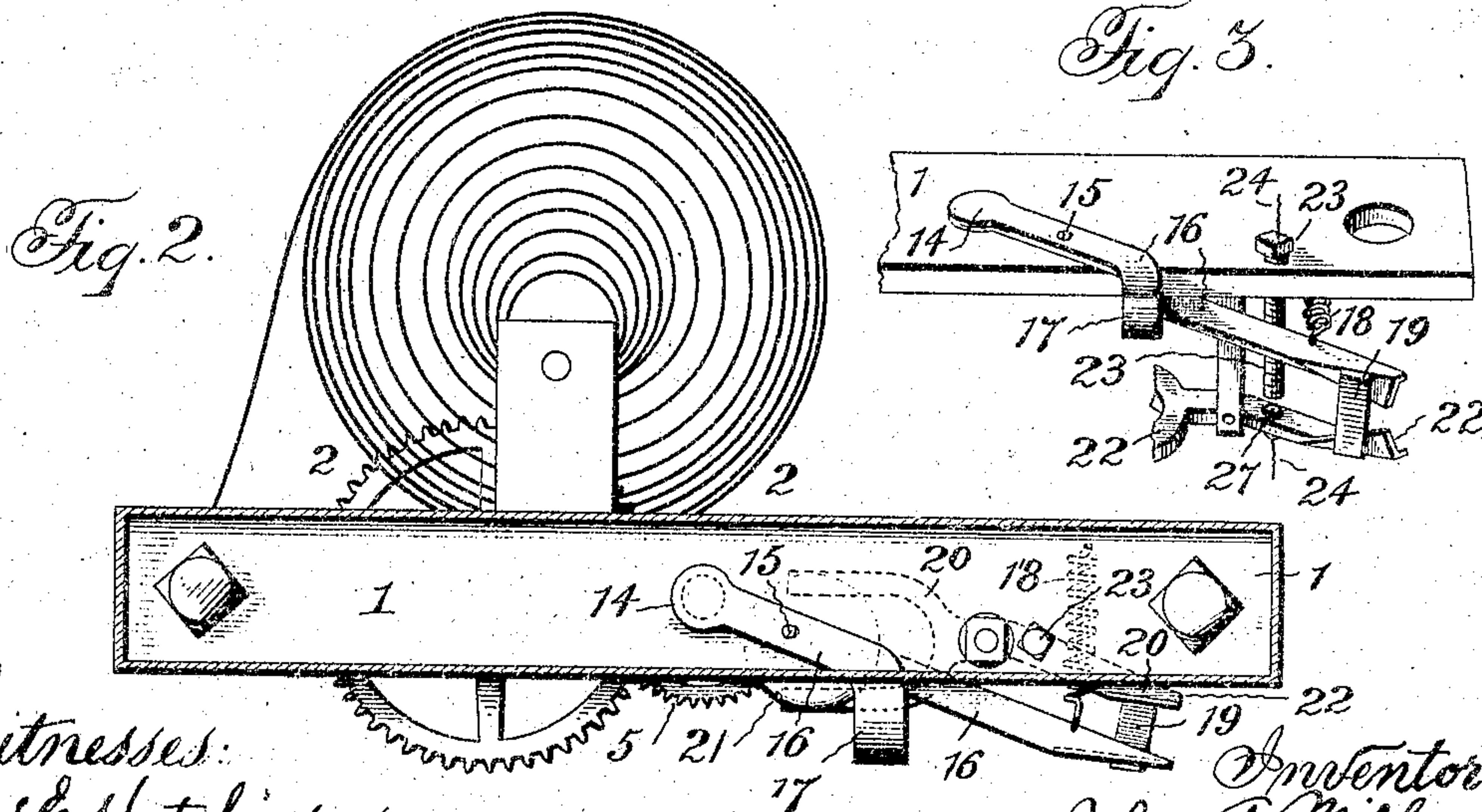
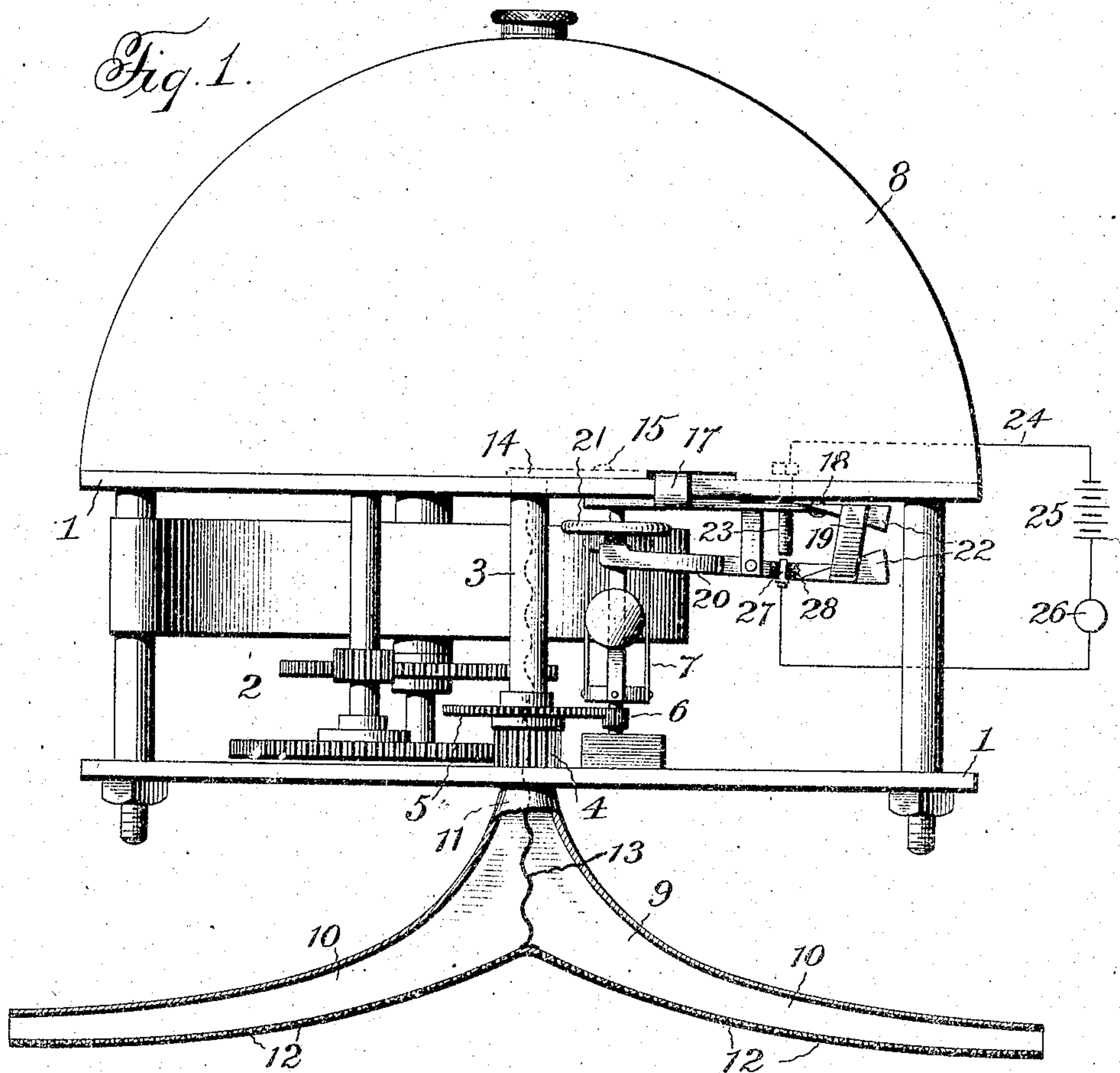


No. 791,806.

PATENTED JUNE 6, 1905.

J. A. MILLER.
FIRE EXTINGUISHER.
APPLICATION FILED FEB. 11, 1903.

2 SHEETS—SHEET 1.



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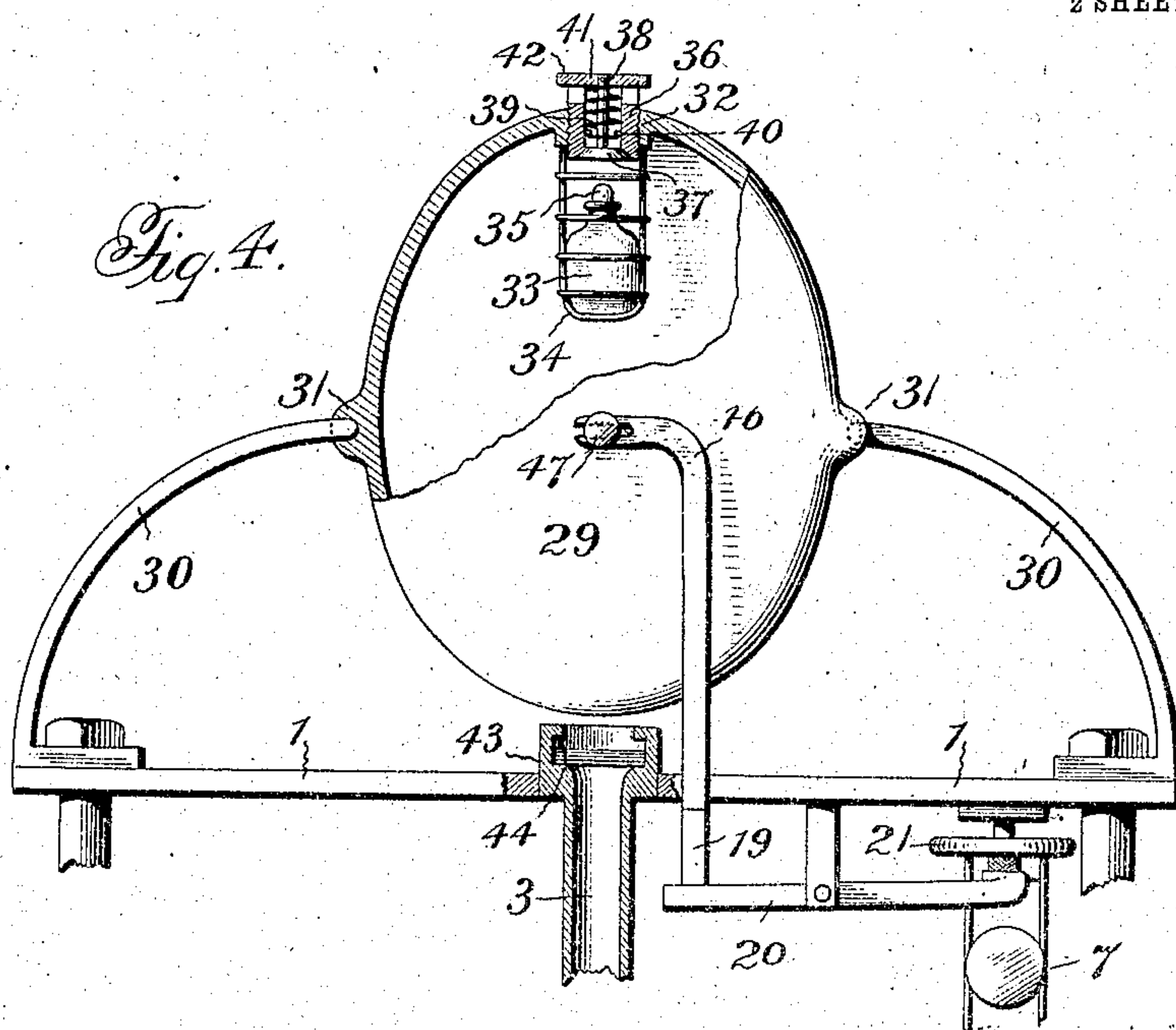
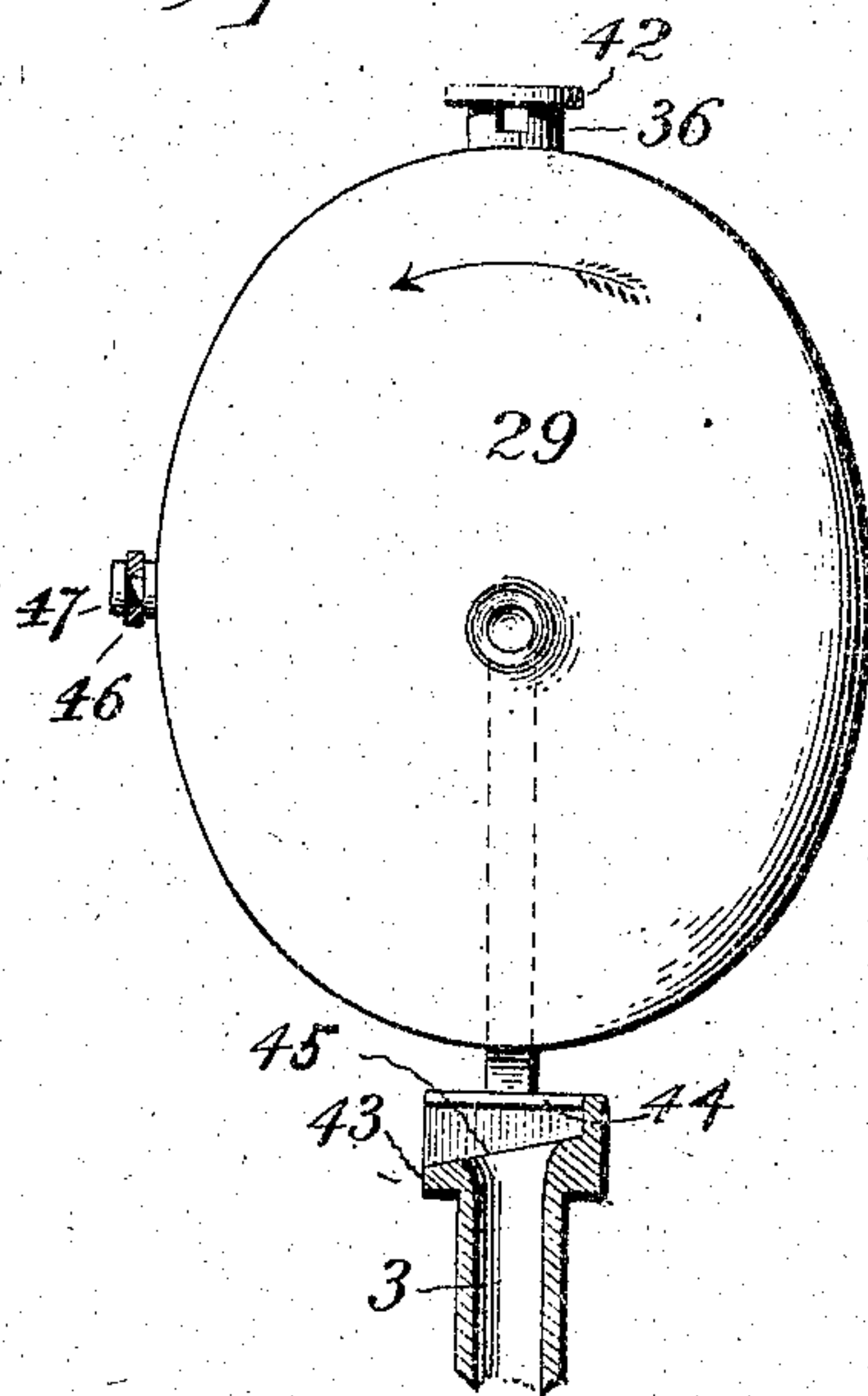


Fig. 5.



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UNITED STATES PATENT OFFICE.

JOHN A. MILLER, OF BALTIMORE, MARYLAND.

FIRE-EXTINGUISHER.

SPECIFICATION forming part of Letters Patent No. 791,806, dated June 6, 1905.

Application filed February 11, 1903. Serial No. 142,903.

To all whom it may concern:

Be it known that I, JOHN A. MILLER, a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Fire-Extinguishers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in fire-extinguishers.

The usual form of fire-extinguishers now employed in department-stores and other places as safeguards against conflagrations are of a fixed type—that is to say, these extinguishers are placed at predetermined points in the stores and fixed thereat, and consequently are designed to act upon only the portion of the store immediately adjacent to the extinguisher. Moreover, these extinguishers are usually simply distributors for water as the extinguishing agent, and consequently, each being controlled by a fuse, whenever the fuses melt, as frequently occurs from excessively high temperatures, although not due to a conflagration, the water in the extinguisher is distributed as during the presence of a fire, and the goods adjacent to the extinguishers are needlessly damaged.

It is therefore the object of the present invention to provide an improved construction of fire-extinguisher possessing all the advantageous features of those now in general use, but eliminating the objectionable characteristics of the same, and to so construct the extinguisher as to reduce the number of parts to a minimum, to enable the extinguisher being easily manufactured and at small expense, and to also admit of installation without the employment of the expensive and cumbersome systems now commonly adopted.

A further object of the present invention is the provision of a fire-extinguisher embodying in its construction simple and efficient means for rendering the same inoperative until the necessity for its use arises, but which when occasion requires is rendered effectual for distributing the extinguishing agent by

centrifugal action through a space of large area.

A further object of the present invention is the provision of a fire-extinguisher of the character referred to having also in its construction simple and efficient means for causing an alarm to be sounded at a predetermined point, and thereby indicate the precise location in the building at which the fire has occurred.

With these general objects in view and others which will appear as the nature of the improvements is better understood the invention consists, substantially, in the novel construction, combination, and arrangement of parts, as will be hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the appended claims.

In the drawings, Figure 1 is a side elevation, partly in section, of a fire-extinguisher constructed in accordance with the present invention. Fig. 2 is a plan view thereof. Fig. 3 is a detail perspective view illustrating the construction of the valve for controlling the flow of the fire-extinguishing agent and the relation of said valve to the brake device of the motor. Fig. 4 is a side elevation, also partly in section, illustrating the invention adapted for use with a liquid extinguishing agent. Fig. 5 is a similar view taken at right angles to Fig. 4, a portion thereof being also in section.

Referring to the drawings, the numeral 1 designates a substantially rectangular frame, which frame is formed of any suitable material, and said frame is designed to provide a support for a motor 2. The latter, as is shown in the drawings, is preferably a spring-motor; but it is obvious that any other form may be employed.

Located at substantially the central portion of the frame 1 and extending vertically therethrough is a tubular conductor 3, and arranged at the lower end of said conductor is a pinion 4, which latter meshes with the gearing of the motor when the motor is in operation. A gear 5 is also carried by the pinion 4, and said gear meshes with a pinion 6, carried by a centrifugal ball-governor 7 of the usual construction and through the me-

dium of which the operation of the motor is regulated, as is usual with spring-motors.

Arranged above the frame 1 and suitably secured thereto is a receptacle or hopper 8, 5 designed to receive the extinguishing agent, and this agent is preferably in the form of a powder. The upper end of the tubular conductor 3 communicates with the interior of the receptacle 8 in order that the extinguish- 10 ing agent within the latter may freely gravitate through said conductor, and to effect a distribution of the extinguishing agent a distributor 9 communicates with the lower end of said conductor 3 and comprises a pair of 15 divergent tubular arms 10, the inner ends of which merge into a conducting-mouth 11, fitted to the lower end of the tubular conductor 3. It will be observed that the arms 10 are inclined and have their lower sides perforated, 20 as at 12, while the outer ends of said arms are also open, and through the perforations 12 and the open ends of said arms 10 the extinguishing agent may freely pass through said arms and be distributed thereby during the 25 rotation of the distributor 9 and which rotation distributes the extinguishing agent through centrifugal action. In the practical use of the device, however, it is possible that the extinguishing agent may cake in the tu- 30 bular conductor 3 and the conducting-mouth 11, and to prevent caking of the agent within said elements a spiral agitator 13 extends from the juncture of the arms 10 upwardly and through the tubular conductor 3, and 35 consequently said agitator will effectually prevent clogging of the tubular conductor 3 with the extinguishing-powder as the latter gravitates through said tubular conductor.

For preventing passage of the extinguish- 40 ing agent from the receptacle 8 into the tubular conductor 3 a valve 14 is arranged over the upper end of said tubular conductor and pivoted, as at 15, to the upper side of the frame 1, and said valve is provided with an 45 elongated lever 16, having a looped portion 17, designed to receive the upper side of the frame 1 to permit free swinging of the valve from over the upper end of the tubular conductor 3. Connected to the valve-lever 16 is 50 a spring 18, which spring is also connected to the frame 1, and said spring exerts its tension to swing the valve-lever 16 upon its pivot, and thereby remove the valve 14 away from the upper end of the tubular conductor 55 3; but said spring is normally restrained from operating the valve-lever 16 in the manner indicated through the medium of a fuse 19, one end of which is connected to said lever and the other end of which is connected to a 60 brake-lever 20, pivoted upon the frame 1 and coacting with a brake-disk 21 in order to control the operation of the governor 7 in the usual manner. It will be observed that the ends of the valve-lever 16 and the brake-le- 65 ver 20 are bent, as at 22, and by reason of this

construction it will also be noted that the fuse 19 is arranged in an oblique position, and consequently the same is exposed to the full effects of the high temperature necessary for melting the fuse. 70

The numeral 23 designates a regulating-screw arranged in the frame 1, and against which the brake-lever 20 is adapted to contact, and through the medium of said screw 23 the degree of movement of said lever may 75 be readily regulated.

It is highly desirable in a device of this character that when a fire occurs the precise location of the same may be readily determined, and in order to accomplish this re- 80 sult the screw 23 is utilized as one terminal of an electric circuit 24, in which is included a source of current 25 and a suitable alarm 26, the other terminal of said circuit 24 consisting of a contact 27, arranged in an in- 85 sulating-plug 28, carried by the brake-lever 20. Under normal conditions the fuse 19 causes the brake-lever 20 to bear against the brake-disk 21, and hence the motor is prevented operating. Under these conditions 90 the contact 27 is also removed from the regulating-screw 23, and the circuit 24 is thus normally open. However, as soon as the fuse 19 melts the brake-lever 20 is removed 95 from close frictional engagement with the brake-disk 21, and the contact 27 is moved against the screw 23, thereby completing the circuit 24, whereupon the alarm 26 is immediately sounded and continues to operate until the contact 27 is moved from the screw 23. 100 The alarm 26 may be arranged at any suitable point; but in the case of a large store the same is usually located in the office or in the watchman's quarters.

As before stated, the form of the invention 105 illustrated in Figs. 1, 2, and 3 is especially designed for distributing the extinguishing agent in the form of a powder; but in order that the invention may be also adapted for use in conjunction with a gas or other fluid 110 agent the form of the invention shown in Figs. 4 and 5 is adopted. In these figures a motor of the general construction shown in Figs. 1, 2, and 3 is employed; but in lieu of the hopper or receptacle 8 a substantially el- 115 liptical receptacle 29 is employed, said receptacle being supported by arms 30, extending upwardly from the frame 1 and fitting within sockets 31, arranged at the sides of the receptacle 29, but at a point below the trans- 120 verse axis of said receptacle, thus rendering the upper end of the receptacle 29 when the latter is in its normal position of greater weight than the lower end, and thereby adapt- 125 ing said receptacle to become inverted when the latter is released, as will be presently described. The receptacle 29 is designed to receive carbonate of soda, as is usual in the case of the ordinary chemical fire-extinguishers, and the upper end of said receptacle is pro- 130

vided with an opening 32 of sufficient diameter to permit the introduction therethrough of a bottle 33 or other receptacle filled with sulfuric acid. Supported adjacent to the opening 32 and within the receptacle 29 is a wire cage or hanger 34, in which the bottle 33 is held, and said bottle 33 is provided with a metallic cork or closure 35, loosely fitted therein to completely close the bottle when the same is in its normal position, as shown in Fig. 4; but it will readily fall from the mouth of the bottle when the receptacle 29 is inverted, and thereby permit the escape of the sulfuric acid into the carbonate of soda in order to produce the carbonic-acid gas in the usual manner. Surrounding the opening 32 is a tubular valve-seat 36, upon the inner end of which is mounted a valve 37, and projecting outwardly from said valve and through the seat 36 is a rod 38, which is encircled by a coil-spring 39. The inner end of said spring rests against inwardly-extending stops 40, carried by the valve-seat 36, while the outer end of said spring 39 abuts against a transversely-extending bar 41, the latter being pivoted to the rod 38. The rod 41 projects through the valve-seat 36 and is connected to a ring 42, slidably mounted upon the exterior of the valve-seat 36. Surrounding the upper end of the tubular conductor 3 is a coupling 43, which coupling has one of its sides open and is provided with overhanging flanges 44, and said coupling 43 is also provided beneath the flanges 44 with inclined or beveled surfaces 45, with which the ring 42 is adapted to engage. This engagement takes place when the receptacle 29 becomes inverted, and at such time the ring 42 enters the coupling 43 beneath the flanges 44 and rides upon the inclined surfaces 45. In contacting with the surfaces 45 the ring 42 is forced along the valve-seat 36, and consequently, through the medium of the rod 38, the valve 37 is unseated, and the gas is thereby permitted to escape from the receptacle 29 into the tubular conductor 3 and to the distributor 9. By the use of the coupling 43 the receptacle 29 is held over the tubular conductor 3, and the gas readily passes from the receptacle 29 into said tubular conductor. To maintain the receptacle 29 in its normal position, a latch 46 is employed, the upper end of said latch engaging with a stud 47, formed on the receptacle 29, while the lower end of said latch is connected to the brake-lever 20 through the medium of the fuse 19 in substantially the same manner as shown in Figs. 1, 2, and 3. Consequently when the fuse 19 melts the latch 46 is released from engagement with the stud 47, and the receptacle 29 becomes immediately inverted, causing the mixture of the carbonate of soda and the sulfuric acid to produce the carbonic-acid gas, and the latter escapes through the tubular conductor 3 to the distributor 9.

It may be stated that the fuse 19 is con-

nected rigidly to both the brake-lever 20 and the latch 46, and not until the fuse 19 melts can any relative movement of said levers take place nor will the brake-lever be released from engagement with the friction-wheel 21.

The operation of the herein-described extinguisher will be readily understood from the foregoing description; but, briefly stated, it will be observed that as soon as the fuse 19 melts the spring 18 in the form shown in Figs. 1, 2, and 3 removes the valve 14 from over the tubular conductor 3, thus enabling the powder from the receptacle 8 to readily pass into said tubular conductor. With the melting of the fuse the pressure of the brake-lever 20 is removed from the governor of the motor, and the latter begins to operate, in turn imparting rotary movement to the spreader 9, and as the extinguishing agent passes into the spreader the same is distributed through the perforations 12 and the open ends thereof by centrifugal action, thus covering a space of large area and effectually extinguishing the fire. The operation of the motor in the form shown in Figs. 4 and 5 is precisely the same, and the extinguishing agent is formed and caused to be distributed by the distributor 9 in the manner previously described.

While the forms of the invention herein shown and described are what are believed to be preferable embodiments thereof, it will of course be understood that the same is susceptible of various changes in the form, proportion, and minor details of construction, and the right is therefore reserved to modify or vary the invention as falls within the spirit and scope thereof.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is—

1. A fire-extinguisher, comprising a receptacle for the extinguishing agent, a rotary distributor communicating therewith, a brake for restraining the rotation of said distributor, and means for automatically releasing said brake.

2. A fire-extinguisher, comprising a receptacle for the extinguishing agent, a distributor communicating therewith, a motor for rotating said distributor, a brake for restraining the operation of said motor, and means for automatically releasing said brake.

3. A fire-extinguisher, comprising a receptacle for the extinguishing agent, a rotary distributor communicating therewith, means for restraining the rotation of said distributor, and alarm mechanism operatively related to said restraining means and adapted to be actuated by the latter when the same are released.

4. A fire-extinguisher, comprising a receptacle for the extinguishing agent, a rotary distributor communicating therewith, a motor for actuating said distributor, a brake for nor-

mally restraining the operation of said motor, and a fuse operatively related to said brake and adapted to release the latter when melted.

5 5. A fire-extinguisher, comprising a receptacle for the extinguishing agent, a rotary distributor communicating therewith, a motor for actuating said distributor, means for normally restraining the operation of said motor, alarm mechanism operatively related to said
10 restraining means and adapted to be actuated when said restraining means are released, and a fuse operatively related to said restraining means and adapted to release the latter when melted.

15 6. A fire-extinguisher, comprising a receptacle for the extinguishing agent, a rotary distributor communicating therewith and comprising divergent perforated arms, a motor for actuating said distributor, and means for
20 normally restraining the operation of said motor.

7. A fire-extinguisher, comprising a receptacle for the extinguishing agent, a rotary distributor communicating therewith and com-
25 prising divergent perforated arms, a motor for actuating said distributor, means for normally restraining the operation of said motor, and means for automatically releasing said restraining means.

30 8. A fire-extinguisher, comprising a receptacle for the extinguishing agent, a rotary distributor communicating therewith and comprising divergent perforated arms, a motor for actuating said distributor, means for nor-
35 mally restraining the operation of said motor, and alarm mechanism operatively related to said restraining means and adapted to be actuated when said restraining means are released.

40 9. A fire-extinguisher, comprising a receptacle for the extinguishing agent, a distributor communicating therewith, a valve arranged between said receptacle and said distributor to prevent the extinguishing agent passing to
45 the distributor, a motor for operating said distributor, a brake for restraining the operation of said motor, and means connected to said valve for releasing the latter when said brake is released, whereby the extinguishing
50 agent is permitted to feed to the distributor.

10. A fire-extinguisher, comprising a receptacle for the extinguishing agent, a distributor communicating therewith, a valve arranged

between said receptacle and said distributor to prevent the extinguishing agent passing to 55 the distributor, a motor for operating said distributor, means for restraining the operation of said motor, and a spring connected to said valve for releasing the latter when said restraining means are released, whereby the 60 extinguishing agent is permitted to feed to the distributor.

11. A fire-extinguisher, comprising a receptacle for the extinguishing agent, a distributor communicating therewith, a valve arranged 65 between said receptacle and said distributor to prevent the extinguishing agent passing to the distributor, a motor for operating said distributor, a brake for restraining the operation of said motor, and means connected to 70 said valve for releasing the latter when the brake is released, whereby the extinguishing agent is permitted to feed to the distributor.

12. A fire-extinguisher, comprising a receptacle for the extinguishing agent, a distributor 75 communicating therewith, a valve arranged between said receptacle and said distributor to prevent the extinguishing agent passing to the distributor, a motor for operating said distributor, a brake for restraining the opera- 80 tion of said motor, means connected to said valve for releasing the latter when said brake is released, whereby the extinguishing agent is permitted to feed to the distributor, and a fuse connected to said brake and said valve 85 and adapted to release the same when melted.

13. A fire-extinguisher, comprising a receptacle for the extinguishing agent, a distributor communicating therewith, a valve arranged 90 between said receptacle and said distributor to prevent the extinguishing agent passing to the distributor, a motor for operating said distributor, a brake for restraining the operation of said motor, a spring connected to said valve for releasing the latter when said brake 95 is released, whereby the extinguishing agent is permitted to feed to the distributor, and a fuse connected to said brake and said valve and adapted to release the same when melted.

In testimony whereof I affix my signature in 100 the presence of two witnesses.

JOHN A. MILLER.

Witnesses:

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FANNIE R. FITTON.