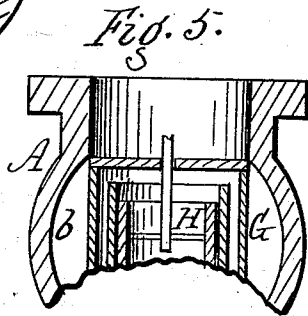
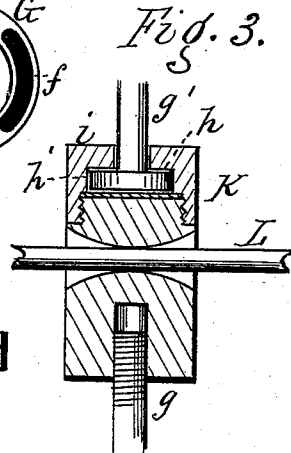
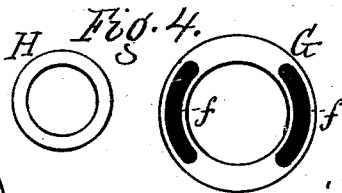
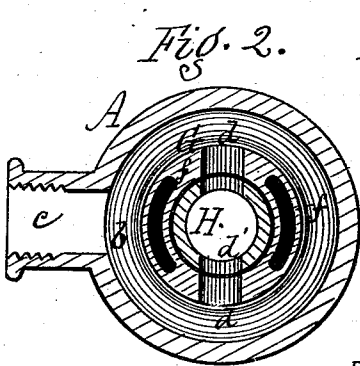
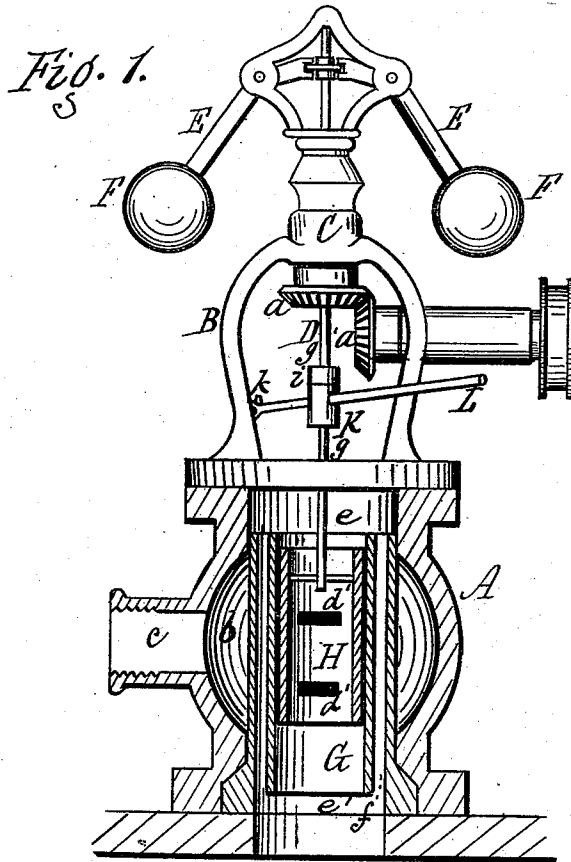


E. SCHIRCK.
GOVERNOR-VALVE.

No. 177,963.

Patented May 30, 1876.



Witnesses.
Edwin B. Scott.
Richard E. White.

Inventor.
Edward Schirck.
per R. F. Osgood,
Atty.

UNITED STATES PATENT OFFICE.

EDWARD SCHIRCK, OF ROCHESTER, NEW YORK.

IMPROVEMENT IN GOVERNOR-VALVES.

Specification forming part of Letters Patent No. **177,963**, dated May 30, 1876; application filed March 2, 1875.

To all whom it may concern:

Be it known that I, EDWARD SCHIRCK, of the city of Rochester, in the county of Monroe and State of New York, have invented a certain new and useful Improvement in Governor-Valves for Steam-Engines; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, in which—

Figure 1 is a sectional elevation. Fig. 2 is a cross-section through the casing. Fig. 3 is a vertical section of the swivel-coupling in the piston-rod. Figs. 4 and 5 are detail views.

My invention consists, essentially, in combining in the casing or shell an independent cylinder or barrel and a balance-valve resting therein, having coincident ports through which the steam is admitted, said cylinder also having longitudinal ports through its walls, by which means the steam which passes upward through the open-topped valve is returned to join with the volume passing downward through the bottom of the valve, the valve being thus held in balance.

A is the casing or outer shell of the valve. B is the standard or frame. C is the hollow sleeve inclosing the piston-rod. D is the piston-rod. E E are the arms; F F, the balls, and *a a* are the gears by which the motion is given. Instead of both gears *a a* only the upper one may be used, and with it may engage a worm-gear so arranged as to give motion to the governor. With the use of such a device, if the belt should break the balls would instantly fall and the engine would stop. G is an independent cylinder or barrel which rests in the casing A, having an annular space around it which receives the steam from the induction-pipe *c*. The bearings of the casing A are reamed out so that the cylinder may fit accurately therein, and at the ends of the latter are steam-spaces *e e'*, for the purpose of allowing a free passage of the steam. H is a cylindrical valve, which rests closely in the cylinder or barrel, and is attached to the piston-rod D, and works up and down with it. This valve is open at both ends, so as to allow the steam which enters to pass both up and down. *d d* and *d' d'* are ports of any desired form and size, formed, respectively, in the

sides of the cylinder or barrel and the valve, which allow the steam to pass from the space *b* to the interior of the valve, and thence to the steam-chest of the engine. These ports are at right angles, or thereabout, to the induction-pipe, so that the force or impetus of the steam is broken before reaching the ports, thereby preventing side pressure on the valve. *ff* are ports in the cylinder or barrel G, extending vertically through the same, and connecting the steam-space *e* above the valve with that, *e'*, below the valve, by which means the steam which passes the top returns to mingle with that which passes downward through the lower end of the valve, the two uniting in the space *e'* at the bottom before passing into the steam-chest. By this means the pressure on both ends of the valve is equal, and the latter is perfectly balanced, so that it works easily in the cylinder. In order to keep the ports *d d d' d'* in line as the valve works up and down the valve is provided with a spline or feather which slides in a vertical groove of the cylinder or barrel. The cylinder or barrel, instead of reaching to the top of the casing, may extend but part-way up, the top being closed by a cover, as shown in Fig. 5. K is a swivel-head, which connects the two halves *g g'* of the piston-rod. The lower half, *g*, is provided with a screw-thread, or is otherwise arranged so that it may be turned or adjusted up or down in the swivel-head to raise or lower the valve in the barrel, the object of which is to properly adjust the ports *d d d' d'*. The upper half *g'* of the rod has an enlarged bearing or ball, *h*, which rests loosely in a corresponding socket, *h'*, of the swivel-head, so as to allow the upper half of the rod to turn without binding. The upper half of the rod is fast with the governor-head, and revolves with it in the sleeve C, but has a free vertical motion to operate the valve. The ball-and-socket joint in the swivel-head insures the proper turning of the upper half of the rod without affecting the lower half, so that the valve cannot be displaced. The upper end of the swivel-head has a screw-thread, on which is screwed a cap, *i*, to keep the bearing or ball in the socket and preserve the same from dirt; also, to form an oil-box. L is a lever resting on a fulcrum, *k*, and passing through or otherwise

connected with the swivel-head K, so that the latter may be operated by it. I prefer to make a loose connection between the lever and its fulcrum *k*, so that the lever may be removed from place, if desired, when the valve is in operation.

When the valve is at rest the ports *d' d'* of the valve stand above those *d d* of the barrel, and no steam can enter. By pressing down upon the lever L the valve is lowered, and said ports are brought in coincidence, and the steam enters the valve. By this means the engine is started by the movement of the valve alone. As soon as the engine receives motion the governor will run, and the lever may then be released or removed. If the belt should break under motion the stopping of the governor-valve and the falling of the balls would cause the valve to rise in the barrel, thus cutting off the steam and preventing the running away of the engine. I thus form a stop-motion without the use of a special device for the purpose.

An important feature in this invention is the independent barrel G fitted in the casing, and provided with the longitudinal ports *f f*

in addition to the side ports. These longitudinal or vertical ports enable the steam that goes above the valve to pass down and unite in one volume with that which passes below the valve, thus balancing the latter. This barrel is easily cast, and is therefore not expensive.

Having thus described my invention, what I claim as new is—

In a governor-valve, an independent cylinder or barrel, G, fitted removably in the casing A, in combination with an open-ended steam-balanced valve, H, resting within the barrel, the barrel and valve having coincident side ports *d d*, and the barrel constructed with vertical ports *f f*, extending longitudinally through its walls, as and for the purpose specified.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

EDWARD SCHIRCK.

Witnesses:

R. F. OSGOOD,
ANDREW SCHIRCK.