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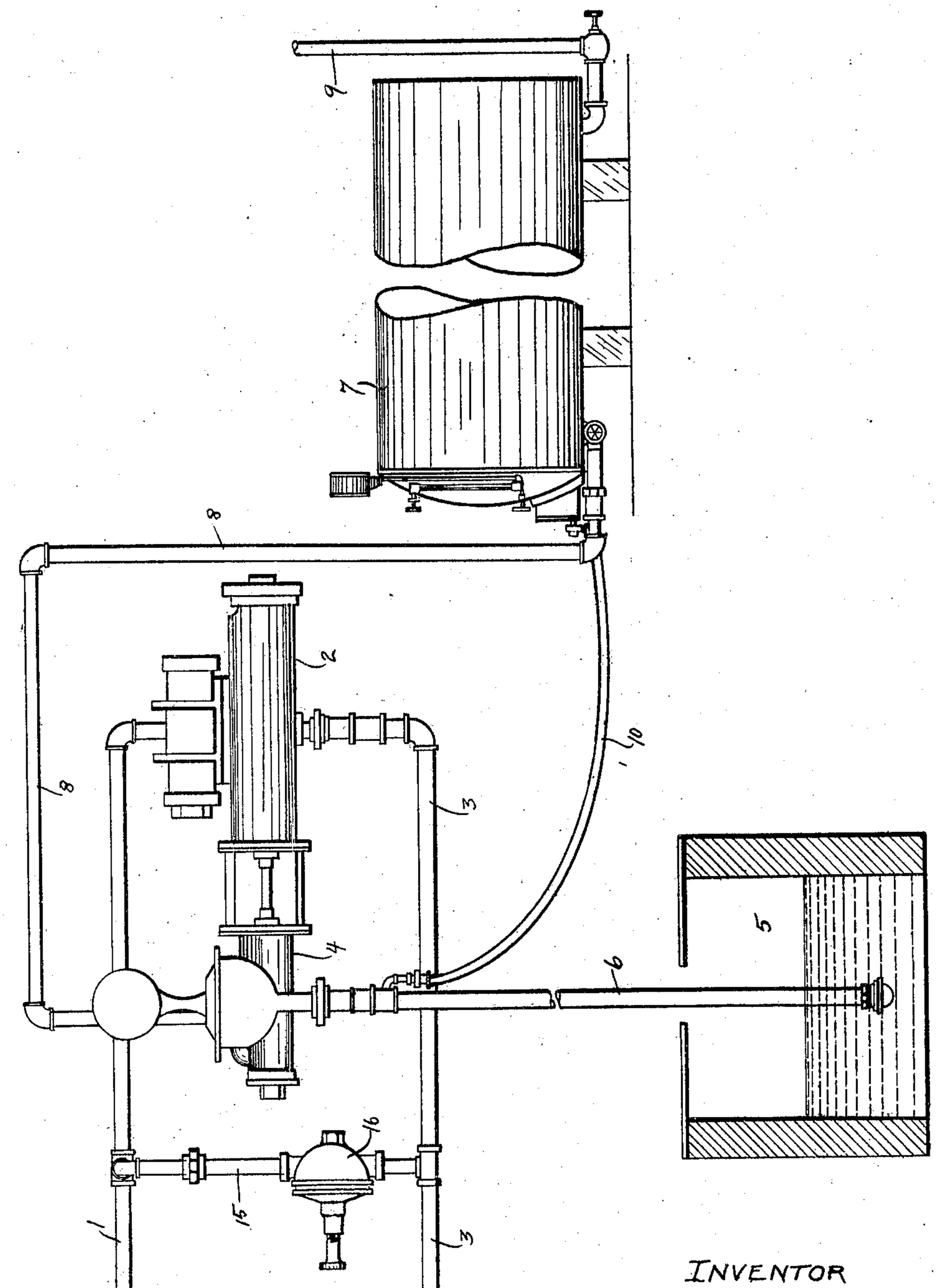
PUMPING APPARATUS.

APPLICATION FILED MAR. 26, 1909.

963,358. Patented July 5, 1910.



WITNESSES:

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PUMPING APPARATUS.

963,358. Specification of Letters Patent. **Patented July 5, 1910.**

Application filed March 26, 1909. Serial No. 485,917.

To all whom it may concern:

Be it known that I, XENOPHON CAVERNO, a citizen of the United States, residing at Kewanee, county of Henry, and State of Illinois, have invented new and useful Improvements in Pumping Apparatus, of which the following is a specification.

My invention relates to improvements in fluid actuated pumping apparatus of that class in which fluid under pressure, acting against a piston in one cylinder, is utilized to operate a piston in another cylinder for the purpose of pumping another fluid to a tank or to a desired point of use, the most common use of such apparatus being for the purpose of using water from municipal supply mains, hereinafter termed the power water, to pump cistern water into a storage tank or cause its delivery to points of use within a dwelling. In such cases, it is desirable to also utilize the power water as far as possible, and the exhaust port of the pump is therefore connected with service pipes leading to various points of use, the cistern water being delivered to a storage tank and from that to other service pipes. With such an arrangement, whenever water is drawn from the power water service pipes, the pump is operated to force a quantity of cistern water into the storage tank unless the pressure in that tank is such as to preclude further deliveries. Where the pressure in the storage tank is such as to prevent further deliveries great inconvenience is caused to those who desire to use the water from the power service pipe, and the object of this invention is therefore to provide means, in such a system, for permitting the withdrawal of water from the power water service pipes at all times, and without operating the pump when the pressure in the cistern water storage tank is in excess of that desired for cistern water delivery.

In the following description, reference is had to the accompanying drawings illustrating a water supply system of the class described, embodying my invention.

Power water under pressure is supplied through a pipe 1 to the power cylinder 2 of the pump and exhausts therefrom into a service pipe 3. Cistern water is supplied to the cistern water cylinder 4 from a cistern 5 through a suction pipe 6 and is delivered from the cylinder 4 to a storage tank 7 through a pipe 8. A cistern water service pipe 9 leads from the storage tank to the point or points of use. A pipe 10 supplies a quantity of air to the suction pipe 6 to maintain an elastic fluid pressure in the storage tank. All these parts may be of any ordinary construction, and as their construction, arrangement and manner of use, are well understood in the art to which this invention pertains, it is not necessary to illustrate or describe them herein with greater particularity.

To permit withdrawals of water from the power water service pipe 3, at times when the pressure in the storage tank precludes further deliveries of cistern water thereto, I connect the power water supply pipe 1 with the power water service pipe 3 by a by-pass duct, such as the pipe 15, with an interposed automatically acting pressure regulator 16 of any ordinary construction, arranged to control the delivery of water through the by pass. With this construction it will be obvious that the pressure regulator may be so adjusted, that whenever the pressure on the delivery side of the pressure regulator 16 (*i. e.* in the service pipe 3) is such as to provide the requisite deliveries of power water, no water will be delivered through the by pass, but whenever a delivery valve or cock in service pipe 3 is opened, if the pump fails to operate, the pressure in service pipe 3 drops to a point where the pressure regulator valve opens, and permits a delivery of water through the by pass. It is well understood that the pressure regulator valves in common use may be adjusted to open and close at any desired difference in pressure at the supply and delivery ports.

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

1. In a water supply system of the described class, the combination with pumping apparatus, including a power cylinder and a pumping cylinder each provided with supply and service pipe connections, of a by pass connection leading from the supply to the service pipe connection of the power cylinder, and provided with an automatic pressure regulating valve controlling the delivery of fluid through the by pass.

2. In a water supply system of the described class, the combination of a pumping device provided with supply and service pipe connections, a fluid actuated motor also provided with supply and service pipe con-

nections and arranged to operate the pumping device, a by pass connection between the supply and service pipe connections of said motor, and an automatic pressure regulating valve interposed in the by pass connection and controlling the delivery of fluid through the by pass.

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

XENOPHON CAVERNO.

Witnesses:
CHAS. H. SHELDON,
F. A. DICKINSON.