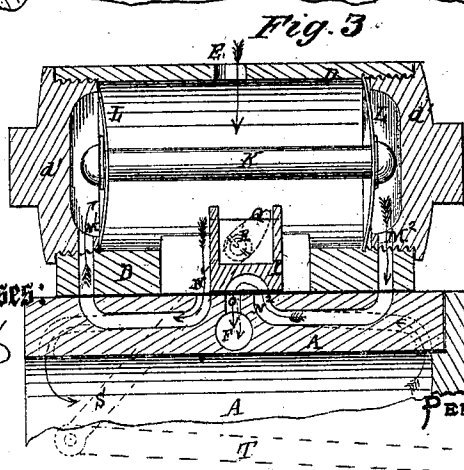
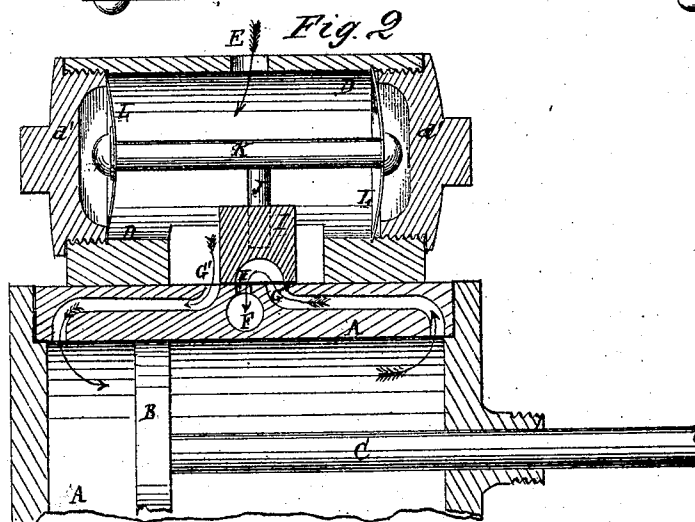
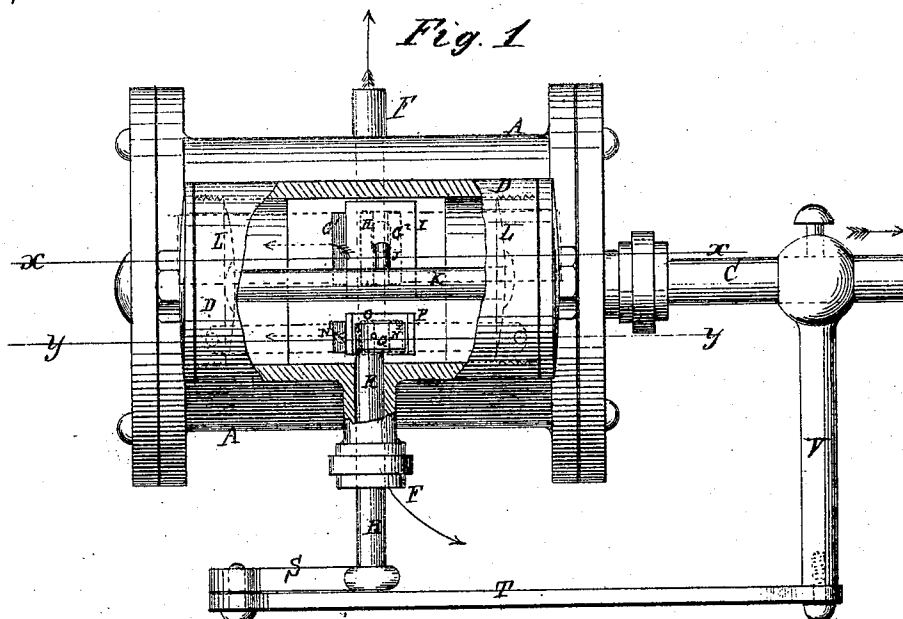


FREDERICK GLASSON & WILLIAM GILFILLAN.

Improvement in Valve Movements.

No. 119,755.

Patented Oct. 10, 1871.



Witnesses:

A. W. Almquist
Francis McClellan

Inventor:

Frederick Glasson
William Gilfillan

Mumford
Attorneys.

UNITED STATES PATENT OFFICE.

FREDERICK GLASSON, OF NEW YORK, N. Y., AND WILLIAM GILFILLAN, OF
PATERSON, NEW JERSEY.

IMPROVEMENT IN VALVE MOVEMENTS.

Specification forming part of Letters Patent No. 119,755, dated October 10, 1871.

To all whom it may concern:

Be it known that we, FREDERICK GLASSON, of New York city, in the county and State of New York, and WILLIAM GILFILLAN, of Paterson, in the county of Passaic, and State of New Jersey, have invented a new and useful Improvement in Valve-Movement; and we do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification.

Figure 1 is a top view of a steam-chest and cylinder to which our improvement has been attached, part being broken away to show the construction. Fig. 2 is a detailed section of the same taken through the line *x x*, Fig. 1. Fig. 3 is a detail section of the same taken through the line *y y*, Fig. 1.

Our invention has for its object to furnish an improved device for operating the valve, for admitting the steam to and exhausting it from the cylinder, which shall be simple in construction and effective and reliable in operation; and it consists in the flexible plates, in combination with the steam-chest, and with the rod that operates the main valve, as hereinafter more fully described.

A is the cylinder; B is the piston; C is the piston-rod, and D is the steam-chest or valve-chamber, about the construction of which parts there is nothing new. E is the inlet for the steam, and F is the outlet or exhaust. G¹ G² are the ports that admit the steam to the cylinder, and H is the port that leads to the exhaust F. I is the slide-valve, the lower side of which is recessed, as shown in Fig. 2, so that as the valve is moved upon its seat the exhaust-port H may be connected with the inlet-ports G¹ G², alternately, and the said ports G¹ G² may be alternately uncovered to admit the steam to the cylinder A at one side of the piston B while it is being exhausted from the other side. In the upper side of the valve I is formed a hole or slot to receive the lower end of an arm, J, the upper end of which is rigidly attached to the rod K, which extends longitudinally through the center of the steam-chest D, and which is made of such a length that its ends may extend to the shoulders

against which the heads *d'* of the steam-chest D rest, said heads being concaved or recessed upon their inner sides to allow the rod K to have a sufficient longitudinal movement to shift the valve I. To the ends of the rod K are attached flexible metallic plates or diaphragms L, the edges of which are clamped between the shoulders of the steam-chest D and the flange edges of the inner sides of the heads *d'*. From the spaces between the flexible metallic plates L and the concaved or recessed heads *d'* ports or passages M¹ M² lead to the ports N¹ N² which open into the steam-chest D upon each side of the port O which is connected with the exhaust F. P is a sliding-valve, which is recessed upon its lower side so as to connect the ports N¹ N² alternately with the exhaust-port O, leaving the other one of the said ports N¹ N² open into the steam-chest D. The upper side of the valve P is recessed, as shown in Fig. 3, to receive a toe, Q, attached to the inner end of a shaft, R, so that the valve P may be shifted by the oscillation of the said shaft R. The shaft R passes out through the side of the steam-chest D, and to its outer end is attached a crank-arm, S, the other end of which is pivoted to the end of a connecting-rod, T. The other end of the connecting-rod T is pivoted to the end of the arm U, which is rigidly but adjustably attached to the piston-rod C, as shown in Fig. 1, so that the point at which the steam is cut off may be regulated at will.

By this arrangement, when the parts are in the position shown in Fig. 2, the steam passes to the rear of the piston B through the port G¹, and exhausts from in front of the piston through the ports G² H, forcing the piston and piston-rod to the right. This movement of the piston-rod through the arm U, connecting-rod T, crank-arm S, shaft R, and toe Q, shifts the small valve P, connecting the port N¹ M¹ which leads to the space between the flexible plate L and head *d'* of the steam-chest D, at the left-hand end of the steam-chest with the exhaust-port O, and opening the port N² to the steam-chest, allowing the steam to pass through the port N² and passage M² to the space between the flexible plate L and the head *d'* of the steam-chest D, at the right-hand end of said steam-chest. This moves the rod K and arm J and shifts the valve I to the

left, cutting off the steam at the rear and admitting it in the front of the piston B, and so on.

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

The flexible metallic plates L, in combination with the rod and arm K J that operate the valve I, and with the recessed heads or ends *d* of the steam-chest D, substantially as herein shown and described, and for the purpose set forth.

The above specification of our invention signed by us the 16th day of August, 1871.

FREDERICK GLASSON,
WILLIAM GILFILLAN.

Witnesses:

JAMES T. GRAHAM,
ALEX. F. ROBERTS.

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