B. CHAMBERS.

Reversing Gears for Engines.

No. 148,807. Patented March 24, 1874.

Fig. 1.

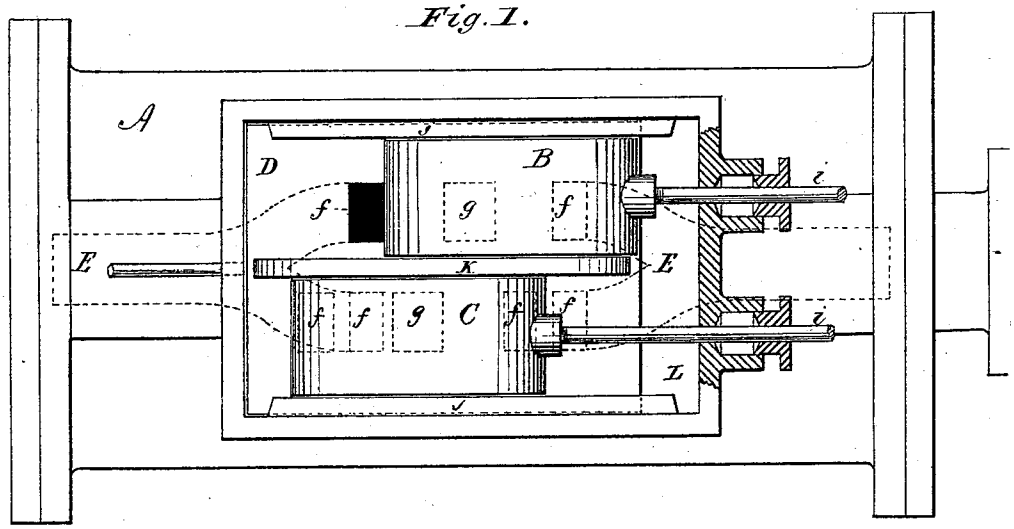
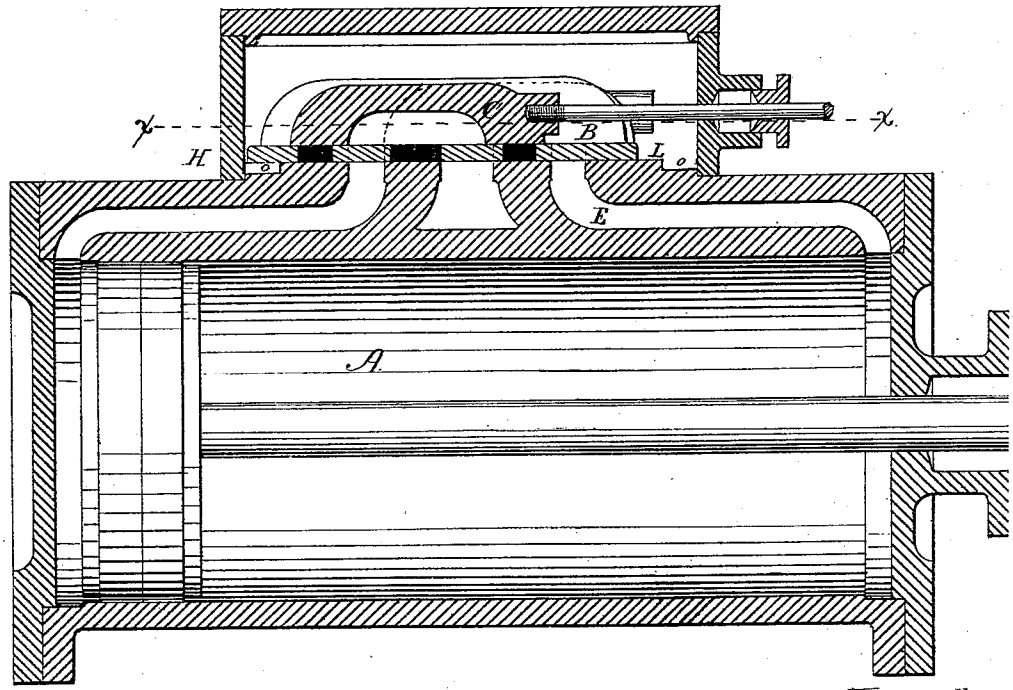


Fig. 2.



Witnesses:
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UNITED STATES PATENT OFFICE.

BENJAMIN CHAMBERS, OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNOR OF ONE-HALF HIS RIGHT TO JOHN S. ELLIS, OF SAME PLACE.

IMPROVEMENT IN REVERSING-GEARS FOR ENGINES.

Specification forming part of Letters Patent No. **148,807**, dated March 24, 1874; application filed February 27, 1874.

To all whom it may concern:

Be it known that I, BENJAMIN CHAMBERS, of Washington, District of Columbia, have invented a new and useful Improved Reversing-Gear for Steam-Engines; and I do hereby declare that the following is a full, clear, and exact description thereof, sufficient to enable others skilled in the art to which my invention appertains to make and use the same, reference being had to the accompanying drawing forming part of this specification, and in which—

Figure 1 is a plan view of my improved reversible valve-gear. Fig. 2 is a longitudinal section, in elevation, with cylinder attached.

Similar letters of reference indicate like parts in all the figures.

The object of this invention is, first, to construct a simple and easy reversing-gear for steam-engines, whereby any person of ordinary intelligence may be able to manipulate it; second, the reversing-gear may be used for a throttle-valve; third, the reversing-gear may be used for the purpose of regulating the quantity of steam to the engine; and, fourth, to effect an economic first cost by the simplicity of the construction.

My invention consists in constructing a sliding plate between the slide-valves and the face of the cylinder, said plate having ports in zigzag position to correspond to the ports in the face of the cylinder. This plate is in one piece, and, when moved to one end or the other of the steam-chest, it covers up one set of ports while it opens the other set; thus only one valve is receiving steam at the same time, which may be forward or backward, as the case may be, according to the set of ports that are open or shut. It also consists in constructing the plate before alluded to so that, when used as a throttle-valve, it may be moved equidistant from both ends of the steam-chest, thus effectually closing both sets of ports, and also may be used as a regulator to either set of ports by moving it so much as may be desired to let any given quantity of steam to the piston. Said motion of the plate may be graduated in any of the known forms, which will indicate how much of the working-ports may be open.

Lines *x x*, Fig. 2, show a longitudinal section through the valve C, with the ports shut off, while the dotted lines (same figure) show the ports open for live steam to valve B, corresponding to the position shown in Fig. 1. Thus while valve C is shut off, valve B is in operation.

E represents the main steam-passage to and from the cylinder, communicating with either valve that is then operating. A represents the cylinder; *f*, the live-steam ports, Fig. 1; and G, the exhaust-ports. D is the slide between the valves and the face of the cylinder, and is operated by stem H, by levers, or any suitable mechanism. *i i* are valve-stems, connected, by rock-shaft or any suitable means, to the eccentrics. The slide is held to its seat by two side pieces, *j j*, running longitudinally with the sides of and fastened to the steam-chest, or in any other manner preferable. K is a division-plate rigidly fixed to plate D, and, of course, moves with it. L is the face of the cylinder, slightly projecting upward.

When the plate D is at either end, there is a recess, *o*, between it and the lower portion of the cylinder free. The steam in this space, and that under the plate covered by the valve that is not in operation, serves to balance the pressure upon said plate, thus requiring very little physical strength to move it.

I am aware that sliding valve-seats are not new; but,

Having thus described my invention, what I desire to secure by Letters Patent is—

1. The sliding plate D, division-piece K, longitudinal piece *j j*, ports *f*, and slide-valves B and C, operated in one steam-chest by two eccentrics, in combination with the ports in the face of the cylinder, substantially as and for the purpose herein set forth and described.

2. The combination of slide D, constructed as described, with the ports *f*, side pieces or guides *j j*, and ports E, all arranged as and for the purpose specified.

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Witnesses:
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