(No Model.)

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AUTOMATIC GOVERNOR FOR AIR BRAKE PUMPS.

No. 428,299. Patented May 20, 1890.

Fig. 1.

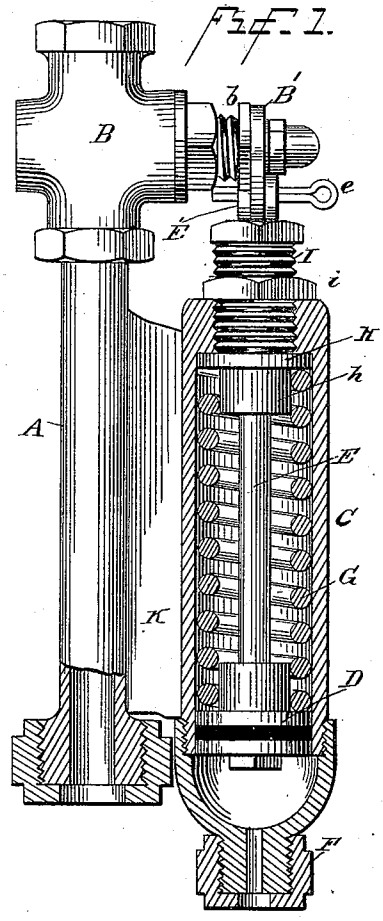


Fig. 3.

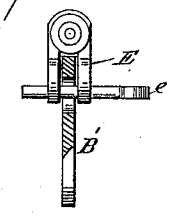
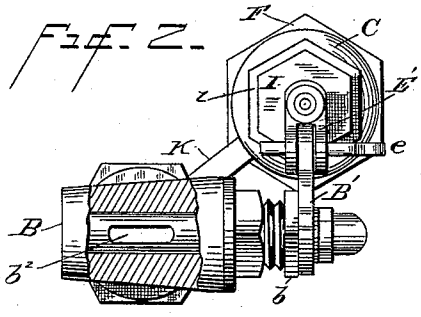


Fig. 2.



Witnesses
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AUTOMATIC GOVERNOR FOR AIR-BRAKE PUMPS.

SPECIFICATION forming part of Letters Patent No. 428,299, dated May 20, 1890.

Application filed October 7, 1889. Serial No. 326,167. (No model.)

To all whom it may concern:

Be it known that we, GEORGE WOODARD BURBANK, GEORGE WASHINGTON BILL, and WILLIAM HENRY RAMSEYER, citizens of the United States, residing at Missouri Valley, in the county of Harrison and State of Iowa, have invented certain new and useful Improvements in Automatic Governors for Air-Brake Pumps; and we do 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, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

Our invention relates to governors for the pumps of fluid-pressure brake systems; and it consists in the combination and arrangement of parts, as hereinafter set forth, and particularly pointed out in the claims.

In the drawings, Figure 1 is an elevation, partly in section, of our improved air-pump governor; and Fig. 2 is a top plan view of the same, partly in section. Fig. 3 is a detail showing the slot in the lever-handle.

The governor is connected with the pipe that supplies steam to the steam-cylinder of the air-pump, and operates to automatically control the flow of steam, throttling it more or less, in accordance with the increase or decrease of air-pressure in the main reservoir.

The short section of pipe A, in which is a valve B, is made a part of the steam-supply pipe, the steam entering from the boiler at one end and passing out to the pump at the other. The valve is preferably a turning plug-cock, either cylindrical or tapering, capable of opening the pipe to its full capacity or of closing it by degrees until the steam is wholly shut off. The stem of the valve is packed steam-tight by a stuffing-box and gland *b*.

In order to throttle the steam automatically, we arrange adjacent to the valve B a cylinder C, containing a piston D or other movable abutment, the movement of which can be communicated by means of a rod E to the lever-handle B′ of the valve.

We prefer to make the connection between the rod and the lever by means of a forked head E′, secured to the upper end of the rod, the end of the lever being received between the arms of the fork and jointed thereto by a wrist-pin *e*. A slot *b′* in the lever provides for the necessary play of the parts when the rod rises or falls.

Attached to the end of the cylinder C, below the piston D, is a union F, by which a branch pipe from the main reservoir or from the brake-pipe below the engineer's valve can be connected with the cylinder. The under side of the piston D is therefore subjected constantly to the air-pressure in the main reservoir and tends to rise in the cylinder and turn the cock B. The passage-way b^2 through the plug is so arranged that when the piston D is at the bottom of the cylinder C the valve will be wide open, as shown, but will gradually close as the piston rises until the lever B′ has described about one-sixth of a circle, when the steam will be wholly shut off.

The pressure of air on the bottom of the piston is counteracted by a helical spring G, which surrounds the rod E, and seats at one end on top of the piston and at the other end against a loose collar H, which fits the inside of the cylinder and has a neck *h*, encircled by the spring. A screw-threaded sleeve I screws into the upper end of the cylinder around the rod E, for which it forms a guide. The inner end of the sleeve abuts against the collar H, and by means of these parts the tension of the spring G can be regulated. A jam-nut *i* locks the sleeve I when properly adjusted.

For convenience of manufacture and use the pipe A and cylinder C may be cast in one piece—as, for instance, by being arranged parallel with one another and united by the web K.

The operation of our governor has been referred to in the course of the above explanation of its preferred construction. In practice it is best to so adjust the strength of the spring that when the normal air-pressure has been reached in the main reservoir the piston will come to rest just before the valve is entirely closed, allowing steam enough to continue passing through to keep the pump moving just enough to compensate for leakage. The main reservoir-pressure can be va-

ried by simply adjusting the sleeve I. When the brakes are released or the main reservoir-pressure reduced in any other way, the spring forces the piston down and opens the valve B, admitting a full head of steam to the pump.

The oil that is fed into the steam-pump from time to time for lubricating purposes keeps the valve B well lubricated and ready to move at the slightest change in air-pressure on the piston D, while the air-cylinder C, being entirely disconnected from the steam-pipe, is not exposed to the corroding and clogging effects of the oil and steam, and will work freely and accurately for a long time.

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

A governor for the pump of an air-brake system, consisting of the short section A, adapted to be inserted in and form part of the pipe supplying steam to the pump, the throttle-valve B, located in said section A and having the slotted handle B′, the air-cylinder C, formed integral with the section A, but having no communication therewith and adapted to be connected with the main reservoir, the piston D in the cylinder, the piston-rod E, having the pin *e* engaging with the slot in the valve-handle, the helical spring G, surrounding the rod, and the screw-threaded sleeve I, for adjusting the tension of the spring, substantially as and for the purpose set forth.

In testimony whereof we affix our signatures in presence of two witnesses.

GEORGE WOODARD BURBANK.
GEORGE WASHINGTON BILL.
WILLIAM HENRY RAMSEYER.

Witnesses:
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