No. 788,498. PATENTED APR. 25, 1905.

C. W. ATON.

FIRE EXTINGUISHER.

APPLICATION FILED JAN. 7, 1905.

2 SHEETS—SHEET 1.

Fig. 1

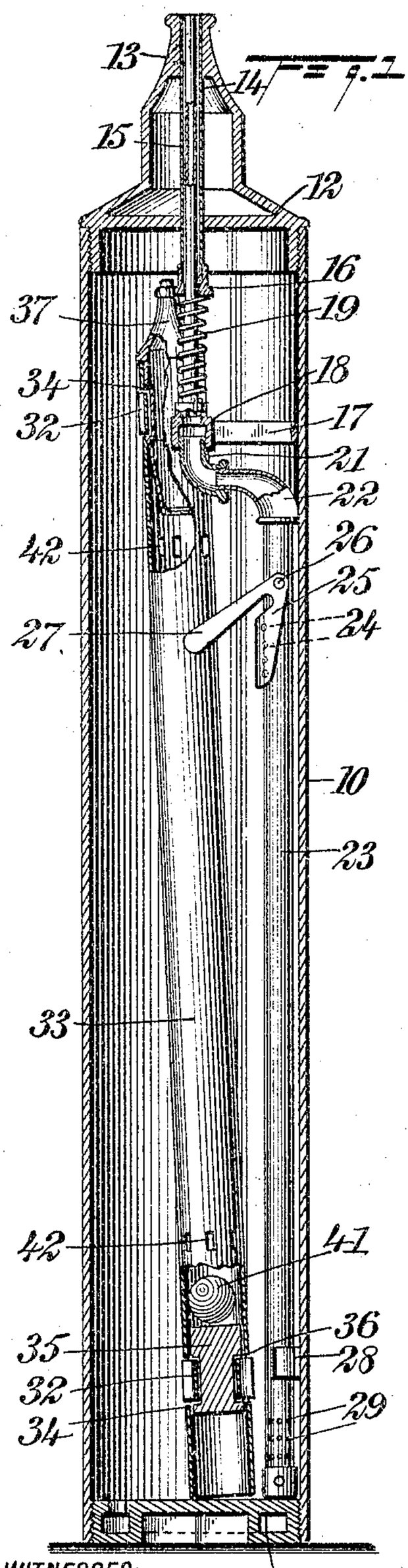
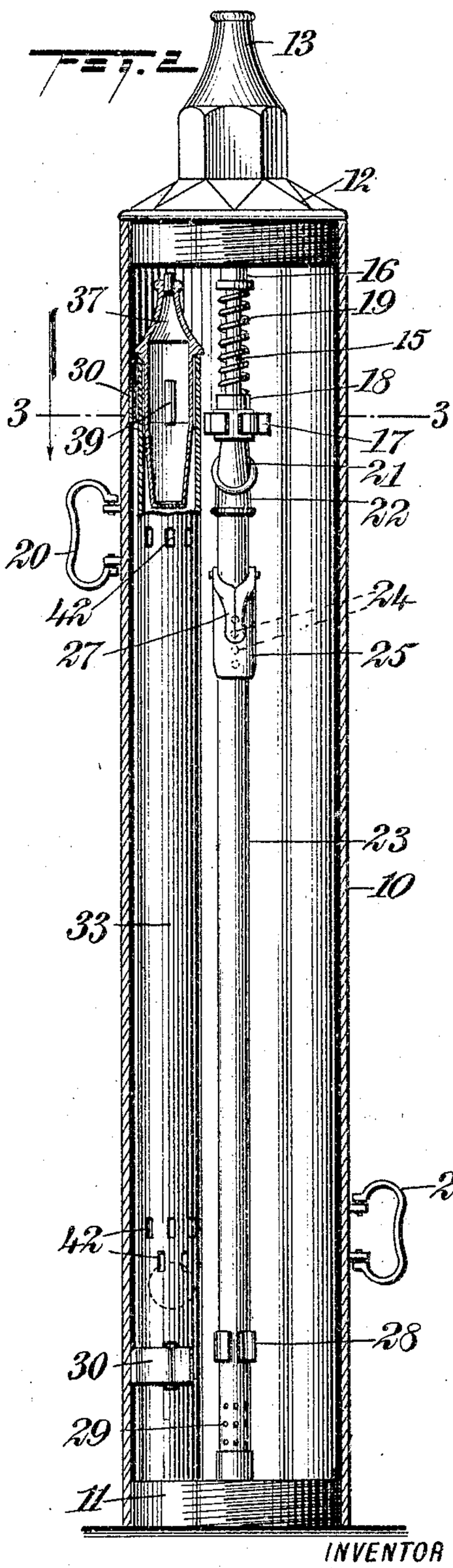


Fig. 2



WITNESSES:

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A. E. Fay

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Charles W. Aton

BY

ATTORNEYS

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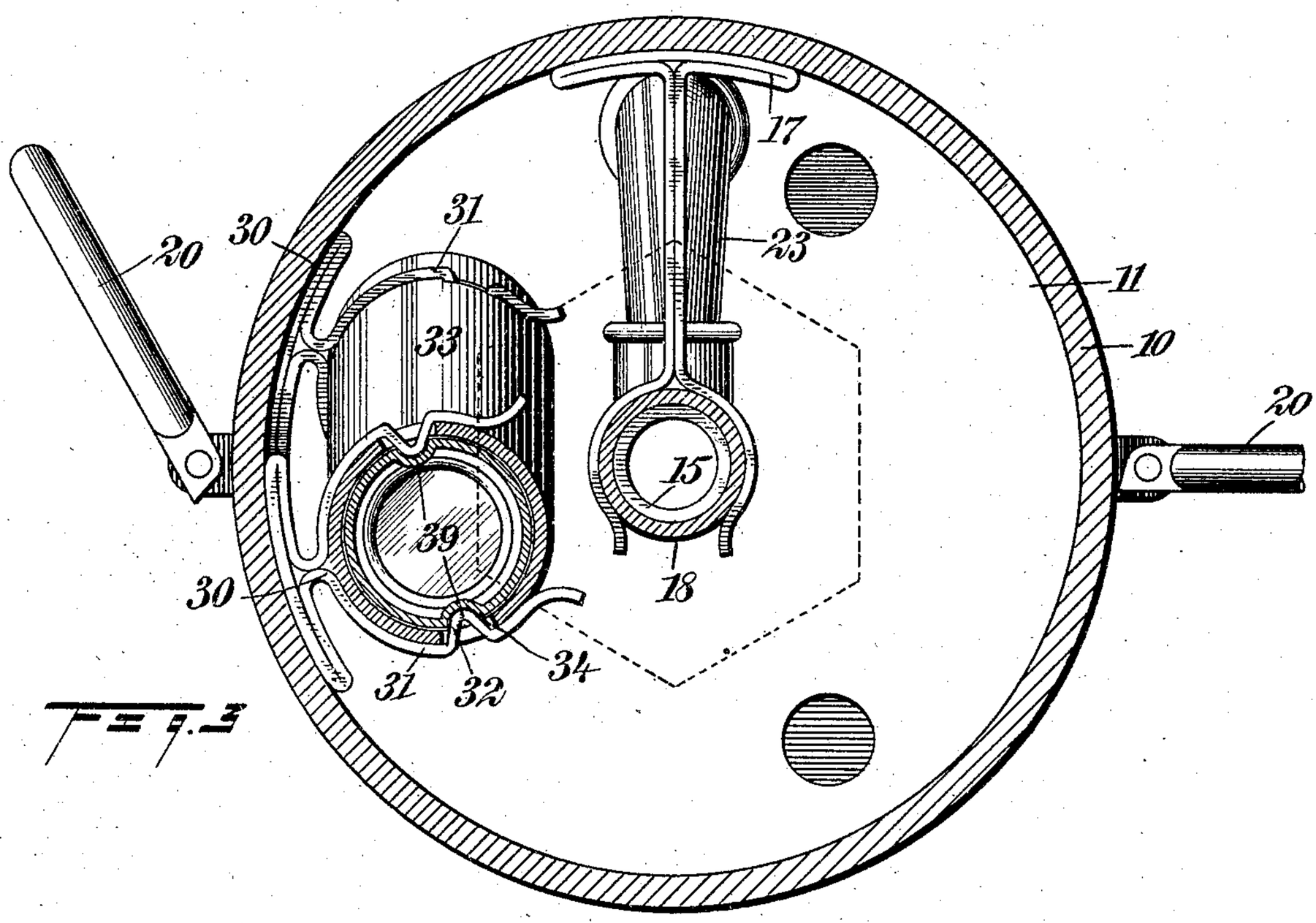

Fig. 3

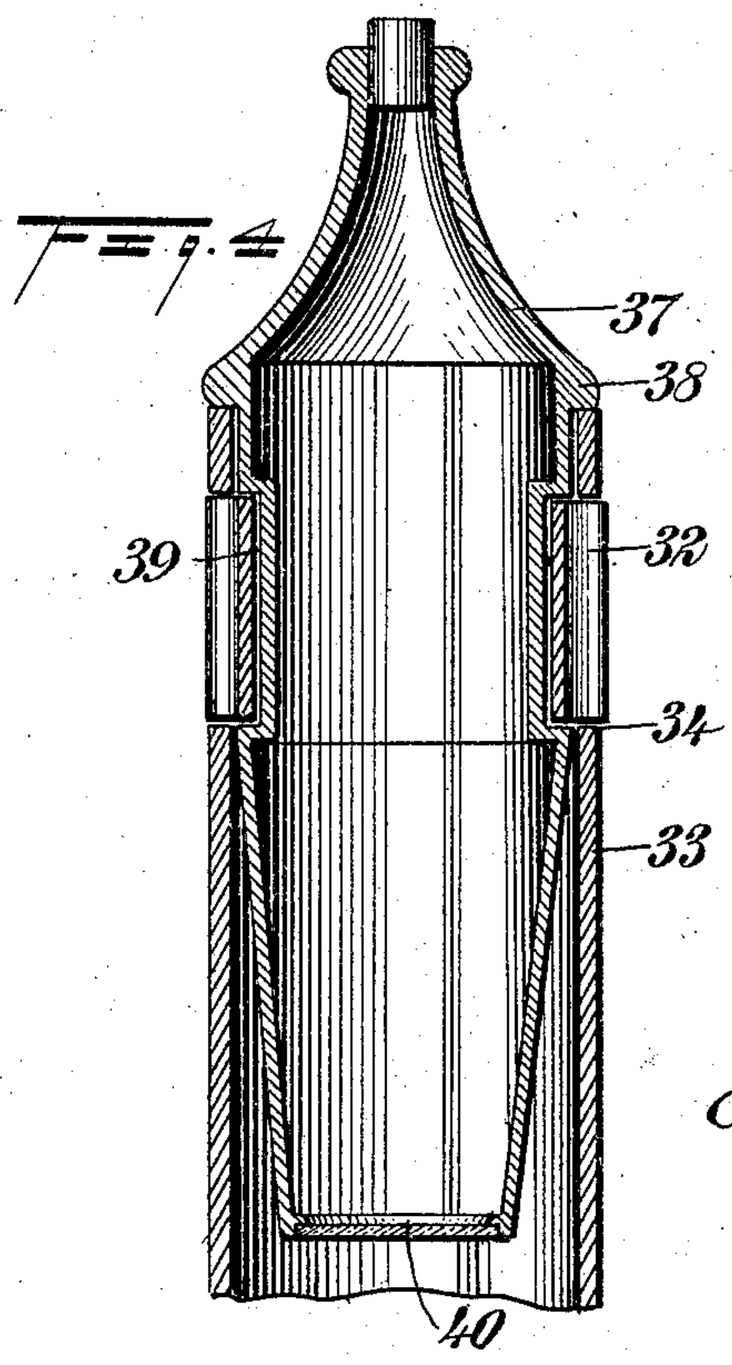

Fig. 4

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No. 788,498. Patented April 25, 1905.

UNITED STATES PATENT OFFICE.

CHARLES WILLIAM ATON, OF CLAIRTON, PENNSYLVANIA.

FIRE-EXTINGUISHER.

SPECIFICATION forming part of Letters Patent No. 788,498, dated April 25, 1905.

Application filed January 7, 1905. Serial No. 240,051.

To all whom it may concern:

Be it known that I, CHARLES WILLIAM ATON, a citizen of the United States, and a resident of Clairton, in the county of Allegheny and State of Pennsylvania, have invented a new and Improved Fire-Extinguisher, of which the following is a full, clear, and exact description.

My invention relates to fire-extinguishers; and the principal objects thereof are to provide means for setting free a chemical for exerting pressure upon the inversion of the extinguisher; for providing efficient means for causing the fluid to be forced out of the device by the gas-pressure in all directions when properly held; to provide for charging the device with a higher pressure than has heretofore been attained in fire-extinguishers; to provide for forcing the fluid straight from the machine without the imposition of hose or valves to impede its progress, and to provide for insulating the device from the hands of the operator, so that the fluid can be directed upon highly-charged electrical wires.

Further objects of the invention will appear in the course of the subjoined description.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a central longitudinal sectional view of a fire-extinguisher embodying my invention. Fig. 2 is a similar view on a line at right angles to that upon which Fig. 1 is taken. Fig. 3 is a sectional view, on an enlarged scale, on the line 3 3 of Fig. 2. Fig. 4 is a central sectional view of the acid-bottle and connections.

The extinguisher comprises a casing 10, having a removable bottom 11 and a removable top 12. The top is provided with a nozzle 13, through which passes a tube 14, which is fixed to the nozzle, and an interior tube 15, which is movably mounted with respect to the nozzle. The lower portion of the tube 14 is provided with a coupling 16, surrounding the tube 15 and forming a tight joint with it to prevent the passage of liquid between the two tubes. The two tubes, however, are capable of sliding one with respect to the other, so that the cap 12, with the nozzle 13 and tube 14, can be removed from the casing. A bracket 17 within the casing supports a coupling 18, to which the lower end of the tube 15 is tightly secured, and a spring 19 bears upon this coupling and the coupling 16, so as to normally force the tubes 14 and 15 apart and exert a constant pressure upon the coupling 16. It will be readily understood that the various elements included within the casing, which will be described below, are preferably introduced when the bottom 11 is removed and that the device is then charged and the cap 12 secured in place against the action of the spring 19.

Upon opposite sides of the extinguisher and located one near the bottom and one near the top are a pair of handles 20, preferably formed of fiber, so as to constitute insulators between the hands of the operator and the casing. By the insulating property of these handles it will be readily understood that the device can be handled with safety even when the fluid is directed against highly-charged electric wires and that the current from the wires will not be conducted to the operator. Also it will be seen that by the location of the handles upon opposite sides of the receptacle and near opposite ends the extinguisher can be very conveniently and effectively handled.

Connected with the coupling 18 are a pair of elbows 21 and 22, providing an offset from the tube 15 to a second tube 23. This tube is provided with perforations 24, which are normally covered by a valve 25, pivoted at 26 to the tube. This valve is preferably composed of a piece of sheet-lead bent to the shape of the tube and provided with a counterbalancing extension 27, which, as will be seen later, serves to open and close the valve upon certain changes in the position of the extinguisher. In addition to the bracket 17 a second bracket 28 is provided for assisting in holding the tube 23. Near the lower end of this tube and near the bottom of the extinguisher the former is provided with a second series of perforations 29 for the admission of fluid. A

pair of brackets 30 are secured to one side of the casing, and these brackets are provided with spring-clips 31, having inwardly-facing elbows 32. These clips are designed to hold a receptacle or tube 33, which extends longitudinally of the casing, but is preferably slightly inclined. This tube is provided with depressions or perforations 34 for the reception of the elbows 32 in order to securely hold it in stationary position. The two brackets are located near the opposite ends of this tube, and at the point at which the lower bracket grasps the tube a wooden plug 35 is inserted in the tube. This plug is provided with depressions 36 for receiving the elbows 32 and stops the end of the tube. It will thus be seen that it is securely held by the lower bracket and clips. Near the other end the tube receives a receptacle 37 for chemicals. This receptacle will be referred to hereinafter as the "acid-bottle." The bottle is of such size as to fit into the upper end of the tube 33 and is provided with a shoulder 38 for engaging the upper edge of the tube. It is also provided with depressions 39 for receiving the elbows 32 of the upper bracket 30, which project through the openings 34 in the tube, as above stated. It will be seen that the acid-bottle is thus securely held in the tube, but that by manipulating the clips 31 it can be removed and replaced by a new one or the same one put back in position, if desired. The acid-bottle is frangible. This may be accomplished in any desired manner; but I prefer to provide a frangible bottom 40, which is designed to be broken by the impact produced by the fall of a glass ball 41, located in the tube 33 and normally resting on the plug 35. This bottom may be so constructed that after being broken it can be replaced by another, or, if desired, the whole bottle may be discarded and a new one substituted for it. The tube 33, it will be seen, constitutes a guide for the ball 41, serving to direct it against the frangible bottom 40. When the extinguisher is inverted and the ball breaks the bottom 40, the gases immediately generated will of course fill the tube 33, and openings 42, both near the bottle and near the plug 35, are provided for permitting the gases to escape from the tube. In fact, the tube can be formed as a mere skeleton frame, if desired, in order to accomplish these results. The liberation of the gases will of course result in a collection of gas at the bottom of the receptacle if the latter is held in an inverted position, and the gas would in this position pass through the openings 29 into the tube 23. The liquid in the receptacle, however, would pass through the perforations 24 into the tube 23 at a lower point, because the weight 27 would force the valve 25 about its pivot, so as to uncover these latter perforations. Consequently liquid will be forced out through the nozzle. Upon raising the receptacle to an inclined position the weight 27 will keep the valve 25 open until a horizontal position is reached, and above that it will keep it closed. Hence, as the liquid in the casing passes from the top to the bottom in changing the position of the extinguisher the position of the valve 25 will remain such as to cause the liquid to be discharged constantly without any discharge of the gas.

It will be readily seen that while the device cannot be operated to cause liquid to be discharged without inverting the extinguisher, yet after this inversion has taken place it will discharge liquid at all angles without losing the gas until all the liquid has been forced out. This permits the device to be used in places where stationary extinguishers cannot be used, and permits it to be employed without any hose or valves to impede the passage of the fluid and reduce the force with which it is discharged. By the provision of the elements mentioned and the construction of the device so that such high pressures can be generated a stream of twice the length of that ordinarily produced by chemical extinguishers can be obtained. It will readily be seen also that the other advantages mentioned above will be attained in an extinguisher constructed according to the principle of my invention, whether in the form illustrated or in any other form, and that a very practical, efficient, any inexpensive device is thus secured.

While I have illustrated and described a particular embodiment of my invention, it is to be understood that the latter is not limited to the form shown, as many modifications may be made without departing from the spirit of the invention.

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

1. A fire-extinguisher having a nozzle, a discharge-tube communicating with the nozzle, said tube having two separated series of perforations, and means for closing one series of perforations.

2. A fire-extinguisher having a nozzle, a discharge-tube communicating with the nozzle, said tube having a set of perforations near the top thereof and a set of perforations near the bottom, and means for closing the perforations near the top of the tube.

3. A fire-extinguisher, comprising a frangible receptacle for chemicals, means for breaking the receptacle when the extinguisher is inverted, a nozzle, a tube located in the extinguisher and communicating with said nozzle, said tube having two sets of perforations one near the top of the extinguisher and one near the bottom, and a valve for closing the first-mentioned perforations.

4. A fire-extinguisher, comprising a tube having two sets of perforations one near the bottom of the extinguisher and one near the

top, a valve for the last-mentioned set of perforations, said valve being pivoted to the tube and adapted to cover the perforations, a receptacle for chemicals, and means for breaking said receptacle when the extinguisher is inverted.

5. A fire-extinguisher, comprising a tube having two sets of perforations one near the bottom of the extinguisher and one near the top, and a valve for the last-mentioned set of perforations, said valve being pivoted to the tube and adapted to cover the perforations and provided with a counterbalance-weight adapted to open and close the valve in different positions of the extinguisher.

6. In a fire-extinguisher, the combination of a casing, a removable cap therefor located at its upper end and provided with a nozzle, a tube movably located in said nozzle, a main tube connected with said first-mentioned tube and located longitudinally in the casing, said main tube having two series of perforations one located near its upper end and the other near its lower end, a valve pivoted to said main tube above the upper set of perforations, said valve being formed of a sheet of lead and provided with a plate adapted to cover the upper set of perforations and with a counterweight integral with the plate, said counterweight being adapted to operate the valve, and means for generating gas-pressure when the extinguisher is inverted.

7. A fire-extinguisher comprising a nozzle, a discharge-tube connected therewith and having perforations, and a valve for closing said perforations; said valve being pivoted to the tube and provided with a counterbalance-weight adapted to operate the valve in different positions of the extinguisher.

8. A fire-extinguisher comprising a nozzle, a discharge-tube connected therewith and having perforations, and a valve for closing said perforations; said valve being pivoted to the tube and provided with a counterbalance-weight adapted to operate the valve in different positions of the extinguisher, and being formed of a sheet of metal and provided with a curved plate adapted to cover the perforations, the counterweight being integral with the plate.

9. A fire-extinguisher comprising a casing, a generating-tube therein provided with oppositely-disposed indentations in its walls, and means within the casing for holding the tube, comprising a series of resilient clips having integral projections adapted to enter said indentations, and extensions projecting beyond said projections for the releasing of the projections from the indentations.

10. A fire-extinguisher comprising a tube having perforations in its walls, an acid-bottle in the tube having depressions opposite said perforations, and means for holding the tube and bottle adapted to project through said perforations and engage in the depressions.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CHARLES WILLIAM ATON.

Witnesses:

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T. M. GEALEY.