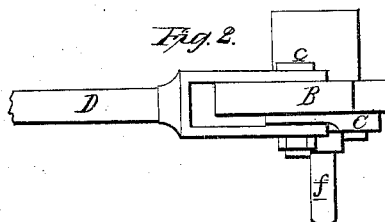
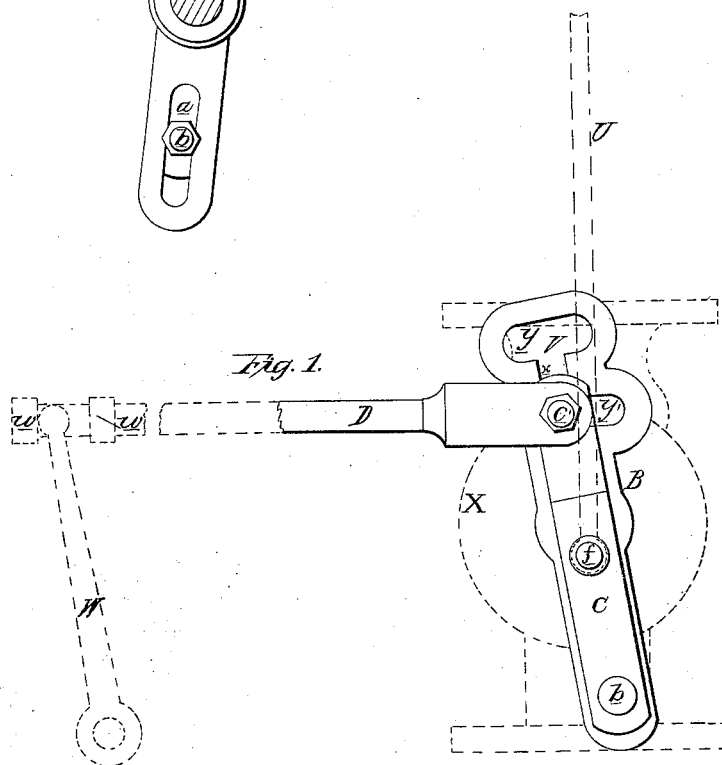
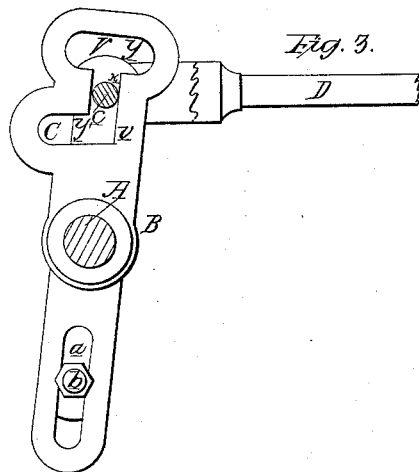


W. Mc Clintock,
 Steam-Engine Valve-Gear.
 N^o 50,304. Patented Oct. 3, 1865.



Witnesses:
 John Parker.
 Chas. P. Paul.

Inventor:
 W. Mc Clintock
 By his Attorney
 J. H. Howden

UNITED STATES PATENT OFFICE.

WM. MCCLINTOCK, OF WILMINGTON, DELAWARE, ASSIGNOR TO HIMSELF
AND G. G. LOBDELL, OF SAME PLACE.

IMPROVEMENT IN CUT-OFF-VALVE GEARS.

Specification forming part of Letters Patent No. **50,304**, dated October 3, 1865.

To all whom it may concern:

Be it known that I, WM. MCCLINTOCK, of Wilmington, Delaware, have invented an Improvement in Cut-Off Valves; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

My invention relates to certain improvements in cut-off valves similar to that for which Letters Patent of the United States were allowed to K. H. Loomis on the 2d day of May, 1865; and my invention consists in an arm, having slots of a peculiar character, secured to the valve-spindle, and combined with devices fully described hereinafter, so that the operation of the said cut-off valve will be discontinued when the speed of the engine exceeds or falls short of the rate at which it is desired to maintain the same.

In order to enable others skilled in the art to make and use my invention, I will now proceed to describe its construction and operation.

On reference to the accompanying drawings, which form a part of this specification, Figure 1 is a side view of a cut-off valve, showing my improvement; Fig. 2, a plan view, and Fig. 3 a detached view.

A is the spindle of a cylindrical valve, which is fitted within a valve-chest, *x*, and to the outer end of this spindle is secured an arm, B.

In the lower end of the arm B is a straight slot, *a*, and in the upper end is a slot or opening, V, of the peculiar shape shown in the drawings, the vertical portion *x* of this opening communicating at the upper end with the horizontal portion *y*, and at the lower end with the horizontal portion *y'*.

In the slot *a* slides a pin, *b*, which projects from the lower end of a plate, C, and to a pin, *c*, projecting from the upper end of the plate and through the slot V is jointed the forked end of a rod, D, to which a horizontal reciprocating motion is imparted by a vibrating arm, W, the upper end of the latter striking alternately against adjustable lugs *w w* on the said rod D.

From the center of the plate C projects a pin, *f*, to which is jointed the lower end of a rod, U, the latter being so connected to the gov-

ernor that when the speed of the latter is decreased the rod and its plate C will be raised, the rod and plate being lowered when the speed of the governor is accelerated.

When the speed of the governor is such that the pin *c* occupies a position in the portion *x* of the slot V the reciprocating motion imparted to the rod D will cause the arm B to vibrate, and then turn the valve, its ports being carried across the ports in the chest so as to allow the steam to pass through the same to the valve-chest below or directly to the cylinder. When the speed of the engine is greatly increased from any cause the action of the governor will depress the plate C so that the pin *c* will occupy a position in the opening *y'* of the slot V, the pin on the backward motion of the arm D bearing against the edge *v*, Fig. 3, of the slot and moving the arm B to the position shown in Fig. 1, the ports of the valve being thus carried beyond the ports in the chest, so that no steam can escape to the cylinder. The arm remains in this position, and the pin *c* slides in the portion *y'* of the slot until the speed of the engine and the governor has decreased to such an extent that the plate C is raised and the pin *c* again occupies a position in the portion *x* of the slot V, when the valve will be operated and steam will be admitted to the cylinder as before. When the speed of the engine is diminished from any cause the plate C will be raised and the pin *c* will occupy a position in the portion *y* of the slot, the pin sliding in the said portion, while the arm B assumes a vertical position, in which it remains, the ports of the valve coinciding with those of the chest, so that the steam may pass freely into the valve-chest until the speed of the engine has sufficiently increased to depress the plate and move the pin *c* into the portion *x* of the slot, when the vibrating motion will be again imparted to the arm B, and the engine will continue at the uniform rate desired.

I am aware that a patent was allowed to K. H. Loomis for a cut-off valve somewhat similar to that above described. In Loomis's valve, however, the slot V in the plate B is curved and of the same width throughout, so that when the plate C is raised to its highest point the vibration of the arm B is continued and the steam is cut off before the piston has completed

its stroke, while, when the plate is depressed, the steam is still admitted to the cylinder, although in diminished quantities.

It will be apparent that a valve of the construction above described is superior to that of the said Loomis, inasmuch as the steam is entirely cut off when the engine exceeds its proper rate of speed and is freely admitted to the full end of the stroke of the piston when the speed of the engine is improperly reduced, the valve in both instances being retained in its position until the desired change in the speed of the engine is effected.

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

The arm B, with its slots *a* and V, formed substantially as described, secured to the valve-spindle, and combined with the within-described operating devices or their equivalents, substantially as and for the purpose set forth.

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

Witnesses: WM. McCLINTOCK.

CHARLES E. FOSTER,
JOHN WHITE.