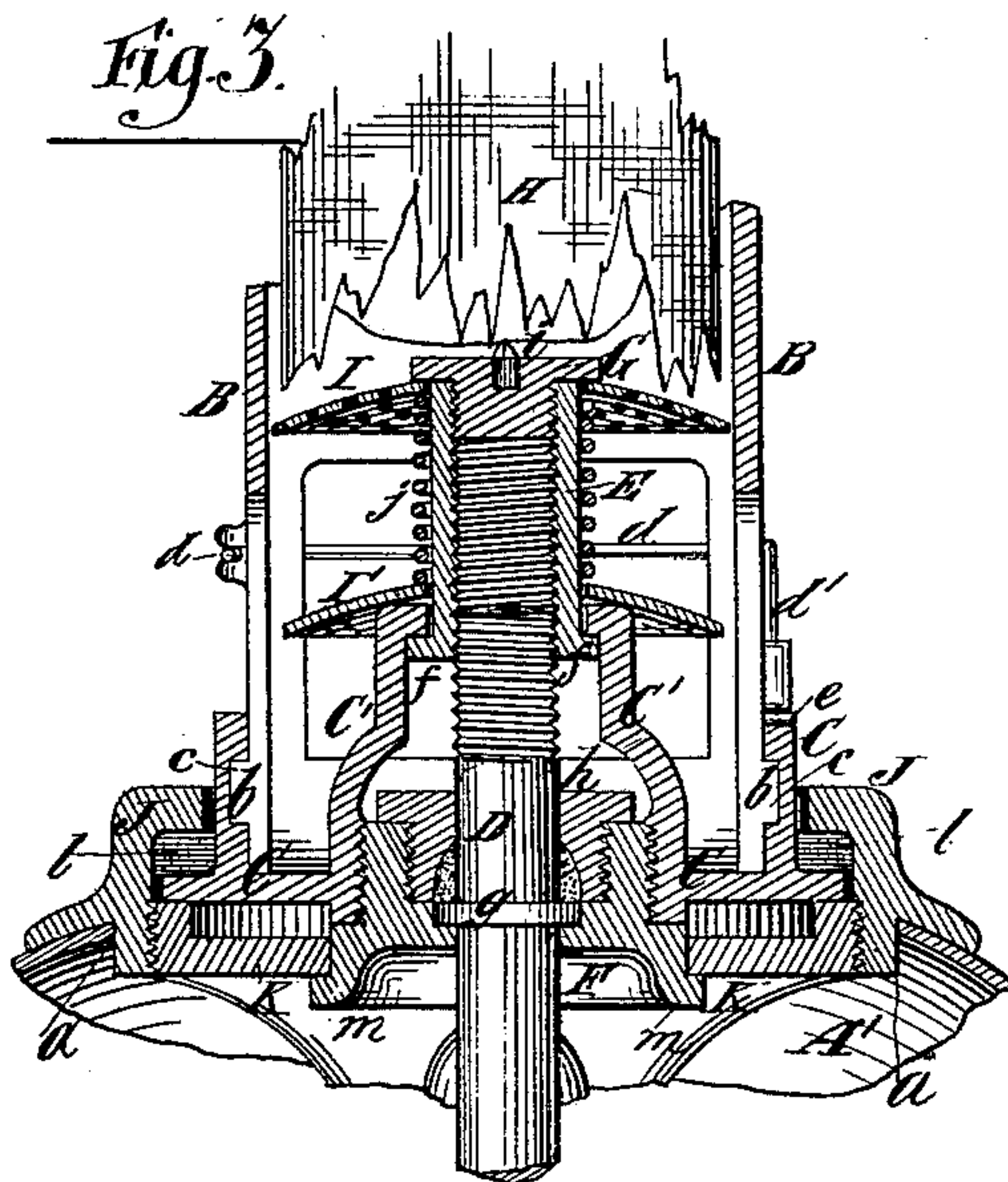
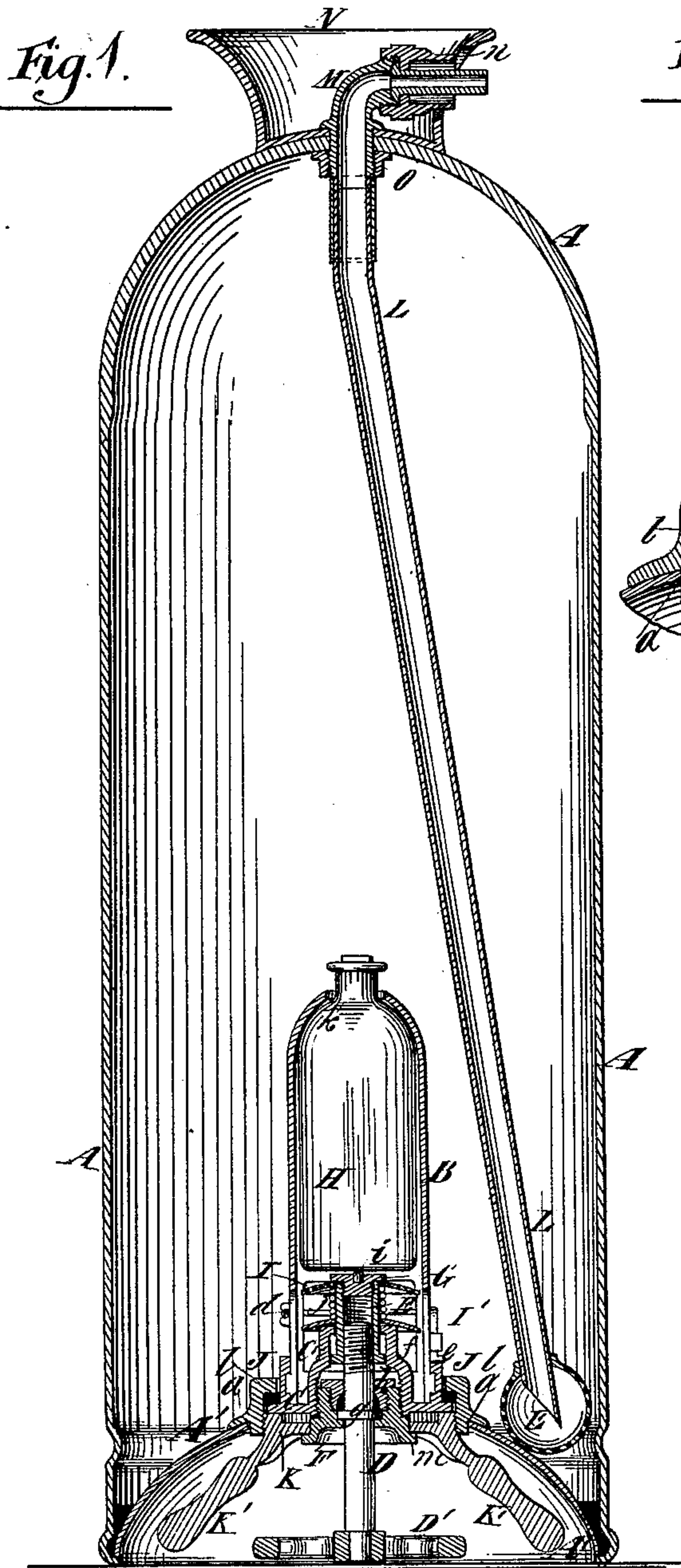
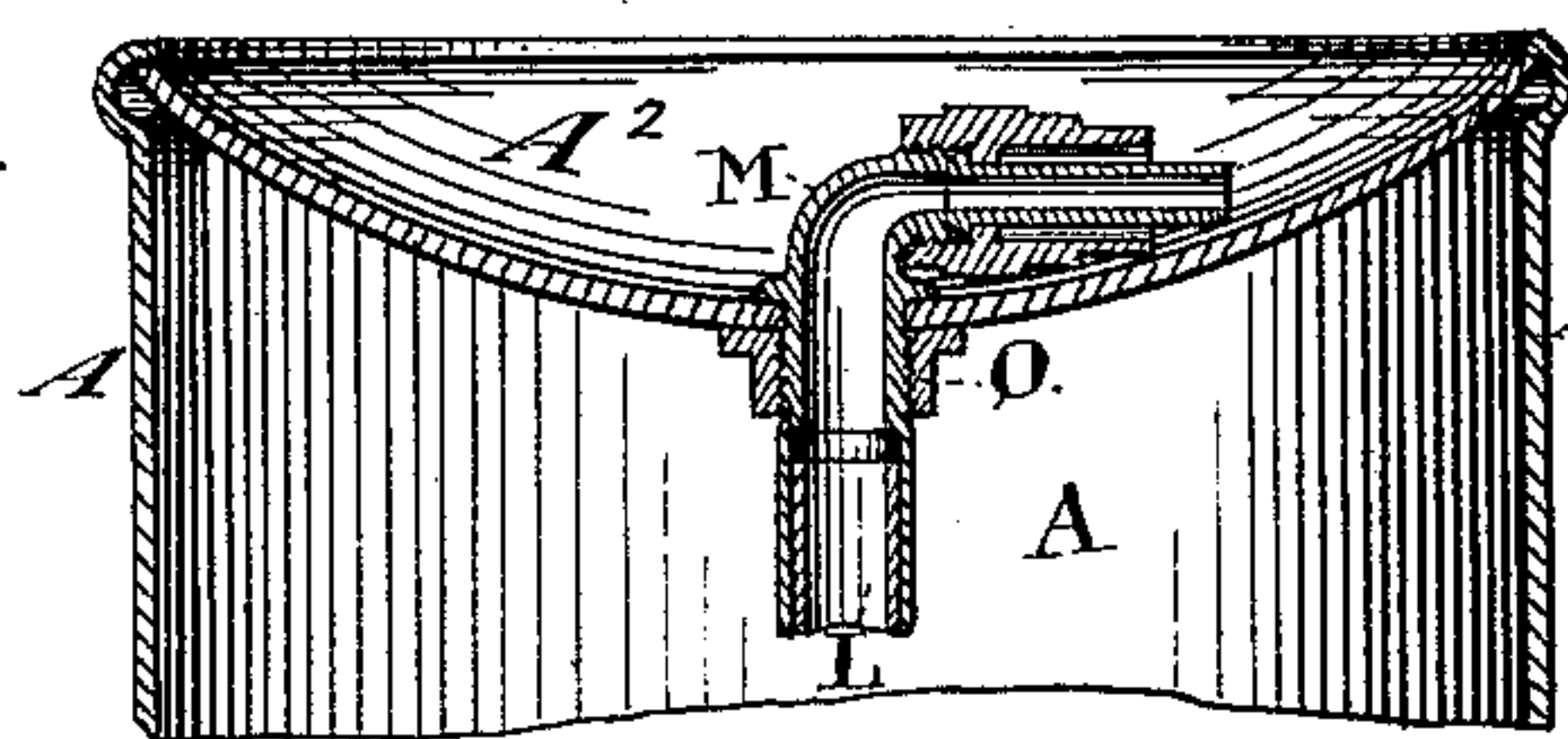


Fig. 4.
Witnesses:-
Louis M. Whitehead,
Geo. Haynes.



Inventor:-
A. M. Granger,
by his Attorney,
Brown & Brown.

UNITED STATES PATENT OFFICE.

ALMON M. GRANGER, OF NEW ORLEANS, LOUISIANA, ASSIGNOR, BY MESNE ASSIGNMENT, OF ONE-HALF OF HIS RIGHT TO THE FIRE EXTINGUISHER MANUFACTURING COMPANY, OF NEW YORK CITY, N. Y.

FIRE-EXTINGUISHER.

SPECIFICATION forming part of Letters Patent No. 233,235, dated October 12, 1880.

Application filed June 19, 1880. (No model.)

To all whom it may concern:

Be it known that I, ALMON M. GRANGER, of the city of New Orleans, in the parish of Orleans and State of Louisiana, have invented certain new and useful Improvements in Fire-Extinguishers, of which the following is a specification.

My invention relates more especially to chemical fire-extinguishers of the class commonly known as "bottle-breaking" fire-extinguishers, in which an acid or one of the chemicals employed is contained in a bottle, which is to be broken when the extinguisher is to be used; but the invention is or may be partly applicable to other chemical fire-extinguishers.

My invention consists in the combination, in a bottle-breaking fire-extinguisher, of a bottle-holder for supporting a bottle with its neck uppermost, and a breaking device adapted to act upon the bottom of the bottle, the said bottle-holder being constructed so as to support the bottle at the shoulder against the action of the said breaking device. The bottle-holder and breaking device are preferably inserted through an opening at the bottom of the extinguisher, and detachably secured to said bottom so as to hold the bottle in an upright position, with its neck uppermost, so that the cork or stopper is not exposed to the action of the acid within the bottle.

It also consists in the combination, with such a bottle-holder and breaking device, of a guard of novel character for retaining all the broken glass within the holder after the breaking of a bottle, so that it may all be removed with the holder from the extinguisher, and in the combination, with said bottle-holder and breaking device, of a novel distributor for spreading or directing the acid or chemical outward when the bottle is broken.

It also consists in the combination, with a bottle-holder and breaking device, of a bottom piece in which the breaking device is supported, and to which the bottle-holder is detachably connected, so that all the broken glass may be retained in the holder after the detachment of the bottom piece therefrom, and all thrown away together.

It also consists in the combination, with a

fire-extinguisher provided with a single opening in the bottom, through which the water and soda or other chemical are introduced, of a bottle-holder and crushing device, also inserted through said opening and secured to the said bottom.

It also consists in the combination, with the shell of a fire-extinguisher having an opening in the bottom, of a hollow or concave crown, and a hose-connection arranged within and concealed by said crown, thus forming a foot or base upon which the extinguisher may stand when turned upside down for charging through the opening in the bottom.

It also consists in various novel details of construction, whereby the several parts of the bottle-holder and bottle-breaking apparatus are secured together in a simple and effective manner, and the effective operation of the bottle-breaking device and appurtenances is secured, and the packing and repacking of the stem of the breaking device is provided for.

In the accompanying drawings, Figure 1 represents a vertical section through an extinguisher embodying my invention. Fig. 2 represents an exterior view of the bottle-holder, the bottom piece thereof, and appurtenances detached from the shell of the extinguisher. Fig. 3 represents a vertical section, upon an enlarged scale, of the lower portion of the bottle-holder, the bottom thereof, and the crushing device; and Fig. 4 represents a section of a modified form of crown for the extinguisher.

Similar letters of reference designate corresponding parts in all the figures.

A designates the shell or body of the extinguisher, which may be made of any suitable material and constructed in any desirable way. I prefer, however, to construct it as here represented, with the dome-shaped top or head made in one piece with the cylindric body, and formed of copper, by drawing, as by this means a light shell or body having great strength to resist internal pressure may be produced.

The bottom A' is preferably, also, of dome shape, concave upon the outside and secured within the cylindrical shell by solder or other means.

In the bottom A' is an opening, *a*, which, it will be observed, is the only opening in the

shell or body of the extinguisher, save the small opening at the top through which the discharge-pipe projects. Through this single opening in the bottom are introduced the water and soda or other chemical necessary to operate the extinguisher, which may be introduced in the form of a solution of soda or other chemical in water, or separately, as may be deemed most desirable.

The concave form of the bottom acts as a funnel, and therefore facilitates the charging of the extinguisher. Another advantage of filling or charging at the bottom is, that all the joints are below the level of liquid in the extinguisher, and are therefore not liable to shrink and produce leakage. Through this opening are also introduced the bottle-holder containing a bottle, the crushing device, and the devices employed in connection with these devices, all of which are secured to the bottom A'. This simplifies the construction of the extinguisher, lessens the liability of leakage, and avoids weakening the shell or body A by cutting holes in the sides thereof.

B designates the bottle-holder, which is here shown as consisting of a skeleton-frame, and is secured in or to a bottom piece, C, so that it may be readily connected and disconnected therefrom. In the present example of my invention this attachment or connection is effected by forming lugs *b* upon the holder B, (see Fig. 3,) which are adapted to be inserted through notches in the inner circumference of the bottom piece, C, and upon turning the bottle-holder relatively to the bottom piece these lugs enter a circumferential groove, *c*, in the bottom piece, and lock the two together in a manner similar to the well-known bayonet-lock.

To prevent the bottle-holder from turning accidentally relatively to the bottom piece and becoming disconnected therefrom, I may employ a wire spring, *d*, partly surrounding the holder B, and having a downwardly-projecting arm or portion, *d'*, which engages with a notch, *e*, in the bottom piece, (see Fig. 2,) and prevents the holder from turning accidentally. By raising the arm *d'* of the spring the bottle-holder is unlocked and is free to be turned relatively to the bottom piece to permit its disengagement therefrom. Any other of the simple devices frequently used for such a purpose may be employed in lieu of the wire spring *d*.

The bottle breaking or crushing device here represented consists of a screw, D, which is held against longitudinal movement, and which is provided with a hand-wheel, D', and a nut, E, which is held against rotary movement, and by the turning of the screw is raised and lowered longitudinally to the bottle-holder and bottle.

In the present example of my invention the bottom piece, C, is constructed with a socket, C', through an opening in the top of which the nut E works, and the said nut is provided

at its lower end with a flange, *f*, of square, polygonal, or other form fitting said socket, and is thereby prevented from turning, as shown clearly in Fig. 3.

F designates a plug screwed into the lower end of the socket C', and through which the screw D passes, the said screw being furnished with a collar, *g*, fitting in said plug and preventing the longitudinal movement of the screw. Screwed into the upper side of the plug F is a gland, *h*, affording provision for packing the screw D to prevent leakage.

In the upper end of the nut E is screwed a flanged plug, G, in which may be inserted a steel point, *i*, adapted to bear upon the bottle H and crush the bottom thereof.

No special form of bottle is required. Any ordinary commercial bottle holding about eight ounces or more will answer the purpose.

I designates a guard, and I' a distributor, both fitting upon the exterior of the nut E, and having a spiral spring, *j*, interposed between them. The said spring pushes the guard I upward against the flange of the plug G, so that it always travels upward with the nut E and pushes the distributor I' downward upon the top of the socket C'. The guard I is of a size to fit loosely in the bottle-holder B, has a convex upper surface, and is preferably perforated, so that while allowing all the acid or other chemical contained in the bottle to pass freely out it retains the broken glass within the holder B, and prevents the pieces from falling into the body of the extinguisher.

The distributor I', which is stationary, is also convex upon its upper surface, and as the acid or other chemical flows out of the bottle it is directed outward, so as to come in contact with any soda or chemical which may be undissolved in the bottom of the extinguisher.

It will be seen that the bottle-holder B holds the bottle with its neck uppermost, and that its shape is such that it supports the bottle H at the shoulder *k*, and that therefore the bottle will always be broken by crushing in the bottom, insuring the discharge of all the acid or chemical contained therein.

J designates a recessed ring or socket, permanently secured to the bottom A' by solder or otherwise, and into which the bottom piece, C, of the bottle-holder B fits, a packing, *l*, of leather or other material, being interposed to make a tight joint.

K designates a cap or cover, adapted to screw into the ring or socket J, and provided with handles K', whereby it may be conveniently screwed in or out.

As shown clearly in Figs. 1 and 3, the cap or cover K is secured to the bottom piece, C, by a flange, *m*, upon the plug F, which overlaps the edge of the opening in the cap or cover, through which the plug passes, and which, when the plug F is screwed in place in the socket C', securely locks the whole together.

When it is desired to open the extinguisher

for charging, all that is necessary is to unscrew the cap or cover K from the ring or socket J and withdraw the bottle-holder and all appurtenances together.

5 By unscrewing the plug G from the top of the nut E and the plug F from the socket C' the screw and nut may be drawn out and the stuffing-box in the plug F repacked.

10 If the bottle-holder B be turned upside down and then detached from the bottom piece, C, all the broken glass will be retained in the holder and may be thrown away.

L designates the discharge-pipe, which is preferably provided at its lower end with a strainer, L'. This pipe is connected at its upper end to an elbow, M, provided with a coupling for the attachment of a hose.

20 The opening through which the extinguisher is charged being in the bottom, it is necessary, when it is desired to charge the extinguisher, to invert it, and to provide a foot or base upon which the extinguisher may stand when so inverted.

In order to protect the hose-coupling and appurtenances from injury, I attach to the top of the extinguisher a hollow crown, N, which is provided in its side with an opening, n, through which the hose-connections pass, as shown clearly in Fig. 1. This hollow crown 30 not only serves a very useful purpose, but it also adds greatly to the appearance of the extinguisher.

As here represented, both the hollow crown N and the hose-connection and elbow M may be conveniently and securely fastened in place by a single nut, O, upon the inside of the extinguisher.

In lieu of the hollow crown N, I may make the upper head or top, A², of the extinguisher 40 in the form of a hollow or concave crown, as shown in Fig. 4. When the crown N is used the hose is coiled around it, while when the crown shown in Fig. 4 is used the hose is coiled within it; but in either case the crown 45 conceals the coupling and protects it from injury.

It will be observed that when the bottle is held in an upright position, with its cork or neck uppermost, the cork is not exposed to the contact of the acid, as when in an inverted position, and the bottom of the bottle being broken in all the acid will quickly escape.

By my invention I furnish a strong, light, and durable extinguisher, the parts of which 55 are all easily accessible, and are all combined so as to produce a very effective extinguisher.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, in a bottle-breaking 60 fire-extinguisher, of a bottle-holder for supporting a bottle with its neck uppermost, and a breaking device adapted to act upon the bottom of the bottle, the said bottle-holder being constructed so as to support the bottle 65 at the shoulder against the action of said breaking device, substantially as specified.

2. The combination, in a fire-extinguisher having an opening in its bottom, of a bottle-breaking device adapted to operate upon the bottom of a bottle, and a bottle-holder in 70 which said device is movable longitudinally, and which is inserted through said opening and detachably secured to the bottom of the extinguisher, so as to hold the bottle in an upright position, with its neck uppermost, substantially as specified. 75

3. The combination, in a fire-extinguisher, of a bottle-holder, a breaking device movable therein in a direction lengthwise of the bottle contained therein, and a guard fitting 80 within the said bottle-holder and moving with the said bottle-breaking device, for the purpose of retaining the broken glass in the bottle-holder, substantially as specified.

4. The combination, in a fire-extinguisher, 85 of a bottle-holder and breaking device, both arranged upright therein, and a distributor arranged in the lower part of said holder, substantially as and for the purpose specified.

5. The combination, in a fire-extinguisher, 90 of an upright bottle-holder, a breaking device, and a bottom piece in which the breaking device is supported, and to which the bottle-holder is detachably secured, substantially as specified. 95

6. The combination, in a fire-extinguisher having a single opening in the bottom, through which the water and soda or other chemical are to be introduced, of a bottle-holder and a bottle-breaking device inserted through the 100 same opening and secured to the bottom of the extinguisher, substantially as specified.

7. The combination, with a fire-extinguisher having an opening in the bottom for charging the extinguisher, of a hose-connection at 105 the top thereof, and a hollow or concave crown, within which the hose-connection is concealed and protected from injury, substantially as specified.

8. The combination, with the extinguisher, 110 shell, or body, of the elbow-pipe connection M, the hollow crown N, and the single nut O, for securing both to the extinguisher, shell, or body, substantially as specified.

9. The combination of the bottom piece, C, 115 and a breaking device supported therein, the bottle-holder B, secured to the said bottom piece by a bayonet-joint, and a spring-catch for preventing the accidental turning of the said bottle holder relatively to said bottom 120 piece, substantially as specified.

10. The combination of the bottle-holder B, the bottom piece, C, and socket C', the nut E and screw D, the cap K, and the screw-plug F, secured in the socket C', and provided with 125 a flange, m, for overlapping the cap K, all substantially as specified.

ALMON M. GRANGER.

Witnesses:

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JOHN BECKER.