No. 701,089. Patented May 27, 1902.

W. M. REASON.

FLUID PRESSURE REGULATOR.

(Application filed Mar. 29, 1901.)

(No Model.)

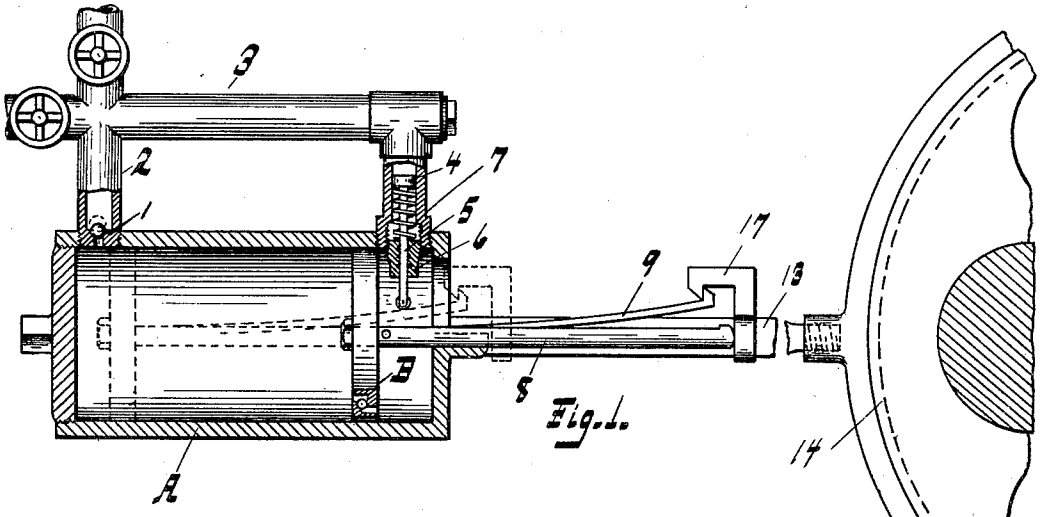


Fig. 1.

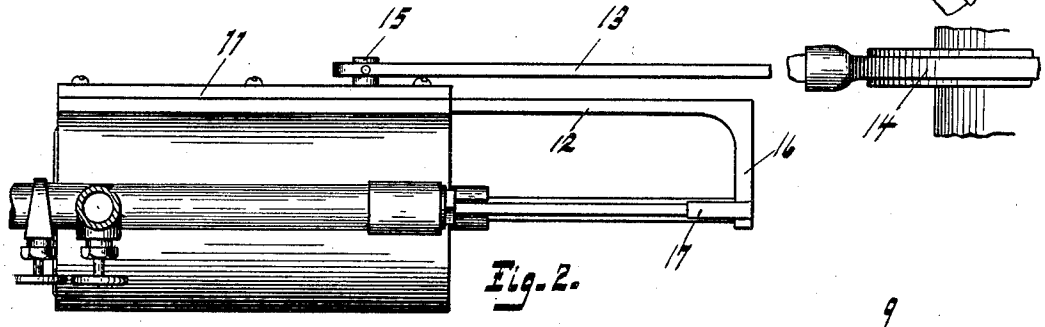


Fig. 2.

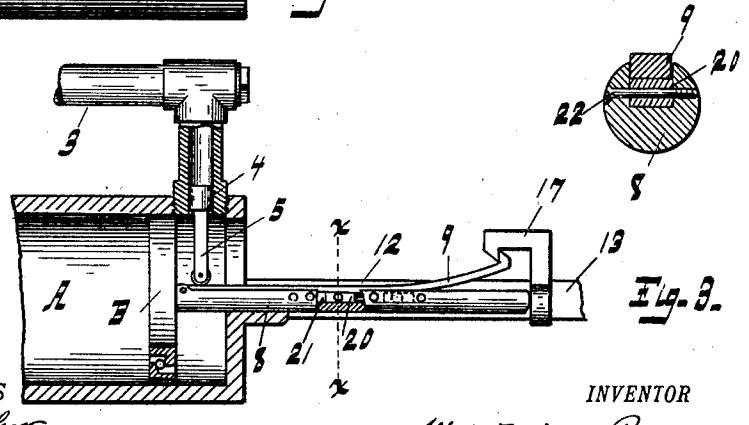


Fig. 3.

WITNESSES

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UNITED STATES PATENT OFFICE.

WALTER M. REASON, OF PONTIAC, MICHIGAN.

FLUID-PRESSURE REGULATOR.

SPECIFICATION forming part of Letters Patent No. 701,089, dated May 27, 1902.

Application filed March 29, 1901. Serial No. 53,382. (No model.)

To all whom it may concern:

Be it known that I, WALTER M. REASON, a citizen of the United States, residing a Pontiac, county of Oakland, State of Michigan, have invented a certain new and useful Improvement in Fluid-Pressure Regulators; and I 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 pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

This invention relates to fluid-pressure regulators, and has for its object a fluid-pump which is intended to be used to produce pressure for a fluid-receptacle and to regulate the pressure therein, keeping it practically constant.

The regulator comprises an air-pump and parts connected therewith by means of which it is itself brought into actuating engagement with a moving part that is constantly moving and which serves to actuate the pump periodically whenever the pressure drops below that which the apparatus is adjusted for. The moving part of the engine, which is in constant motion, is shown in this case as a pitman actuated by an eccentric, and on this pitman is a hook, which at times engages with a spring-hook on the rod of a piston, and while the engagement between the two hooks continues the piston reciprocates and the pump compresses air into the storage-receptacle. As soon as the desired pressure has accumulated in the storage-receptacle the two hooks are disengaged and the pump ceases to act, although the eccentric and pitman continue in action.

In the drawings, Figure 1 is a sectional elevation. Fig. 2 is a plan. Fig. 3 shows a modification.

A indicates the pump-cylinder, in which the piston B is arranged to reciprocate, compressing air in front of it, which passes by the check-valve 1 into a pipe 2, that leads to the storage-receptacle. A branch pipe 3 leads to the intake end of the cylinder, and within that part of the branch pipe 3 which extends toward the intake end of the cylinder is provided a small piston 4, arranged in any suitable way to be air-tight in the cylinder, in which it acts, and having behind it a piston-rod 5, an adjusting screw-plug 6, and a regulating-spring 7.

Lengthwise of the piston-rod 8 of the piston B extends a spring 9, which lies in a longitudinal groove or channel 21 in the piston-rod, and on the spring bears the end of the small piston-rod 5. The small piston-rod 5 is provided with a friction-roller 10 at its bearing-point.

The cylinder A is mounted on any suitable support (not shown) and at one side of it is provided with a guide 11, in which a reciprocating slide-arm 12 travels. The arm 12 is actuated by a pitman 13 from an eccentric 14, the pitman being connected to the slide by a wrist-pin 15. The slide 12 has an arm 16, that extends into the path of the piston-rod 8 and is adapted to engage against the end of the piston-rod 8. A hook 17 reaches from the arm 16 over the piston-rod 8, and when the hook 9 and the hook 17 are in engagement the slide 12 and the piston-rod 8 travel together, both on their instroke and their outstroke, and in consequence of the motion given to the piston the air is compressed into the storage-tank and into the branch pipe 3 until finally an amount of compression has been produced sufficient to force the small piston 4 against the spring 7 and the end of the piston-rod 5 against the upper side of the spring-catch 9. The pressure acting on the spring-catch 9 serves to disengage the two hooks, and thereafter the slide 12 continues to reciprocate, but the piston 8 remains stationary; but at each stroke of the slide 12 the hook 17 passes into a position to engage with the hooked end of the spring 9 and does make such engagement as soon as the pressure of the storage-tank has been reduced to such an extent that the small piston 4 rises under the actuating influence of the spring 7. As soon as this happens the hooks engage, the pump is again put in action, and the air-pressure in the storage-tank is again brought about.

In the form shown in Fig. 3 the spring 7 is removed, and the spring-hook 9 acts in place of it. A block 20 is placed in the channel 21, and the effective strength of the spring 9 is

regulated by changing the position of the block. The block is held in its adjusted position by a screw 22.

What I claim is—

1. The combination of an air-pump, a reciprocating arm adapted to engage the air-pump piston-rod to produce an instroke, a catch, a part of which is on said arm and the other part upon said piston-rod, one part of said catch being movable relative to the part upon which it is located, said parts of said catch being adapted to engage each other to secure said reciprocating arm to said piston, and means controlled by the air-pressure adapted to act directly on the said relatively movable part of said catch to disengage it from the other.

2. In combination with an air-pump and its piston, a grooved piston-rod, a hooked spring extending lengthwise in said groove, a reciprocating slide provided with a hook adapted to engage the hooked spring, means for producing reciprocation of the slide, a disengaging device arranged to be actuated by the pressure of air produced by the pump and adapted to disengage the two hooks, substantially as described.

3. In combination with an air-pump and its piston, a spring lying lengthwise the piston-rod, means for reciprocating said piston-rod, a sliding block arranged to engage under the spring and between it and the piston-rod, and to regulate the tension of said spring, substantially as described.

4. In combination with an air-pump and its piston, a spring lying lengthwise the piston-rod, means for reciprocating said piston-rod, a sliding block arranged to engage under the spring and between it and the piston-rod, and to regulate the tension of said spring, and means for holding said block in place, substantially as described.

In testimony whereof I sign this specification in the presence of two witnesses.

WALTER M. REASON.

Witnesses:

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