

(Model.)

F. GRINNELL.

AUTOMATIC FIRE EXTINGUISHER.

No. 248,831.

Patented Oct. 25, 1881.

Fig. 1 .

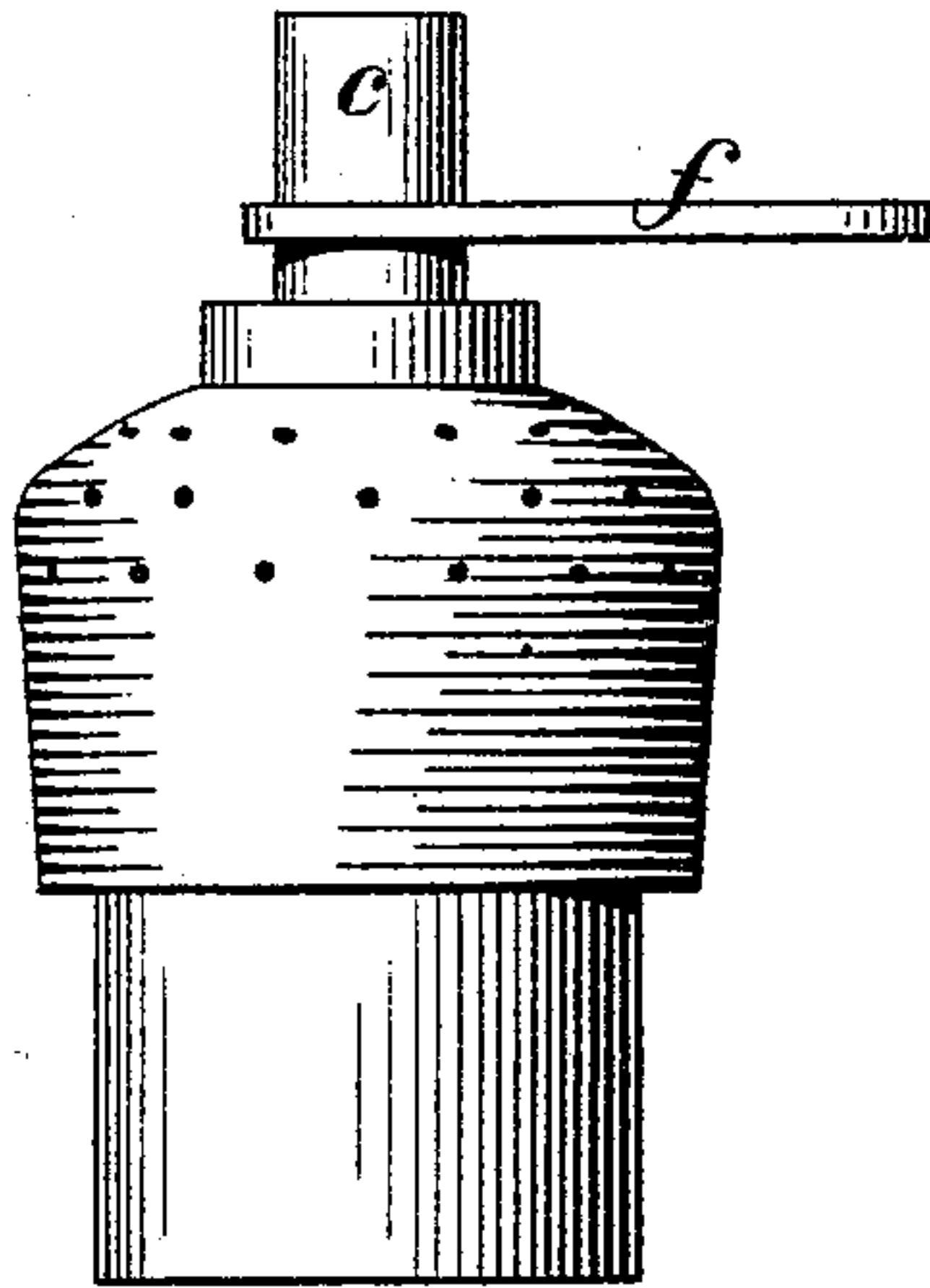


Fig. 2 .

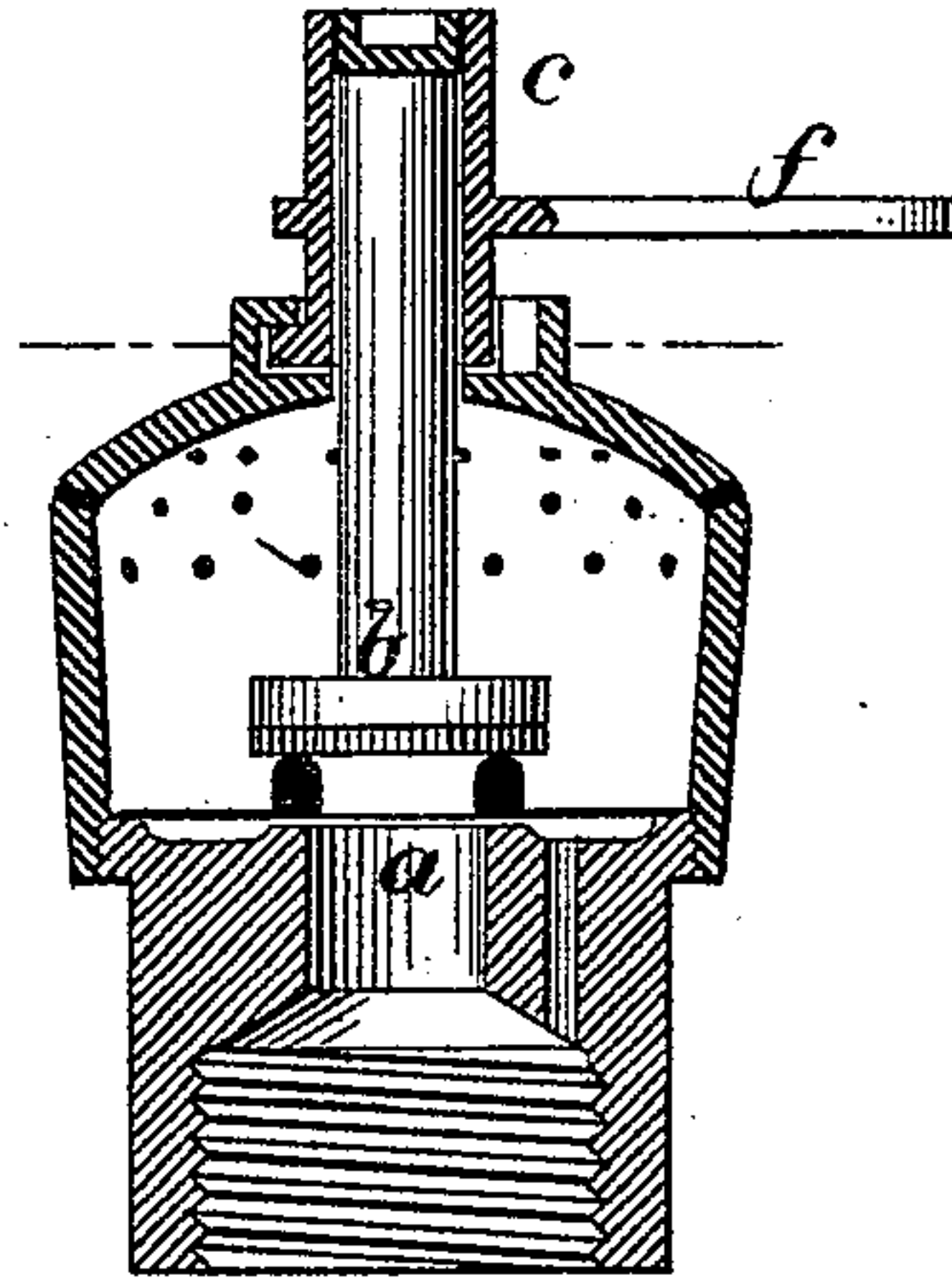


Fig. 4 .

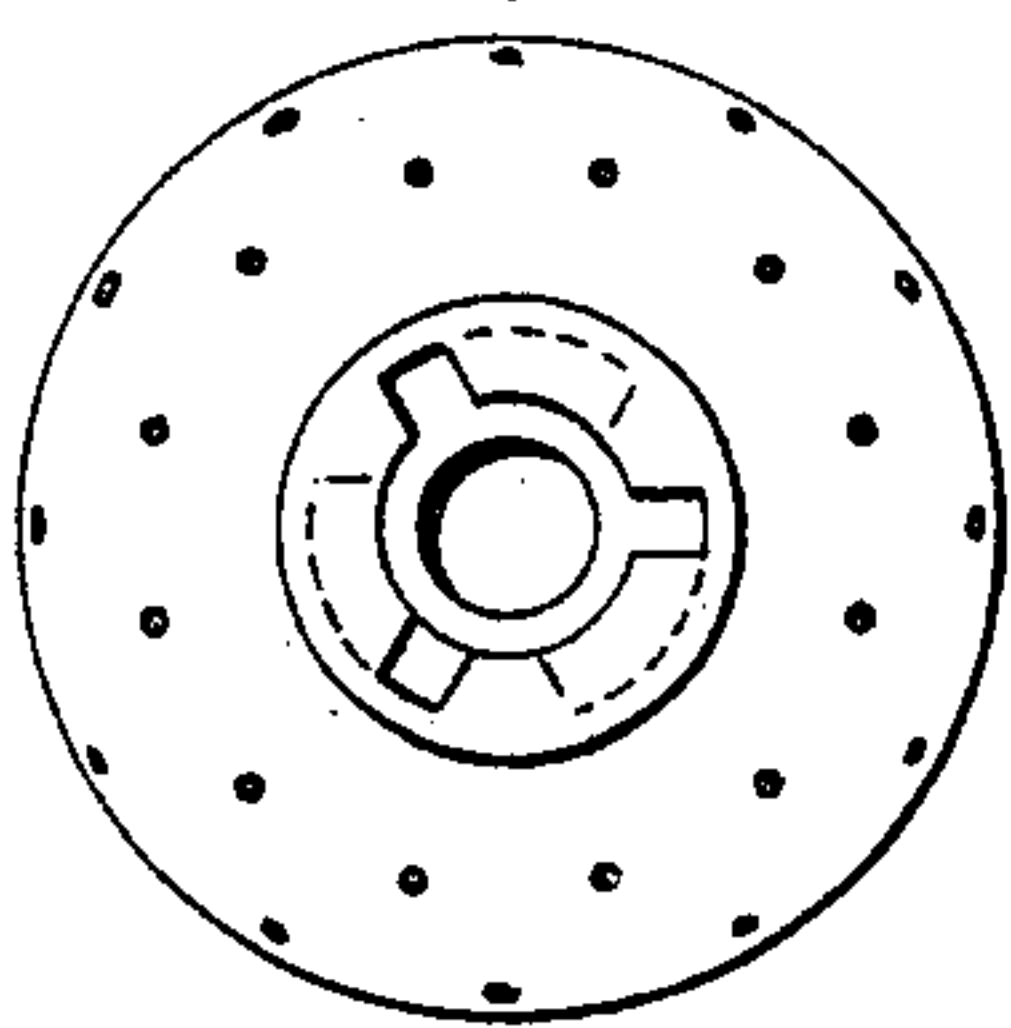


Fig. 5 .



Fig. 6 .

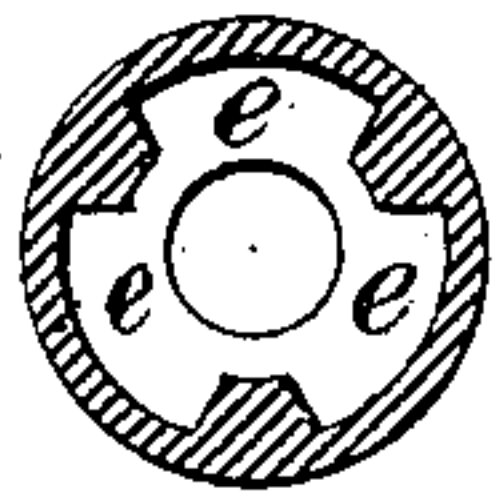
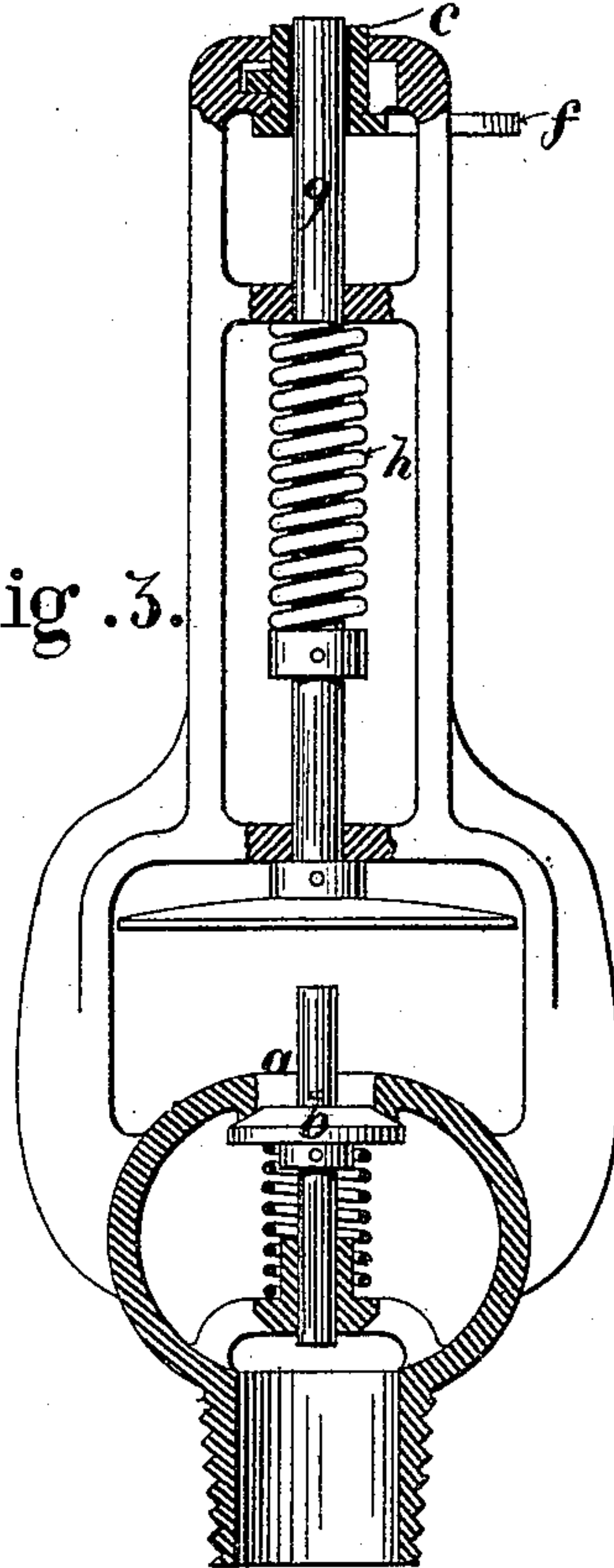


Fig. 3.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

FREDERICK GRINNELL, OF PROVIDENCE, RHODE ISLAND.

## AUTOMATIC FIRE-EXTINGUISHER.

SPECIFICATION forming part of Letters Patent No. 248,831, dated October 25, 1881.

Application filed July 22, 1881. (Model.)

*To all whom it may concern:*

Be it known that I, FREDERICK GRINNELL, of the city and county of Providence, and State of Rhode Island, have invented a new and  
5 useful Improvement in Automatic Fire-Extinguishers; and I hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification.

10 The object of this invention is to construct an automatic fire-extinguisher so that the whole conduit conveying the water or other fire-extinguishing fluid to the distributor will be opened automatically by the action of heat  
15 on the retaining material, by which a valve or seal is retained, and can also be opened by hand, so that on the breaking out of a fire the automatic extinguishers in close proximity to the fire will be operated automatically, and  
20 other automatic fire-extinguishers near some inflammable material may be caused to operate by hand or automatically, and thus the fire be surrounded by a cartoon of extinguishers.

The invention consists in securing the valve,  
25 seal, or other device by which the outlet is closed, to or with a device that can be liberated automatically or by hand, as will be more fully set forth hereinafter.

The invention is applicable to various kinds  
30 of automatic fire-extinguishers, two varieties being shown in the drawings.

Figure 1 is a view of an automatic fire-extinguisher provided with a detachable device, to which the stem of the valve is secured by a  
35 material fusible at low temperature. Fig. 2 is a sectional view of an automatic fire-extinguisher in which the valve is held against the internal pressure by a device held by a bayonet-joint to the distributor, to which the valve-stem  
40 is secured by a material fusible at a low temperature, and provided with an arm, so that by a pivotal rotation of the arm the holding sleeve or device is released and the valve opened by the internal pressure. Fig. 3 is a view,  
45 partly in section, of an automatic fire-extinguisher in which the valve is held to its seat when in use by the internal pressure, and is opened by the release of a rod acted upon by a spring, which strikes the valve with a blow  
50 and opens the same. The spring-pressed rod

is held in a sleeve by a fusible solder, the sleeve being secured so that it can be released by the partial rotation of the sleeve, and for this purpose is provided with an arm, by which it can be so rotated or held against rotation. 55  
Fig. 4 is a top view of the distributor, showing the bayonet attachment by which the sleeve is secured. Fig. 5 is an end view of the sleeve, showing three projections, which are constructed to enter the three slots shown in Fig. 4, 60  
and which by a partial rotation of the sleeve secure the same. The arm for rotating the sleeve is also shown in this figure. Fig. 6 is a sectional view of the bayonet attachment, showing the stops in the annular groove. 65

In the drawings, referring to Figs. 1 and 2, *a* is the outlet for the fluid; *b*, the valve; *c*, the sleeve, in which the valve-stem is secured by a material easily affected by heat, (preferably by a solder fusible at a low temperature.) This 70  
tube is provided with one or more projections or pins, *d d*, which enter slots in a groove, so that by partial rotation the pins or projections *d d* enter the groove and hold the sleeve in place. 75

Instead of a groove, inclined ways *e e e*, of considerable pitch, may be used, so that when the tube is partially rotated it will hold the stem or rod as long as the sleeve is prevented from rotating, and as soon as it is released the 80  
pressure of the water or a spring will rotate the sleeve and release the same.

*f* is an arm secured to the sleeve *c*. Considering this sleeve as held by a bayonet-joint with a groove and constructed to hold a valve, 85  
a seal, or a cap, then the melting of the solder will release the same by heat, and if a wire is secured to the arm *f* the sleeve can be partially rotated and the sleeve thus released; and considering the sleeve as held in inclined ways, 90  
a wire attached to some fixed point, and united at one or more points by means of fusible links, would be released by the action of heat and the sleeve would be thrown off by the internal pressure. 95

In Fig. 3 the rod *g* is held by being soldered to the sleeve *c*, which is secured by a bayonet-joint with either square or inclined ways, and provided with the arm *f*; and if released, either directly by heat, indirectly by heat, automati- 100



cally, or by hand, the spring *h* will force the valve *b* open by a blow and keep it open.

By providing automatic fire-extinguishers with such a detachable device, rooms which it is  
5 now almost impossible to protect by automatic fire-extinguishers can be thoroughly protected—as, for instance, the picker-room of a cotton-mill, in which loose cotton fibers fill most parts of the room and quantities of loose cotton are  
10 placed in one or more parts of the room. If in such a room a number of these improved automatic fire-extinguishers are placed and a fire occurs, the whole or any part of them may be at once opened by the operatives by hand,  
15 or they may be so connected that when one link of the connecting-wires is melted all will be opened automatically, and even if not connected by wires and not opened by hand, they will open as soon as the material by which  
20 the valve, seal, or cap is held is affected sufficiently to be released.

It is obvious to any one versed in the arts that the device by which the valve, seal, or cap is held in any automatic fire-extinguisher may  
25 be connected with a bayonet-joint or other mechanical equivalent and arranged to be released

by hand, by the breaking or the separation of a wire or cord, without describing such devices.

In Fig. 2 the valve-seat is secured to a flexible disk, so that the internal pressure will  
30 keep the valve tight. This device forms the subject-matter of a previous application, and is no part of my present invention.

Having thus described my invention, I claim as new and desire to secure by Letters Patent— 35

1. The combination, substantially as before set forth, of a valve and a device for controlling the opening of the valve, which is secured by fusible material and by movable mechanical means, so that said device may be released  
40 either by the action of heat or by hand, to cause the automatic opening of the valve.

2. The combination, substantially as before set forth, of a normally-closed valve, a stem subject to the action of a spring under tension, 45 and a locked sleeve, to which the stem is secured by fusible material.

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Witnesses:

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