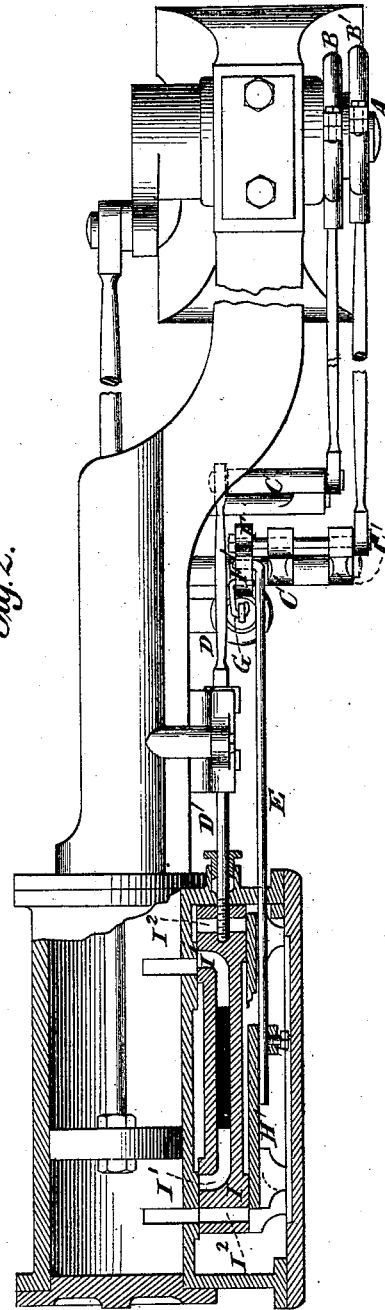
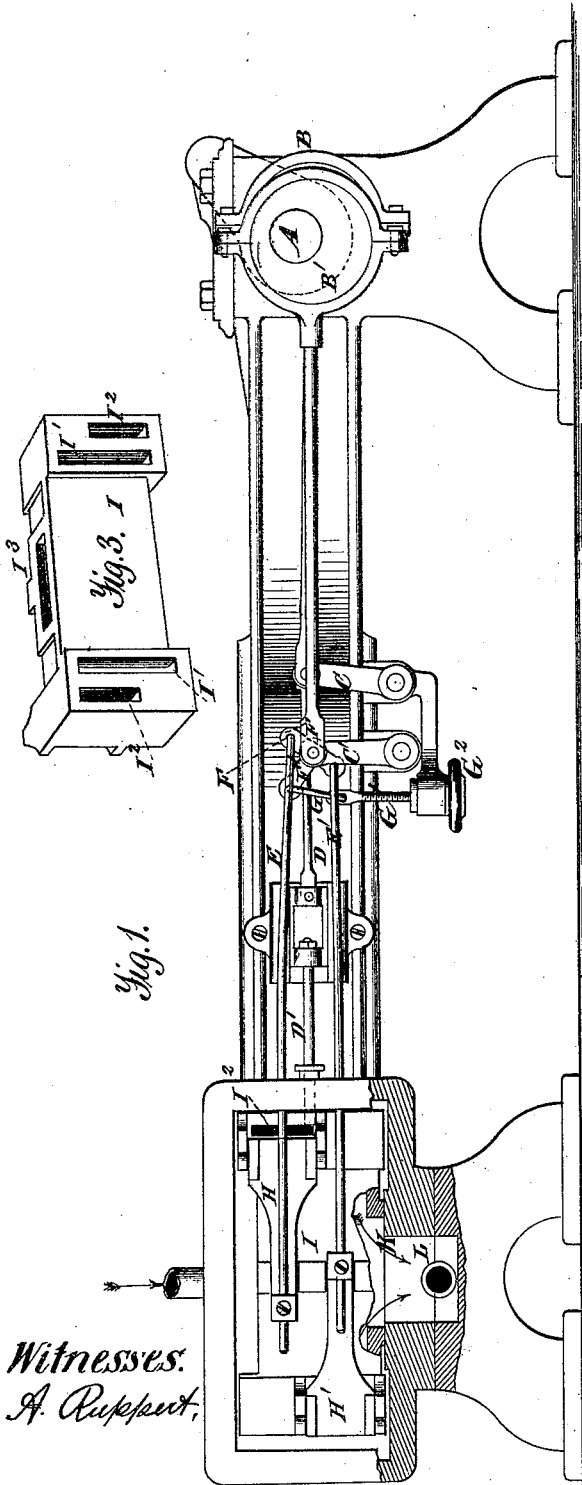


T. & A. SHARP.
VALVES FOR STEAM ENGINES.

No. 181,212.

Patented Aug. 15, 1876.



Witnesses:
A. Ruppert,

T. Sharp
A. Sharp
Inventors.
D.P. Holloway & Co.
Atty.

UNITED STATES PATENT OFFICE.

THOMAS SHARP AND ALONZO SHARP, OF SALEM, OHIO.

IMPROVEMENT IN VALVES FOR STEAM-ENGINES.

Specification forming part of Letters Patent No. **181,212**, dated August 15, 1876; application filed May 1, 1876.

To all whom it may concern:

Be it known that we, THOMAS SHARP and ALONZO SHARP, of Salem, in the county of Columbiana and State of Ohio, have invented a new and useful Improvement in Steam-Engines, of which the following is a specification:

This invention relates to the valves of steam-engines of that class which have an independent cut-off; and consists in a new and useful modification in the form of the slide-valve.

In the annexed drawings, making a part of this specification, Figure 1 is an elevation, partly in section, showing the valves and their operative mechanism. Fig. 2 is a plan view, partly in horizontal section; and Fig. 3 is a perspective view of the slide-valve.

The same letters are employed in all the figures in the indication of the same parts.

The engine is of the common slide-valve order, the general principles of which are very well and familiarly known, so as not at all to require any detailed description.

The crank-shaft A carries the eccentrics B B', which respectively operate the slide-valve and cut-off valves, their connecting-rods being attached to the cranks C C'. The rods D D', connecting crank C with the slide-valve I, are connected by a slide, by which rod D' is adjustably connected to the slide-valve, so as to admit of its regulation. The rods E E' are respectively attached to the opposite arms of the three-branched crank F, and to the cut-off valves H H', so that as the former are oscillated by the swinging of crank C' the cut-off valves H H' shall alternately move to cover and uncover the ports of the slide-valve I, through which steam is supplied to the cylinder, thereby cutting off steam at part of the stroke.

The point where the steam may be cut off is regulated by the adjustment of the position of the triple crank F. This is done in the following manner: The arm F' is midway between the arms to which the valve-rods E E' are attached. The cut-off valves may be made to come into action sooner or later, after the induction-ports have been opened, by shifting their position in relation to the induction-ports I². By drawing down the arm F' both valves

H H' will be moved farther from the ports I², and consequently the greater distance must the crank have turned the shaft A before the cut-off valves will cut off the steam; and, on the contrary, by lifting arm F' the valves will cut off sooner. This movement is effected by means of the rod G attached to arm F', and actuated by the rod G¹, having a screw cut on it, and turned in its nut by the milled head G². This enables the engineer to shift the cut-off valves and regulate their action without stopping the engine.

It is manifest that the arm F' may, in like manner, be actuated by a governor.

The steam introduced between the face of the valves shown in Fig. 1 and the cap of the valve-chest (which is represented in that figure as taken off) passes through the induction-ports I² directly into the cylinder whenever the ports are opened.

The exhaust steam is discharged from the cylinder into the exhaust-ports I¹, which do not communicate at all with the induction-ports, but are entirely independent of them, passing (both of them) through the port I³ and seat K into the exhaust-pipe L.

The valve I is finished to fit its seats both on the face next the cylinder and the face where it rests on the seat K.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The valve I, constructed with two finished faces and independent induction-ports I² and exhaust-ports I¹, the latter connecting at I³, and delivering the exhaust through a port in the seat K, substantially as set forth.

2. In combination with the slide-valve I, having independent induction and eduction ports I² and I¹ I³, the cut-off valves H H', adjustably regulated to act on the induction-ports, substantially as set forth.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

THOMAS SHARP.
ALONZO SHARP.

Witnesses:

THOMAS KENNETT,
PETER AMBLER.