

(No Model.)

2 Sheets—Sheet 1.

L. GRANNAN.  
PRESSURE GOVERNOR.

No. 249,169.

Patented Nov. 8, 1881.

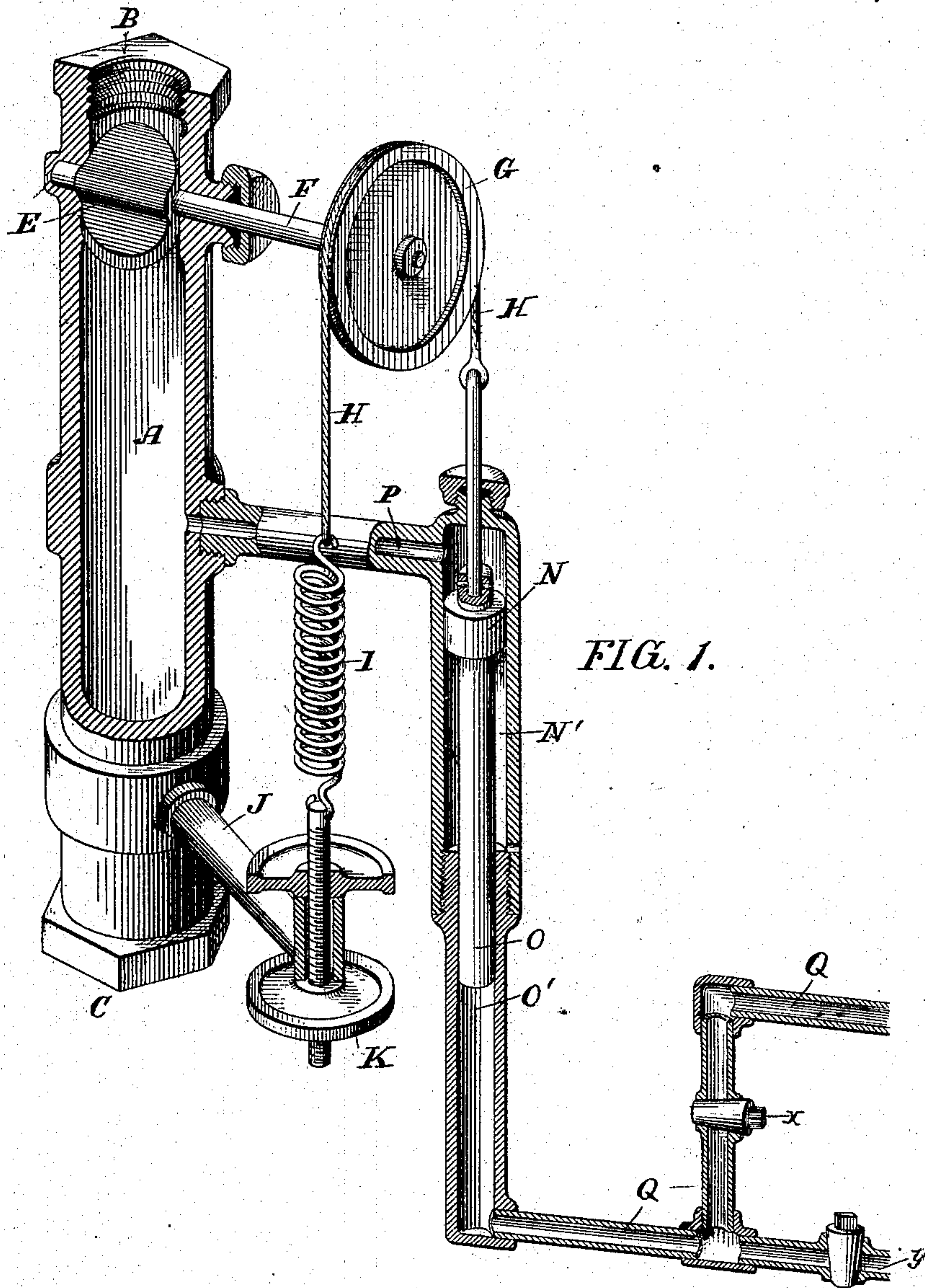


FIG. 1.

Witnesses,

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John D. Colley

Inventor,

Louis Grannan,  
By his Attorneys  
W. C. Drawbridge  
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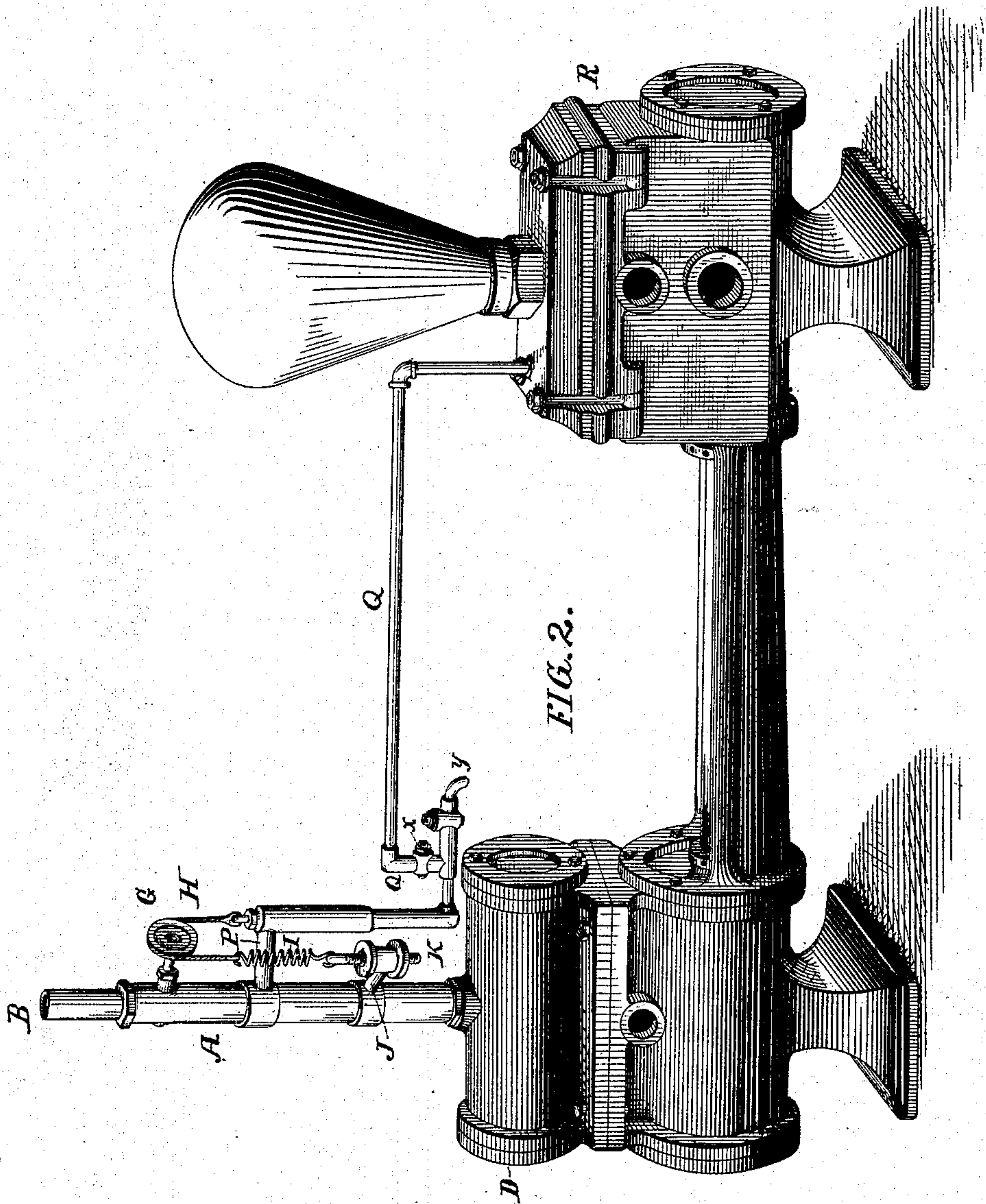
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2 Sheets—Sheet 2.

L. GRANNAN.  
PRESSURE GOVERNOR.

No. 249,169.

Patented Nov. 8, 1881.



Witnesses,

*C. B. Taylor*  
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# UNITED STATES PATENT OFFICE.

LOUIS GRANNAN, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO THE ATLANTIC REFINING COMPANY, OF SAME PLACE.

## PRESSURE-GOVERNOR.

SPECIFICATION forming part of Letters Patent No. 249,169, dated November 8, 1881.

Application filed May 23, 1881. (No model.)

*To all whom it may concern:*

Be it known that I, LOUIS GRANNAN, of Philadelphia, Pennsylvania, have invented a new and useful Pressure-Governor, of which the following is a specification.

In the drawings, Figure 1 is a view, partially in perspective and partially in sectional elevation, of a governor embodying my improvements; and Fig. 2, a perspective view of the same connected with a pump.

Similar letters of reference indicate corresponding parts.

The object of my invention is to provide a device for use in connection with pumps and pumping apparatus generally, whereby any sudden or abnormal increase of resistance or work is utilized to increase the supply of steam to the engine, and thus restore equilibrium between the power and the work.

In the drawings, A is a steam feed-pipe, which at B receives steam from the boiler, and at C feeds it to the engine D.

E is a plate-valve controlling the steam feed-pipe, and mounted therein upon a shaft, F, journaled transversely through the walls of said pipe, and adapted to be revolved by means of a pulley, G, affixed to the projecting outer extremity of said shaft, in such manner that the supply of steam to the engine may be regulated at will. The pulley G is provided on its edge with a groove, in which works a cord, H, one end of which is connected with a coiled spiral or other suitable spring, I, conveniently attached to a bracket, J, by means of a thumb-screw, K, in such manner that the tension of the spring may be regulated thereby. The other extremity of the cord terminates in and is attached to a two-part piston, the two parts of which, N O, are of different diameters, and work respectively within chambers or cylinders N' O', of suitable construction, and conveniently supported from the feed-pipe.

P is a steam-passage between the feed-pipe A and the chamber N', whereby steam is admitted from the feed-pipe below the valve to said chamber.

Q is a pipe extending from the interior of the pump R and terminating in the lower chamber, O'. This pipe is provided with a drip cock,

Y, and a supply-cock, X, whereby the supply of steam from the pump is regulated at will.

Such being the construction of a convenient embodiment of my invention, it is to be remarked that the construction of the upper portion, N, of the piston and its operation in connection with the spring in the controlling of the valve are fully set forth and claimed in and constitute the subject-matter of an application executed and filed by me contemporaneously with this application, and denominated by me "Case A."

The operation of the second part of the piston to which I herein lay claim is as follows: Assume the cock X to be open, so that direct communication is established between the pump R and the chamber O', and further assume that the pump R is being operated to perform a given amount of work, and that it is suddenly called upon to meet a greater or abnormal demand—such, for instance, as the forcing of water for the extinguishing of fires. Under these conditions the pressure in the pump is transmitted through the pipes Q to the chamber O', wherein it is exerted upon the part O of the piston to force it upward, and thereby co-operate with the spring I in overcoming the resistance of the steam upon the part N in revolving the pulley G and in opening the valve E for the admission of more steam to the engine. The spring I is to be so adjusted that the valve E stands open prior to the admission of steam to the feed-pipe A.

It is thus seen that my invention provides a governor adapted to be automatically operated to feed an increased supply of steam to the engine whenever a sudden or abnormal amount of work is to be performed thereby. It is obvious that the valve is then subject to two opposing forces—one that of the steam in the feed-pipe acting upon the upper part of the piston, and the other that of the spring, assisted by that of the steam in the pump, upon the lower part of the piston—and that under the fluctuations or varying tensions of these forces the valve is operated.

It will be obvious to any mechanic that, although both convenient and simple, the wheel and cord upon the valve-shaft may be dis-



pensed with and cranks, segmental gears, or kindred mechanical devices employed to connect the spring on the one hand and the plunger on the other with the valve. It will be also  
5 obvious that other mechanical equivalents for the spring may be employed in lieu thereof.

Having thus described my invention, I claim—

1. In combination with a valve controlling a  
10 steam feed-pipe, and provided with a wheel and cord or kindred valve-operating device, a spring, or its equivalent, connected with one end of said valve-cord, and a two-part piston—  
15 one part of which plays within a chamber communicating with said steam feed-pipe below the valve, and is adapted to be operated upon by steam from the feed-pipe in such manner as to counteract the recoil of the spring, and the  
20 other part of which plays within a chamber communicating with a pump, and is adapted to be operated upon by steam from the pump in such manner as to assist the recoil of the spring—connected with the other end of said cord, the whole constituting a pressure - gov-

ernor in which the steam - supplying valve is 25  
opened by the spring, assisted by steam-pressure upon that part of the piston which is in communication with the pump, closed by steam-pressure upon that part of the piston which is  
30 in communication with the feed-pipe, or held in equilibrium by the counteracting tensions of the forces above named, substantially as set forth.

2. In a pressure-governor, the combination of the valve E, provided with a wheel and cord 35  
or kindred valve - operating device, and controlling the steam feed-pipe, the spring I, and the piston N, operating within the chamber N', and the piston O, operating within the chamber O', substantially as and for the purposes 40  
set forth.

In testimony whereof I have hereunto set my hand the 4th day of April, 1881.

LOUIS GRANNAN.

Witnesses:

W. C. STRAWBRIDGE,  
J. BONSALL TAYLOR.