

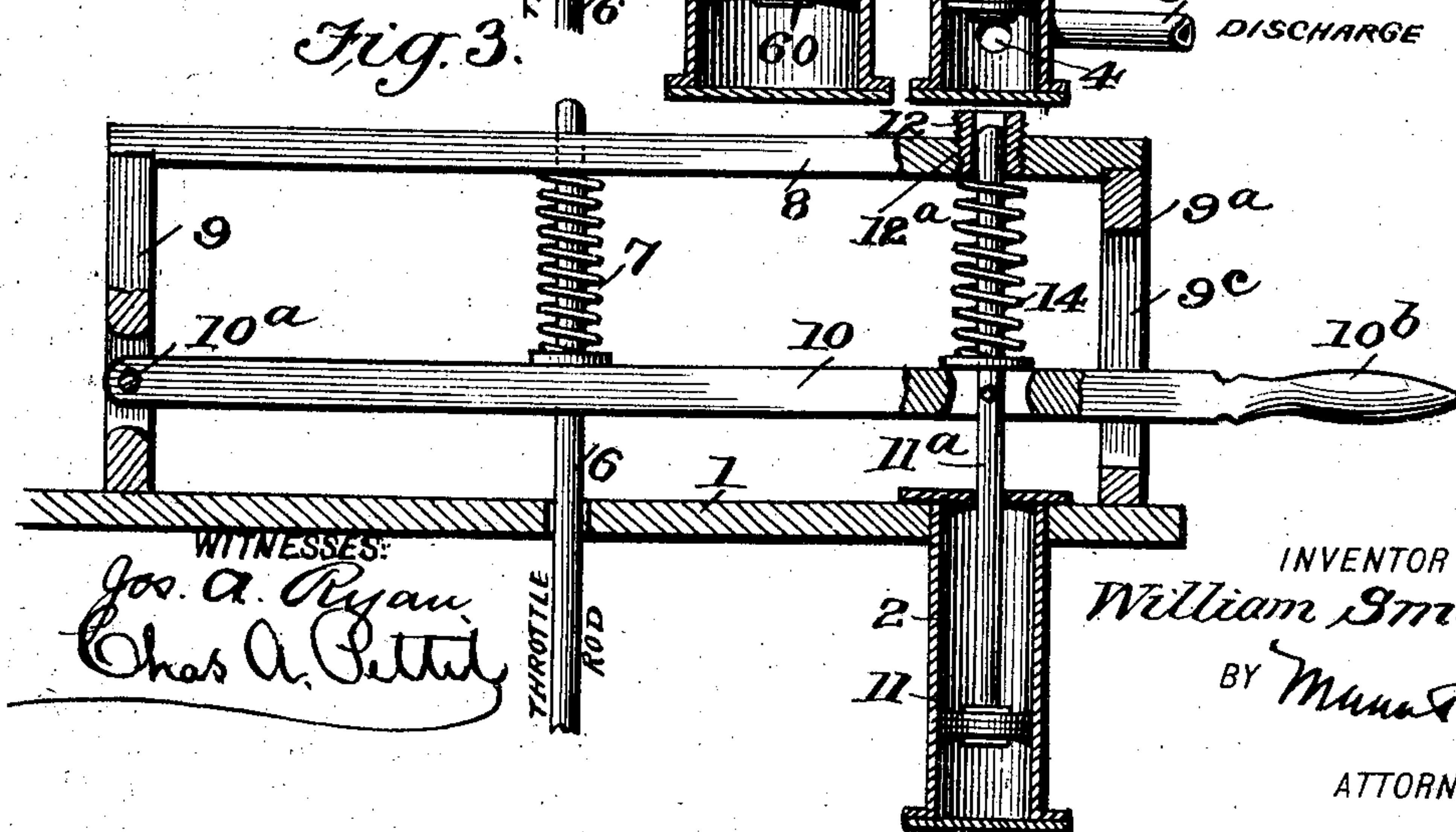
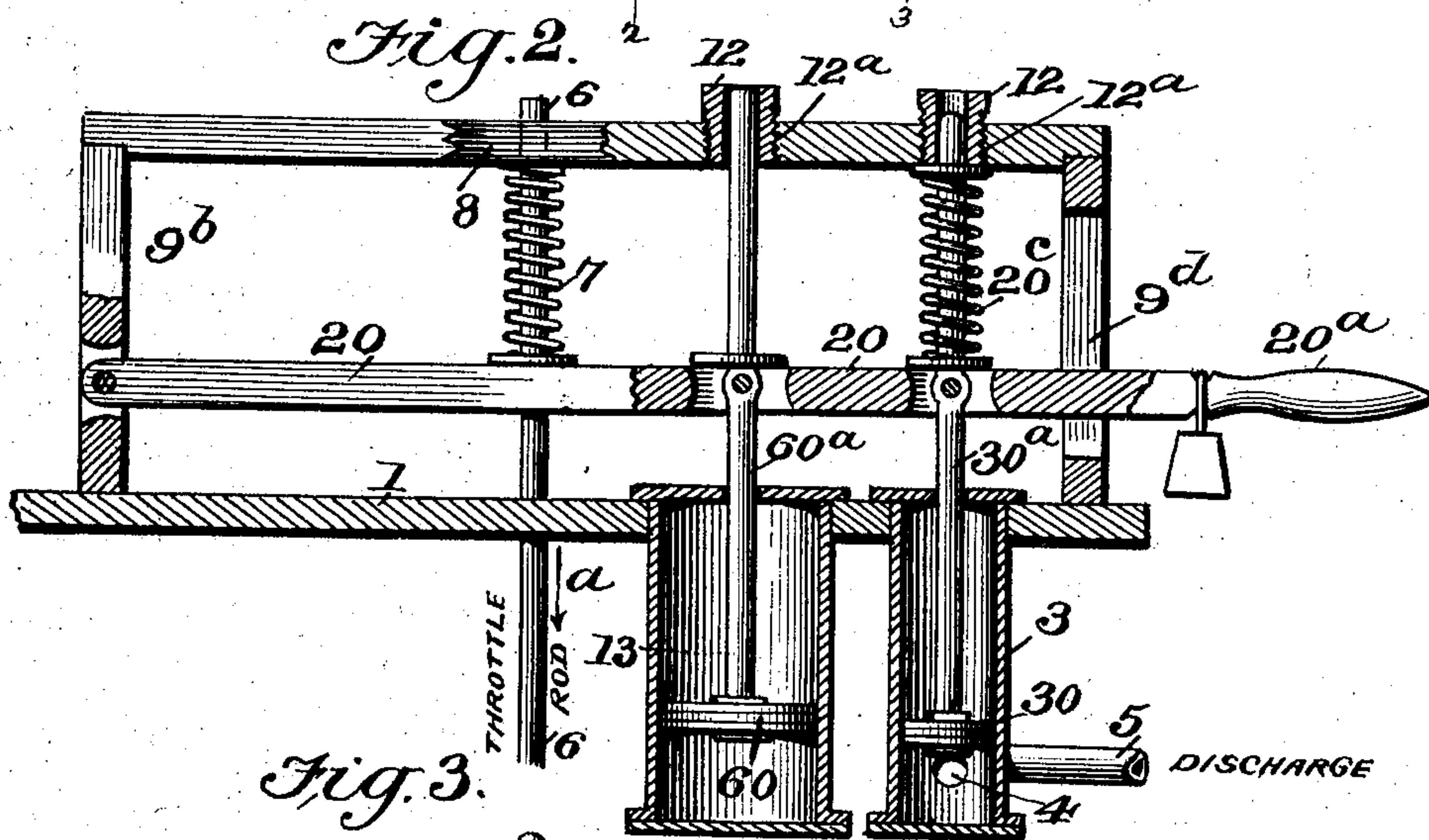
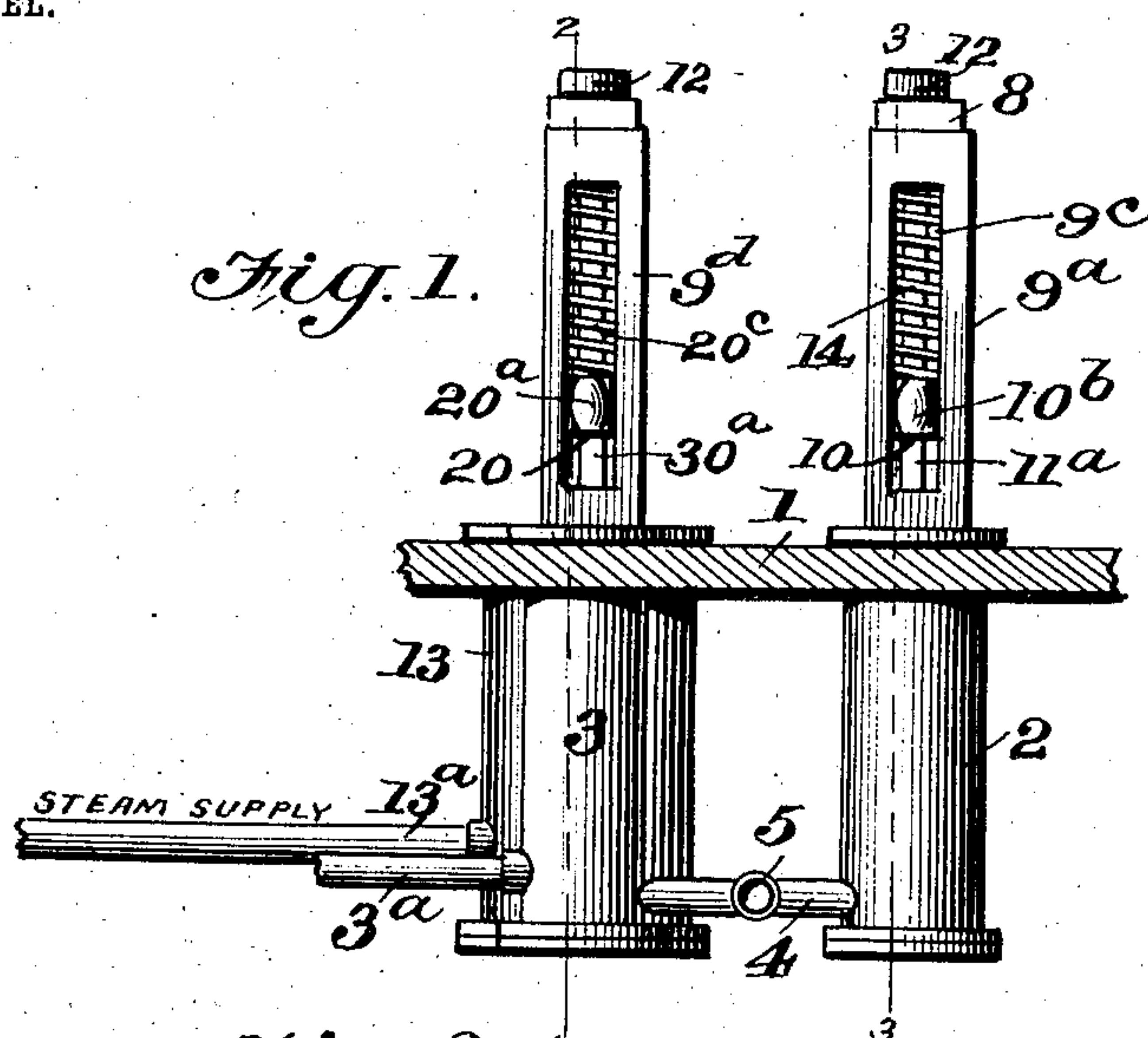
No. 768,488.

PATENTED AUG. 23, 1904.

W. SMALL.
PUMP CONTROLLING MEANS.

APPLICATION FILED FEB. 29, 1904.

NO MODEL.



WITNESSES:

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WILLIAM SMALL, OF SOURLAKE, TEXAS.

PUMP-CONTROLLING MEANS.

SPECIFICATION forming part of Letters Patent No. 768,488, dated August 23, 1904.

Application filed February 29, 1904. Serial No. 195,776. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM SMALL, residing at Sourlake, in the county of Hardin and State of Texas, have invented a new and Improved Pump-Controlling Means, of which the following is a specification.

My invention is in the nature of an improved means operable by the variable pressure of the fluid being pumped for controlling or governing the pump operation, whereby to maintain a uniform and even pressure on the discharge-line; and the said invention primarily seeks to provide a means for the purposes stated of a simple, economical, and compact construction which will effectively operate as a governor for the pump in such manner that when pumping oil large quantities of the amount that is usually wasted whenever a break in the oil-line occurs by reason of excessive pressure or when the supply to the suction becomes too low is saved, whereby pumps when equipped with my improvement hereinafter explained will require less attention, and the service of one or more attendants at the station usually required is dispensed with.

My invention comprehends the peculiar cooperative arrangement of parts hereinafter described, specifically pointed out in the claims, and illustrated in the accompanying drawings, in which—

Figure 1 is a front view of my improvements. Fig. 2 is a vertical longitudinal section thereof, taken on the line 2 2 of Fig. 1. Fig. 3 is a similar view on the line 3 3 of Fig. 1.

In the drawings, 1 designates a base member, which in practice may be and preferably is the cap or top of the throttle of the usual angle type. At the front end and pendently secured to the cap 1 are two cylinders 2 3, which are connected by a T-pipe 4, to which the discharge-pipe 5 joins, as shown.

The cylinder 2 is arranged to cooperate with the throttle-rod 6, which in practice actuates the usual type of throttle-valve, (not shown,) the opening or closing of which is regulated according to the pressure in the discharge-line. The throttle-valve rod 6 is normally held shifted in a position for holding the valve open by the normal pressure on the discharge-

line, and it is shifted to its valve-closing position—that is, in the direction indicated by the arrow *a*—whenever the fluid-pressure decreases through the medium of a spring 7, that surrounds the upper end of the rod 6 and which is held between the cross-head piece 8, mounted at the ends upon the oppositely-disposed slotted standards 9 9^a, and a lever 10, which extends in a plane parallel with the member 8, one end of which is pivoted at 10^a in the slotted standard 9, and the other end terminates in the handle extension 10^b, that is movably guided in the slot 9^c of the standard 9^a, as shown.

11 designates a plunger or piston-valve located in the cylinder 2, the stem or rod 11^a of which extends up through the head of the cylinder 2 and is fixedly joined to the lever 10 and its upper end extended up through the cross-piece 8 and through an externally-threaded sleeve 12, which engages a threaded socket 12^a in the piece 8, and is provided for adjusting the tension of the spring 14, which encircles the upper end of the stem 11^a, which is disposed between the said piece 8 and the lever 10, as shown.

So far as described whenever the pressure in the discharge-line is up to the normal the piston in the cylinder 2 is forced upward, and thereby moves the lever 10 upwardly against the tension of the spring 14 and holds the throttle-valve open to its normal position; but should a break occur in the discharge-line or if the suction-line, presently referred to, gets air through any cause the said lever 10 will be forced downward, and in consequence the throttle-stem is automatically adjusted to close or shift the throttle-valve to close off the steam-supply, and thereby stop the pump. The cylinder 3, that connects with the T-joint, also joins with the cylinder 2 and communicates with the suction-line 3^a or with a drain-pipe, as may be desired.

The spring that actuates to shift the lever 10 to its pump-cutting-off position in practice is set under such tension or stress that when the desired pressure on the discharge-line is reached the piston rises above the over-flow and allows the surplus of the liquid pumped to flow into the suction of the drain-

pipe, and thereby maintains an even pressure on the discharge-line and also prevents the said surplus liquid from entering the cylinder 2 and in consequence raising the throttle-actuating piston therein too high.

13 designates a third cylinder, which is also pendently connected to the cap or base member 1, and the said cylinder is joined by the pipe 13^a with the steam-supply, which is also so combined with the said supply that when the steam-pressure rises above the normal the piston 60, within the said cylinder 13, lifts and helps to raise the regulating valve or piston 30, presently again referred to. The rod 60^a connects with a second lever 20, pivotally mounted at one end in the slotted standard 9^b, that projects from the base or cap 1, and the handle end 20^a of the lever 20 moves in the slot of an oppositely-disposed standard 9^d.

The connections with the joint or rod 60^a and the lever 20 is such that when the said rod 60^a is lifted the lever 20 is raised, and by reason thereof it lifts the piston 30 within the cylinder 3, which is fixedly connected to the lever 20, which operation adjusts the said piston 30 to regulate the flow of the supply or overpressure oil or other liquid being pumped, and to cause it to flow into the suction.

By reason of the coöperative arrangement of the cylinder 13 the pistons 60 and 30, lever 20, and the connections that join the said lever 20 with the pistons 60 and 30 the pressure on the pump is not effected by any variation of the steam-pressure near the normal. The lever 20 is also automatically held pushed or in its down or normal position by a spring 20^c, which surrounds the shank or rod 30^a of the piston 30, as shown.

It will be understood that in case the steam-pressure drops to an abnormal point the pump would stop entirely; but in that case the said pump can be readily started again by the pumpman raising the throttle-lever 10 by hand.

The handle portion of the levers 20 and 10 is extended so that weights can be used to assist the springs in their operation, if it should be found necessary.

While I have shown it, it is obvious that a by-pass might be used in conjunction with my improved governor devices, so that the pump

may be started without interfering with the levers or disarranging them after they have been once properly adjusted.

From the foregoing description, taken in connection with the accompanying drawings, it is thought the advantages and complete operation of my invention will be readily understood by those skilled in the art to which it appertains.

My improvements when applied to a pump will save large quantities of oil that are now usually wasted whenever a break occurs and that will save pumps from an injury by shutting them down when otherwise they would run off whenever a break occurs or when the supply of suction becomes too low.

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

1. A means for controlling the throttle-valve of pumping-engines, which comprises in combination with the valve-rod; a suitable framing, a lever pivotally connected thereto to which the throttle-valve connects a spring for forcing the lever and the rod in one direction, an intake-cylinder, a second cylinder, a T-joint connecting the two cylinders, said T-joint having a discharge, a piston operable in the second cylinder, said discharge being controlled by the varying fluid-pressure within the cylinder 2, said piston having its rod connected to the valve-shifting lever, all being arranged substantially as shown.

2. A means for controlling the throttle-valve of pumping-engines, which comprises in combination with the valve-rod; a suitable framing, a lever pivotally connected thereto, to which the throttle-valve connects a spring for forcing the lever and the rod in one direction, an intake-cylinder, a second cylinder, a T-joint connecting the two cylinders, said T-joint having a discharge, a piston operable in the second cylinder, said discharge being controlled by the varying fluid-pressure within the cylinder 2, said piston having its rod connected to the valve-shifting lever, and a means controlled by steam-pressure from the pump for regulating the inflow to the intake-cylinder.

WILLIAM SMALL.

Witnesses:

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