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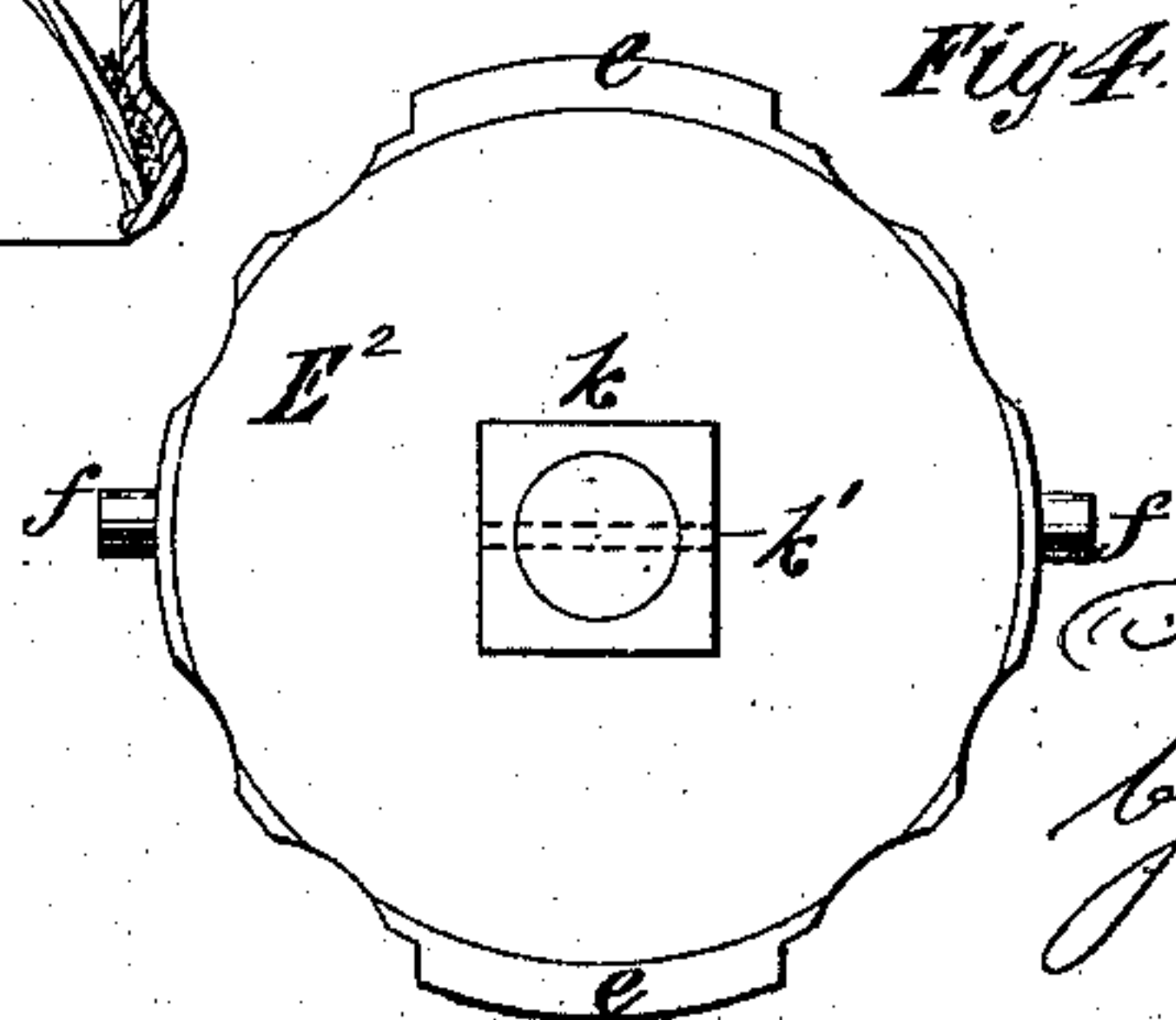
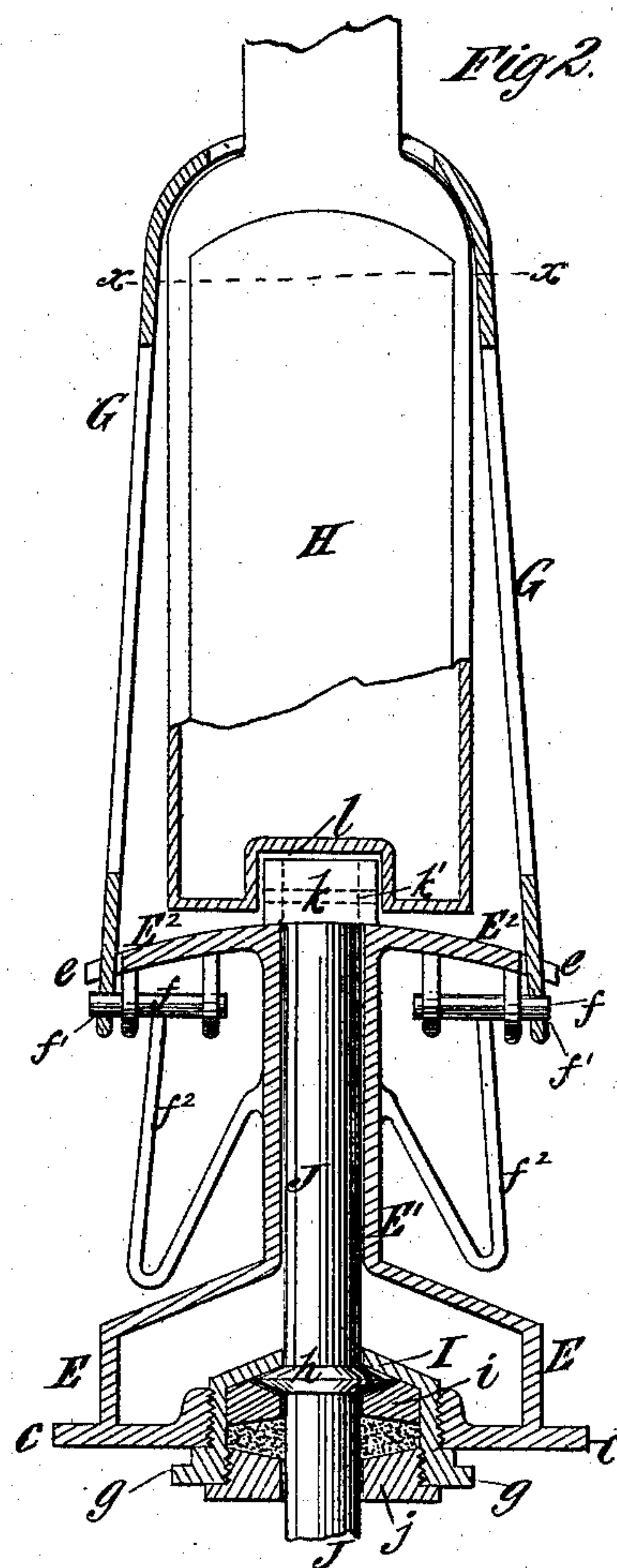
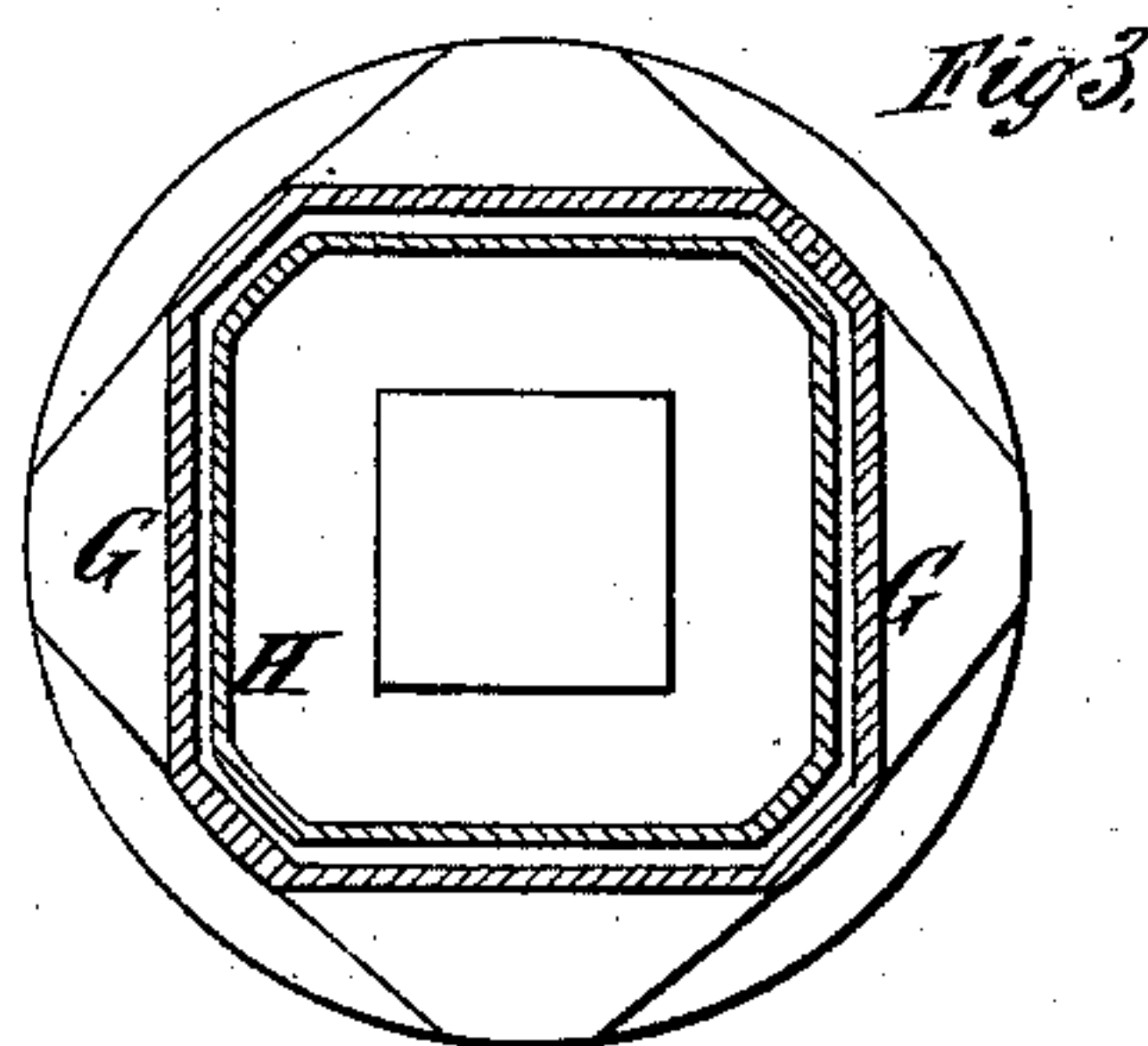
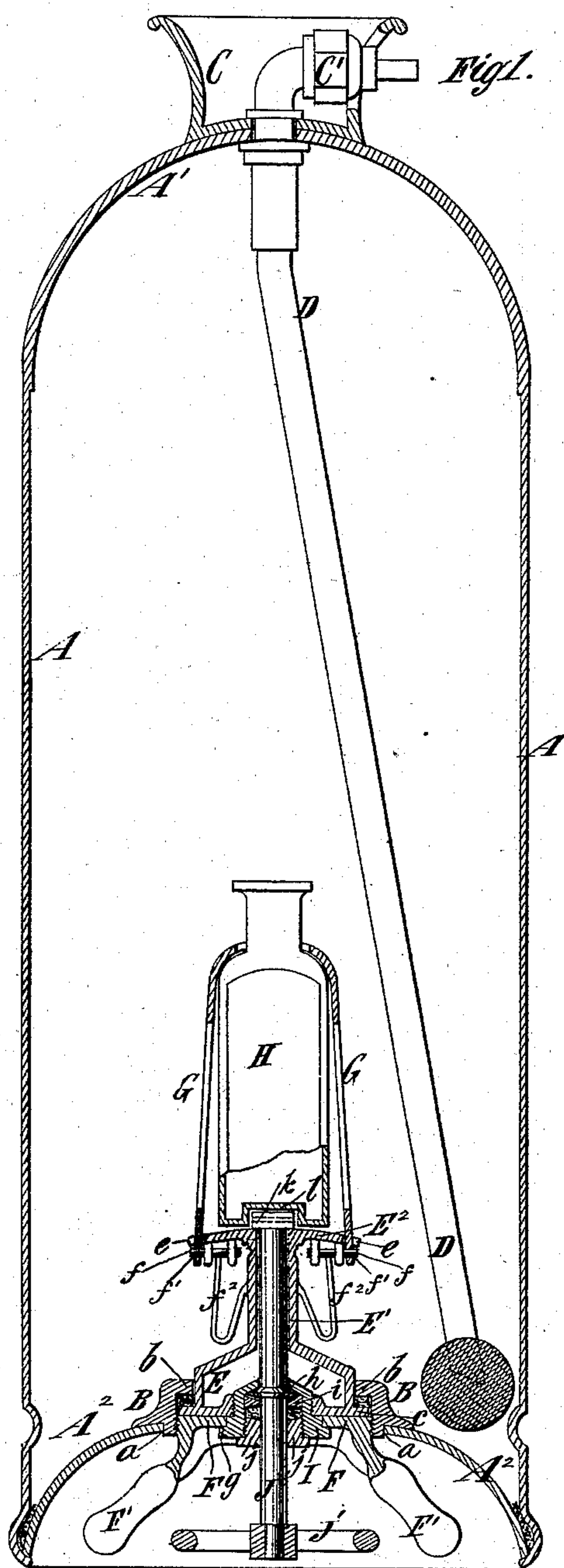
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A. M. GRANGER.

BOTTLE BREAKING FIRE EXTINGUISHER.

No. 258,293.

Patented May 23, 1882.



WITNESSES

Geo. H. Bots

INVENTOR

J. M. Granger  
 by his Attorneys  
 Brown & Brown

(No Model.)

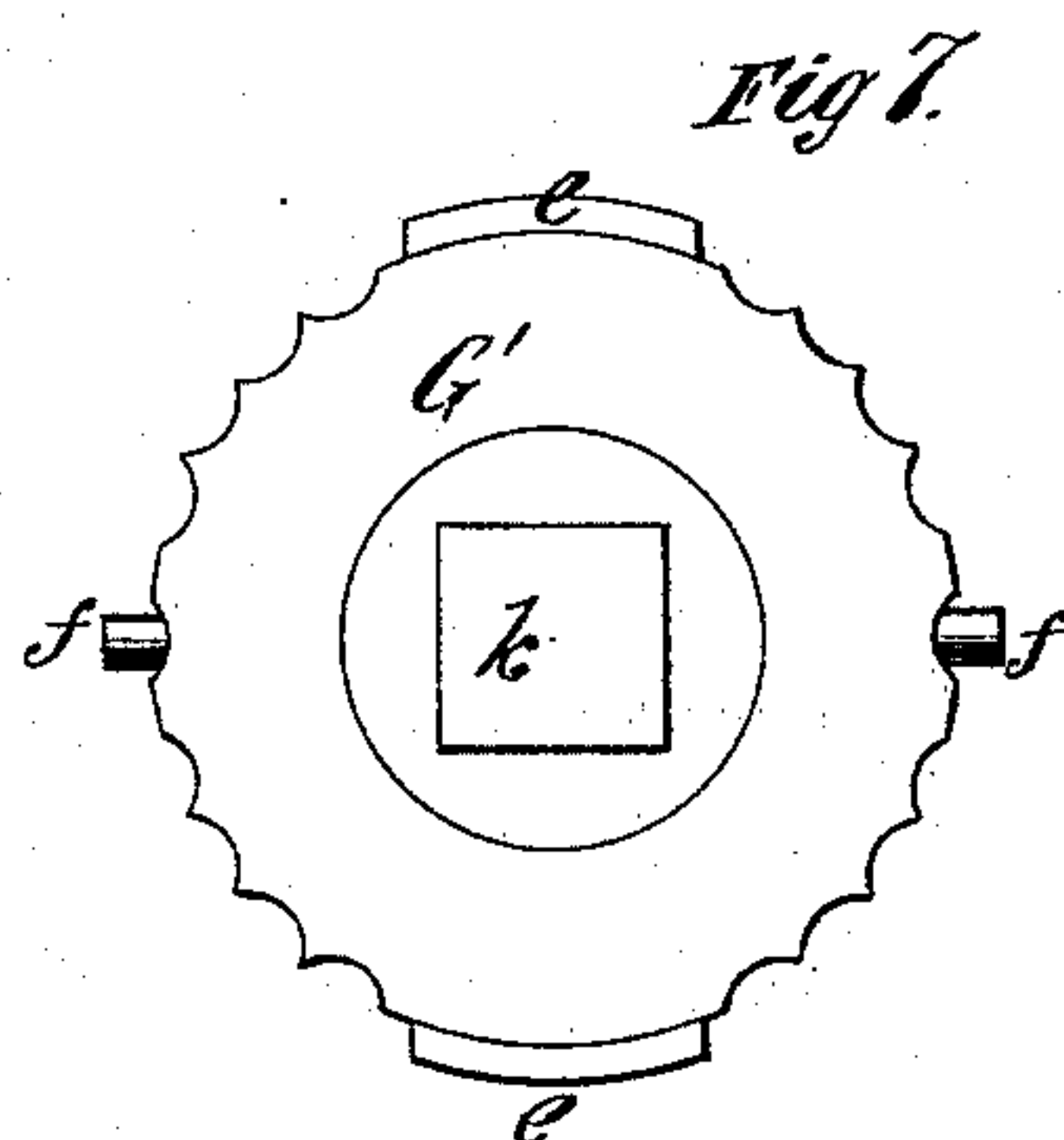
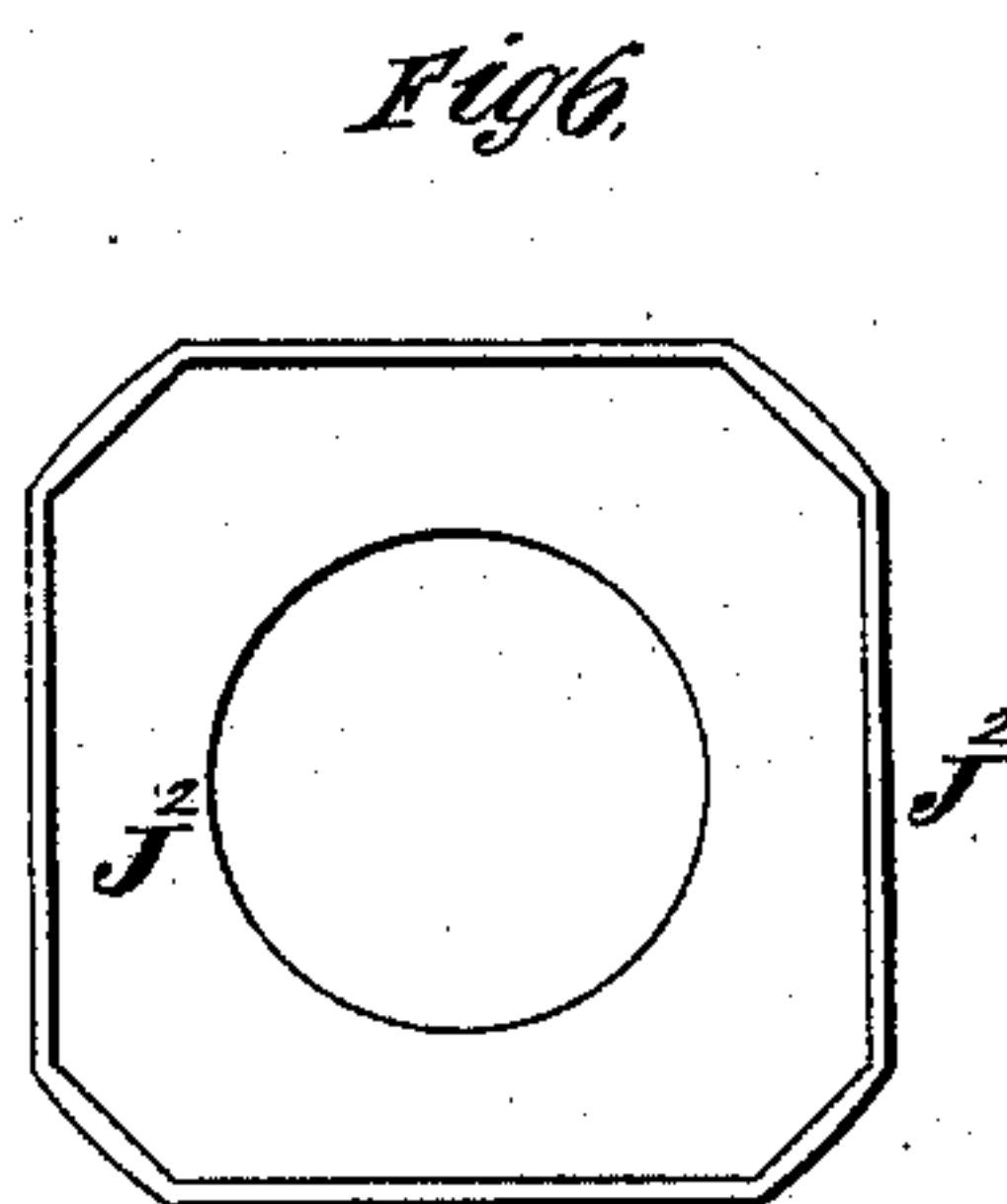
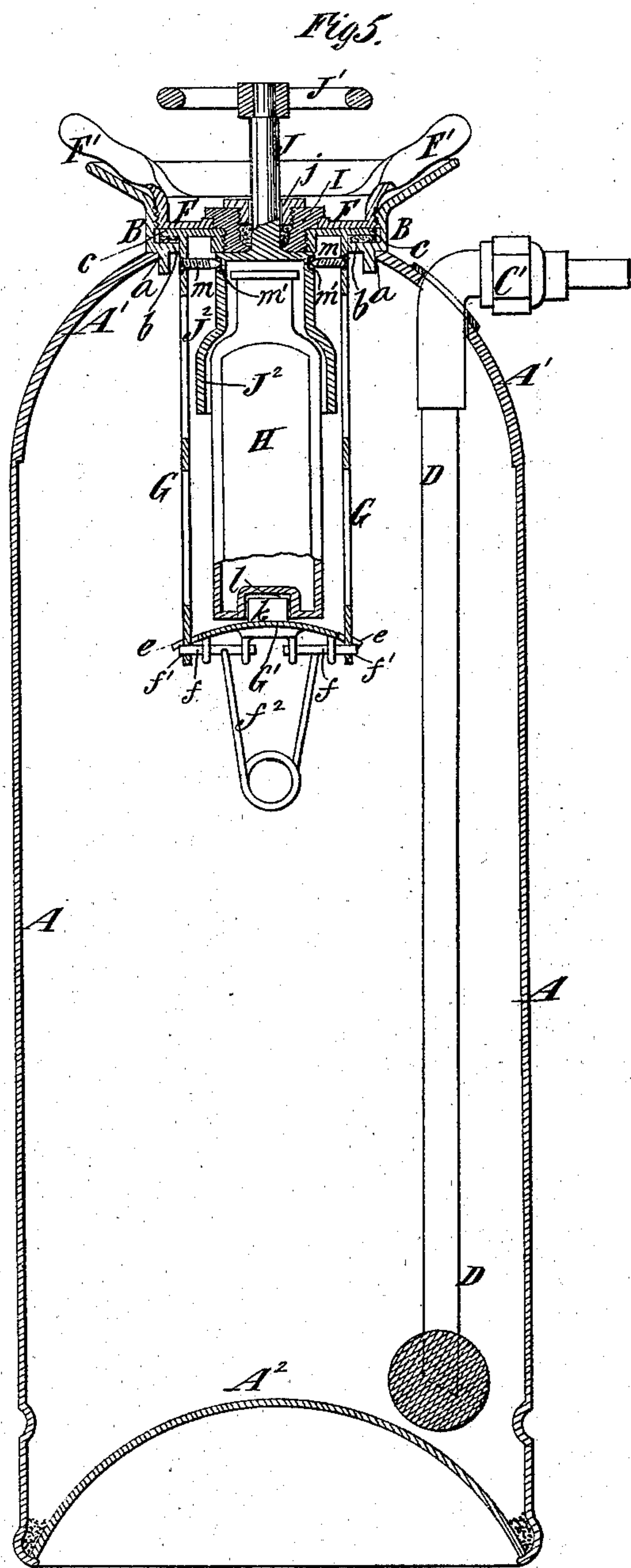
2 Sheets—Sheet 2.

A. M. GRANGER.

# BOTTLE BREAKING FIRE EXTINGUISHER.

No. 258,293.

Patented May 23, 1882.



WITNESSES

Wm. H. Haynes  
George H. Bots

INVENTOR

INVENTOR  
A W Granger  
by his Attorney



# UNITED STATES PATENT OFFICE.

ALMON M. GRANGER, OF BOSTON, MASSACHUSETTS.

## BOTTLE-BREAKING FIRE-EXTINGUISHER.

SPECIFICATION forming part of Letters Patent No. 258,293, dated May 23, 1882.

Application filed September 15, 1881. (No model.)

*To all whom it may concern:*

Be it known that I, ALMON M. GRANGER, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Bottle-Breaking Fire-Extinguishers, of which the following is a specification.

In bottle-breaking fire-extinguishers the acid-bottle is usually broken by pressure applied to it in the direction of its length, and produced by a screw-spindle which must ordinarily be rotated several turns to break the bottle.

The object of my invention is to enable the bottle to be broken by a torsional strain, which may be produced by only a slight rotation or turning of the spindle, whereby I provide for breaking the bottle very quickly, and also for breaking it so completely that all the acid contained in it will be at once discharged and the best effects obtained.

To this end my invention consists essentially in the combination, in a bottle-breaking fire-extinguisher, of a bottle-holder, which is adapted to fit one end of a bottle and hold it against turning, and a rotary device adapted to engage with the other end of the bottle, and by its rotation to subject the bottle to a torsional strain, and thus break it. The bottle is preferably of square or polygonal transverse section externally, and the case or shell of the bottle-holder may be constructed so as to fit the bottle externally, and thus hold it against turning, while the rotary device may be of square or polygonal form and engage with a recess of corresponding form in the bottom of the bottle; or the case or shell may be provided with a projection entering the square or polygonal recess in the bottle to hold it stationary, and the rotary device may be a cup or socket adapted to fit the square or polygonal exterior of the bottle, all as hereinafter fully described.

In the accompanying drawings I have represented two examples of my invention—one embodied in an extinguisher in which the bottle-holder is inserted through and supported at the bottom, and the other as embodied in an extinguisher in which the bottle-holder is inserted through and suspended from the top.

Figure 1 represents a vertical section of the extinguisher having the bottle-holder at the bottom. Fig. 2 represents a similar section, upon a larger scale, of the bottle holder de-

tached from other parts. Fig. 3 represents a transverse section on the line *xx*, Fig. 2. Fig. 4 represents a plan of the base of the holder and the rotary breaking device. Fig. 5 represents a vertical section of the extinguisher having the bottle-holder at the top. Fig. 6 represents a plan upon a larger scale of the cup or socket into which the bottle fits, and which constitutes the rotary device; and Fig. 7 represents a plan of the cap or cover of the bottle-holder upon the same scale as Fig. 6.

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

Referring first to Figs. 1 to 4, inclusive, A designates the cylindric shell or body of the extinguisher, having a dome-shaped head,  $A^1$ , which is made integral with the cylindric shell by drawing; and  $A^2$  designates the bottom, which is concave, and secured in the shell or body by solder. Although this construction is considered most desirable, it forms no part of my present invention and may be varied. In the bottom of the extinguisher is a large opening, *a*, in which is soldered a ring or socket, B, through which the bottle-holder is inserted, and this is the only opening in the extinguisher, and through it the extinguisher is charged when inverted. Upon the top of the extinguisher is a crown, C, which, when the extinguisher is inverted, forms a foot upon which it may stand; and D designates the discharge-pipe, which passes out through the side of the crown C, and has a coupling,  $C'$ , by which a hose may be attached.

I will now describe the parts embodying my invention.

The ring B is provided with an inwardly-projecting lip or flange, *b*; and E designates the base of the bottle-holder, which fits within said ring, and is provided with a lip or flange, *c*, which bears against the lip or flange *b*, or against a packing-ring inserted between them. The base E is secured in the ring B by means of a cap or securing plate, F, which is screwed into the ring B, and has handles  $F'$ , whereby it may be turned. The base E comprises a socket or neck,  $E'$ , and is surmounted by a horizontal flange or head,  $E^2$ , which forms the lower end or bottom of the bottle-holder proper.

G designates the shell or case, in which is mounted the bottle H. The shell or case is made separate from the flange  $E^2$ , and it con-



sists of a skeleton frame, which will allow a free escape of the acid when the bottle is broken. It projects below the edge of the flange  $E^2$ , and rests upon projections  $e$  on the flange, which enter notches in the lower edge of the shell. It is securely held in place by means of sliding bolts  $f$ , which enter holes  $f'$  in the shell  $G$ , and are impelled outward by springs  $f^2$ , as clearly seen in Fig. 2. By pressing both springs inward by the hand the bolts are drawn in, and the shell is released and may be removed. The bottom of the shell or case  $G$  is of circular form; but its upper part is approximately square, as seen in Fig. 3, so as to fit the exterior of the bottle  $H$ , which is of corresponding form. Of course the bottle might be of polygonal form, and in such case the shell or case  $G$  would be modified accordingly, so as to fit the bottle and prevent it from turning within the shell or case.

The cap or securing plate  $F$  is connected with the base-piece  $E$  of the bottle-holder by means of a plug,  $I$ , which is provided with a flange or shoulder,  $g$ , and passes loosely through the plate  $F$  and screws into the base  $E$ . In the plug  $I$  is a stuffing-box; and  $J$  designates a spindle, which passes loosely through the stuffing-box and the socket or neck  $E'$ , and is provided with a hand-wheel,  $J'$ , whereby it may be turned. The spindle  $J$  is provided with a fixed collar,  $h$ , which fits in and against the inner end of the stuffing-box; and  $i$  designates a cup-shaped washer, which fits over said collar and forms a seat for packing, and permits the fixed collar  $h$  to turn freely. The packing is secured in the stuffing-box by a gland,  $j$ , and it will be readily understood that the spindle is prevented from moving longitudinally in either direction. The upper end of the spindle  $J$  projects above the flange  $E^2$ , and is provided with a square steel head or collar,  $k$ , which may be secured by a pin,  $k'$ , as seen clearly in Figs. 3 and 4, and which enters a recess or depression,  $l$ , of corresponding form in the bottom of the bottle.

The bottle  $H$  forms no part of this invention, but is made the subject of another application for Letters Patent.

It will be readily understood that if the spindle  $J$  be turned it will have a tendency to turn the bottle; but as the upper end of the bottle is held stationary by the shell or case  $G$  the bottle will be subjected to a severe torsional strain and broken into fragments, thus allowing all the acid to escape at once and producing the best effects.

If desirable, the recess  $l$  in the bottle and the collar  $k$  might be of polygonal form; or the bottle might have a projection of square or polygonal form, and the spindle  $J$  a cup or socket of corresponding form.

Referring now to Figs. 5, 6, and 7,  $A$   $A'$   $A^2$  designate the body of the extinguisher, and  $B$  the ring, which is inserted in an opening,  $a$ , in the head instead of in the bottom, as previously described, and is made so as to constitute a funnel for charging the extinguisher.

The shell or case  $G$  of the bottle-holder is closed at the upper end, and is provided with an outwardly-extending flange or lip,  $c$ , whereby it is supported upon the lip or flange  $b$  of the ring  $B$ . The shell or case  $G$  is secured in place by a cap or securing plate,  $F$ , having handles  $F'$ , and has at the lower end a removable cover or bottom,  $G'$ , which is secured in place by bolts  $f$  entering holes  $f'$  in the shell or case, and impelled outward by a spring,  $f^2$ , as clearly seen in Fig. 5. Upon the cover or bottom  $G'$  are projections  $e$ , which enter notches in the lower edge of the shell or case and center the cover or bottom so that the bolts  $f$  will readily enter their holes  $f'$ . Upon the top of the cover or bottom is a square rigid projection,  $k$ , which is adapted to enter a recess,  $l$ , of corresponding form in the bottom of the bottle  $H$ , and thereby hold the bottle against turning.

$J$  designates a spindle, which may be turned by a hand-wheel,  $J'$ , and which passes through a plug,  $I$ , which fits loosely in the cap-plate  $F$  and screws into the closed top of the shell or case  $G$ . In the plug  $I$  is a stuffing-box, in which packing is compressed by a gland,  $j$ . At its inner end the spindle  $J$  is provided with a cup or socket,  $J^2$ , which fits over the upper end of the bottle  $H$ , and is approximately square in transverse section, so as to fit the square bottle. The spindle  $J$  and cup or socket  $J^2$  are held against longitudinal movement by screws  $m$ , which are inserted through the side of the shell or case  $G$ , as seen in Fig. 5, and the points of which enter a circumferential groove,  $m'$ , in the upper part of the cup or socket  $J^2$ .

It will be readily understood that inasmuch as the bottle is held against turning at the bottom, the turning of the spindle  $J$  and cup  $J^2$  will subject the bottle to a torsional strain and break the same very effectually.

It is evident that the details of construction might be varied without departing from my invention, which consists essentially in constructing a bottle-holder so that it will hold the bottle at one end against turning, and providing a rotary device which will engage with the other end of the bottle, and may be turned to subject the bottle to a torsional strain.

It is obvious that instead of the bottle having a solid bottom it might have the recess or depression  $l$  formed in a separate piece, which is adapted to be screwed into the bottom of the bottle like a stopper, and to be unscrewed by the torsional strain applied to the bottle. In such case the acid-receptacle might be made of metal; but it would constitute in effect an acid bottle or flask.

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

1. In a bottle-breaking fire-extinguisher, the combination of a bottle-holder, which is adapted to fit one end of a bottle and hold it against turning, and a rotary device adapted to engage with the other end of the bottle, and by its turning to subject the bottle to torsional strain, substantially as specified.



2. In a bottle-breaking fire-extinguisher, the combination of a case, shell, or cup adapted to receive within it one end of a bottle and to fit the exterior thereof, and a projection adapted  
5 to enter a recess or depression in the bottom of the bottle, one of said parts being stationary and the other capable of being turned or rotated, substantially as specified.

3. In a bottle-breaking fire-extinguisher,  
10 the combination of a bottle-holder comprising a case or shell adapted to fit the exterior of a

bottle and hold it against turning, and a rotary spindle carrying a square or polygonal projection, which is adapted to engage with a recess or depression of corresponding form in  
15 the bottom of the bottle, substantially as specified.

ALMON M. GRANGER.

Witnesses:

EBEN HUTCHINSON,  
T. W. PORTER.