

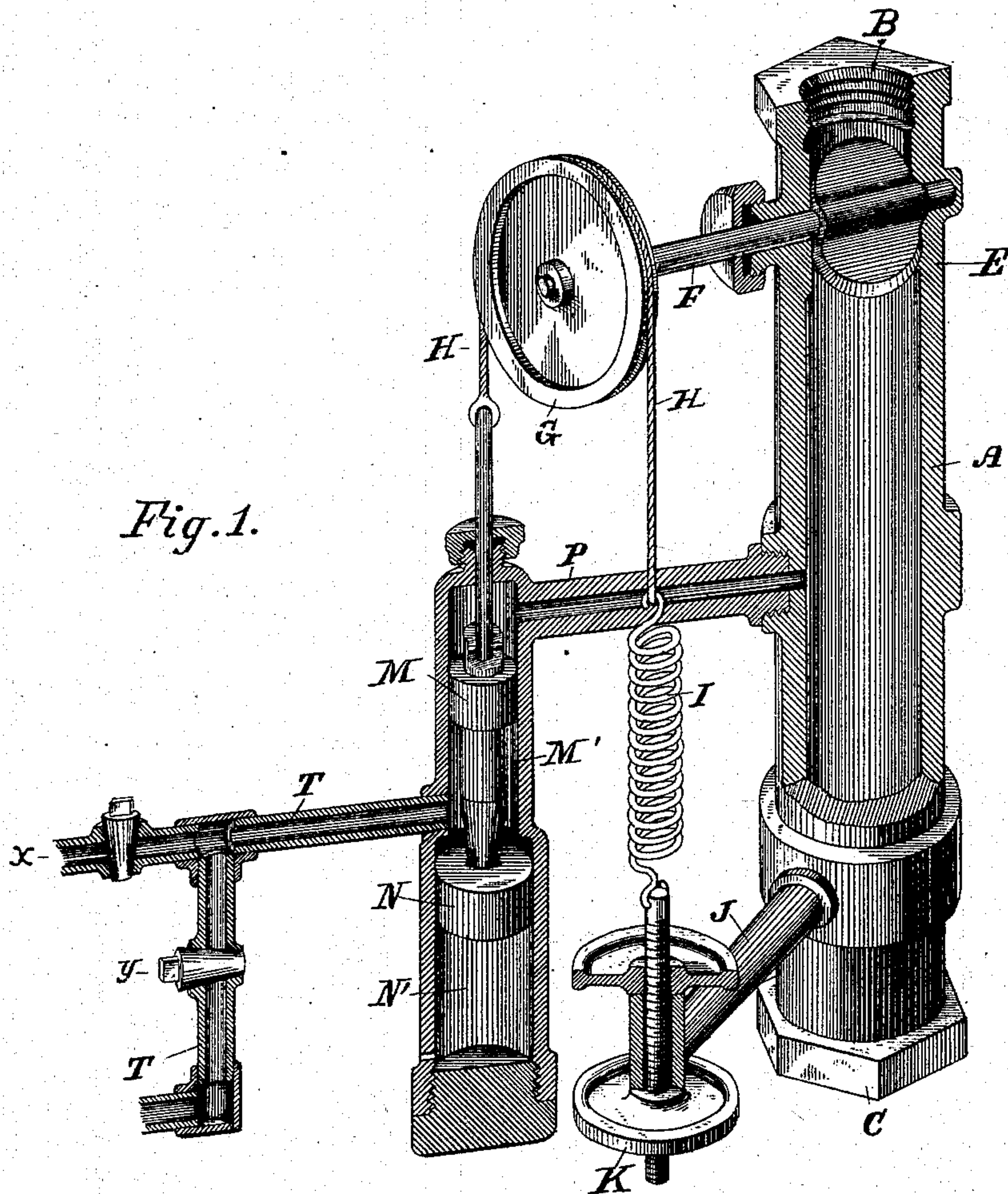
(No Model.)

2 Sheets—Sheet 1.

L. GRANNAN.
PRESSURE GOVERNOR.

No. 249,170.

Patented Nov. 8, 1881.



Attests:
J. H. Templin.
John Toller

Lewis Grannan
Inventor
By his Attorney,
W.C. Strawbridge,
Bonsall Taylor.

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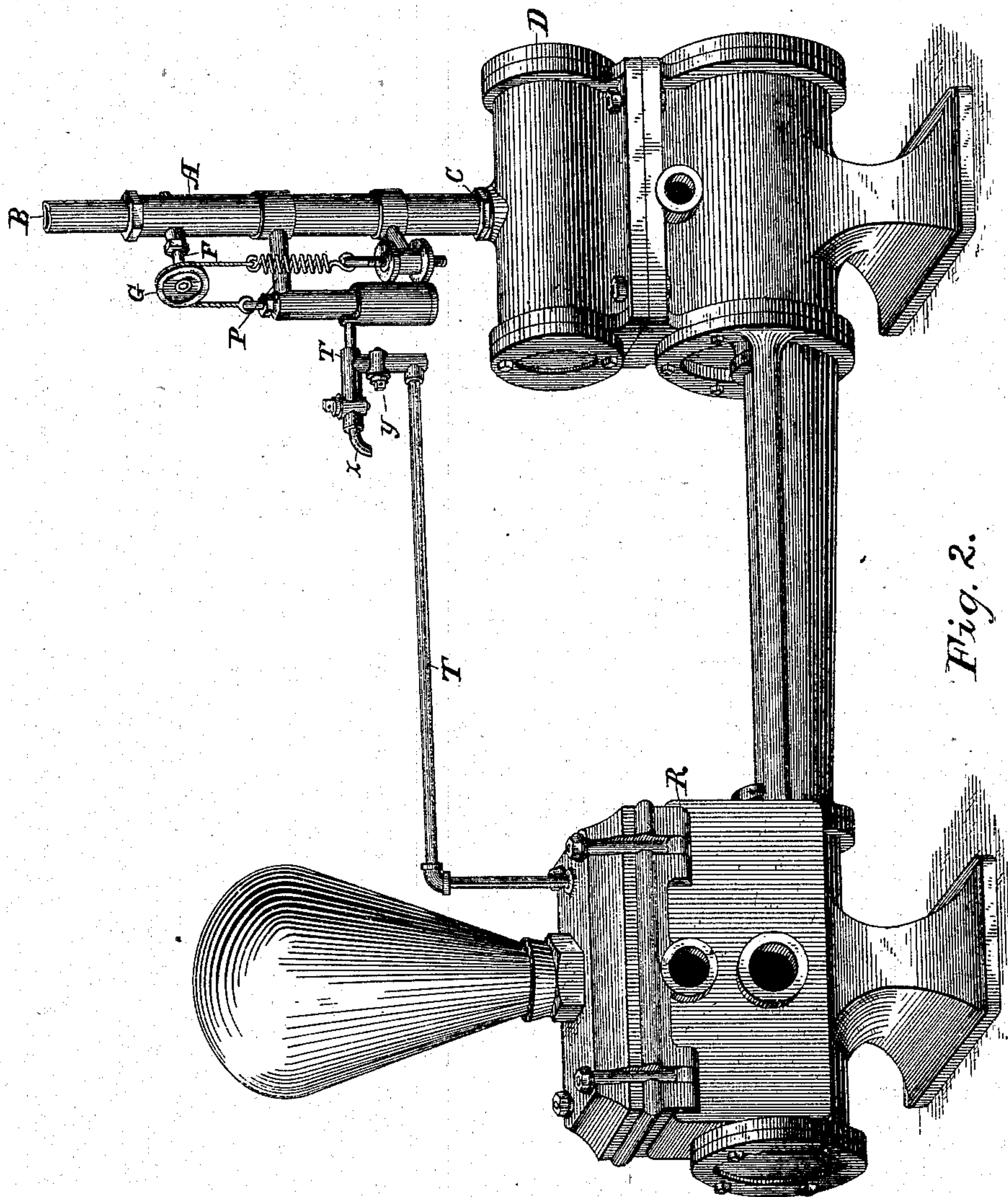


Fig. 2.

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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. 249,170, 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 is 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 decrease 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 is attached to a double-headed piston, the two heads of which, M and N, work, respectively, within the chambers M' and N', suitably formed and supported. To the first-named chamber, M', which is located at a point farther from the source of steam-supply than the valve is located, steam is admitted from the feed-pipe A by means of the steam-passage P.

T is a pipe connecting the chamber N' with a pump located at any desired point. This pipe is provided with a supply-cock, Y, and a drip-cock, x. The area of the respective heads of the piston is such as convenience may dictate, and is proportionate to the respective steam-supply.

Such being the construction of a convenient embodiment of my invention, the mode of operation is as follows: When the supply-cock Y in the pipe connecting the chamber N' with the pump is closed the piston is exposed to but one pressure, or that of the steam in the pipes A and P and in the chamber M', which is exerted upon the upper surface of the head M, with the result that as the pressure increases the piston is depressed, the pulley G revolved, and the valve E thereby closed. Diminution of the steam-pressure enables the spring I, which is expanded as the piston is depressed, to contract, and thereby operate the pulley in a contrary direction, raise the piston, and open the valve E. When, however, communication is established between the chamber N' and the pump by the opening of the cock Y in the pipe T, the pressure existing in the pump, with which the pipe T is connected, is transmitted through said pipe to the chamber N', and is there exerted upon the upper surface of the piston-head N, whereby the steam-pressure in the chamber M' is assisted in forcing the piston downward, revolving the pulley and closing the valve—an action the result of which is that the operation of the engine and pump is retarded until the necessary equilibrium in the line of pipes has been restored. It is thus seen that when the pump is being operated to force liquid through a long line of pipes to a distant point, if such pipes should become suddenly clogged, or if it should for any reason become necessary at such distant point to close the discharge-orifice of the pipes, my device acts to prevent a bursting of the pipes, without the necessity of the stoppage of either the engine or the pump.

It will be obvious to any mechanic that, although both convenient and simple, the wheel and cord upon the valve-shaft may be dispensed 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 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 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 piston provided
with two heads or pistons respectively playing
within chambers communicating respectively
5 with said steam feed-pipe below the valve and
with a pump, and respectively adapted to be
operated upon in the manner described for the
movement of the piston by steam therefrom,
connected with the other end of said cord, the
10 whole constituting a pressure-governor in
which the steam-supplying valve is opened by
the spring, closed by steam-pressure upon the
heads of the piston, or held in equilibrium by
the counteracting tensions of the spring and
15 the steam, substantially as set forth.

2. In a pressure-governor, the combination
of the valve E, provided with a wheel and
cord or kindred valve-operating device and con-
trolling the steam feed-pipe, the spring I, the
piston M, operating within the chamber M', 20
and the piston N, operating within the cham-
ber N', substantially as and for the purpose set
forth.

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

LOUIS GRANNAN.

Witnesses:

W. C. STRAWBRIDGE,
J. BONSALE TAYLOR.