(No Model.)

# E. L. PHIPPS.

## SYSTEM FOR PROTECTING BUILDINGS FROM FIRE.

No. 564,534. Patented July 21, 1896.

Fig. 1.

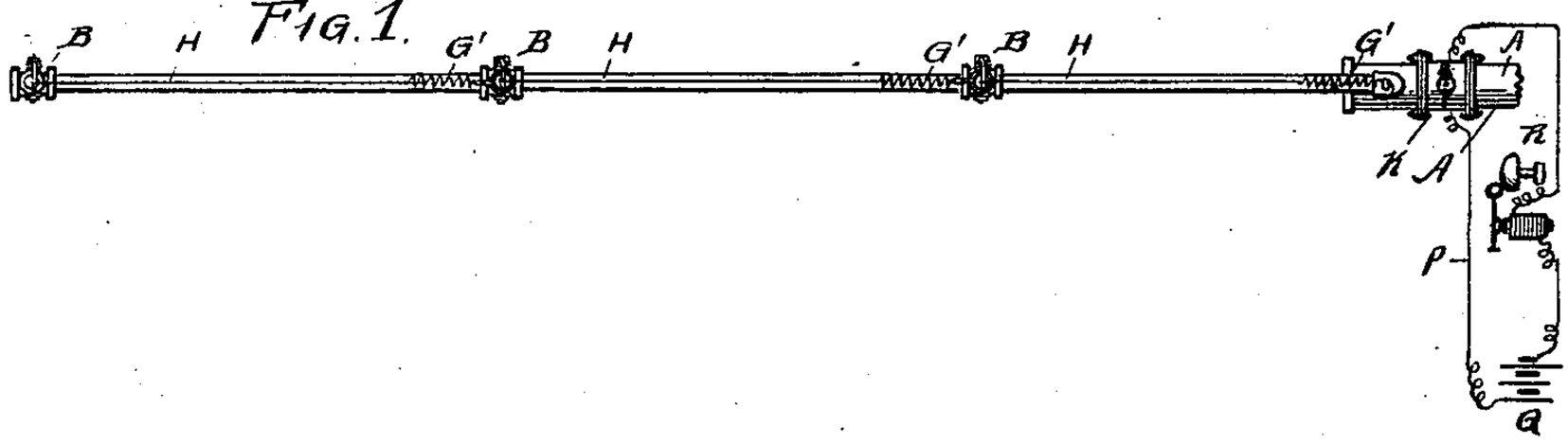



Fig. 2.

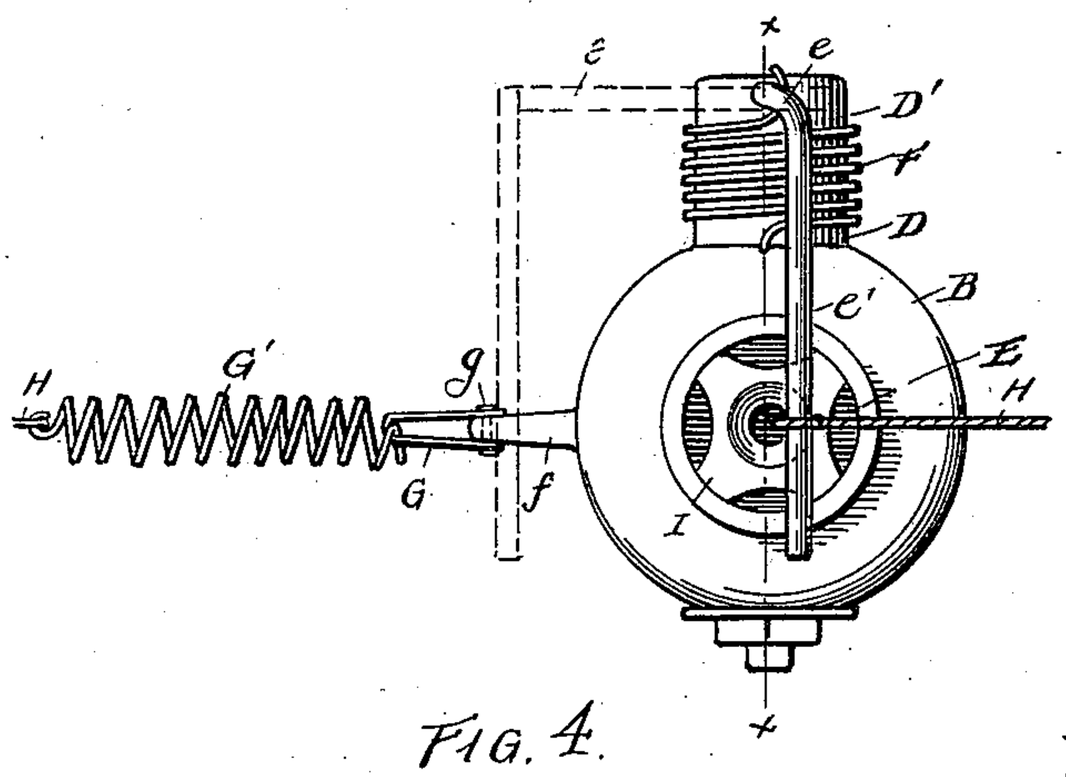



Fig. 3.

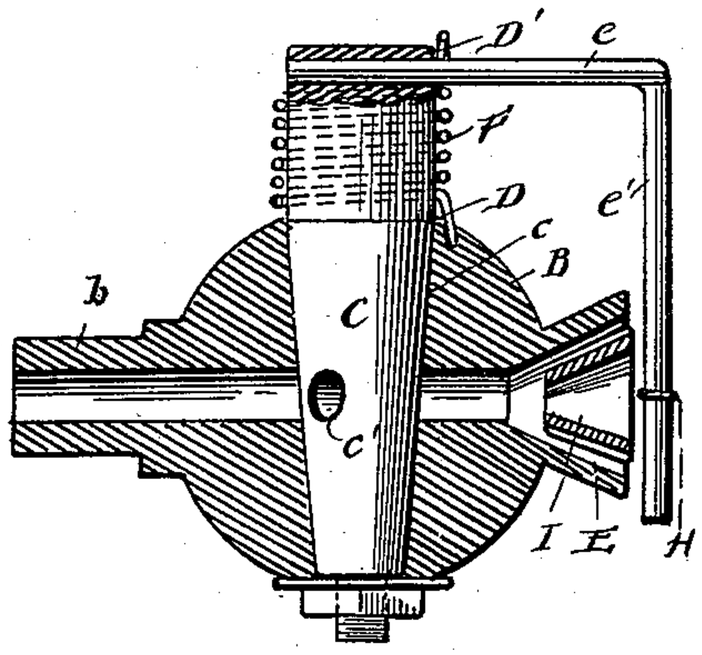



Fig. 4.

Fig. 5

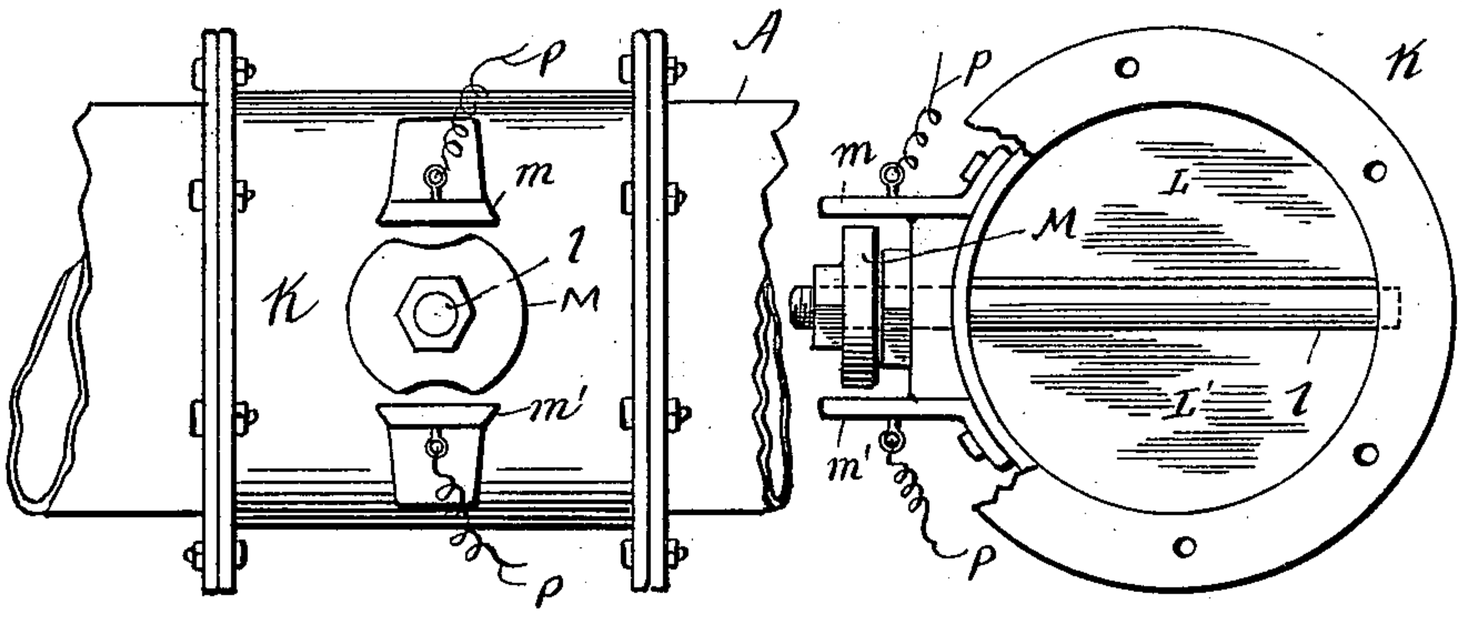
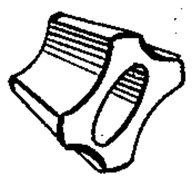



Fig. 6.




WITNESSES

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## SYSTEM FOR PROTECTING BUILDINGS FROM FIRE.

SPECIFICATION forming part of Letters Patent No. 564,534, dated July 21, 1896.

Application filed August 3, 1895. Serial No. 558,103. (No model.)

*To all whom it may concern:*

Be it known that I, EDWARD L. PHIPPS, a citizen of the United States, and a resident of Milford, in the county of Oakland and State of Michigan, have invented certain new and useful Improvements in Systems for Protecting Buildings from Fire; and I do 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, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

Figure 1 of the drawings is a representation of the invention applied, and is partly diagrammatic. Fig. 2 is a front view of sprinkler, with arm *e* shown thrown around in dotted lines. Fig. 3 is a section on line *x x*, Fig. 2. Fig. 4 is a front view of section K in supply-pipe. Fig. 5 is a view inside said section, flange partly broken. Fig. 6 is a perspective view of grooved plug.

This invention has for its object the provision of simple, efficient, and reliable apparatus for the protection of buildings against fire, and is of that class known as "automatic stationary fire-extinguishers."

The invention consists in the novel construction and combination of parts, all as hereinafter described, and pointed out in the appended claims.

Referring to the accompanying drawings, the letter A designates a water-pipe which in the application of the invention is designed to be supported just below the ceiling of a factory, warehouse, or other building to which the invention is applied, or in such position as may be the most effective in view of the nature of any particular building and the character and location of its contents. A number of these pipes are usually employed, or a single pipe having a number of branches, as the circumstances may require. Said pipe or pipes are supplied by a connection with a water-main, whereby a constant pressure is maintained therein, or they may be supplied by a pump or pumps in the boiler-room. Disposed along said pipes at suitable intervals are a series of sprinklers, which consist each of a shell B, having a nipple *b*, which is threaded into a tap of the pipe or a coupling thereof, A, a valve-seat *c*, rotary valve C, carried by a stem D, which is journaled in the walls of the shell, and a discharge E, which is directly opposite the nipple *b*. On one projecting end of the stem D is a head D′, around which is coiled a spring F, one end of which is secured to the shell B, and the other end portion of which has a bearing against an arm *e* of the head D′, the stress of this spring being such that if free to act it would hold the valve C in such position that its port *c′* would register with the passage through the nipple *b* and with the discharge E.

Attached to a lug or projection *f* of the shell B, by means of an easily-fusible pin *g*, is a loop G, to which is connected one end portion of a spring G′, to the opposite end portion of which is attached one end portion of a textile cord H, the other end portion of which is attached to the arm *e* of the next sprinkler of the series. This arrangement is followed throughout the system; that is to say, the arm *e* of the valve-stem of each of the sprinklers is connected by a spring and cord with the loop G of the next valve, and this connection exerts a tension on the said arm E, which holds the valves C closed against the stress of the springs F. In the discharge E of each sprinkler is placed a perforated and laterally-grooved plug I or other suitable device for causing the water to spread as it is discharged.

The operation will be readily understood. Whenever from any cause the temperature surrounding any one of the sprinklers reaches the fusing-point of the pin *g*, or whenever flame comes in contact with a cord H, the connection which holds the valve closed is at once destroyed and the said valve is at once thrown open by its spring F, causing a discharge of water from the opening E. Each valve will operate in the same manner as soon as subjected to the same conditions of temperature. The arm *e* is extended, as at *e′*, for the purpose of striking the lug *f* of the valve-shell to form a stop for the valve when it reaches its full-opened position.

Another feature of the invention consists in the provision of means for giving automatically an alarm whenever the sprinklers are

thrown into operation. For this purpose I place in a section K of the pipe a vertically-disposed diaphragm L, which cuts off approximately one-half the diameter of the pipe. Below this diaphragm is a gate L, arranged to close the passage thereunder, and which is attached to a shaft or spindle *l*, which is journaled in the wall of the said section and projects therethrough at one end, as indicated at *l'*. On this projecting end is a cam-plate M, which is between two contact plates or posts *m m'*, to which are connected, respectively, the terminals of a normally open electric circuit P. This circuit includes a battery Q and a suitable alarm R, such as a bell. When the sprinkler-valves are all closed, the valve L' hangs vertically in the section K, and the plate *m* (which is made of material which is a conductor of electricity) is out of contact with the posts or plates *m m'*. So soon, however, as one or more of the sprinkler-valves are opened the valve L' is raised by the current which flows through the pipe, and rocks the shaft or spindle *l* to bring the plate M into contact with said posts or plates. This completes the electric circuit, and the alarm, which is suitably located for the purpose, is sounded.

It is obvious that instead of a normally open circuit I might employ a normally-closed circuit, the plate M being normally in contact with the posts *m m'*, and arranged to move away from the same to break the circuit and sound the alarm upon the proper movement of the valve or gate.

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

1. In a fire-extinguishing apparatus of the class described, the combination with a supply-pipe having a series of normally-closed discharges, of a vertically-disposed diaphragm L located in said pipe and cutting off approximately one-half of the diameter thereof, a gate L' journaled adjacent to the lower edge of the said diaphragm, and normally closing the passage thereunder, a cam-plate on the projecting end of the pivot of said gate, and an electric circuit including an alarm, said circuit having terminals connected to contact posts or plates located one upon each side of the said cam-plate, substantially as specified.

2. In a fire-extinguishing apparatus of the class described, the combination with a water-supply pipe, of a number of sprinkler devices connected thereto, each of said devices comprising a shell having a discharge-opening, a rotary valve which controls the said discharge said valve having its stem journaled in the said shell, and provided on its projecting end portion with an arm, a spring coiled around said end portion and having bearings whereby its stress is such as to hold the valve open, and a combustible cord connected to the said arm at one end, and to a spring at its other end, said spring having a fusible connection with the shell of an adjacent sprinkler-device, substantially as specified.

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

EDWARD L. PHIPPS.

Witnesses:
CHARLIE B. ANDREWS,
JOHN L. ROOL.