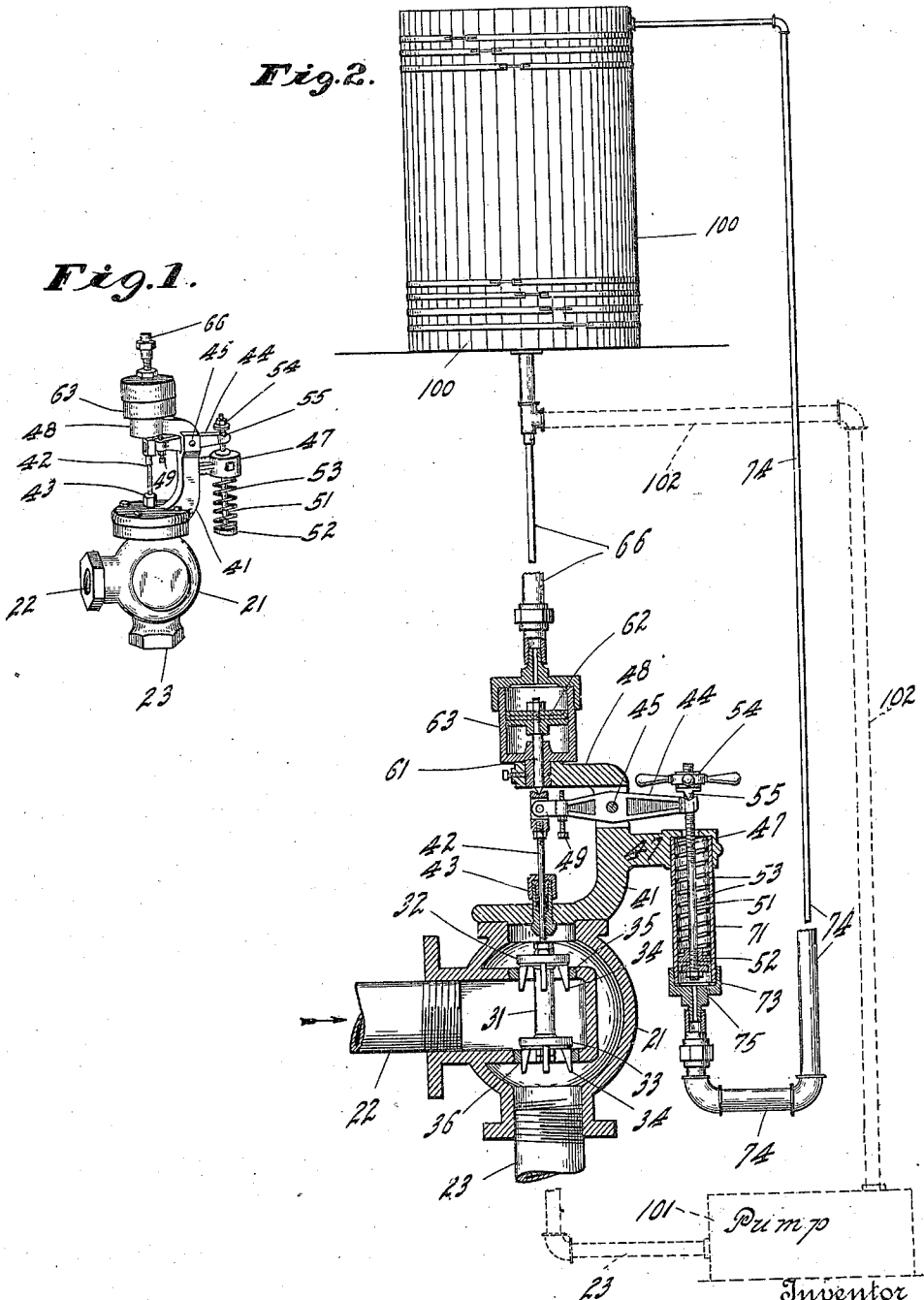


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PUMP GOVERNOR.

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984,193.

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UNITED STATES PATENT OFFICE.

EMORY M. CARR, OF NEWCASTLE, INDIANA.

PUMP-GOVERNOR.

984,193.

Specification of Letters Patent.

Patented Feb. 14, 1911.

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To all whom it may concern:

Be it known that I, EMORY M. CARR, a citizen of the United States, residing at Newcastle, in the county of Henry and State of Indiana, have invented certain new and useful Improvements in Pump-Governors, of which the following is a specification.

The object of my present invention is to produce a governing device for pumps whereby the position of the valve is regulated by means of the pressure beyond the pump.

A further object is to produce means whereby, when such a governor is applied to a pump for supplying a tank, that the overflow from the tank shall operate to shut the valve completely.

Referring to the accompanying drawings, which are made a part hereof, and on which similar reference characters indicate similar parts, Figure 1 is a perspective view of a pressure regulator or governing device embodying my present invention, and Fig. 2 is a central vertical sectional view of the same in the form applied to use with tanks, and showing, diagrammatically, the tank connections.

The valve shell 21 has a steam inlet 22 leading from the boilers or source of steam supply, and a steam exit 23 leading to the pump to be operated.

The valve, as shown, is a balanced valve, composed of a central stem 31 and upper and lower valve portions 32 and 33 each of which is provided with ordinary guide arms 34 passing down through the valve seats 35 and 36 as shown.

Secured to the valve shell 21 is a yoke-shaped casting 41, which forms a cap for an opening of the valve shell and also contains bearings for the main valve-stem and for a piston-rod which will be presently described. The main valve stem 42 extends out through a stuffing box 43, and is connected, at its upper end, with a lever 44, pivotally mounted at 45, in the yoke-shaped casting 41. To the other end of this lever is connected a rod 51 which extends down through an arm 47 on casting 41, and is surrounded by coiled spring 53, arranged between the arm 47 and a head 52, and which normally exerts a pressure thereon causing the lever to normally hold the valves open. The pressure may be adjusted by means of a nut 54 on the upper end of this rod, by which the rod can be adjusted so as to com-

press the spring or loosen it. A rocker washer 55 gives the proper rocking movement. A stop screw 49 limits the movement of the lever 44 to prevent the valves from becoming opened too widely. Said stop screw is adjustable to any point desired, so that a limit of movement of the valve may be predetermined. The open-sided form of yoke 41 enables convenient access to the parts between its arms, which adds greatly to the convenience of the work of assembling, disassembling or adjustment.

Directly above the valve stem, and in line therewith, is a piston rod 61 carrying a small piston 62 which is mounted in the cylinder 63 carried by an arm 48 of casting 41, and suitably secured thereto. From the chamber in the cylinder beyond the piston 62 a small pipe 66 leads to the fluid system (a pump 101 and its discharge pipe 102 are illustrated diagrammatically), so that, when the pressure beyond the pump reaches a predetermined point, it will exert a closing pressure upon the valve, through this piston and piston rod, in opposition to the opening pull of the spring. The pressure beyond the pump is thus regulated, and the danger of excessive pressure obviated. The lower end of piston rod 61 is pointed, and rests on the upper end of the part secured to valve stem 42. Said valve stem and piston rod are therefore not united except by the pressure exerted upon them respectively by the other parts, and they are not rigid with each other, so that any slight disalignment will not affect their operation.

Fig. 2 as before stated, illustrates the form of my invention which is especially designed for governing the supplying of tanks with water. In this view the water discharge pipe 102 is indicated by means of dotted lines as when arranged to supply an ordinary tank 100, and the pipe 66 as leading to the bottom of said tank, either directly or through a portion of pipe 102. When so used, the rod 51 and spring 53 are surrounded by a cylinder 71, and the head 52 beyond the spring becomes a piston head. The head 73 of this cylinder is connected by a small pipe 74 to the upper portion of the tank at the high water line. When, therefore, the tank becomes filled up to this high water line, water will overflow into the pipe 74 leading to this small cylinder head 73, and exert a pressure on the piston head 52 therein, thus serving to aid in compressing

the spring 53, and overcoming its opening pull on the valves. This will be so adjusted as to cause the valve to tightly close as soon as the tank is filled, thus shutting off the steam from the pump and preventing it from causing the tank to overflow. As will be readily understood, the parts have been so adjusted that the pressure on piston 62 in cylinder 63 is slightly less than the pull of the spring 53 on the valve through the lever 44, so that, until the extra pressure comes from the overflow, as described, the valve will remain open. When the valve is shut the overflow of course ceases, and it is then desirable that the fluid contained in pipe 74 should escape, thereby restoring the system to condition for repetition of the operation. To this end I provide a small discharge orifice 75 in the cylinder head 73, through which such fluid may slowly trickle away.

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

1. The combination, in a pressure regulating governor, with the steam valve, of a valve stem leading from the valve to the outside, a cylinder and piston arranged for a connection with the water system, a lever connected to said valve stem, a spring connected to the other end of the lever through the cylinder and piston, a cylinder and piston on the opposite side of the lever from the valve stem, a piston rod extending downwardly from said piston into contact with but not connected to said valve stem, and a connection from the water system beyond the pump to above said piston, whereby, when the pressure in the water system reaches a predetermined point, it will operate through the piston to close the valve.

2. The combination, in a pressure regulating governor, of a steam valve, a valve stem extending therefrom to the outside, an open-sided U-shaped support secured to the structure through one arm whereof said valve stem passes, a cylinder secured to the other arm of said support, a piston therein which extends down through said arm, a lever mounted in the intermediate portion of said support one end whereof is connected to the valve stem, a spring also carried by said support and connected to the other end of said lever and means for adjusting the tension of said spring, said means comprising a screw threaded rod, a nut on the end of said rod on the opposite side of the lever from the spring, and a nut having a knife edge bearing interposed between said nut and the end of said lever.

3. The combination, in a pressure regulating governor, with the valve thereof, of a piston arranged to actuate the valve toward closing position, a fluid receptacle, a fluid connection leading from the bottom of the fluid receptacle to the cylinder containing

the piston, a lever having one end connected to the valve stem and the piston rod, a spring connected to the other end of said lever and arranged to actuate the valve oppositely to the force from the piston, a piston connected to said spring, and a fluid connection leading from the high water line of the fluid receptacle to the cylinder containing the last mentioned piston, whereby when the receptacle is filled, an overflow therefrom will operate to overcome the spring and reinforce the pressure of the first-named piston and thus close the valve.

4. The combination, in a pressure regulating governor, with the valve thereof, of a piston arranged to actuate the valve toward closing position, a fluid receptacle, a fluid connection leading from the bottom of the fluid receptacle to the cylinder containing the piston, a lever having one end connected to the valve stem and the piston rod, a spring connected to the other end of said lever and arranged to actuate the valve oppositely to the force from the piston, a piston connected to said spring, and a fluid connection leading from the high water line of the fluid receptacle to the cylinder containing the last mentioned piston, whereby, when the receptacle is filled, an overflow therefrom will operate to overcome the spring and reinforce the pressure of the first named piston and thus close the valve, said last named cylinder being provided with a small discharge orifice whereby the overflow water may escape therefrom when such overflow has ceased.

5. The combination, in a pressure regulating governor, with the valve thereof, of a piston arranged to actuate the valve toward closing position, a fluid receptacle, a fluid connection leading from the bottom of the fluid receptacle to the cylinder containing the piston, a spring arranged to actuate the valve oppositely to the force from the piston, a piston connected to said spring, and a fluid connection leading from the high water line of the fluid receptacle to the cylinder containing the last mentioned piston, whereby when the receptacle is filled, an overflow therefrom will operate to overcome the spring and reinforce the pressure of the first-named piston and thus close the valve.

6. The combination, in a pressure regulating governor, with the valve thereof, of a piston arranged to actuate the valve toward closing position, a fluid receptacle, a fluid connection leading from the bottom of the fluid receptacle to the cylinder containing the piston, a spring arranged to actuate the valve oppositely to the force from the piston, a piston connected to said spring, and a fluid connection leading from the high water line of the fluid receptacle to the cylinder containing the last mentioned piston, whereby, when the receptacle is filled, an

overflow therefrom will operate to overcome
the spring and reinforce the pressure of the
first named piston and thus close the valve,
said last named cylinder being provided
5 with a small discharge orifice whereby the
overflow water may escape therefrom when
such overflow has ceased.

In witness whereof, I, have hereunto set

my hand and seal at Indianapolis, Indiana,
this first day of February, A. D. one thou- 10
sand nine hundred and nine.

EMORY M. CARR. [L. S.]

Witnesses:

CHESTER BRADFORD,
THOMAS W. McMEANS.