

J. H. CLARK.
AUTOMATIC PRESSURE ACTUATED GOVERNOR FOR STEAM
ENGINES OR PUMPS.

APPLICATION FILED JULY 14, 1902.

NO MODEL.

Fig. 1.

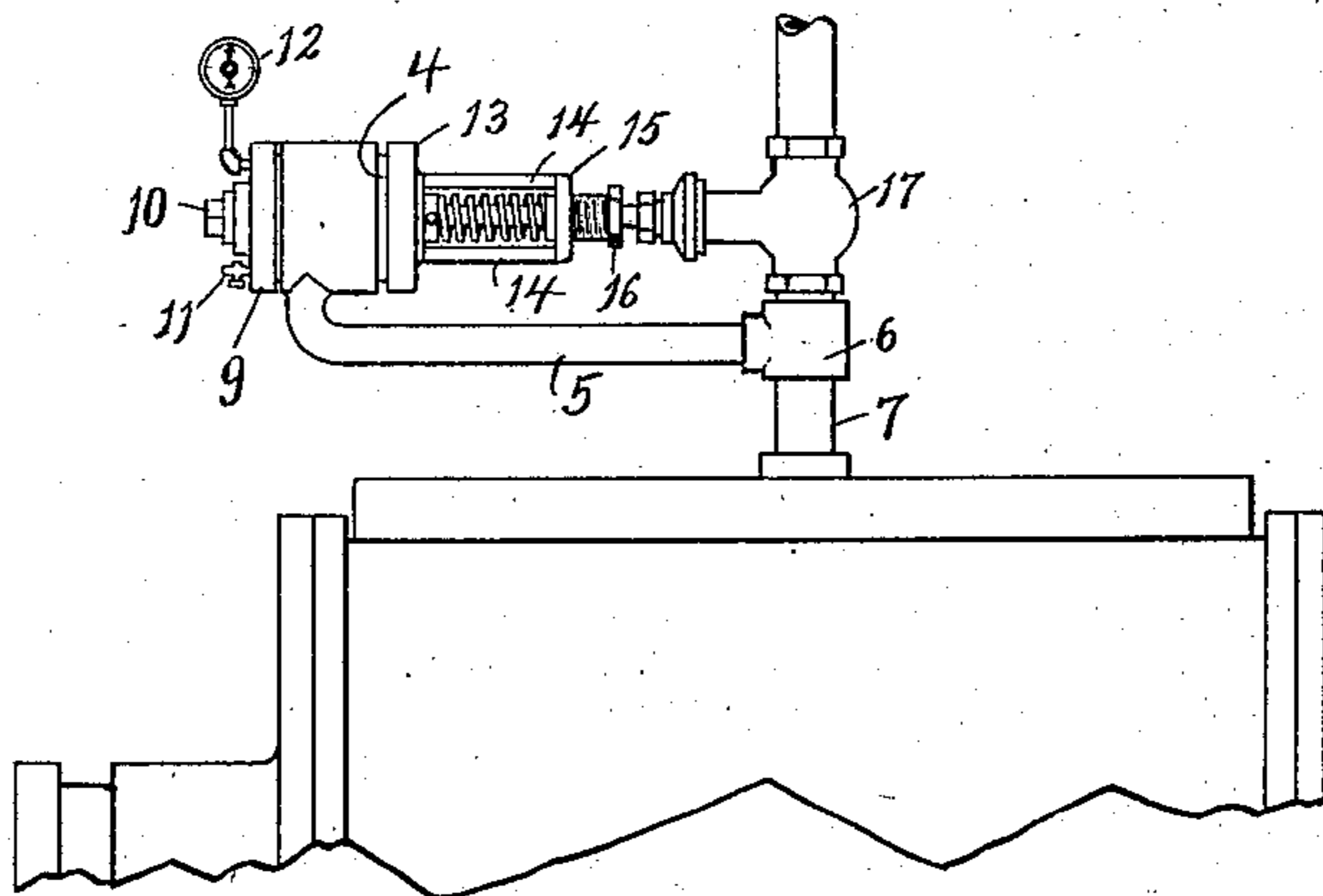


Fig. 2.

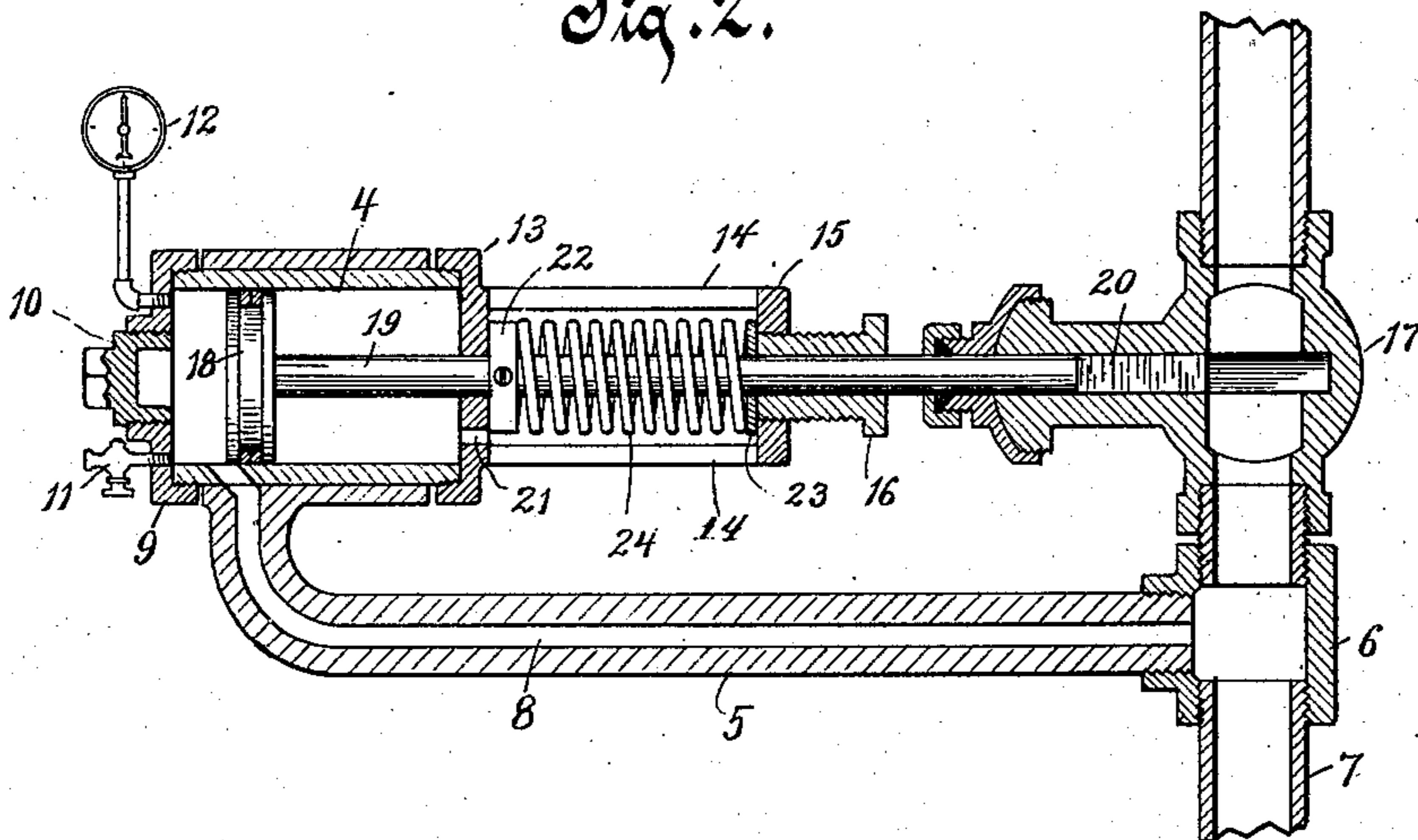


Fig. 3.

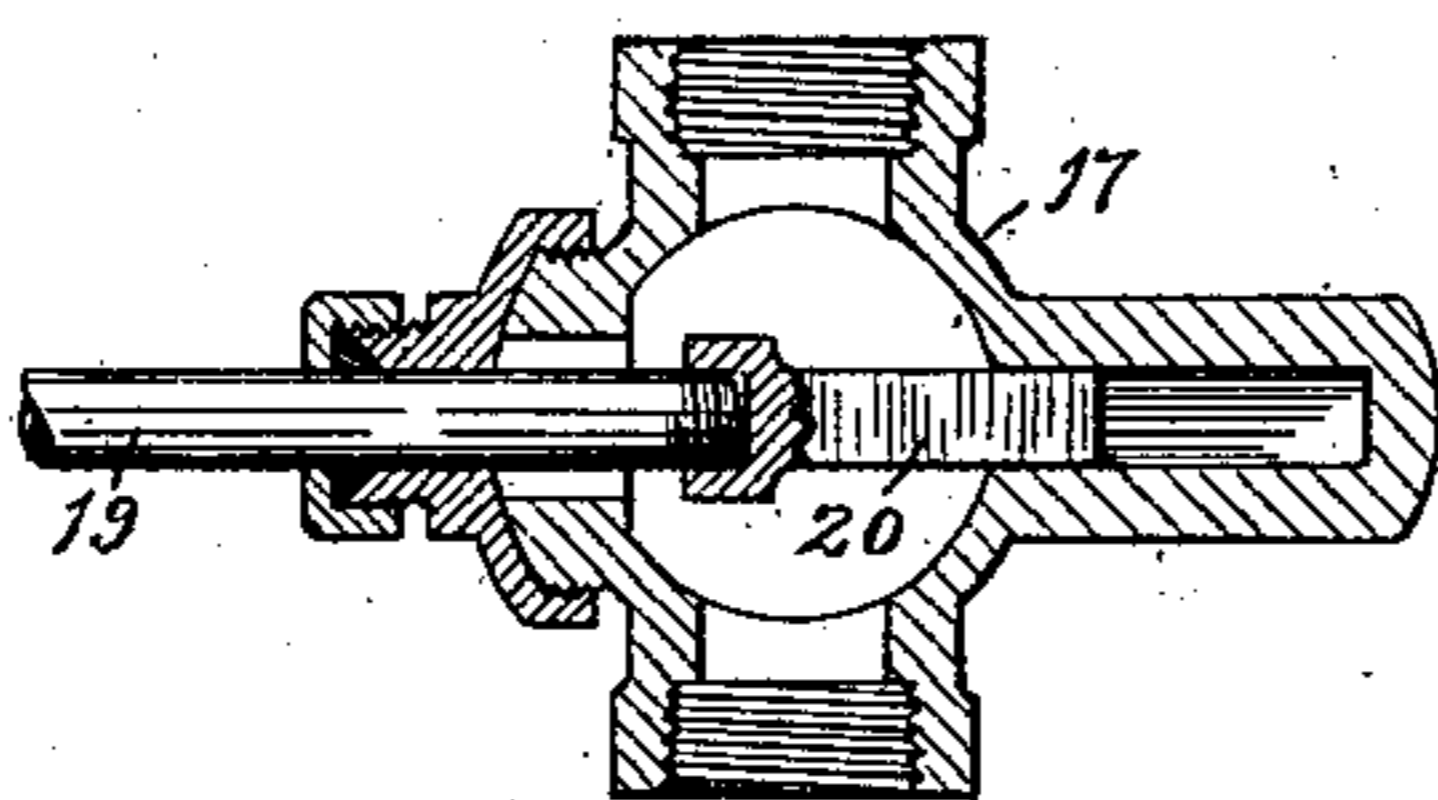
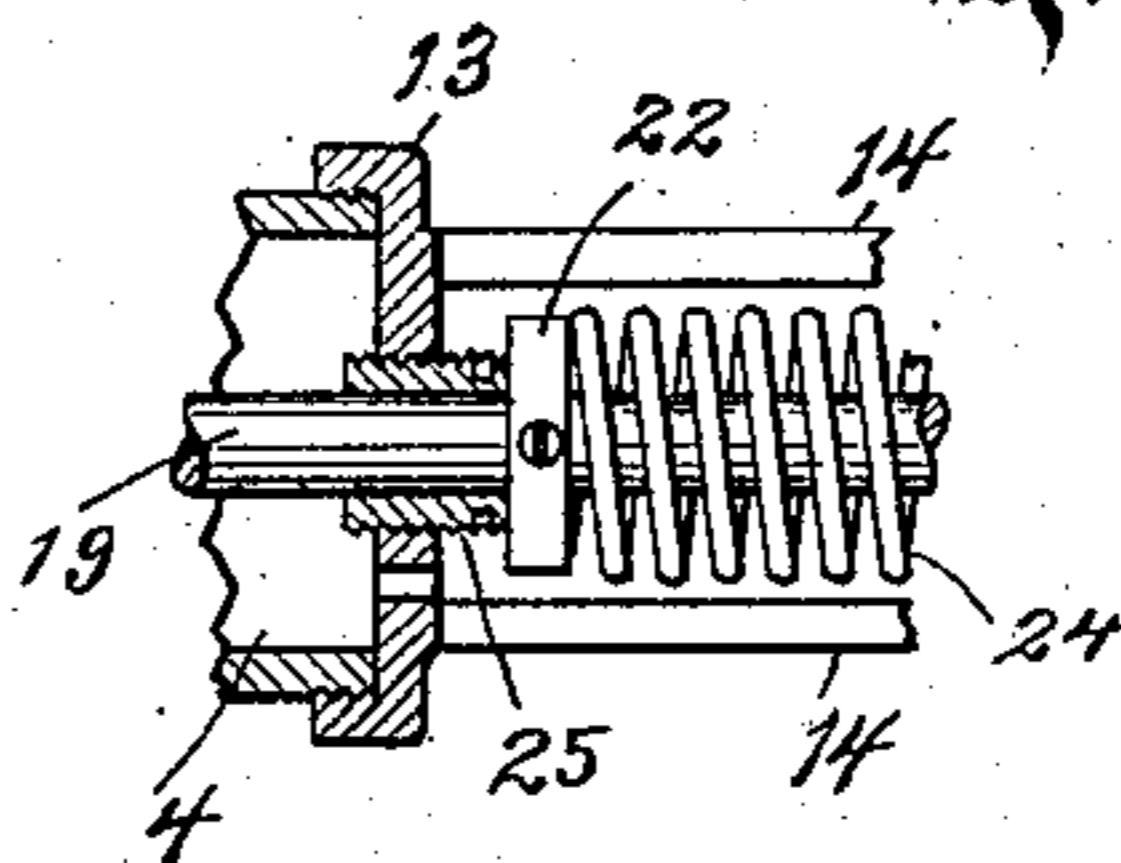


Fig. 4.



Witnesses:

A. H. Keeney,

Anna V. Faust

Inventor.

James H. Clark,
By Benedict, Howell and Green,
Attorneys.

UNITED STATES PATENT OFFICE.

JAMES H. CLARK, OF PORTAGE, WISCONSIN.

AUTOMATIC PRESSURE-ACTUATED GOVERNOR FOR STEAM ENGINES OR PUMPS.

SPECIFICATION forming part of Letters Patent No. 742,290, dated October 27, 1903.

Application filed July 14, 1902. Serial No. 115,421. (No model.)

To all whom it may concern:

Be it known that I, JAMES H. CLARK, residing at Portage, in the county of Columbia and State of Wisconsin, have invented a new and useful Improvement in Automatic Pressure-Actuated Governors for Steam Engines or Pumps, of which the following is a description, reference being had to the accompanying drawings, which are apart of this specification.

This invention relates to automatic pressure-actuated governors for steam engines and pumps.

The object of the invention is to produce an automatic pressure-actuated governor the principles of which by slight variations in the construction and arrangement of parts may be utilized in performing the necessary operations for both steam-engines and steam-pumps, and especially when the steam-pump is to be used for pumping water where a desired pressure of said water so pumped is to be maintained.

A further object of this invention is to produce a governor for automatically varying the flow of steam admitted to the steam-chest of a pump according to the variations in the water-pressure in the water-main or other reservoir which the pump supplies—that is, when the water-pressure in the main falls below normal or a predetermined point the governor is adapted to allow an increased flow of steam to the steam-chest of the pump creating the pressure.

A still further object of this invention is to produce a pressure-actuated governor for automatically throttling the flow of steam to the steam-chest of the engine on which it is installed when said engine begins to race.

These and other objects I attain by means of the construction and arrangement of the elements embodied in the make-up of the device illustrated in the accompanying drawings and by slight variations or modifications of said construction.

In the drawings, Figure 1 is a side view in elevation of a device embodying this invention shown installed on a fragment of a steam-pipe leading to a fragment of a steam-chest of an engine. Fig. 2 is a longitudinal sectional view of the device shown in Fig. 1. Fig. 3 is a sectional view of a modified form

of valve which will be used with the device when the same is to be utilized for preventing the engine on which the same is installed from racing. Fig. 4 is a detail view of a modification of a portion of the device.

The device preferably consists of a cylinder 4, supported in position by means of a supporting-arm 5, attached by any suitable means, such as a collar 6, to the steam-pipe 7, leading to the steam-chest of the engine or pump on which it is to be installed. When the device is to be used for governing a steam-actuated water-pump, the support 5 will be formed solid and not, as shown in Fig. 2, with a steam-channel 8, leading from cylinder 4 to steam-pipe 7. One head 9 of cylinder 4 will be tapped and will receive a pipe connecting said cylinder 4 to a suitable portion of the water-main or water side of the pump subject to the pressures of the water-main instead of a closing-plug 10, as shown in Fig. 2. Head 9 is also provided with a relief-cock 11, and a pressure-gage 12 is in communication through head 9 to the interior of the cylinder. The opposite head 13 of cylinder 4 is provided with supporting-arms 14, carrying a plate 15, having a centrally-screw-threaded opening adapted to receive a hollow adjusting-nut 16. When the device is to be used for water, as has been heretofore explained, a gate-valve 17, as shown in Fig. 2, will be included in the steam-pipe.

A piston 18, movable within cylinder 4, is provided with a rod 19, extending out through the head 13 of cylinder 4 through adjusting-nut 16 and is connected to the gate 20 of the valve 17. Cylinder 4 on the head 13 side is provided with an escape-port 21, and piston-rod 19 between supports 14 is provided with an adjustable set-collar 22. A washer 23 loosely surrounds rod 19 and abuts against adjusting-nut 16, and between washer 23 and set-collar 22 a spiral spring 24, surrounding rod 19, is included.

The operation of this device is as follows: The tension of spring 24 by means of adjusting-nut 16 is adjusted so that when the water-pressure in the main is at the point desired or at normal pressure the valve 17 will partially choke the steam-pipe 7, and when the water-pressure which is in communication with piston 18 falls below normal or the de-

sired point spring 24 will move piston 18 toward head 9 of cylinder 4, and thus allow a greater flow of steam to the steam-chest of the pump.

5 When the device is to be used on an engine to prevent the same from racing, plug 10 will be used, as shown, in head 9 of cylinder 4, instead of the pipe leading to the water-pressure, and support 5 will be provided with the
10 channel 8, leading from cylinder 4 adjacent to head end 9 to the steam-pipe 7. The form of valve shown in Fig. 3 will be substituted for the form shown in Fig. 2, and in this form when rod 19 moves to the left the passage
15 through the valve is reduced instead of being enlarged as valve 7 is when the rod 19 moves to the left. From this it will be seen that as the engine starts to race and the pressure between the valve and the steam-chest is re-
20 duced by said racing the piston 18 will move toward head end 9 of the cylinder and the steam-channel through the valve will be reduced or entirely cut off.

In Fig. 4 an adjustment-nut 25 is shown
25 threaded through cylinder-head 13 and bearing against collar 22 on the rod 19. By adjusting this nut by means of a spacer-wrench the movement of piston 18 toward the head 9 end of the cylinder may be limited, and as
30 this modified form will only be used with the Fig. 3 form of valve the lead of said valve by this means may be varied.

What I claim as my invention, is—

1. In combination with the steam-pipe lead- 35
ing to the steam-chest of an engine, a throttling-valve in said pipe, a cylinder arranged adjacent to said valve, a steam-channel lead-
ing from said cylinder to said steam-pipe be-
tween said throttle-valve and the steam-chest, 40
a piston in said cylinder, a rod connecting said piston and said valve and a spring for moving said piston and said valve to close
said valve when the steam-pressure between
said valve and the steam-chest falls below
normal.

2. In combination with the steam-pipe lead- 45
ing to the steam-chest of an engine, a valve in said pipe, a cylinder adjacent to said valve and subject to the pressures of the steam be-
tween said valve and the steam-chest, a pis- 50
ton in said cylinder, a rod connecting said piston and said valve so that when the pressure between said valve and said steam-chest
are at or above normal said valve will be held
open by said piston, a spring surrounding 55
said rod for moving said piston against said pressure when it falls below normal and means
for varying the tension of said spring.

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

JAMES H. CLARK.

Witnesses:

GEORGE W. MORRISON,
J. M. RUSSELL.