

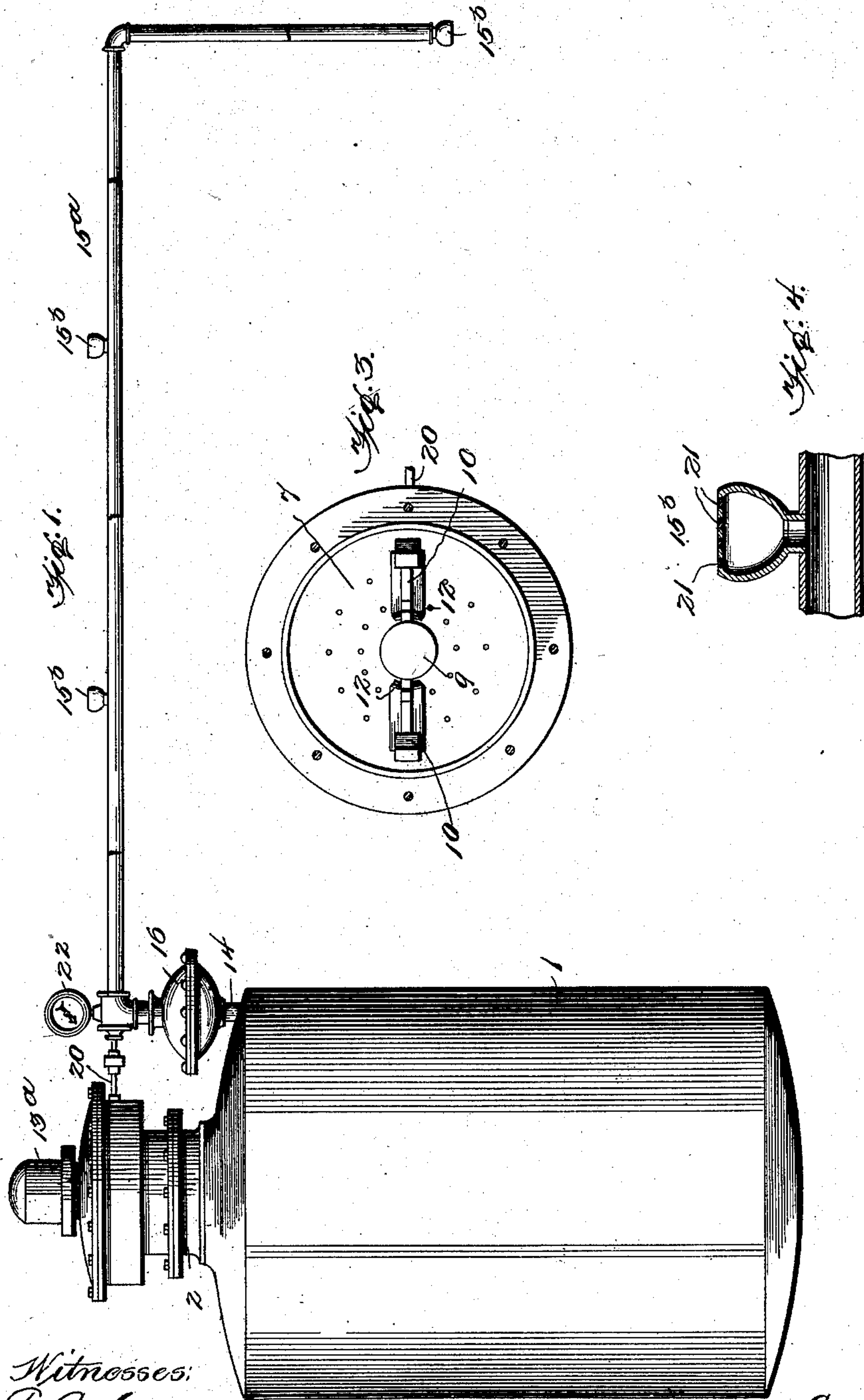
No. 749,688.

PATENTED JAN. 12, 1904.

G. C. HALE.
FIRE EXTINGUISHER.
APPLICATION FILED NOV. 6, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



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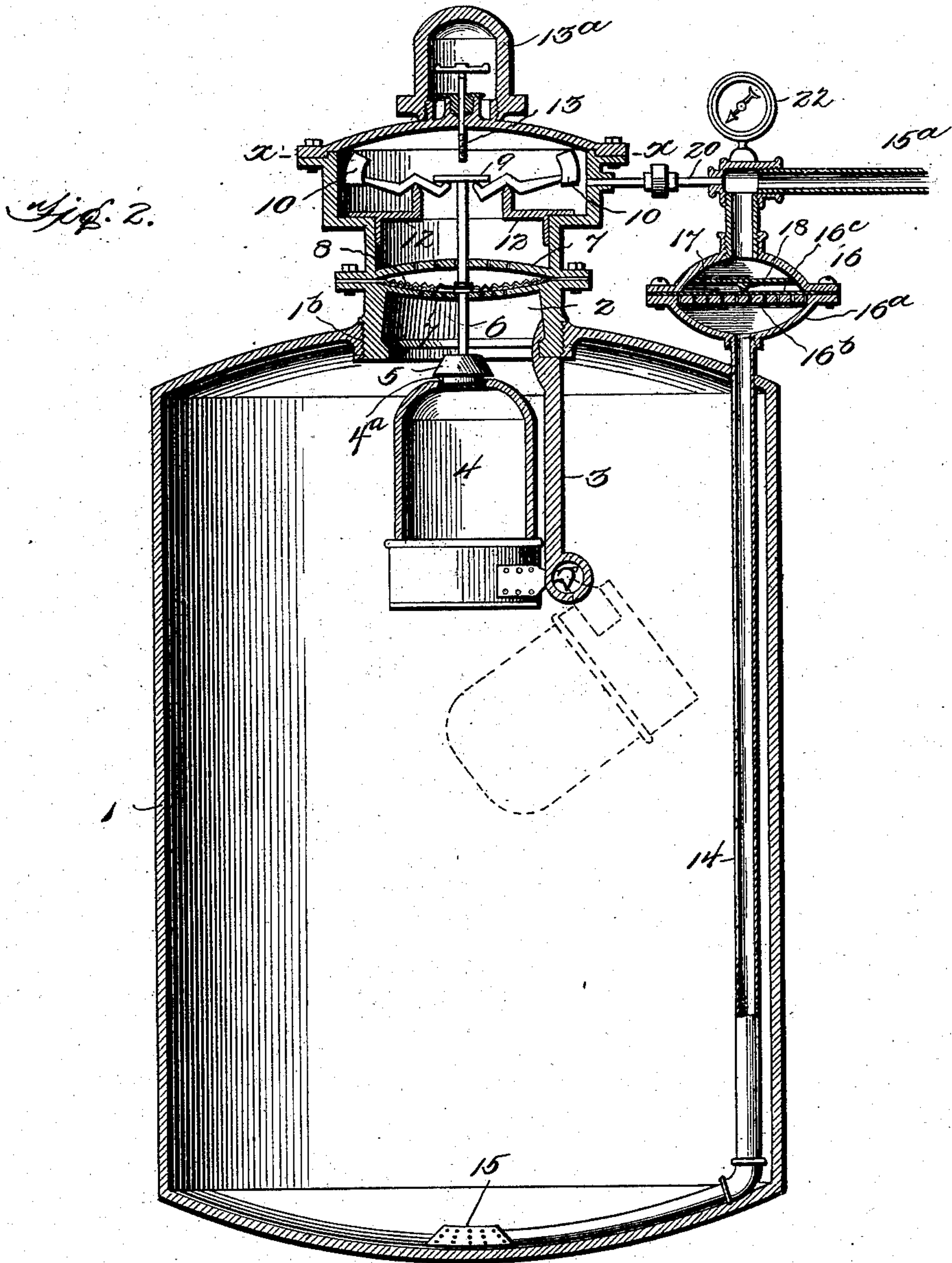
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TO OSCAR C. WIESNER, OF KANSAS CITY, MISSOURI.

FIRE-EXTINGUISHER.

SPECIFICATION forming part of Letters Patent No. 749,688, dated January 12, 1904.

Application filed November 6, 1902. Serial No. 130,324. (No model.)

To all whom it may concern:

Be it known that I, GEORGE C. HALE, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, 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.

My invention relates to improvements in fire-extinguishers which are automatically controlled.

The invention has for its object to automatically control the union of the chemicals for generating the fire-extinguishing fluid from a point remote to the generator.

Another object is the distribution of said fluid at only the location where it is needed.

My invention broadly consists of a generating-chamber combined with a fluid-pressure mechanism for regulating the mixing of the chemicals for generating the fire-extinguishing fluid.

It also consists of a distributing system, in combination with the above, which is provided with means for controlling the fluid-pressure-actuated mechanism.

It further consists of means for normally closing the passage between said distributing system and the generating-chamber, which is adapted to be opened by the pressure of the fire-extinguishing fluid generated by union of the chemicals within the generating-chamber.

The invention also consists of the details of construction, arrangement, and combination of parts hereinafter described, and more particularly pointed out in the claims.

In the accompanying drawings, showing one way of embodying my invention in a practical device, and in which like reference characters indicate similar and corresponding parts, Figure 1 is an elevation of my improvement, showing, on a reduced scale, the distributing system.

Fig. 2 is a vertical longitudinal section showing in dotted lines the position of the acid-receptacle when it has emptied its contents. Fig. 3 is a cross-section on the line $x-x$ of

Fig. 2, and Fig. 4 is a detail sectional view of one of the nozzles.

Referring more particularly to the drawings, 1 indicates a suitable generating-chamber, having a preferably screw-threaded opening in its top 1^b, to which is connected a chamber 2. From the top of said generating-chamber depends a bracket 3, to which is pivoted a dumping-receptacle 4, having a mouth or opening 4^a, which is designed to contain the acid which is to be combined with the alkali solution, preferably arranged in the generating-chamber. Said dumping-receptacle is so pivoted that without some means of holding it in an upright position it would swing down and empty any material which might be contained therein. To normally retain said receptacle in an upright position, a stopper 5 is adapted to enter the neck thereof, said stopper being secured to the end of a rod 6, having bearings in plates 7, arranged between the pressure-chamber and the generating-chamber. Of course other means for holding said receptacle in an upright position may be employed than that herein described and shown. These plates are preferably oppositely bulged and are perforated to provide for the free circulation of air when a diaphragm 8, preferably concentrically corrugated and brazed to the rod 6, is sprung to the opposite sides of the space between said plates. Said diaphragm is to shut off all passage between said generating-chamber and the pressure-chamber and is preferably secured between said plates by brazing. The upper end of said rod is preferably provided with a head 9, under which bear the ends of weighted levers 10, preferably fulcrumed on brackets 12, secured to the sides of said pressure-chamber. These levers are adapted to readily raise the rod so as to withdraw the stopper, and thus leave the dumping-receptacle free to swing down and empty its contents. In the top of said pressure-chamber is a screw 13, suitably packed, adapted to hold the rod in its lowered position, the purpose of which will be hereinafter described. Preferably screw-threaded to the said chamber is a cap 13^a for inclosing

the head of said screw, and thereby prevent any possible leakage around the passage for the screw.

The delivery or dispensing tube 14, communicating with the generating-chamber, preferably extends down to the bottom thereof and is preferably provided with a perforated head 15. This delivery-tube is connected with the distributing system 15^a, which is suitably arranged through the house or other building and provided with nozzles 15^b for spraying or delivering the fire-extinguishing fluid at various points. Interposed between the delivery-pipe and the distributing system is a valve 16, consisting of a casing 16^a, having a perforated diaphragm 16^b, upon the upper face of which rests a lid or cover 16^c for said holes, preferably consisting of a thin sheet of lead securely fastened to the said casing. Above said lid is supported by a cross-bar 17 a knife 18, adapted to puncture said lid when it is raised. Said distributing system is also connected with the pressure-chamber by a pipe or coupling 20.

The operation of my device is as follows: In installing the fire-extinguisher an acid is preferably placed in the dumping-receptacle and an alkali in the generating-chamber, the former being preferably sulfuric acid and the latter bicarbonate of soda, the combination of which will generate a gas or fluid which will suffocate or extinguish fire. After the acid has been placed in said dumping-receptacle the stopper is inserted in the mouth thereof and held from being raised by the screw 13, which is adapted to bear upon the head of the rod 6. A pressure is then created within the distributing system, which exerts its force on the diaphragm and resists the action of the weighted levers. The openings or nozzles 15^b in said distributing system are then sealed, as at 21, by some metal fusible at a low temperature. A gage 22 is preferably provided at a suitable point for said pressure in order that it may be readily discerned whether there is any accidental leakage in the distributing system or the pressure-chamber. The action of said levers now being resisted by the pressure, the screw is raised a sufficient distance to permit the levers to raise the stopper from the acid-receptacle should the pressure be released in order that said receptacle might be free to swing down and empty its contents within the generating-chamber. Of course unless the pressure in said distributing system is shut off from the interior of said generating-chamber the pressure upon the diaphragm would be neutralized and the desired purpose of said pressure destroyed. To obviate this, the valve 16 is provided. This valve normally shuts off all communication between the distributing system and the generating-chamber by way of the delivery-pipe; but on generation of the gas the pressure created will force said lid upward until the knife-blade punctures a hole

therein, after which said lid will break or tear, and thereby permit the free passage of the fire-extinguishing fluid through the distributing system.

When my system has been installed as hereinbefore described, a fire in the building will cause the melting of the metal seals in the nozzle at the point most approximate thereto, and thereby release the pressure, which will permit the levers to lift the stopper and release the receptacle, which will empty its contents upon the chemicals within the generating-chamber. The gas then created will force its way through the delivery-pipe, open the valve, pass out through the distributing system, and be delivered or discharged through the unsealed opening or nozzle into the fire.

It is obvious that my invention provides a device which is particularly adapted to be installed in places isolated from water-supplies and that it is particularly advantageous for use in buildings, houses, and other structures. The system being automatic will be set in operation by a fire without the assistance of an operator, and, further, it will deliver the fire-extinguishing fluid only at the point where it is needed.

While I have herein shown and described the preferred embodiment of my invention, yet I do not wish to limit myself thereto, as it is obvious that various changes may be made in the details of construction, arrangement, and combination of parts without in any way deviating or departing from the spirit of my invention.

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

1. In a fire-extinguishing apparatus the combination of a generating-chamber and a fluid-pressure-controlled mechanism for regulating the mixing of chemicals for producing the fire-extinguishing fluid comprising normally inoperative levers, a chemical-containing vessel, and a rod carrying a stopper for said vessel and adapted to be actuated by said levers when the fluid-pressure has been removed.

2. In a fire-extinguishing apparatus the combination of a generating-chamber, a distributing system, a fluid-pressure-controlled mechanism for regulating the mixing of chemicals for generating the fire-extinguishing fluid, comprising normally inoperative levers, a chemical-containing vessel, and a rod carrying a stopper for said vessel and adapted to be actuated by said levers when the fluid-pressure has been removed, and means in said system for regulating said fluid-pressure mechanism.

3. In a fire-extinguishing apparatus the combination of a generating-chamber, a fluid-pressure mechanism for controlling the mixing of chemicals for generating the fire-extinguishing fluid, comprising normally inoperative levers, a chemical-containing vessel, and a rod carrying a stopper for said vessel and

adapted to be actuated by said levers when the fluid-pressure has been removed, a distributing system, means in said distributing system for regulating the fluid-pressure mechanism controlled by atmospheric conditions.

4. In a fire-extinguishing apparatus the combination of a generating-chamber, a fluid-pressure-controlled mechanism for causing the mixing of chemicals for producing the fire-extinguishing fluid, comprising normally inoperative levers, a chemical-containing vessel, and a rod carrying a stopper for said vessel and adapted to be actuated by said levers when the fluid-pressure has been removed, a distributing system communicating with said fluid-pressure mechanism and said generating-chamber, means for normally shutting off communication between said distributing system and said generating-chamber adapted to be opened by the pressure of gases produced within the generating-chamber, and means within the distributing system for automatically controlling said pressure mechanism.

5. In a fire-extinguishing apparatus the combination of a generating-chamber, a pressure-chamber, means arranged between said chambers for controlling the mixing of the chemicals within said generating-chamber, comprising normally inoperative levers arranged in said pressure-chamber, a chemical-containing vessel arranged in said generating-chamber, a rod carrying a stopper for said vessel and adapted to be actuated by said levers when the fluid-pressure has been removed, and a distributing system provided with means for controlling the pressure within said pressure-chamber.

6. In a fire-extinguishing apparatus the combination of a generating-chamber, a pressure-chamber, means arranged between said pressure-chamber and said generating-chamber for controlling the generation of the fire-extinguishing fluid, comprising perforated bulged plates fixed between said generating and pressure chambers, a diaphragm arranged between said plates, a chemical-containing vessel suspended in said generating-chamber, normally inoperative levers arranged in said pressure-chamber, and a rod carrying a stopper for said vessel and adapted to be actuated by said levers when said pressure has been removed, a distributing system communicating with said generating-chamber and said pressure-chamber, means for normally shutting off communication between said distributing system and said generating-chamber adapted to be opened by the pressure of gases produced within the generating-chamber, and means in said distributing system for automatically controlling the pressure within said pressure-chamber.

7. In a fire-extinguishing apparatus the combination of a generating-chamber, a pressure-chamber, a diaphragm, perforated bulged plates arranged between said pressure-cham-

ber and said generating-chamber, said diaphragm being arranged between said plates, means connected to said diaphragm for controlling the mixing of the chemicals for generating the fire-extinguishing fluid, a distributing system connected to said pressure-chamber, and means provided in said distributing system for automatically controlling the pressure in said pressure-chamber.

8. In a fire-extinguishing apparatus the combination of a generating-chamber, perforated bulged plates arranged between said chambers, a pressure-chamber, a diaphragm arranged between said plates, means connected to said diaphragm for controlling the mixing of the chemicals for generating the fire-extinguishing fluid, a distributing system communicating with said pressure-chamber and said generating-chamber, means for normally shutting off communication between said generating-chamber and said distributing system, and means in said distributing system for releasing the pressure within said pressure-chamber.

9. In a fire-extinguishing apparatus, the combination of a generating-chamber, a pressure-chamber, a diaphragm separating said chambers, a dumping-receptacle supported in said generating-chamber, means operatively connected up with, and actuated by, said diaphragm and carrying a stopper or plug engaging the mouth or opening of said dumping-receptacle and thus adapted to retain said dumping-receptacle in an upright position, raising and lowering means for said stopper or plug carrying means, and pressure-distributing means connected to said pressure-chamber, provided with means for automatically controlling the pressure within said pressure-chamber.

10. In a fire-extinguishing apparatus, the combination of a generating-chamber, a pressure-chamber, a diaphragm separating said chambers, a dumping-receptacle supported in said generating-chamber, means operatively connected up with, and actuated by, said diaphragm and carrying a stopper or plug engaging the mouth or opening of said dumping-receptacle and thus adapted to retain said receptacle in an upright position, raising and lowering means for said stopper or plug carrying means, means for retaining said plug-carrying and diaphragm means in its normally lowered position, and pressure-distributing means connected to said pressure-chamber, provided with means for automatically controlling the pressure within said pressure-chamber.

11. In a fire-extinguishing apparatus the combination of a generating-chamber, a pressure-chamber, perforated bulged plates arranged between said chambers, a rod slidingly supported by said plates, a dumping-receptacle within said generating-chamber adapted to be held in an upright position by said rod when it is lowered, weighted levers within

said pressure-chamber for lifting said rod and thereby releasing the dumping-receptacle, a diaphragm arranged between said plates for separating said generating-chamber and said pressure-chamber adapted to be sprung downwardly by a pressure within the pressure-chamber and to be sprung upwardly by said weighted levers, and a distributing system connected to said pressure-chamber and provided with means for automatically controlling the pressure within said chamber.

12. In a fire-extinguishing apparatus the combination of a generating-chamber, a pressure-chamber, a diaphragm separating said chambers, a rod secured to said diaphragm adapted to retain a dumping-receptacle arranged within said generating-chamber in an upright position, means for lifting said rod and thereby releasing the dumping-receptacle, and means adapted to retain said rod in a lowered position.

13. In a fire-extinguishing apparatus the combination of a generating-chamber, a distributing system, a valve for normally shutting off communication between said distributing system and said generating-chamber, comprising a perforated diaphragm, a lid for said perforated diaphragm, and the knife supported above said lid adapted to puncture the same when it is raised.

14. In a fire-extinguishing apparatus the combination of a generating-chamber, a pressure-chamber, perforated plates separating said chambers, a rod slidingly supported by said plates adapted when lowered to retain a

dumping-receptacle within said generating-chamber in an upright position, weighted levers for lifting said rod, a diaphragm arranged between said plates and secured to said rod adapted to be sprung downwardly by pressure within the pressure-chamber and sprung upwardly by the weighted levers when said pressure is released, a distributing system connecting with said pressure-chamber and said generating-chamber, and a valve for shutting off communication between said generating-chamber and said distributing system adapted to be opened from pressure within the generating-chamber.

15. In a fire-extinguishing apparatus, the combination of a generating-chamber, a pressure-chamber, a diaphragm separating said chambers, a dumping-receptacle supported in said generating-chamber, a rod connected to, and actuated by, said diaphragm and carrying at its lower end a stopper or plug engaging the mouth or opening of said dumping-receptacle and retaining said receptacle in its normally lowered position, means for raising and lowering said rod, and a pressure-distributing system connected to said pressure-chamber, provided with means for automatically controlling the pressure within said pressure-chamber.

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

GEORGE C. HALE.

Witnesses:

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