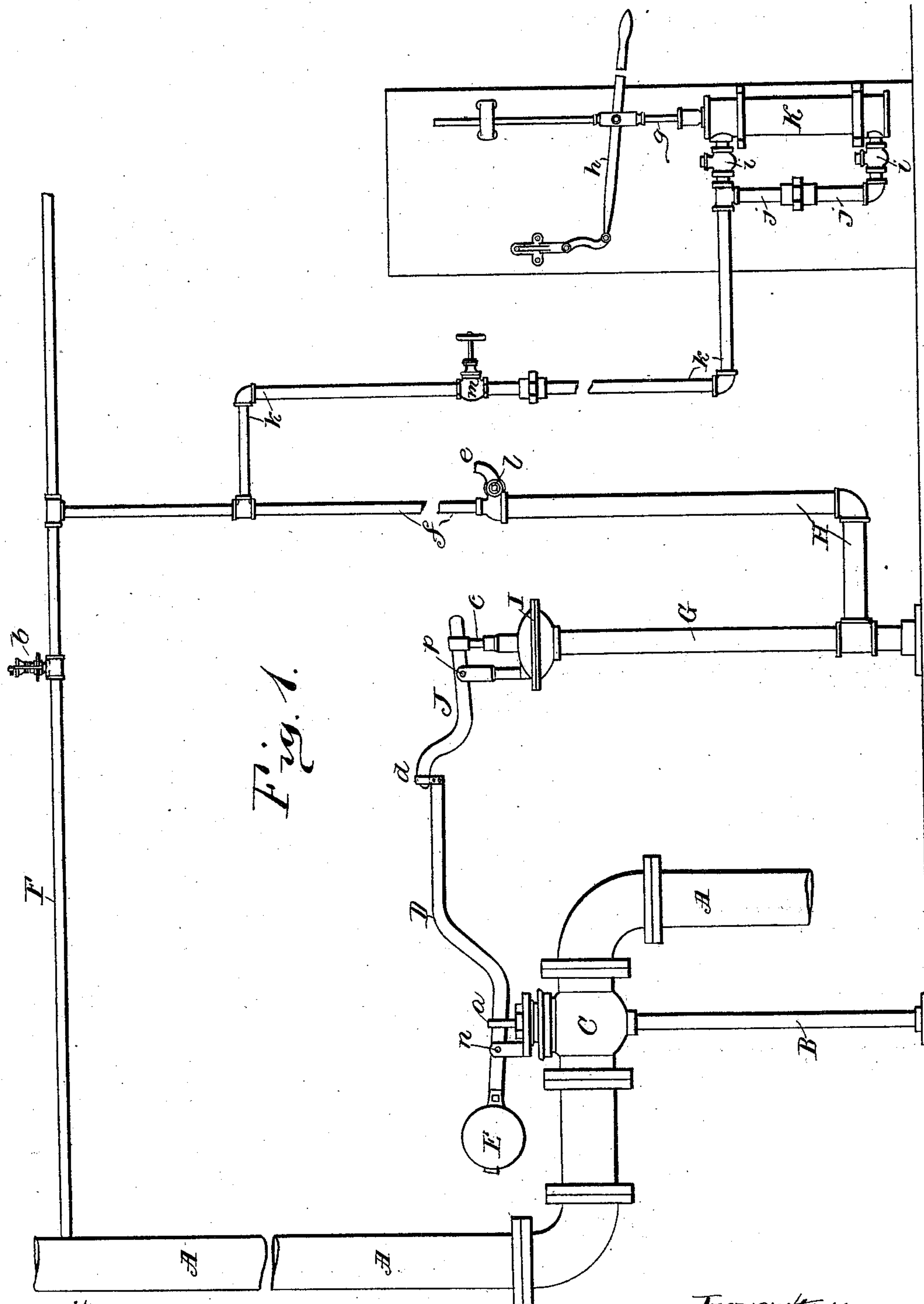


2 Sheets—Sheet 1.

AUTOMATIC FIRE EXTINGUISHING APPARATUS.

Patented Aug. 6, 1889.



witnesses
 Thos W Hildary
 Eugene Humphrey

Inventor.
Osborn B. Hall
for J. W. Porter Atty

(No Model.)

2 Sheets—Sheet 2.

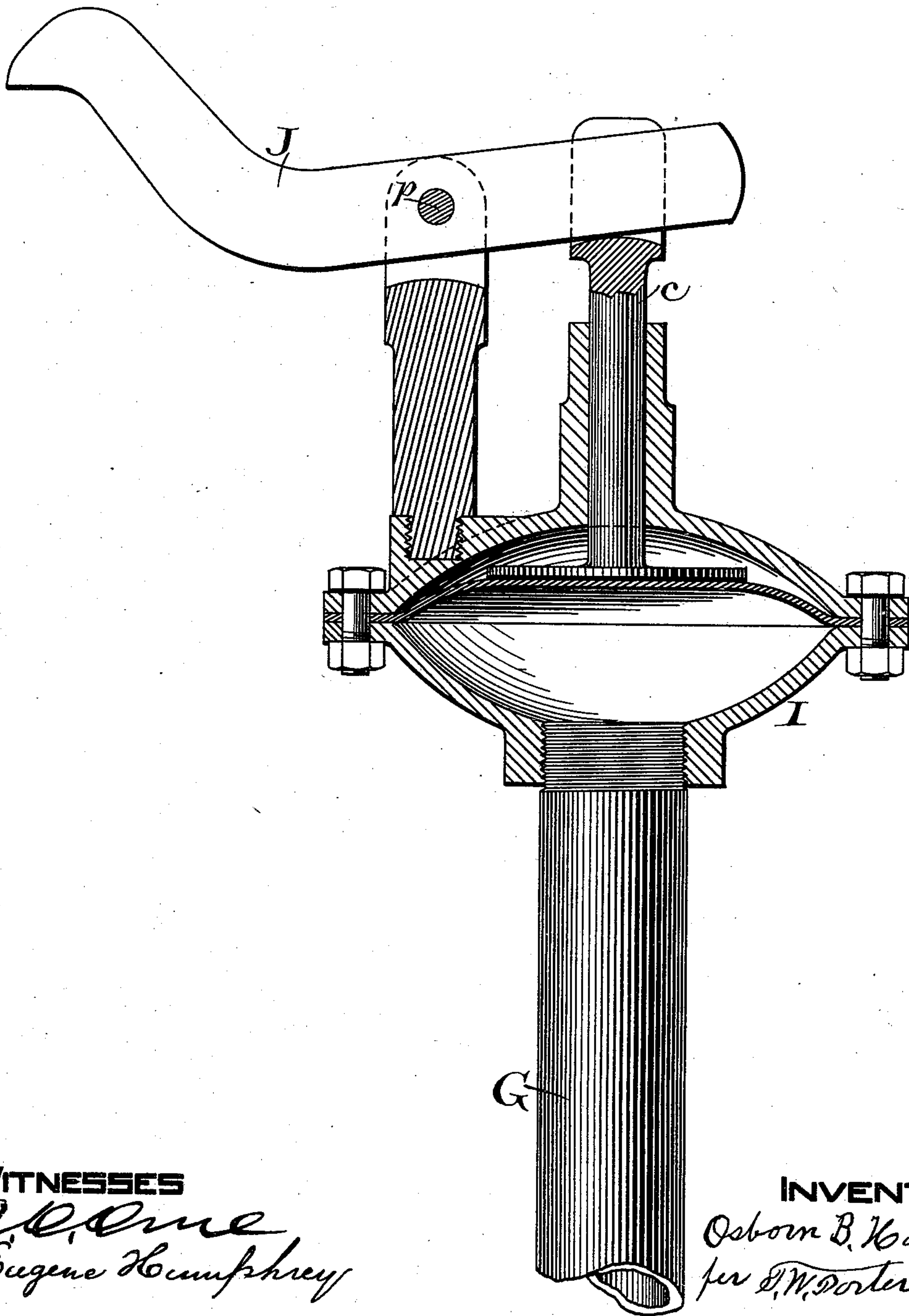
O. B. HALL.

AUTOMATIC FIRE EXTINGUISHING APPARATUS.

No. 408,615.

Patented Aug. 6, 1889.

FIG. 2.



WITNESSES

A. C. Orme
Eugene Humphrey

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Osborn B. Hall
per D. W. Porter, Atty

UNITED STATES PATENT OFFICE.

OSBORN B. HALL, OF MALDEN, MASSACHUSETTS.

AUTOMATIC FIRE-EXTINGUISHING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 408,615, dated August 6, 1889.

Application filed February 28, 1889. Serial No. 301,570. (No model.)

To all whom it may concern:

Be it known that I, OSBORN B. HALL, of Malden, in the county of Middlesex and State of Massachusetts, have invented a new and
5 useful Improvement in Automatic Fire-Extinguishing Apparatus, which will, in connection with the accompanying drawings, be hereinafter fully described, and specifically defined in the appended claims.

10 In said drawings, Figure 1 shows in side elevation an apparatus embodying my invention. Fig. 2 is a detached vertical section through the diaphragm-motor I, taken in a plane passing through the axis of lever J,
15 which latter, as also the piston *c* and pipe G, are shown in elevation.

This invention relates to that class of automatic fire-extinguisher apparatus known as the "dry-pipe" system, in which the water is
20 habitually excluded from the distributor or sprinkler-pipes, except when by the action of heat one or more of said sprinklers is unsealed and the compressed air in the pipes is liberated, whereby the water is turned on
25 and the apparatus rendered operative for the extinguishing of the fire; and it consists in certain features of novelty that will be herein fully described, and pointed out in the claims.

In said drawings, A represents the main or
30 supply pipe, and may lead from the street-main, an elevated fountain, a force-pump, or any known means of supply which maintains a practically-uniform static pressure in the pipe. Above the supporting-standard B is
35 shown the body of a "globe-valve" C, the stem *a* of which is forced downward by the counterweighted lever D, pivoted at *n*, to hold the valve to its seat in body C.

A system of distributing-pipes is represented at F, to which the distributors represented at *b* are connected at the proper intervals in the well-known manner. A stand-pipe G is surmounted by a diaphragm-motor I, the diaphragm of which is directly acted
45 upon by the fluid in the pipe. The stem *c* of the floating piston of motor I is connected with lever J, which is pivoted at P, and its longer arm is inserted in link *d* on the long arm of lever D. An offset or branch pipe H
50 communicates freely internally with pipe G,

and has at its top, just above motor I, a communicating funnel *e*, controlled by a valve *l*, and from pipe H rises a smaller pipe *f*, that communicates with the system F. A force-pump is shown at K, the piston *g* of which is
55 reciprocated by means of lever *h*, and a pipe *j*, having a stop-valve *i*, communicates with the lower part of said pump and connects at top with pipe *k*, also having a stop-valve *i*, and communicating with the top portion of
60 said pump. Said pipe *k* is provided with a shut-off valve *m* and at top connects with pipe *f*.

The operation of this improved apparatus is both effective and obvious, as pipe A is
65 back of and below valve C constantly filled with water under the required static pressure, while beyond and above said valve both pipe A and system F are filled with air under pressure, which is forced therein by pump K,
70 and pipes G H are filled with water through funnel *e*, which is subject to the same pressure as the air in the dry-pipes, as the air therein acts directly upon the water in pipe H.

The pressure upon the greater area of the
75 diaphragm in motor I will, through the relative leverages of D J, not only hold the globe-valve C to its seat, but also sustain counterweight E, so long as the intended pressure in the dry-pipes is maintained; but should an
80 extinguisher *b* be opened by heat or other cause, whereby the air-pressure was removed, then the piston in I would descend, allowing the long arm of lever J to rise, and at the same time weight E would descend, allowing
85 valve C to open, thus liberating the water that had been held back in A and allowing it to fill system F and escape through the unsealed distributors *b*.

I am aware of United States Patents No. 90 311,088, issued to D. C. Stillson, and No. 357,692, issued to Stillson and Prescott, and I claim nothing that is shown in either of said patents, my invention differing therefrom in two essential particulars, to wit: First, I employ two levers so arranged that one acts
95 directly upon the stem of the intercepting-valve in the main supply-pipe, and thus holds the valve to its seat against the water-pressure in said pipe, while the other lever, which is 100

actuated by the diaphragm-motor, is connected directly with and by the force of the water controls the said lever that holds the intercepting-valve to its seat; second, I employ a diaphragm-motor that is utilized through and by means of a column of water which is independent of the fluid that is admitted through the main supply-pipe to the extinguishers.

10 I claim as my invention—

1. In an automatic fire-extinguishing apparatus, the combination of a main supply-pipe provided with an intercepting-valve which seats against the fluid-pressure, and a stem extending above it, a lever pivoted at one side of said stem so as to bear thereon, a diaphragm-motor actuated by a water-column subjected to the air-pressure in the distributing-pipes, and a lever engaged and actuated by the piston of said motor and connected with the valve-controlling lever to thereby

hold the valve to its seat, substantially as specified.

2. In fire-extinguishing apparatus, the combination of supply-pipe A, having a water-distributing system therewith connected, valve C, having stem *a* extending above the valve, lever D, pivoted at one side of said stem and engaging it, diaphragm-motor I, its stand-pipe G, closed at the bottom and having branch pipe H, air-pump K, connected by a conduit with pipe H and the distributing-system, and pivoted lever J, connected at one end with stem *c* of the motor and at the opposite end connected with lever D, to control the same, and thereby the valve, substantially as specified.

OSBORN B. HALL.

Witnesses:

EUGENE HUMPHREY,
T. W. PORTER.