

F. L. JAHN.
PUMP GOVERNOR.
APPLICATION FILED JUNE 17, 1911.

1,037,773.

Patented Sept. 3, 1912.

2 SHEETS—SHEET 1.

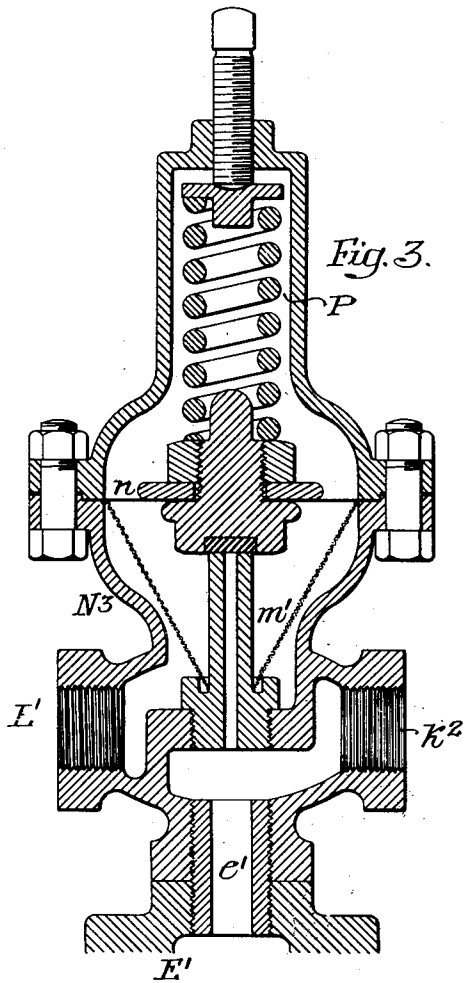
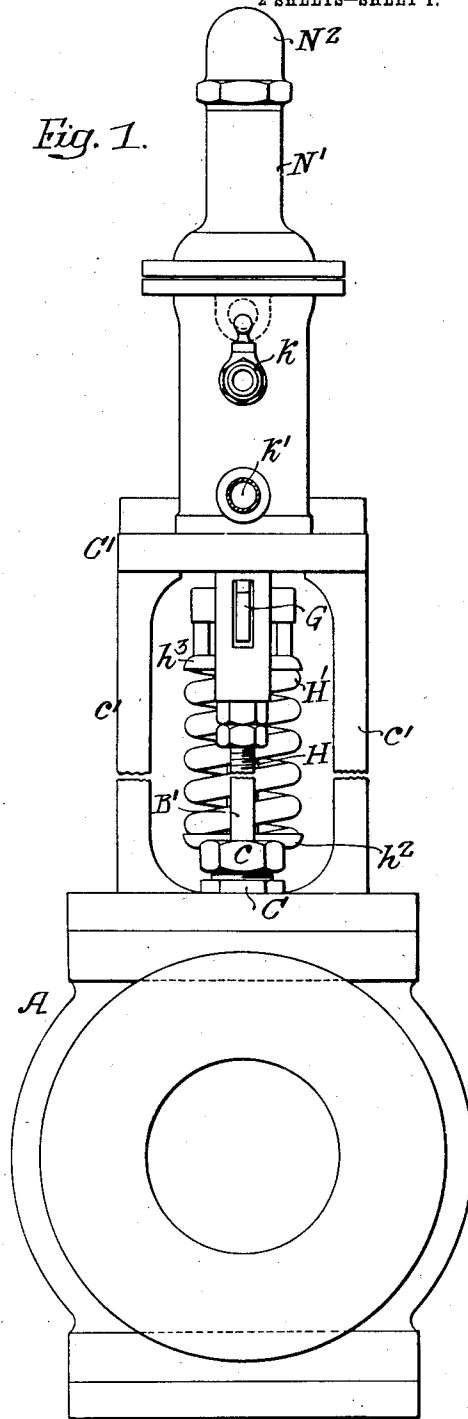


Fig. 1.



Witnesses:
Walter Chism
Wells & Remond

Inventor: Frederick L. Jahn.
by his Attorneys:
Hiram & Hiram

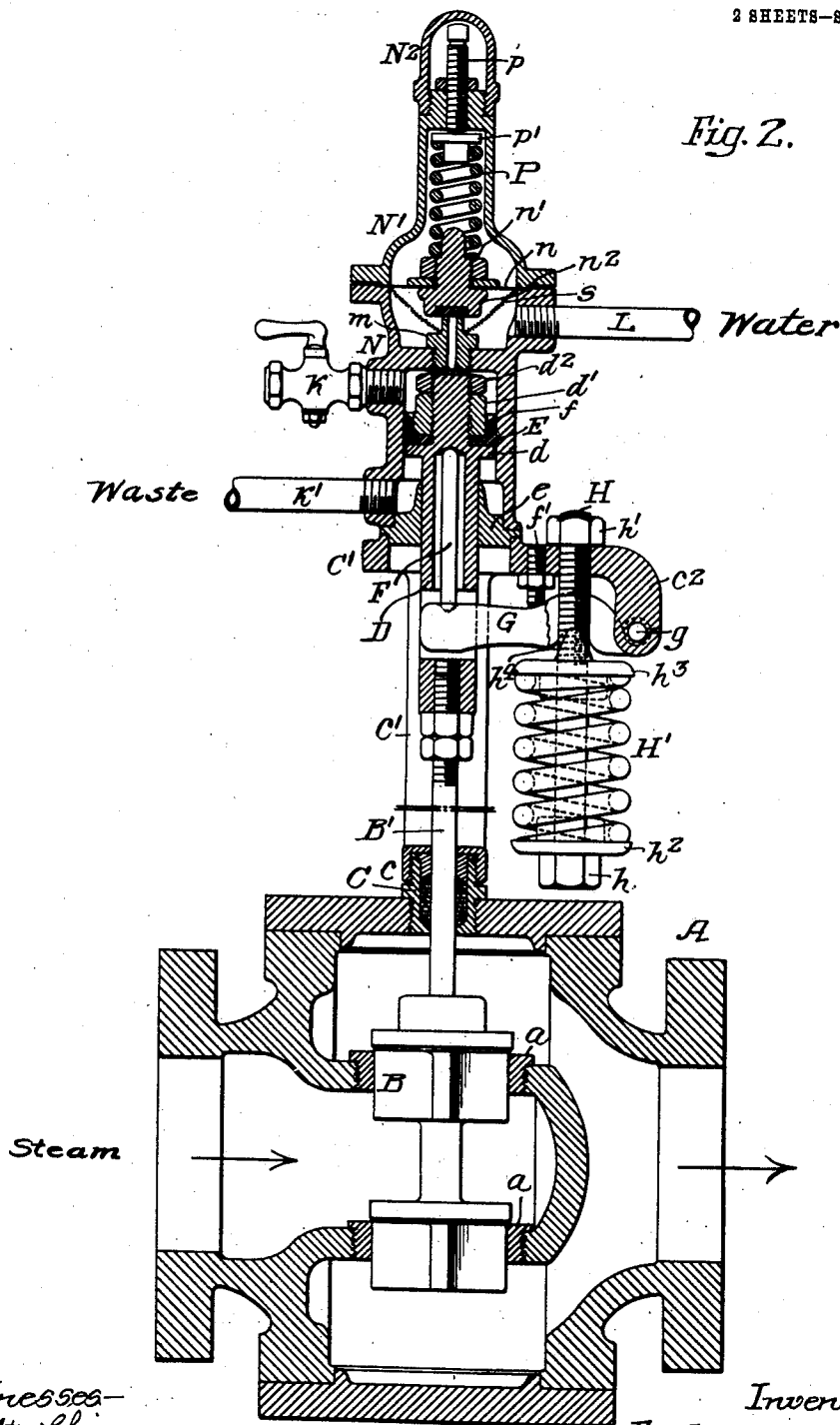
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2 SHEETS—SHEET 2.

Fig. 2.



Witnesses—
Walter Chism
Walter A. Dunsmuir

Inventor—
Frederick L. Jahn.
by his Attorneys—
Horn & Horn

UNITED STATES PATENT OFFICE.

FREDERICK L. JAHN, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO WATSON & McDANIEL COMPANY, OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

PUMP-GOVERNOR.

1,037,773.

Specification of Letters Patent.

Patented Sept. 3, 1912.

Application filed June 17, 1911. Serial No. 633,768.

To all whom it may concern:

Be it known that I, FREDERICK L. JAHN, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Pump-Governors, of which the following is a specification.

This invention relates to certain improvements in pump governors by which the steam supplied to the pump is controlled by the pressure on the water side of the pump.

The object of my invention is to provide means for automatically controlling the supply of steam, utilizing the pressure on the water side of the pump to accomplish my purpose.

The invention is an improvement on the pumps for which Patents have been granted, No. 806,380, dated Dec. 5th, 1905, and No. 809,590, dated Jan. 9th, 1906.

In the accompanying drawings:—Figure 1, is a side view illustrating my improved pump governor; Fig. 2, is a vertical sectional view; and Fig. 3, is a sectional view illustrating a modification of the invention.

A is the steam valve casing, having seats a , a for the valve B, the stem B' of which extends through a stuffing box c in the cap C of the casing A. Forming parts of this cap are standards c' which support the cross bar C' carrying the governor mechanism.

Adjustably secured to the end of the valve stem B' is a plunger D, which extends into a cylinder E supported on the cross bar C'. This plunger is reduced in diameter and passes through a base e of the cylinder E and has a flange d . Mounted between this flange and the screw threaded stem of the plunger is a ring f in the form of a cup leather turned upward, as shown.

In order to lock the nut in its adjusted position, I provide a jam nut d^2 , Fig. 2. The reduced portion of the plunger is hollow, as shown, and mounted within the plunger is a rod F; the upper end of the rod being seated against the end of the opening in the plunger, and the lower end of the rod being mounted in the seat in a lever pivotally mounted on a pivot pin g , carried by a bracket e^2 depending from the cross bar C'. A bolt H is screwed into the cross bar and has a head h at its lower end and a lock nut h' at its upper end.

Carried by the head h is a spring seat h^2 and mounted on this spring seat is a heavy

coiled spring H', and resting on the upper end of the coiled spring is another spring seat h^2 , having projections h^4 forming rockers for the lever G. Adjustably mounted on the cross bar is a set screw f' by which the upward movement of the lever G is limited. The tension of the spring can be increased or diminished by turning the rod H, and the position of the plunger D in respect to the valve B can be regulated by turning the valve stem B' in the threaded opening in the lower end of the plunger, and this stem may be locked in position by the jam nuts shown.

In the upper end of the cylinder E is a passage communicating with a pet cock k , and at the lower end of the cylinder is a passage communicating with a drip pipe k' . The pet cock can be set to any point desired to allow the fluid in the cylinder above the ring to escape, while the drip pipe carries away any leakage water which may pass the ring and which would otherwise be entrapped in the lower portion of the cylinder.

Mounted above the cylinder E is a valve chest N; the lower half of the chest being formed, in the present instance, integral with the cylinder, while the upper portion N' is in the form of a flanged bonnet and is secured to the lower portion by bolts, or other fastenings. Mounted between the two sections of the fastenings is a diaphragm n , carrying a valve n' , having a leather seat disk n^2 which rests upon the nipple m . This nipple is screwed into the head of the cylinder E and has an opening therein, which forms a communication between the interior of the valve casing N and the cylinder.

Communicating with the water space under the diaphragm is a pipe L, which also communicates with the water space of the pump, so that, when the pressure of water increases, it will lift the valve n' off its seat and will allow the water to pass from the valve casing N through the passage in the nipple m into the upper end of the cylinder E, forcing the plunger down against the pressure of the spring H', and at the same time it will move the valve B to close against its seat, cutting off the supply of steam to the pump through the valve A.

The valve n' is kept to its seat, under normal conditions, by a spring P, and the tension of this spring can be adjusted by a set screw p , which extends through a

threaded opening in the bonnet and rests upon a spring seat p' carried by the spring P. There is a lock nut on the adjusting screw p , so as to lock it in the position to which it is adjusted. The upper end of the set screw is inclosed by a cap n^2 screwed onto the bonnet N' .

I preferably provide a screen s , which is conical in shape, and extends from the outer edge of the diaphragm n to the base of the nipple m ; thus straining the water which passes from the pipe L into the valve casing so as to prevent clogging of the small opening in the nipple and the other parts of the apparatus.

In Fig. 3, I have shown a modification of my invention in which the valve casing n^3 has an inlet passage L' from the water side of the pump; a passage k^2 to which the pet cock is connected, and a passage e' leading to the cylinder E' . The diaphragm n and its spring p are similar in construction to the mechanism illustrated in Fig. 2. The nipple m' is of greater length than that shown in Fig. 2, and does not extend into the cylinder E' , but only to the partition of the valve casing.

It will be seen by the above construction that I provide governing mechanism for a pump in which the pressure of steam is regulated automatically by the pressure of the water on the water side of the pump. The plunger, which controls the valve, can be moved upward at any speed desired, according to the position of the pet cock k , which allows a given quantity of water to escape, while the plunger is moving to its full open position. The plunger immediately closes the valve B as soon as the valve n' leaves its seat.

The operation of my improved governor is as follows:—When pressure on the water side increases then it forces the valve n' off its seat on the nipple and water flows into the cylinder, and forces the steam valve to the closed position against the pressure of its spring and, as soon as the pressure on the water side decreases, then the valve n' will close against its seat on the nipple, preventing the flow of water into the cylinder and, as the water above the plunger is allowed to escape through the pet cock, the plunger will be raised, carrying the steam valve off its seat in proportion to the amount of opening of the pet cock. Thus by regulating the pet cock the rapidity of the opening of the steam valve can be regulated.

I claim:—

1. The combination in a pump governor, of a steam supply valve casing, a valve therein, a cylinder, a plunger mounted within the cylinder and connected to the steam valve, a spring tending to raise the valve off its seat, a leakage port at the upper end of the cylinder, a pet cock controlling the flow of water through said leakage port, a drip pipe communicating with the lower end of the cylinder, a ring on the plunger located between the drip passage and the leakage port, a hydraulic valve casing, a diaphragm within the casing, a valve carried thereby, a spring pressing against the valve, a nipple within the valve casing and having a passage communicating with one end of the cylinder, said valve closing against the nipple, with a pipe communicating with the valve casing and leading from the water end of the pump.

2. The combination in a pump governor, of a steam valve casing, a valve therein, a rod connected to the valve, a cylinder mounted above the steam valve, a plunger therein having a ring fitting the cylinder, a lever bearing upon the plunger, a spring tending to raise the lever and the plunger so as to move the steam valve to the open position, said cylinder having a leakage port at its upper end, a valve controlling the flow of water from said leakage port, a drip pipe at the lower end of the cylinder, a hydraulic valve mounted above the cylinder, having a diaphragm, a hydraulic valve casing, a valve carried by the diaphragm, a nipple against which the valve seats, said nipple having an opening communicating with the upper end of the cylinder, a spring tending to force the hydraulic valve to its seat, means for adjusting the tension of said spring, with a pipe leading from the water side of the pump to the space between the diaphragm and the cylinder, so that, when the pressure of the water is increased, the valve will be raised and water will flow from the hydraulic valve casing into the cylinder, causing the plunger to move the valve to a closed position.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

FREDERICK L. JAHN.

Witnesses:

WM. E. SHUPE,
WM. A. BARR.