

(No Model.)

G. W. ANDERSON.

CUT-OFF VALVE.

No. 335,172.

Patented Feb. 2, 1886.

Fig. 1.

Fig. 2.

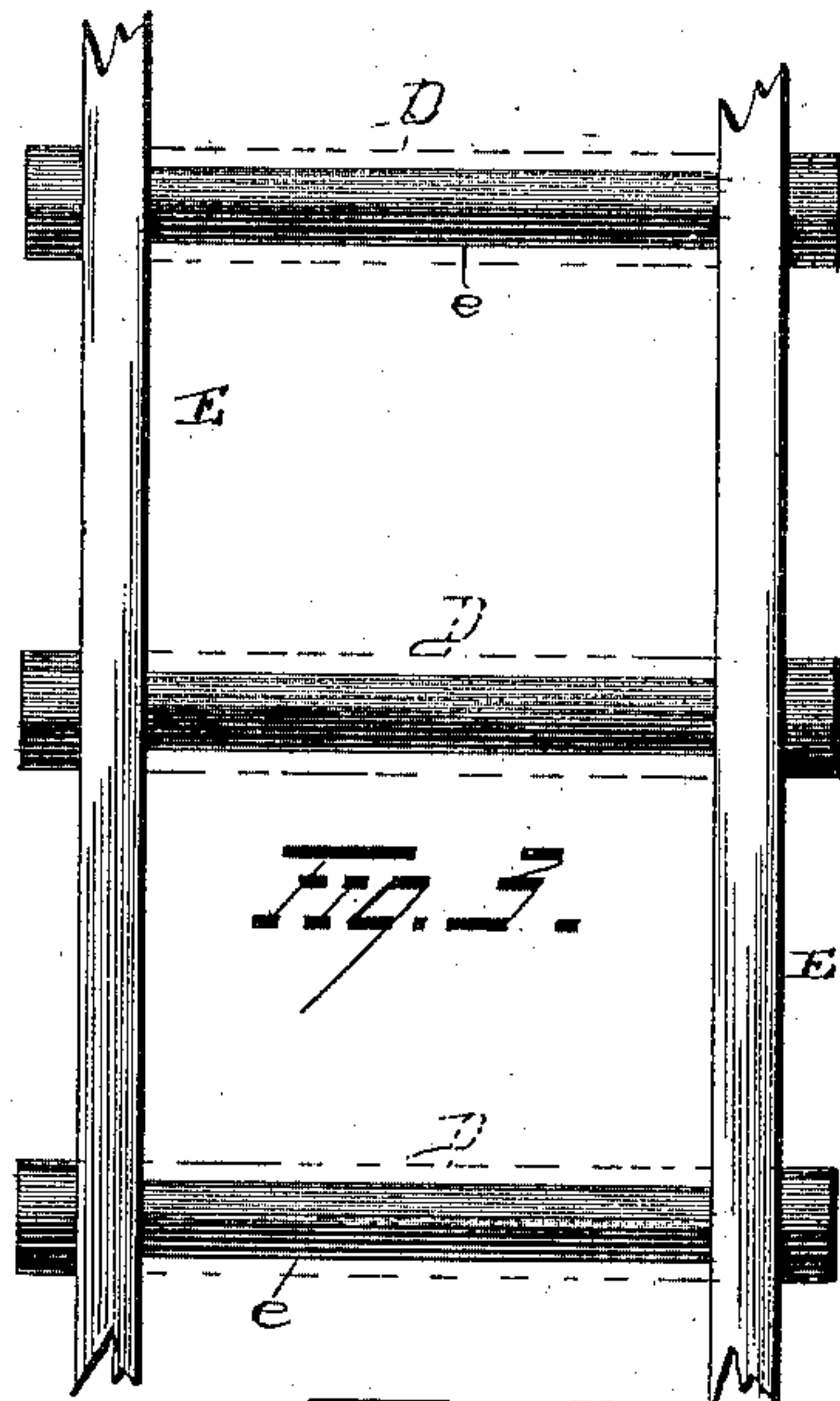
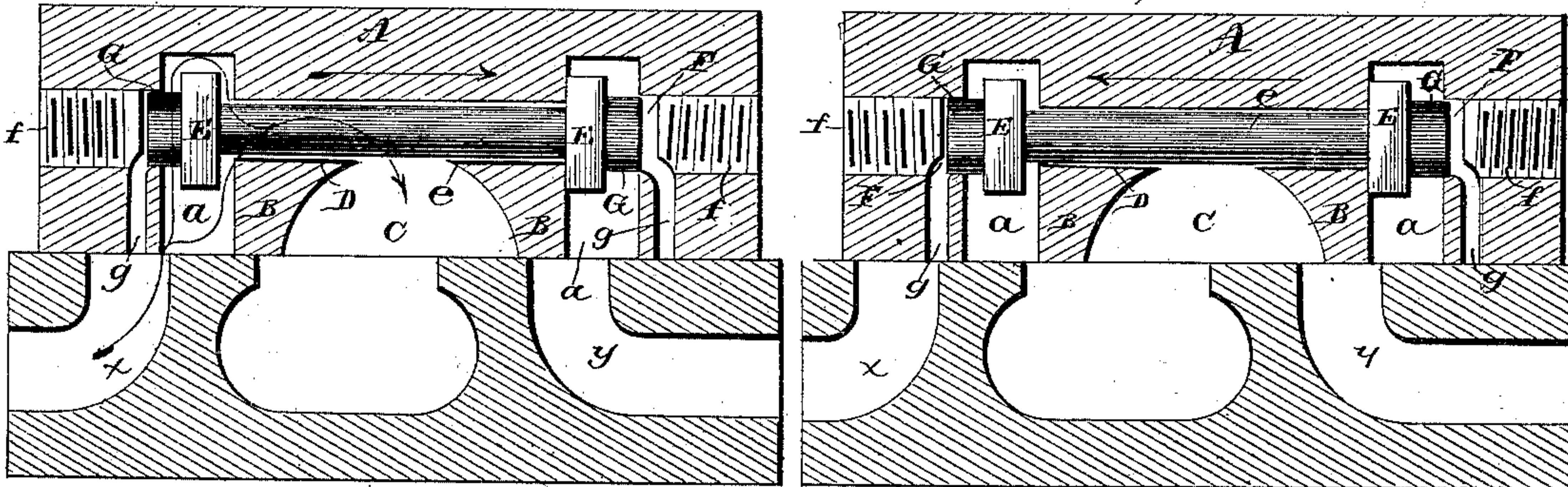
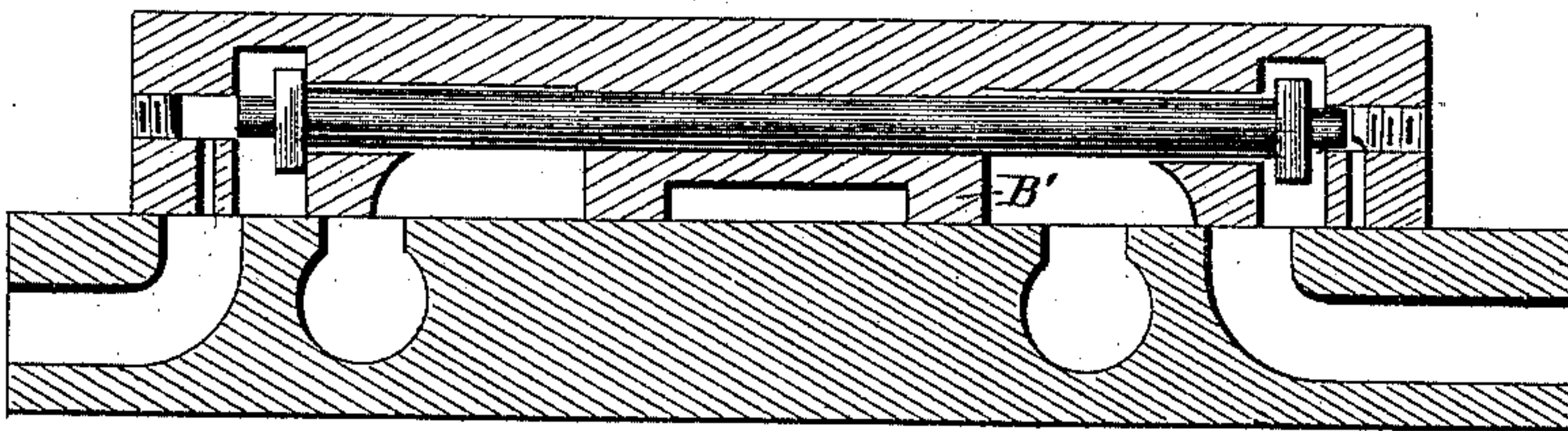


Fig. 4.



WITNESSES

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GEORGE W. ANDERSON, OF WESTPORT, INDIANA.

CUT-OFF VALVE.

SPECIFICATION forming part of Letters Patent No. 335,172, dated February 2, 1886.

Application filed May 25, 1885. Serial No. 166,558. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. ANDERSON, of Westport, in the county of Decatur and State of Indiana, have invented certain new and useful Improvements in Steam-Cut-Off Valves; 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 relates to an improvement in steam-cut-off valves.

In an application for Letters Patent filed on June 5, 1884, and allowed October 25, 1884, Serial No. 133,916, a valve was shown and described for admitting a great amount of outside lap with a very small amount of back-pressure.

The object of my present invention is to improve the construction of the valve described in the above-mentioned application, and particularly to provide improved means for seating the rods or bars which connect the movable blocks, which determine the variable exhaust, and improved means for operating the said blocks.

With these ends in view my invention consists in certain features of construction and combinations of parts, as will be hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a transverse section of the valve with parts in position as the piston is about completing its stroke to the left. Fig. 2 represents the same when the piston is at mid-stroke going toward the right. Fig. 3 is a detached view of the blocks and their connecting-bars. Fig. 4 is a modification.

My improved valve is particularly adapted to use in connection with a cylinder provided with two steam and one exhaust ports; but the construction may be such as to admit of two exhaust-ports.

A represents a slide-valve having the general proportions of an ordinary slide-valve. The exhaust-chamber is provided with a centrally-located depending piece, B, which occupies the greater portion of the space usually occupied by the chamber, leaving only the narrow recesses *a*, one at each end, corresponding with the steam-ports beneath, but having a width slightly less than the steam-ports.

The under face of the projecting piece B is cut away to form an exhaust-chamber, as shown at C. A port, D, running parallel with the bearing-face of the valve, or nearly so, is formed in the projection B, extending through the same from one of the recesses *a* to the other, and communicating at the center with the exhaust-chamber C. The port D is adapted to be closed at the ends where it communicates with the recesses *a* by a pair of blocks, E, connected by a pair of bars or rods, *e*, which fit within the port D and have a free longitudinally-sliding motion therein. The connecting-bars *e* are somewhat longer than the port D, and hold the blocks E at such a distance apart that only one can rest in contact with the projection B at one time.

The ends of the valve are tapped at points opposite the connecting-rods *e*, the perforations F extending through to the recesses *a*. The outer ends of the perforations F are closed with screw-plugs *f*, leaving sockets at the inner ends of the perforations, which are adapted to receive the piston projections G, secured to the backs of the blocks E. The sockets F communicate with the lower face of the valve through small ports *g*. The latter serve to admit steam behind the piston projections G, and thereby operate the blocks E at the proper moment.

x and *y* represent the steam-ports leading to the cylinder.

Suppose the piston to be moving toward the left and just about to complete its stroke. The valve A is moving toward the right, and the exhaust through the port *x* is just about to close, as shown in Fig. 1. As the valve completes its stroke to the right, and is just starting on its return, the steam-port *x* will be wide open and the exhaust free through the port *y*. As the valve reaches about its one-half stroke toward the left, and is about to open the port *x* to the exhaust, the small port *g* on the left has become exposed to the live steam within the port *x*, which has exerted its force behind the piston projections G on the left, and thereby forced the blocks E toward the right, closing the exhaust through the port D from the port *x* and opening the same to the port *y*, thus holding the live steam on the piston until it has nearly completed its stroke toward the right, or un-

til it is desirable that the exhaust should be open. At the proper time for such exhaust to be open the arch exhaust-chamber C in the face of the projection B will open to the port
 5 x. A like movement of the several parts will take place as the piston completes its stroke to the right and returns toward the left.

It will be observed that I obtain by this arrangement a great amount of outside lap and
 10 consequent quickness of cut-off, while the active steam is held upon the piston and the spent steam allowed to escape, with almost, if not quite, the same precision as is obtained by a very slight outside lap. It will further
 15 be observed that the operation of the sliding blocks by steam, instead of by projections on the valve, entirely does away with the liability of breakage which attended the sudden shocks given the blocks by the former construction.
 20 My present construction also does away with the use of spring-rollers or other separate devices for holding the sliding blocks on their seats.

Fig. 4 shows a construction of valve with
 25 two exhaust and two steam ports, an auxiliary depending projection, B', being introduced.

It is evident that slight changes might be resorted to in the construction of the several
 30 parts described without departing from the spirit and scope of my invention, hence I do not wish to limit myself strictly to the construction herein set forth; but,

Having fully described my invention, what
 35 I claim as new, and desire to secure by Letters Patent, is—

1. An automatic steam-actuated exhaust cut-off valve, located within the exhaust-chamber of a sliding valve, substantially as
 40 set forth.

2. The combination, with a sliding valve

having a depending projection in its exhaust-chamber, of a pair of sliding blocks seated in said projection and adapted to alternately open and close an exhaust, substantially as
 45 set forth.

3. The combination, with a sliding valve, of a pair of steam-actuated sliding blocks located within the exhaust-chamber of the valve, and adapted to open and close an exhaust-
 50 port, substantially as set forth.

4. The combination, with a cylinder provided with one exhaust and two steam ports, and a sliding valve, of blocks operated by steam and adapted to alternately form a
 55 steam-joint and an exhaust-space, substantially as set forth.

5. The combination, with a sliding valve having a depending projection located within its exhaust-chamber and provided with an
 60 exhaust-port extending through the projection, of a pair of blocks connected by bars or rods seated within the said port and adapted to open and close the port, substantially as
 65 set forth.

6. The combination, with a sliding valve having a depending projection within its exhaust-chamber and a pair of sliding blocks connected by bars or rods seated in the said
 70 projection, of piston projections secured to the backs of the blocks and adapted to work in sockets formed in the ends of the valve, and steam-ports connecting the sockets with the face of the valve, substantially as set
 75 forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

GEORGE W. ANDERSON.

Witnesses:

MILTON M. MEWHINNEY,
 ISAIAH PROCTOR.