

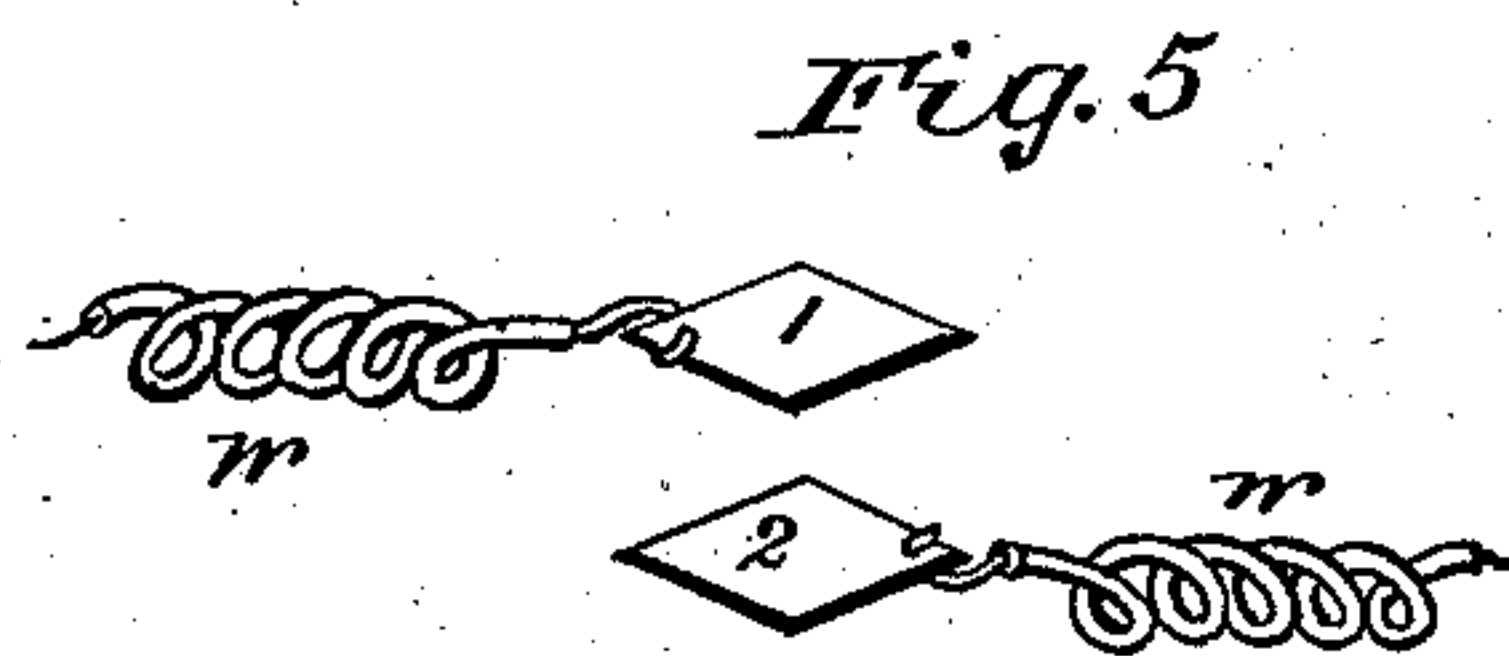
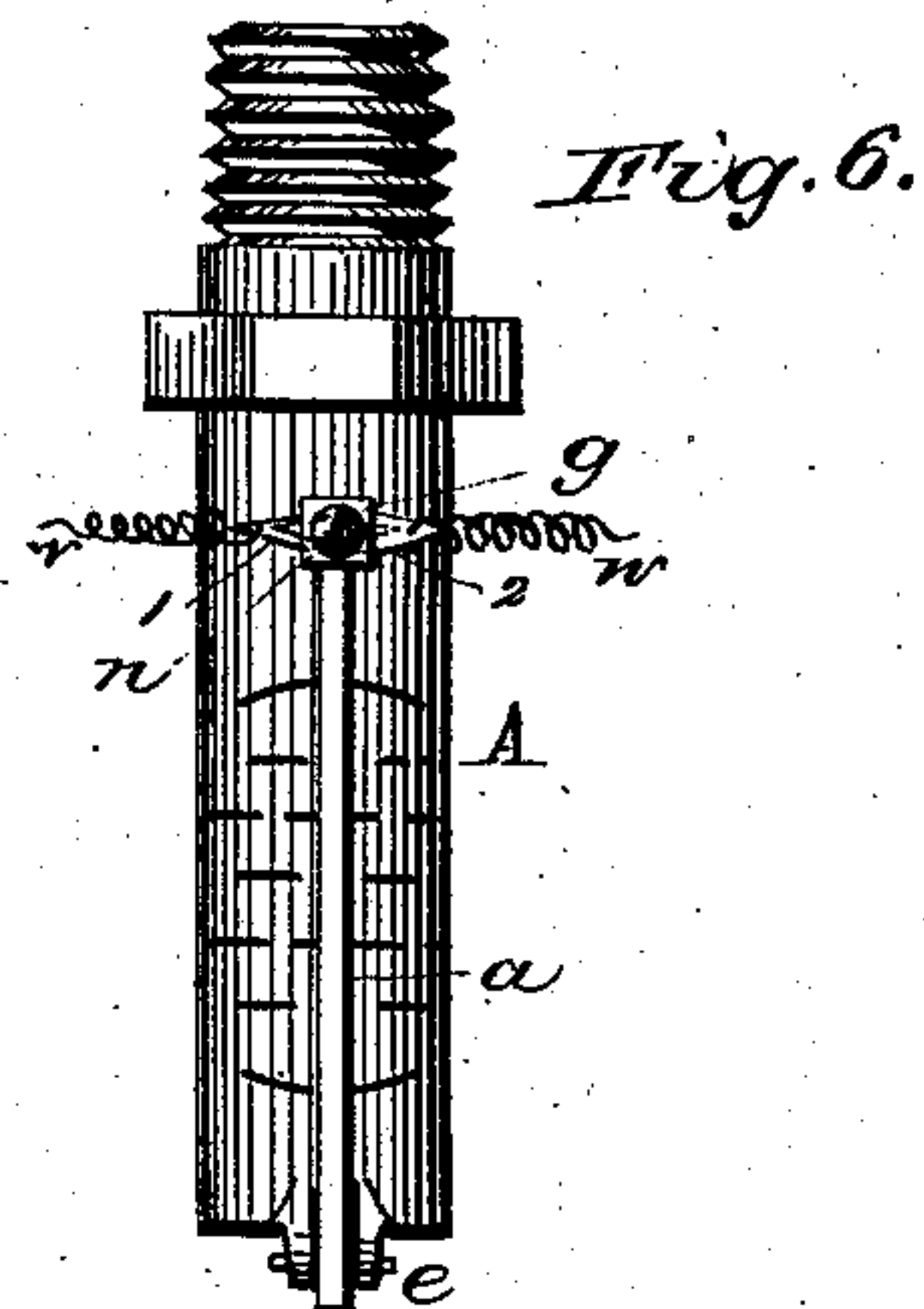
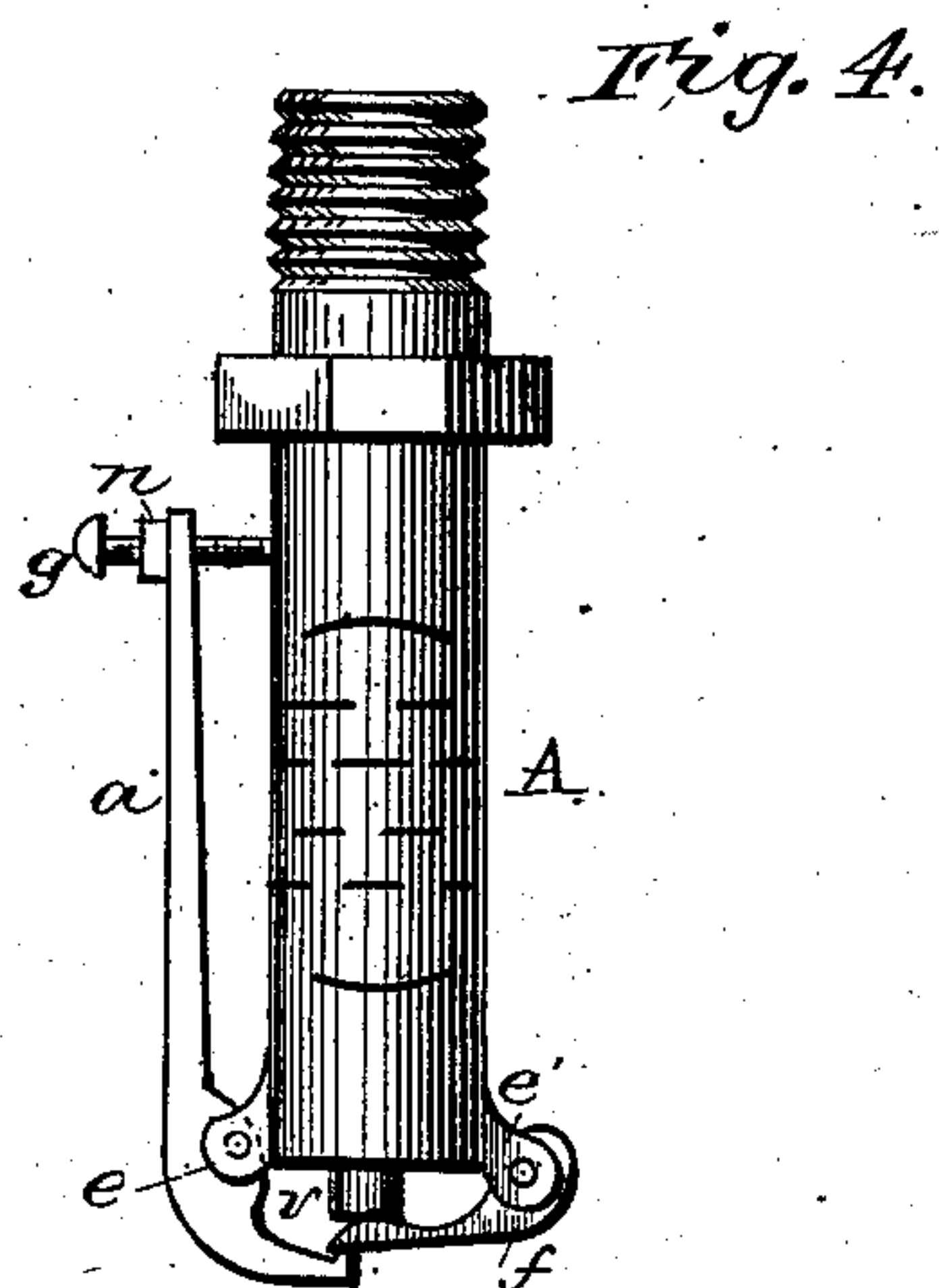
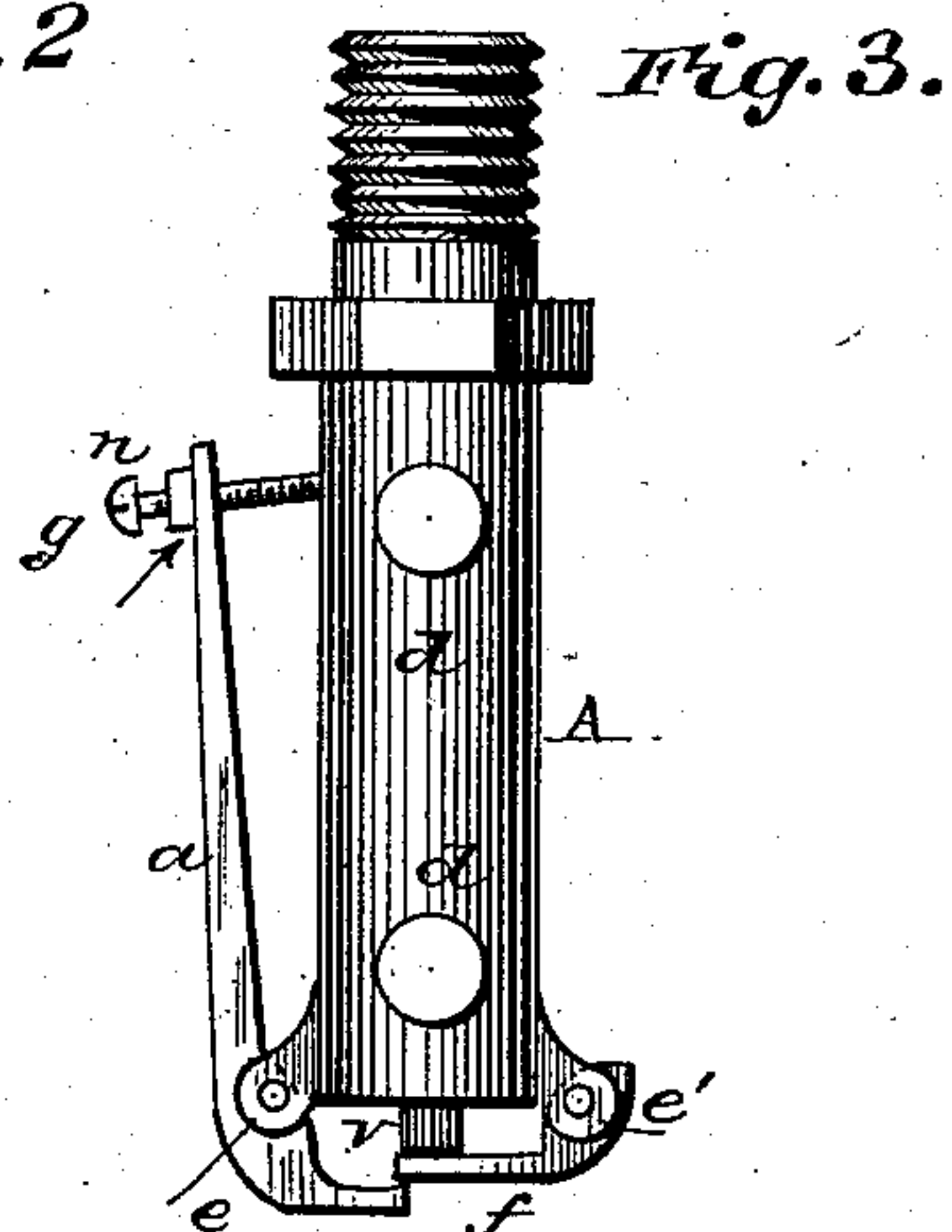
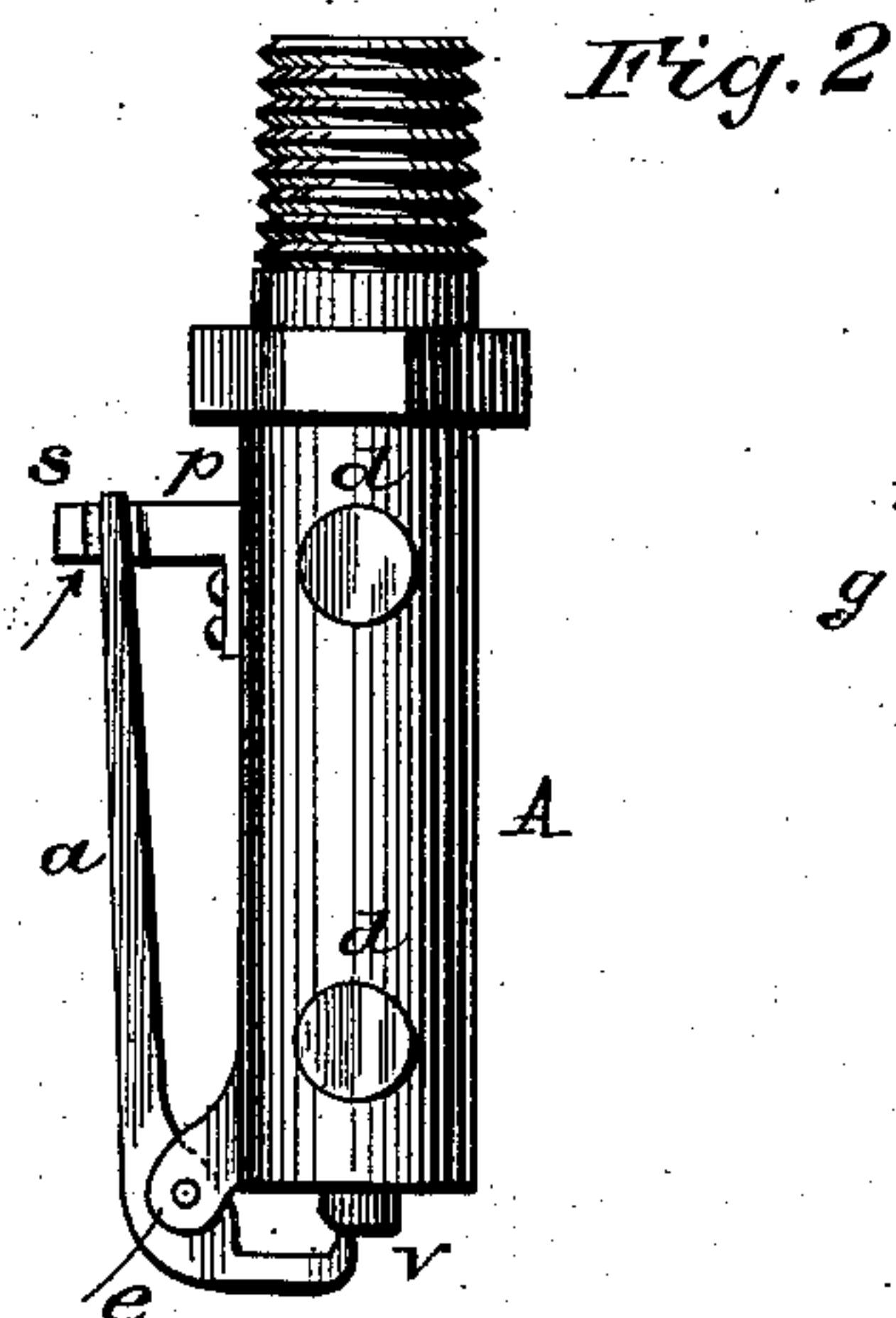
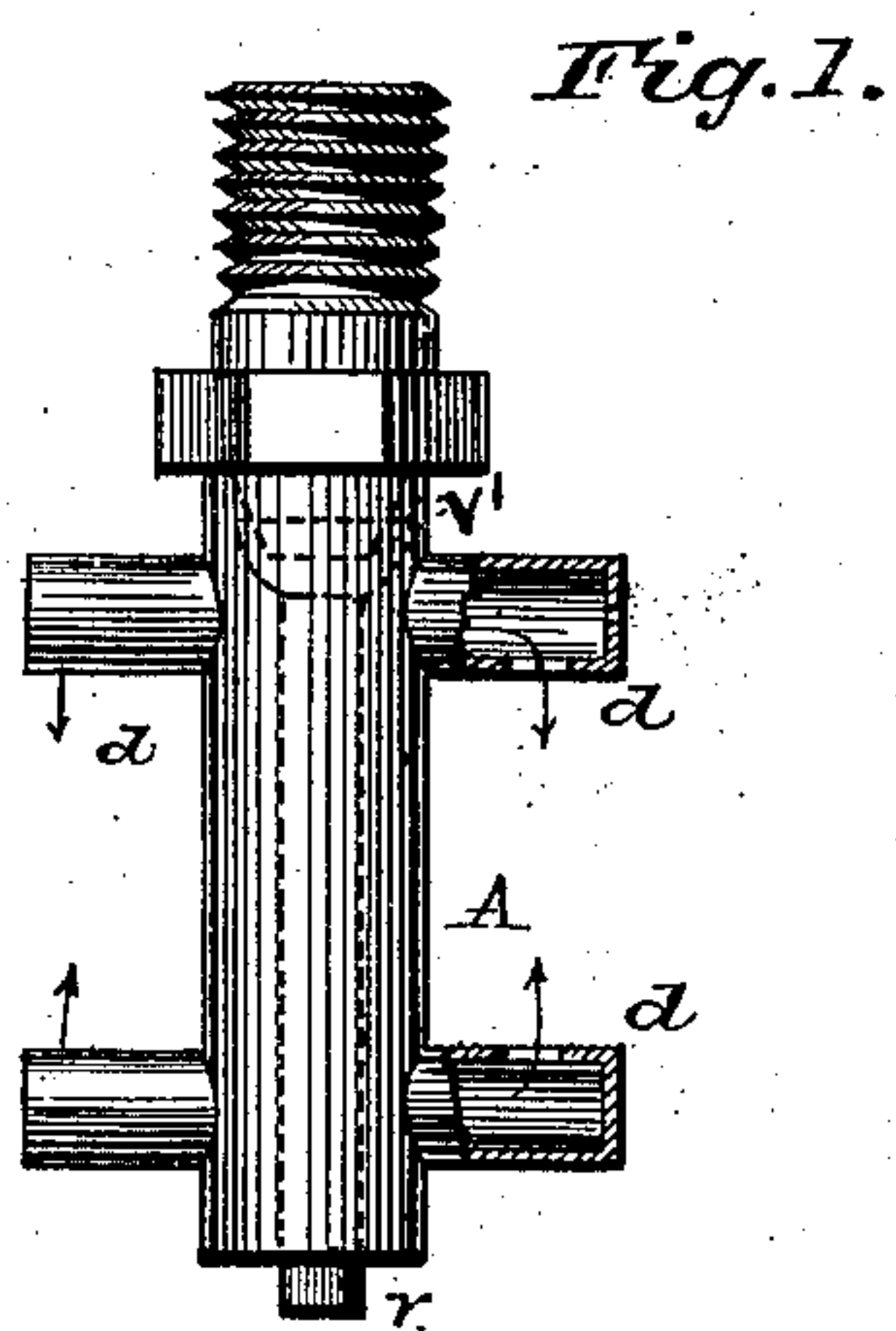
(No Model.)

C. E. BUELL.

FIRE EXTINGUISHER AND FIRE ALARM.

No. 294,308.

Patented Feb. 26, 1884.



WITNESSES:

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UNITED STATES PATENT OFFICE.

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FIRE-EXTINGUISHER AND FIRE-ALARM.

SPECIFICATION forming part of Letters Patent No. 294,308, dated February 26, 1884.

Application filed November 20, 1883. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. BUELL, of the city and county of New Haven, State of Connecticut, have invented certain Improvements in Fire-Extinguishers and Fire-Alarms, of which the following is a specification.

My invention is described hereinafter, and particularly pointed out in the claims at the end of this description.

In the accompanying drawings the same letters and figures refer to corresponding parts.

Figure 1 is a view in front elevation of a form of sprinkler to which my invention is applicable. Fig. 2 is a side elevation of the sprinkler shown in Fig. 1 arranged in accordance with my invention. Figs. 3 and 4 are other modes of applying my invention. Fig. 5 represents details of my invention. Fig. 6 represents my invention applied to a sprinkler.

Referring to Fig. 1, A represents the sprinkler, with openings at *d d d d*, so arranged with relation to each other that water discharged from said openings will be spread over an extended area by the force of streams from opposite directions acting upon each other. The sprinkler is preferably composed of a screw-threaded part adapted to be connected to a water-conducting pipe, and to enter the distributing portion to form a valve-seat for the valve *v'*, and to be secured to said distributing portion by screwing into it or otherwise. The parts of the sprinkler may be of hard rubber or other electrical insulating material, or of metal, or a portion only be of metal, for the purposes to be hereinafter mentioned. The valve *v'* is preferably faced with lead or other yielding material, and has a valve-stem, *v*, adapted to protrude through a hole in the otherwise closed end of the sprinkler at *v*, when the valve *v'* is pressed upon its seat. When the valve, with its stem, is free to move, a pressure of water will remove the valve from its seat and admit water to the distributing portion of the sprinkler. When the sprinkler is pendent, as shown—the valve and stem being free to move—the gravity of the valve and stem will cause the valve to open, so that water turned on after the sprinkler has thus opened will at once discharge through the sprinkler. The sprinkler is preferably used in a position the

reverse of pendent where there is liability to freeze and to become opened by the pressure of water after being released by heat.

Fig. 2 shows the sprinkler A with its valve *v'* held to close the sprinkler against a water-pressure by the lever *a*, which is pivoted at *e*, the long arm of the lever *a* being forced away from the body of the sprinkler to give a desired pressure on the valve *v'*, and may be held to the projection *p* by a rivet or otherwise, so as to be released by heat; or the rivet at *e* may be of easily-fused material.

Fig. 3 shows the lever *a* provided with a hard-metal nut, *n*, soldered or riveted or otherwise secured to the long arm of said lever by an easily-fused material; or the nut *n* may be of easily-fused material, with the screw *g* adapted to screw through said nut and press the long arm of lever *a* away from the body of said sprinkler, and to hold it away until released by heat. By means of the screw *g* the pressure is adjusted on the valve *v'*. The lever *a* is adapted to be secured at *e* by a wire or screw in an obvious manner, and when the said lever is provided with the nut *n*, secured thereto by a fusible material, it requires no application of heat to attach said lever to the sprinkler A; and when manufactured in large numbers, so as to be used interchangeably, the lever *a*, with the nut *n* secured thereto, and with the screw *g* in said nut, may be sent through the mails or otherwise and attached to the body of the sprinkler, adapted to receive it without the application of heat or the trouble and skill necessary in those forms heretofore made in which the parts required soldering. A trigger, *f*, pivoted at *e'*, and adapted to rest across the end of the valve-stem *v*, may be provided, to secure certainty in the movement of the lever *a* away from the stem *v* when it is released; as the trigger *f* projects beyond the stem *v*, the short arm of lever *a* engages slightly therewith and becomes released by slight motion. The distributing portion of the sprinkler is provided with openings *d d d d*, adapted to discharge the water from one of the openings directly toward another stream coming from another opening, so that the streams are directly opposed to each other, in contradistinction to streams that intersect each other at an ob-

lique angle, and are known as "intersecting streams."

Fig. 4 shows the distributing portion of the sprinkler as slitted to spread the water, instead of having the openings at $d d d d$, as in the previously-described form. In either of the described forms the openings or slits are not held closed by the valve or movable parts of the sprinkler, but the water is excluded from the distributing portion of the sprinkler when the valve v' is pressed to its seat, with obvious advantages. The openings $d d d d$ and slits may be so stopped and covered as to exclude dust and lint from entering the distributing portion of the sprinkler, and to be removable by melting out or washed off by water. I am aware that a perforated sprinkler may be used.

Fig. 5 represents two metal plates, 1 and 2, with covered circuit-wires w connected to them. The metal plates 1 and 2 are coated on one side with insulating material, and are intended to be placed, with their uncoated surfaces together, between the screw g and the sprinkler A , as shown; or they may be placed between the lever a and the stem v , so that the pressure of the movable parts will hold them in electrical contact; and when said pressure ceases they will separate, and an electric circuit, formed in part by them, will be ruptured, and an alarm apparatus or apparatus for controlling a water-supply, or both—which are adapted to be made operative by the rupture of a normally-closed circuit—will be made operative by their separation. To facilitate the separation of the plates, the wires $w w$ may be formed into a spiral and connected to them under tension, and an intermediate third piece of uninsulated metal be placed between them.

Fig. 6 shows the said plates 1 and 2 held against the sprinkler A by the pressure of the moving parts of the device.

When the sprinkler A , or a portion thereof, is of insulating material, various circuit-controlling devices of an obvious form may be substituted for the plates 1 and 2, and made operative by the moving parts of a sprinkler when it is opened by heat, by accident, or by design, and the moving parts of a sprinkler be made to close a normally-open circuit without departing from my invention. A wedge or other equivalent mode of adjustment may be substituted for the screw g .

My invention contemplates the use of a series of the hereinbefore-described sprinklers connected to one metal conducting-pipe, or branches therefrom, and with an electric circuit common to the several sprinklers of said series, and by making the said sprinklers of an insulating material, or insulating the electrical contact-pieces from the body of the sprinkler, or the sprinklers from the conducting-pipe, an electrical circuit common to the several sprinklers will be made operative by the opening of either sprinkler of the series,

as described; and the conducting-pipe itself, if desired, may be used as a part of the conducting-circuit.

What I claim is—

1. A sprinkler provided with a screw-threaded portion and with means for spreading the water, combined with a valve for closing the sprinkler and a lever having a fusible adjunct, whereby said valve is held normally closed, said lever being attached to the sprinkler without the application of heat, substantially as set forth.

2. As a new article of manufacture, a lever provided with a fusible adjunct and adapted to be attached to a sprinkler without the interposition of heat, substantially as set forth.

3. The combination, with a sprinkler and a valve for closing the same, of a lever pivoted to the sprinkler and provided with a fusible adjunct, and means whereby one arm of the lever is caused to hold the valve closed while the other arm is pressed outward from the sprinkler until released by heat, substantially as set forth.

4. A sprinkler constructed to deliver opposed streams, and provided with a valve governing the water-supply, combined with fusible devices adjustably attached to the sprinkler, and connected thereto without the interposition of heat, substantially as set forth.

5. The sprinkler A , provided with a valve, as described, combined with the pivoted lever a and means whereby one arm of the lever is pressed outward from the sprinkler, while the other arm is caused to exert a pressure upon the valve, substantially as set forth.

6. The sprinkler A , provided with a valve, as described, combined with the pivoted lever a , having a fusible adjunct, and the screw g , substantially as set forth.

7. The sprinkler A , combined with the pivoted lever a , valve-stem v , and intermediate device, f , substantially as herein set forth.

8. A sprinkler constructed to deliver opposed streams, combined with fusible devices adjustably attached to the sprinkler upon its exterior, and connected thereto without the interposition of heat, substantially as set forth.

9. The sprinkler A , having arms provided with openings $d d$, combined with the valve v' , pivoted lever a , screw g , and nut n , the whole constructed to operate substantially as set forth.

10. A sprinkler consisting of a screw-threaded portion, a distributing portion secured thereto and provided with outlets adapted to discharge opposed streams, a valve seated against the screw-threaded portion, so as to exclude water from the distributing portion, and fusible devices located upon the outside of the sprinkler, for holding said valve to its seat until released by the action of heat, substantially as described.

11. The combination, with a sprinkler, of electrical-circuit connections insulated therefrom, and constructed to be actuated by the

gravity of the moving parts or by the pressure of water upon the moving parts of said sprinkler, to make operative an electric circuit when said sprinkler becomes open.

5 12. The combination, with a sprinkler, of electrical-circuit connections insulated therefrom and adapted to be actuated by the pressure of water acting upon the moving parts of the sprinkler, for making operative an electric
10 circuit when said sprinkler becomes open.

13. The combination, with the sprinkler A, of the contact-plates 1 and 2 and means for holding them in contact with each other until the sprinkler becomes open.

15 14. The combination, with a sprinkler, of

electrical-circuit-controlling devices insulated therefrom and adapted to make operative an electric circuit when said sprinkler opens, and so arranged in relation to the moving parts of said sprinkler as to neither accelerate nor re- 20
tard their motion when the said moving parts are released.

15. The combination, with a sprinkler, of electrical-circuit-controlling devices insulated thereon in a manner to become detached there- 25
from when said sprinkler opens.

CHARLES E. BUELL.

Witnesses:

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GEO. M. LOCKWOOD.