

983,101.

*Fig. 1.*

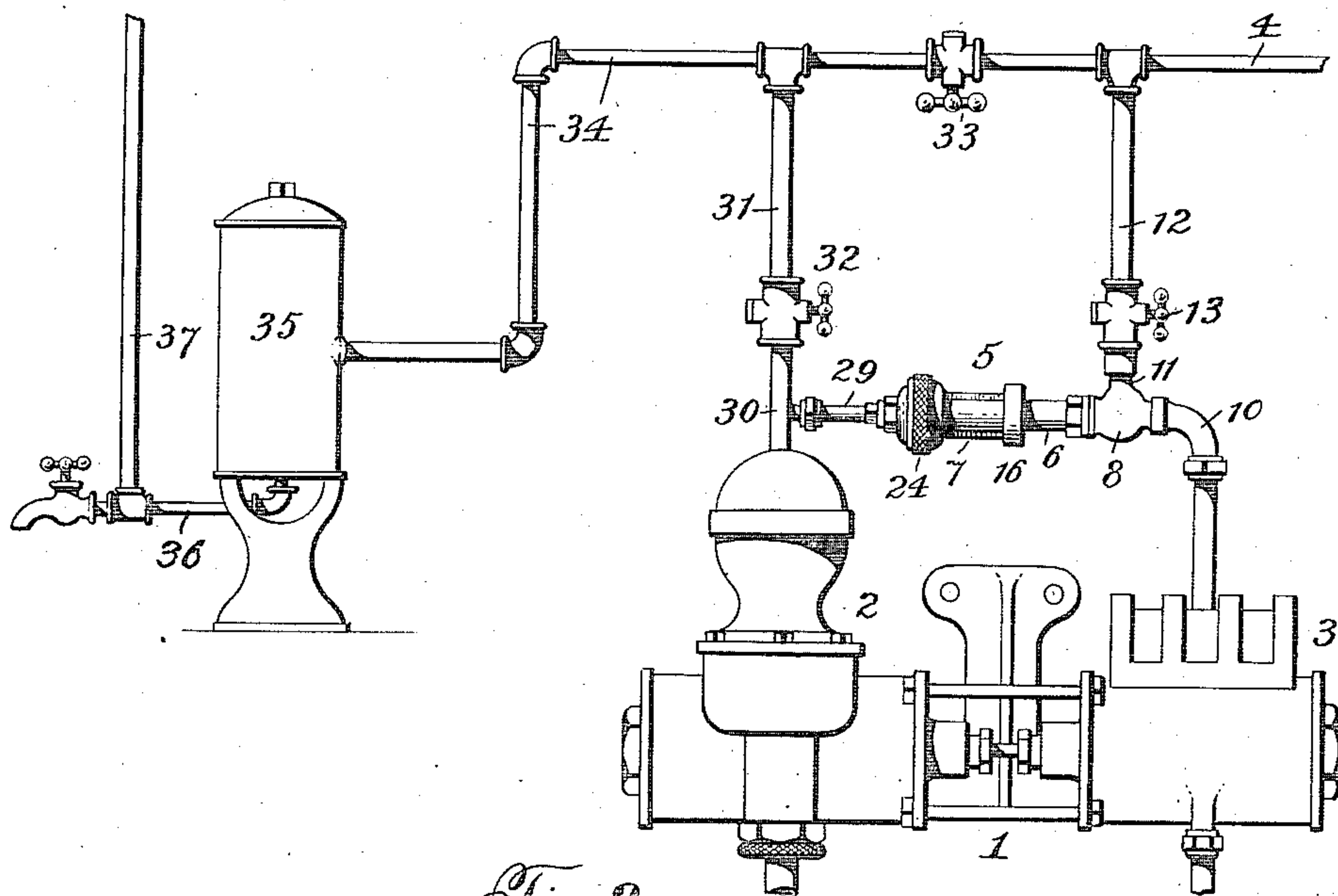
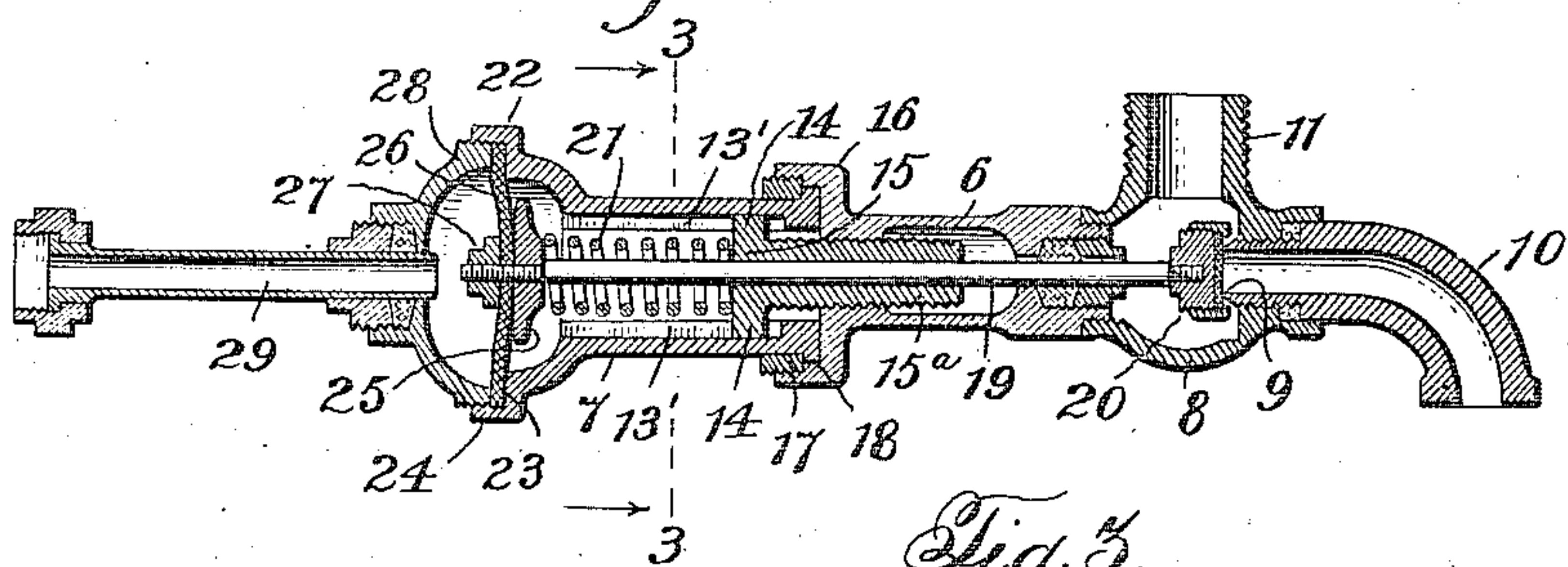
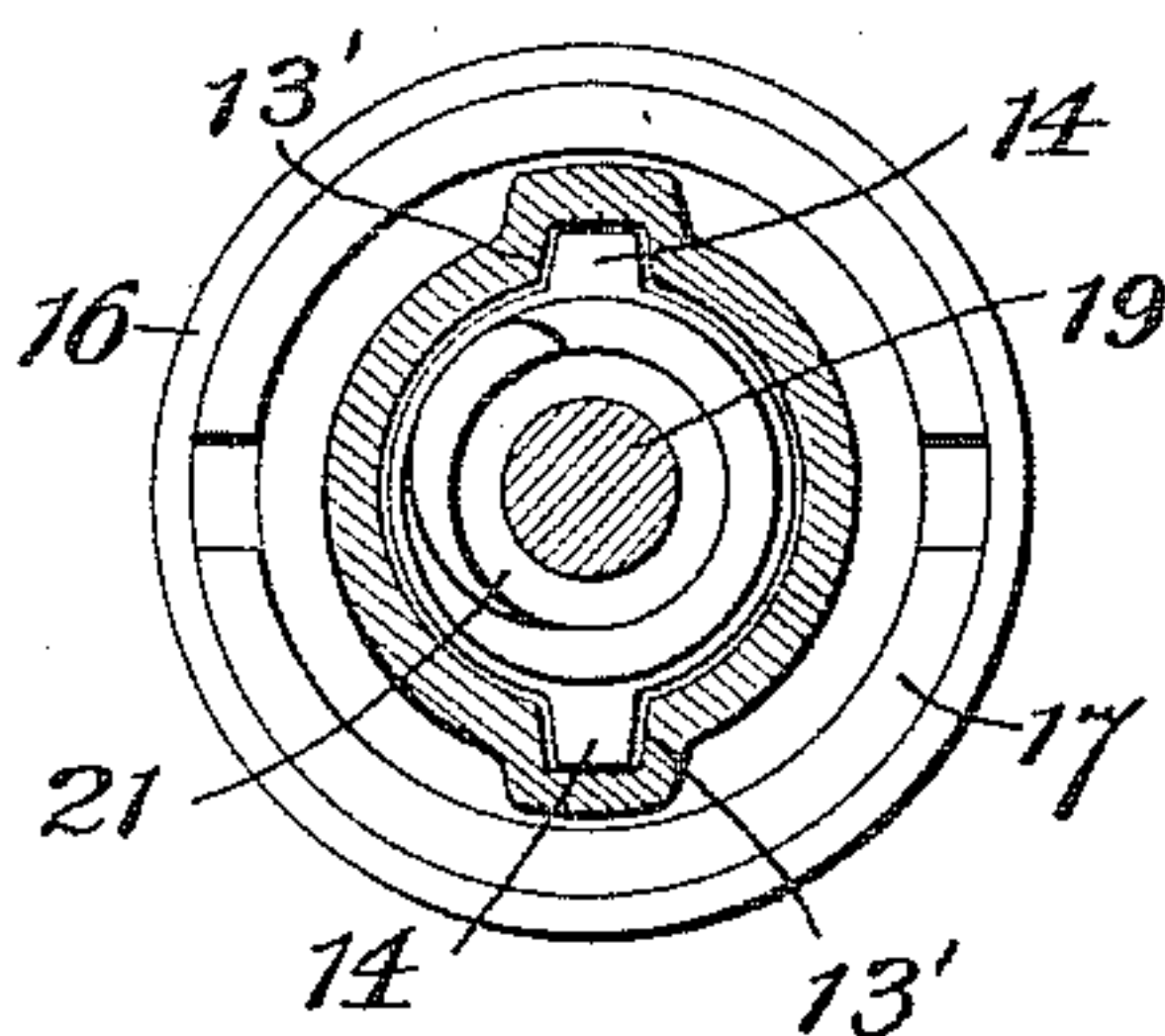


Fig. 2.



*Fig. 3.*



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# UNITED STATES PATENT OFFICE.

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FLUID-PRESSURE GOVERNOR.

983,101.

Specification of Letters Patent.

Patented Jan. 31, 1911.

Application filed July 15, 1910. Serial No. 572,214.

*To all whom it may concern:*

Be it known that I, MATHEW J. WEBER, of Columbus, in the county of Franklin and State of Ohio, have invented certain new and useful Improvements in Fluid-Pressure Governors; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in fluid pressure governors and more particularly to such as are adaptable for use in automatically controlling the operation of a water lift.

It has been heretofore proposed, especially when the city water pressure and supply are not at all times adequate, to provide a water lift operable by water pressure from the city main and connected with a cistern in a manner to supply the plumbing system of a building with soft water. Heretofore, water lifts have usually been installed on the direct pressure system and after they have been in use for some time and the cup leathers have become worn, the pressure water would continue to go to waste even after the operation of the lift had been stopped.

The object of my present invention is to provide simple and efficient automatically operated means for preventing waste of water in a system of the type to which allusion has been made, and for preventing all unnecessary operation of the water lift.

A further object is to so construct a governor that it will operate automatically to stop the operation of the water lift when a predetermined pressure shall have accumulated in the plumbing system or in a compression tank embodied in such system.

A further object is to provide simple and efficient means for adjusting the governor in accordance with different pressures and conditions.

With these objects in view the invention consists in certain novel features of construction and combination of parts as hereinafter set forth and pointed out in the claims.

In the accompanying drawings, Figure 1 is a diagrammatical view illustrating an application of my invention. Fig. 2 is an enlarged sectional view of the governor, and Fig. 3 is an enlarged transverse sectional view of the governor on line 3—3 of Fig. 2.

1 represents a water lift of any preferred form of construction, comprising a pump 2 and a water motor 3 for operating the pump, water for operating said motor being supplied from the city water main indicated at 4, and between said main and the water lift, my improved governor is located, as indicated at 5.

In constructing the governor I employ a casing comprising relatively movable members 6—7. A valve casing 8 is secured to the member 6 and contains a valve seat 9 and from this valve casing, a pipe 10 projects and is connected with the water inlet of the motor member of the lift. Said valve casing is also provided with a threaded nipple 11 for the connection of one end of a pipe 12 provided with a valve 13 and the other end of said pipe 12 is connected with the supply pipe 4. The member 7 of the governor casing is provided interiorly with grooves 13 for the reception of lugs 14 projecting from a head 15 at one end of a threaded shank or sleeve 15<sup>a</sup> which projects through one end of the casing member 7 and is threaded into the casing member 6. The casing member 6 is provided at one end with a hollow head 16 threaded interiorly and adapted to surround the adjacent end of the casing member 7. An annular nut 17 is loosely mounted on the casing member 7 and prevented moving past the end of said member 7 by an annular shoulder 18 at the end of said member. This annular nut is adapted to screw into the hollow head of the member 6. Thus it will be seen that the casing member 7 is revolubly mounted on the casing member 6 for the purposes of adjustment of the valve devices as hereinafter explained.

A valve rod 19 passes through the casing member 6—7 and is provided at one end with a valve 20 to engage the seat 9 in the valve casing 8. A spring 21 surrounds the valve rod within the casing member 7 and bears at one end against the head 15 of the threaded sleeve 15<sup>a</sup>. One end of the casing member 7 is provided with an enlargement 22 having an annular seat 23 therein and also having an internally threaded flange 24. A disk 25 is screwed on the end of the valve rod 19 within the hollow enlargement 22 of casing member 7 and constitutes an abutment for one end of the spring 21. This disk also forms a seat for the central



portion of a flexible diaphragm 26, the peripheral portion of said diaphragm being seated on the annular seat 23 within the hollow enlargement 22. The threaded end of the valve rod passes through the center of the diaphragm 26 and is provided with a clamping nut 27. A cap 28 is screwed into the threaded flange portion of the hollow enlargement 22 and provided with a suitable bushing for the passage of a pipe section 29, and on which pipe section, the revoluble member of the governor can turn.

From the construction and arrangement of parts above described, it will be seen that when the governor member 7 is turned, the threaded sleeve 15<sup>a</sup> will also be turned and as the construction is such that the governor members 6—7 are not relatively movable longitudinally, the said threaded sleeve 15<sup>a</sup> will be caused to move longitudinally and thus adjust the tension of the spring 21 so as to require a greater or less amount of pressure against the flexible diaphragm 26 to move the valve rod 19 and seat the valve 20. The device can thus be adjusted easily by turning one of the casing members, to suit varying pressures and conditions.

The water inlet for the pump member of the lift is suitably connected with a piston (not shown) and the outlet of said pump member is connected by means of a pipe 30 with the pipe 29 and, by means of a pipe 31 with the pipe 4,—said pipe 31 being provided with a valve 32. The pipe 4 is provided, between the pipe 12 and 31, with a valve 33 and said pipe 4 is connected, beyond the pipe 31, by means of a pipe 34 with a compression tank 35. This tank is provided with an outlet 36 having water distribution pipes connected therewith, as indicated at 37.

With the valve 33 closed and the valves 13 and 32 open, water will flow from the city main 4 through the pipe 12, past the valve 20 of the governor and through the motor member of the lift for operating the same. During the operation of the pump member of the lift, water will be elevated from this system and caused to flow through the pipes 30, 31 and 34 to the compression tank 35 and from the latter to the distribution pipes of the plumbing system. The pump will continue to operate until the pressure in the compression tank and plumbing system reaches a degree which will overcome the combined pressure of the spring 21 and the water in the city main 4, at which time pressure against the diaphragm 26 will move the valve rod longitudinally and close the valve 20 on its seat, thus completely stopping the supply of motive fluid to the motor member of the lift and therefore promptly stopping the latter.

When pressure in the compression tank and plumbing system shall have been reduced (as by drawing water from one or more of the faucets in the plumbing system) pressure

against the diaphragm 26 will be relieved and the valve 20 permitted to leave its seat and thus open communication between the city main 4 and the motor member of the lift to permit the renewed operation of the latter. With the use of my improvements the waste of water will be avoided and unnecessary wear and tear on the lift will be obviated thus minimizing water bills, repair bills as well as annoyance by noise occasioned by the continuous operation of the pump and engine during the night.

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

1. In a governor of the character described, the combination with two members, one member movable relatively to the other, a valve having a rod passing through said members, a diaphragm secured to said rod, a spring cooperating with said diaphragm, and a member engaging both of said relatively movable members and cooperating with them to adjust the tension of said spring when one of said members is turned.

2. In a governor of the character described, the combination of two casing members, one revoluble relative to the other, a valve at one end of one of said casing members, a diaphragm in the other casing member, a rod passing through the casing members and connected with said valve and diaphragm respectively, a threaded sleeve movable longitudinally in the revoluble casing member and threaded into the other casing member, and a spring disposed in the revoluble casing member between said longitudinally movable sleeve and the flexible diaphragm.

3. In a governor of the character described, the combination of a governor casing comprising two members, one revoluble with relation to the other, the revoluble member having interior longitudinal grooves, a threaded sleeve adapted to screw into the stationary casing member and provided with a head disposed within the revoluble casing member and having projections to enter the grooves in the latter, a rod passing through the casing members and provided at one end with a valve, a flexible diaphragm secured to the other end of the valve rod in the revoluble casing member, and a spring disposed between said diaphragm and the head on said threaded sleeve.

4. In a governor of the character described, the combination of a stationary casing member having internal screw threads and provided with an internal threaded enlargement, a revoluble casing member having internal longitudinal grooves, a threaded sleeve to screw into the stationary casing member and provided with a head within the revoluble casing member, said head having projections movable in the grooves in



said revoluble casing member, an annular  
nut surrounding the revoluble casing mem-  
ber and screwing into the threaded enlarge-  
ment on the stationary casing member to  
5 prevent relative longitudinal movement of  
said casing members, a rod passing through  
the casing members and provided at one end  
with a valve, a flexible diaphragm located  
in the revoluble casing member and secured  
10 to the other end of the valve rod, and a

spring disposed between said diaphragm and  
the head on the threaded sleeve.

In testimony whereof, I have signed this  
specification in the presence of two subscrib-  
ing witnesses.

MATHEW J. WEBER.

Witnesses:

D. L. DAVIES,  
J. C. MARKLEY.