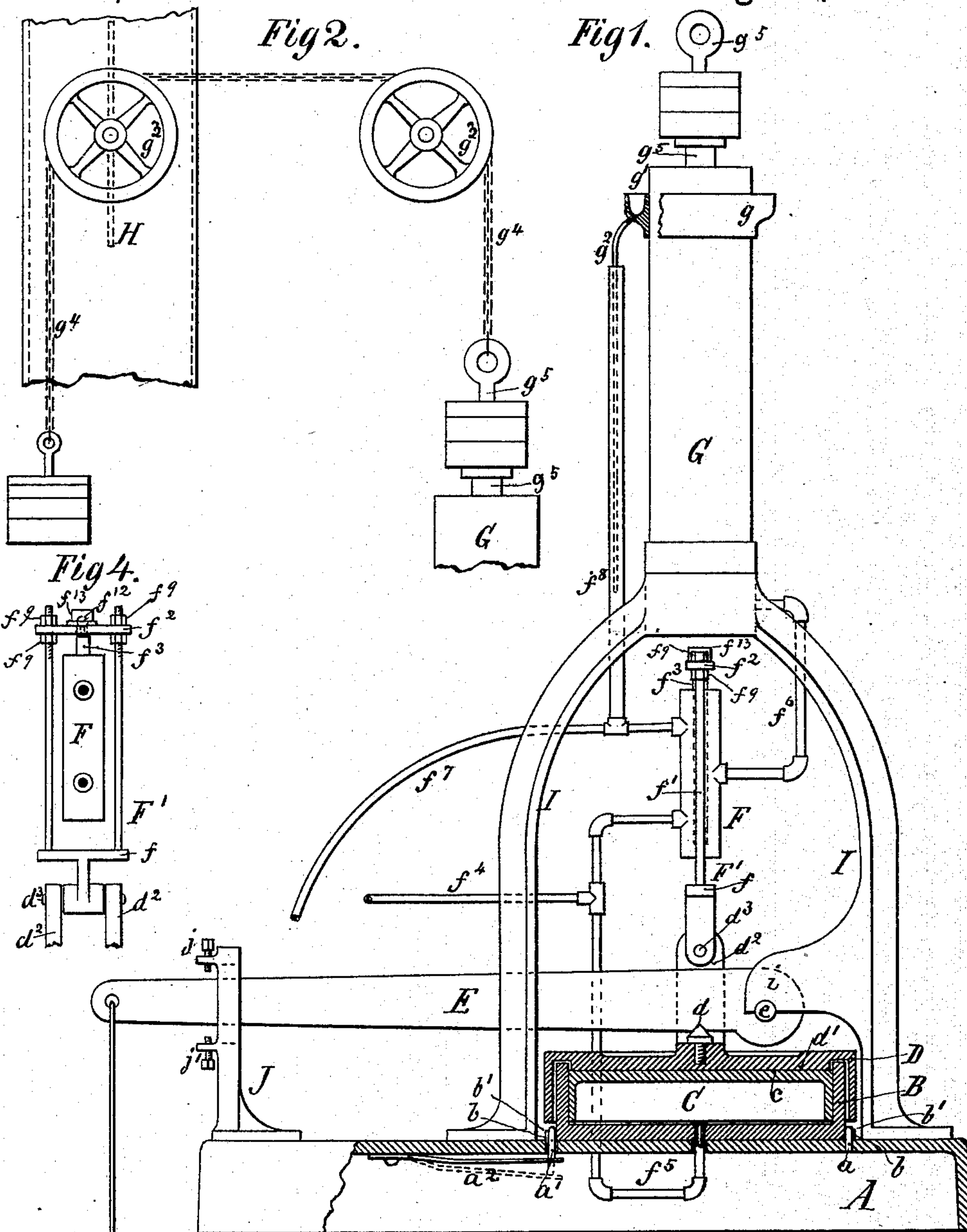


(No Model.)

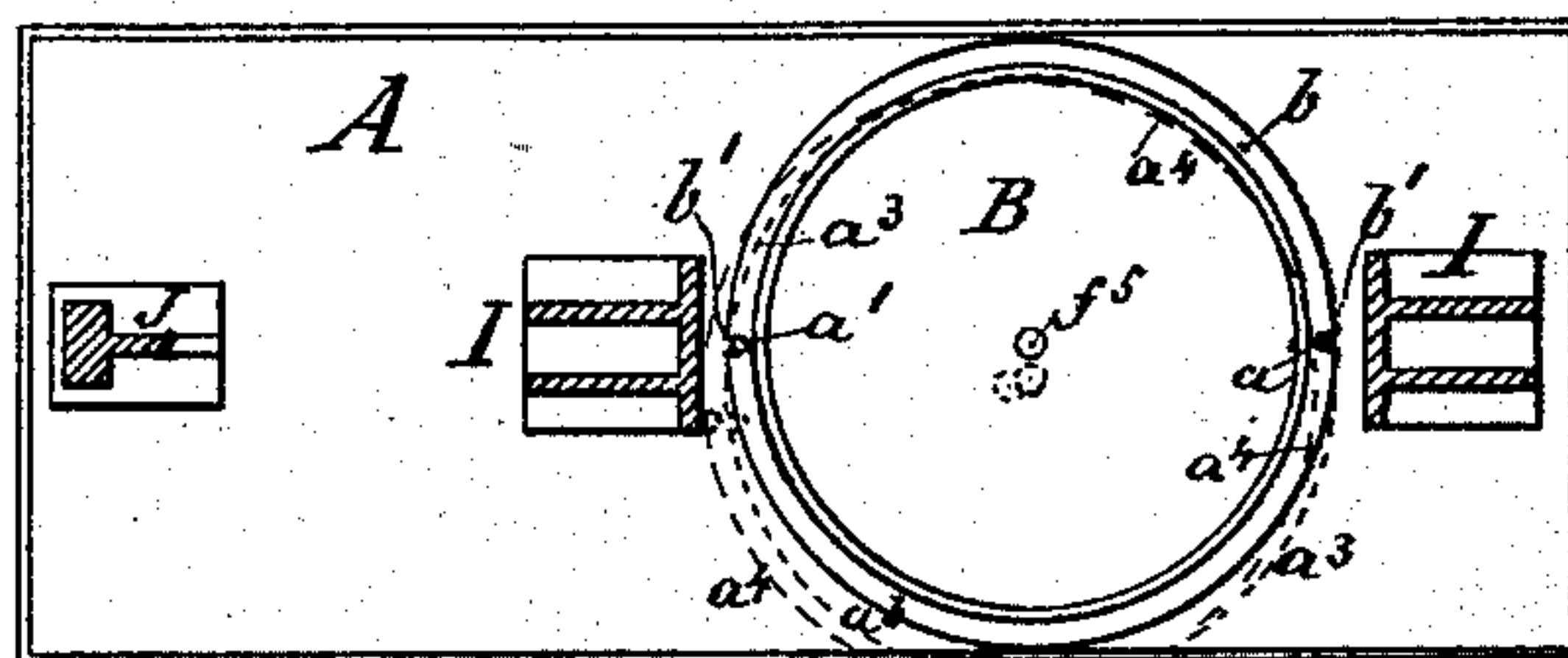
F. LÉCLÈRE.
DAMPER REGULATOR.

No. 388,699.

Patented Aug. 28, 1888.



Witnesses:
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Inventor:
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UNITED STATES PATENT OFFICE.

FRANCIS LÈCLÈRE, OF PHILADELPHIA, PENNSYLVANIA.

DAMPER-REGULATOR.

SPECIFICATION forming part of Letters Patent No. 388,699, dated August 28, 1888.

Application filed March 17, 1888. Serial No. 267,504. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS LÈCLÈRE, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Damper-Regulators; and I do hereby 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.

My invention consists of certain constructions, combinations, and arrangements of parts, hereinafter fully described, and pointed out in the claims, whereby an effective damper-regulator of novel and simple construction is produced.

In the accompanying drawings, Figure 1 is a side view of my invention, the weighted piston and a portion of the foundation-plate being in section and the other parts in elevation. Fig. 2 is a detail of the top portion of the damper-motor used in my invention, showing a damper with a portion of a chimney and the connections between the same. Fig. 3 is a horizontal section near the foundation-plate of the stationary supports of the damper-regulator, and a top view of the diaphragm chamber or cylinder and the connecting mechanism whereby it is attached to the foundation-plate; and Fig. 4 is a detail elevation of the motor-valve and the side frame thereof and its connections.

The letter A in the drawings represents a foundation-plate, to which the parts of the damper-regulator proper are attached.

B is a steam-cylinder; C, its piston; D, a finishing and protecting hood covering the cylinder; E, a balance-lever, which may be single or compound; F, a motor-valve; G, a motor, and H a damper.

The cylinder B is provided with an outer bottom flange, *b*, with two notches, *b'*, in the same, which latter, by means of two pins, *a a'*, applied on the foundation-plate, hold the steam-cylinder in place without other fastenings and admit of its ready removal. The pin *a'* is made to pass snugly through the foundation-plate, and below the same it is fastened to a spring, *a²*, attached to said plate.

In order to remove and replace the steam-

cylinder without taking the whole mechanism apart, the pin *a'* is pushed down flush with the upper surface of the foundation-plate A, whereupon the cylinder can be moved sidewise over it by swinging it around the stationary pin *a* as a pivot in the manner indicated by the dotted circle *a³*, and, being thus adjusted, it can be drawn from the pin *a*, as indicated by the dotted circle *a⁴*, and by now removing the balance-lever E the cylinder can be removed. To replace the cylinder, the pin *a'* is depressed, as just described, and the cylinder fitted against pin *a* and swung on said pin to its place, whereupon the pin *a'*, being released, springs up and confines it.

The piston C, which can be of any suitable known construction, is covered with a protecting-hood, D, which is of greater diameter than the cylinder and rests flatly upon it, while it surrounds the steam-cylinder without touching it. This hood may be made of brightly-polished or painted metal, and thus, while protecting and hiding the parts below, gives a finished ornamental appearance to the steam-cylinder. A knife-edge bearing, *d*, is provided in the center of the top surface of the hood D, upon which the balance-lever E rests.

The lower surface, *d'*, of the hood D and the upper surface, *c*, of the piston C are straight and smooth, and when the piston rises or falls vertically and the lever E moves in an arc the hood will slide easily upon the piston, causing the knife-edge to accommodate itself to the described movement of the lever. The balance-lever E is provided with a fulcrum-pin, *e*, having its bearing in a lug formation, *i*, of a supporting-stand, I, of the motor G. The free end portion of the balance-lever moves in an ordinary slotted standard, J, provided with two set-screws, *j j'*, for the adjustment of the oscillations of the balance-lever, and is weighted in the ordinary manner by suspended adjustable weights *e'*. The hood D is provided with two parallel central lugs, *d²*, between which the balance-lever moves, said lugs *d²* being set far enough apart to permit the insertion and removal of the cylinder B by manipulating said cylinder in the manner hereinbefore described. Above the balance-lever E the lugs *d²* are provided with a cross-pin, *d³*, which transmits the motion of the pis-

ton to a side-rod frame, F' , of the motor-valve F . The side-rod frame F' consists of an upper and lower cross-head and two side rods, the lower cross-head, f , being attached to the hood D between the lugs d^2 by means of the pin d^3 and the two side rods, f' , fastened to it, one at either side of the valve F . Above said valve the upper cross-head, f^2 , is fastened to the side rods, f' , by adjusting-nuts f^9 . To the center portion of the cross-head f^2 the valve-rod f^3 may be connected by means of any suitable loose connection—as, for instance, an ordinary ball-joint, a ball, f^{12} , on the upper end of the valve-rod fitting a corresponding socket in an enlargement or box, f^{13} , of the cross-head. The valve F and motor G used in this damper-regulator, as also the connection between the piston-rod g^5 of the motor G and damper H by means of a weighted chain, g^4 , and pulleys g^3 , are to be the same as shown and described in my Patent No. 370,267, dated September 20, 1887, while the position of the valve F is changed by putting it in line with and between the motor G and cylinder B , thus directly connecting the valve-rod f^3 with the piston C , and connecting the function of the weighted lever E to that of a balance or counterpoise to the piston.

The supply-pipe f^4 of the valve F communicates by means of a branch pipe, f^5 , with the cylinder B , and the fluid used is water under boiler-pressure, or water directly supplied by the boiler. A pipe, f^6 , connects the motor G with the valve F , and either supplies the water from the valve to the motor or exhausts it from the motor into the valve, as described in my aforesaid patent. The exhaust-pipe f^7 conducts the water away from the valve F , and it also receives the leakage from the top portion of the motor G by means of an open branch pipe, f^8 . In order to thus discharge the leakage from the motor, a collar, g , having an annular groove, g' , is provided, into which the leakage is collected, and from whence it is conducted down into the pipe f^8 by means of a pipe, g^2 , which is connected to the collar and enters the pipe f^8 to a suitable depth. By extending the pipe g^2 into the pipe f^8 the exhausted water is prevented from finding its way up into the groove g' and causing an overflow, which it would do if the connection between the pipe f^7 and the groove g' was uninterrupted, unless the pipe f^7 was made so inconveniently large that the exhaust-water could pass through it without friction.

The pipe f^5 is connected to the bottom of the cylinder B , and thus the unsightly pipe-connections are placed out of the way, as well as hidden from view, by the foundation-plate A , and the regulator occupies less room and presents a neater appearance.

By placing the valve F in the same axial line with the piston C , and by using a piston instead of a diaphragm, I am enabled to construct the parts in a more compact form and to locate said valve out of the way and between the legs of the support of the motor G .

What I claim is—

1. In a damper-regulator, the combination, with the weighted lever E , support I , and its connections, of the foundation-plate A , having steadying-pins a a' , one of which is movable, and the flanged piston-cylinder B , having notches b' , substantially as described.

2. The combination of the damper-motor G and its support I , weighted lever E , cylinder B , piston C , hood D , having lugs d^2 , side-rod frame F' , and valve F , arranged in line with and below the motor G and within the support I , substantially as and for the purpose described.

3. The combination of the exhaust-pipe f^7 , the open branch pipe f^8 , leakage-pipe g^2 , grooved collar g , and motor G , substantially as described.

4. A damper-regulator comprising a cylinder, B , piston C , weighted hood D , having lugs d^2 and pin d^3 , valve side-rod frame F' , valve F , damper-motor G , arranged in the axial line of the valve and piston, pipes f^6 f^5 , and pipe f^4 , for supplying both the valve F and cylinder B , substantially as and for the purpose described.

5. The combination, with the cylinder B , piston C , lever E , valve F , and motor G , of the protecting finishing-hood D , provided with a knife-edge bearing, d , and constructed with a diameter sufficiently large with respect to the diameter of the cylinder to provide a space between itself and the cylinder, and thereby be capable of sliding laterally to accommodate the changes in position of the lever, substantially as described.

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

FRANCIS LÉCLÈRE.

Witnesses:

JOHN G. BOWMAN,
WM. H. WOOD.