J. S. LEAS.

PUMP GOVERNOR.

No. 180,604. Patented Aug. 1, 1876.

Fig. 1

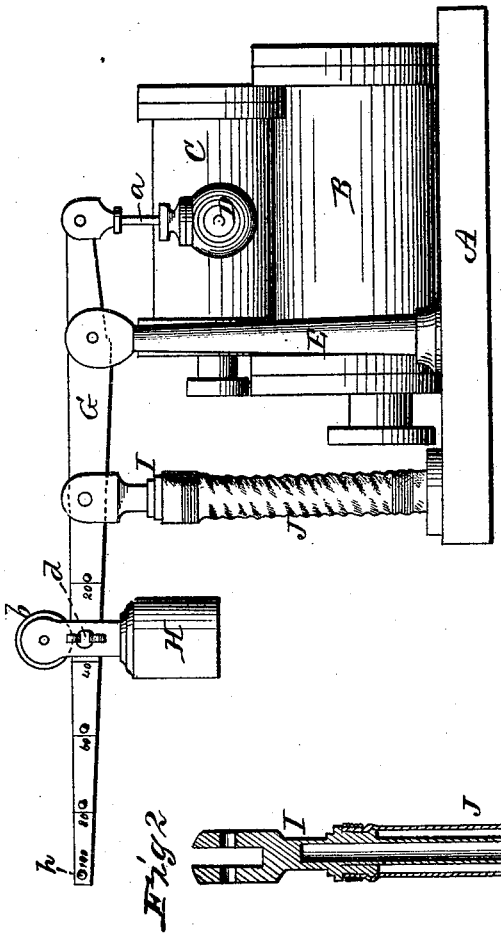

Fig. 2

WITNESSES

Franck L. Durand

C. L. Everett

INVENTOR

J. S. Leas

By T. H. Alexander

Attorney

UNITED STATES PATENT OFFICE.

J. SILAS LEAS, OF ROCK ISLAND, ILLINOIS.

IMPROVEMENT IN PUMP-GOVERNORS.

Specification forming part of Letters Patent No. **180,604**, dated August 1, 1876; application filed June 2, 1876.

To all whom it may concern:

Be it known that I, J. SILAS LEAS, of Rock Island, in the county of Rock Island and State of Illinois, have invented certain new and useful Improvements in Automatic Pump-Governor and Pressure-Valve; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification.

The nature of my invention consists in the construction and arrangement of a governor or apparatus connected to a pumping-engine and the water-main, for the purpose of automatically regulating the operation of the engine by the varying pressure in the pipes when any plug, hydrant, or cock is opened, as will be hereinafter more fully set forth.

In the annexed drawing, Figure 1 is a side elevation of my invention. Fig. 2 is a vertical section of a part thereof.

A is the foundation on which the engine and governor are placed. B is the steam-cylinder, with steam-chest C and valve D. The stem *a* of this valve is connected to one end of a beam, G, which is pivoted in the top of a standard, E, and upon its other end a movable weight, H. This weight is hung on the beam by a roller, *b*, as shown, so as to move easily from one end to the other when the beam is out of a horizontal line. The weighted end of the beam G is held up by the pressure of water in the pipes, by means of a rod, I, pivoted to the beam, and passing loosely through a pipe, K, connected with the water-main. The upper end of the pipe K is connected with the rod I near its upper end by means of a water-tight flexible and compressible cylinder or pipe, J, inclosing the rod I. Within the pipe K there will, in a full-sized governor, be radial arms or their equivalents, for guiding the lower end of the rod I, the upper end thereof being then also guided by any suitable means.

The rod I may be solid, but is preferably made hollow, as shown, from the lower end upward to near the top, and the surrounding cylinder, hose, or chamber J, being water-tight, prevents the escape of water, and causes the pressure thereof to act on the rod. The weight H being set on the beam at the proper point, and fastened by a set-screw, *d*, the pressure of the water holds this end of the beam up, so that the valve D of the pumping-engine will stand open far enough to supply the requisite amount of steam to keep the pump working fast enough to maintain the pressure at which the weight is set.

If a plug, hydrant, or cock in any of the water-pipes connected with the one to which my governor is attached be opened, the pressure on the rod I is instantaneously reduced, and the weighted end of the beam drops, opening the valve D still more, so as to admit more steam to the pumping-engine, and cause the same to run faster and supply more water to the pipes.

My invention is more particularly designed for use in cities, towns, villages, factories, and other institutions where the pressure in the mains is maintained by pumps, to admit more steam to the pumping-engine, and thereby increase its velocity and increase the water-pressure in the mains immediately upon the discovery of fire in any part of the building or buildings connected by or with the same water-supply.

During the day-time the weight H may be fastened on the beam by the set-screw *d;* but at night, especially, it should be loosened, and a stop, *h*, placed in or on the beam at such point where the weight, if placed there, would raise the valve D to give the required fire-pressure, say one hundred pounds.

The beam is graduated, and the stop *h* should be movable, so that it can be set for any pressure desired.

If the watchman during his rounds at night should discover fire in any part of the buildings it is not necessary for him to run back to the engine-room to put on more pressure, which delay, in many cases, would be fatal, but he simply opens the nearest cock or hydrant with hose to throw water on the fire, reducing thereby temporarily the pressure in the water-pipes, causing the beam to tilt, and the weight at once runs down to the stop *h* and opens the valve to fire-pressure.

The increased pressure in the mains, caused by the increase of speed of the pump, balances the weight, and the pressure is always main-

tained at whatever amount the weight may be set.

If the outer end of the beam were connected by a rod with a steam-whistle, bell, or other similar apparatus, signals could easily be transmitted by quickly opening and closing any cock in any part of the building or buildings.

By my invention, therefore, signals may be transmitted from the fire-plugs or hydrants of a water-main to any desired point in the route of said main.

The operation of the pumping-engine may be regulated and controlled by the varying pressure in the pipes when a plug or hydrant is opened or closed, in order to automatically increase or diminish the supply of water.

The invention will operate at any point along the route of the main, and as many as may be desired may, therefore, be employed at various points, as occasion may require.

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

1. In combination with the valve of a pumping-engine, the pivoted beam G, operated by the varying pressure in the mains, and the movable weight H, with roller *b*, substantially as and for the purposes herein set forth.

2. The flexible and compressible tube or cylinder J, in combination with the pipe K, rod I, and beam G, substantially as and for the purposes herein set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

J. SILAS LEAS.

Witnesses:
W. T. JOHNSON,
C. L. EVERT.