

G. S. Young,

Cut Off Valve.

No. 110,813.

Patented Jan. 3. 1871.

Fig. 1

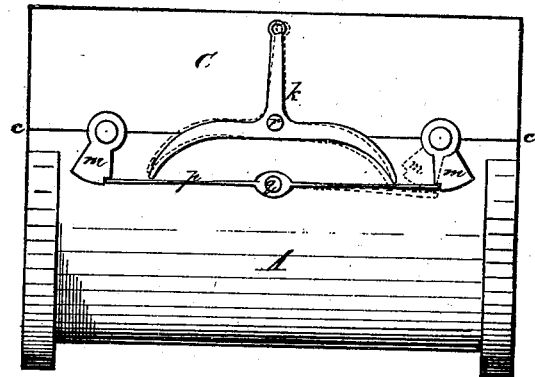
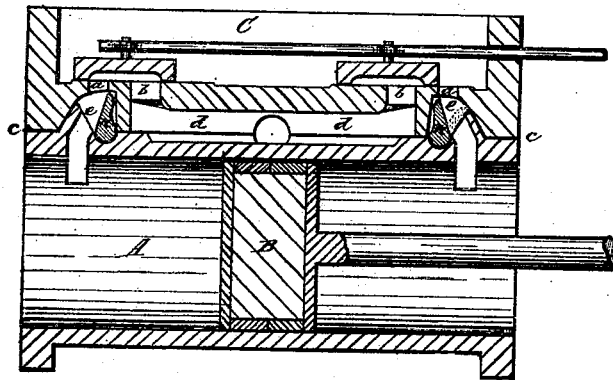


Fig. 2



Witnesses.
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GEORGE S. YOUNG, OF CLEARFIELD, PENNSYLVANIA, ASSIGNOR TO HIMSELF AND A. FITCH BOYNTON, OF SAME PLACE.

Letters Patent No. 110,813, dated January 3, 1871.

IMPROVEMENT IN CUT-OFF VALVES FOR STEAM-ENGINES.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, GEORGE S. YOUNG, of the town and county of Clearfield, in the State of Pennsylvania, have invented certain new and useful Improvements in "Cut-off Valves for Steam-Engines;" and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing through letters of reference marked thereon, and in which—

Figure 1 represents a side elevation of the cylinder and valve-chest of a steam-engine with my improved cut-off applied.

Figure 2 is a vertical longitudinal section of the same.

The same letters indicate like parts on both figures.

The object of my invention is to simplify the general construction of the cylinder and valve-chest portion of the engine, and to provide a cut-off which shall be self-operating at any portion of the stroke of the engine under control of the governor; also, to economize steam; and

It consists—

First, in arranging the line of connection between the cylinder and valve-chest so as to intersect the ordinary side steam-passages, and thus avoid coring by forming them half in each casting.

Secondly, in a novel construction of cut-off valve to be opened and closed by the passing steam; and

Thirdly, in the arrangement of said valves in a separate chamber or chambers from the ordinary valve-chest, and between it and the cylinder in close proximity to the latter.

In the accompanying drawing—

A represents the cylinder; B the piston; and C the valve-chest; in which latter the ordinary double-D or other suitable form of valve may be arranged to operate, to control the steam-passages *a* and exhaust-passages *b*.

The parting-line between the valve-chest and cylinder is represented at *c*, by the arrangement of which I am enabled to form half the side-passages in the underside of the valve-chest casting, and half in the periphery of the cylinder, so that the two cavities, fitted together, form the side-passages *d*, instead of coring them in the solid metal.

On the same two faces are formed, in like manner,

the seats and chambers *e*, for the cut-off valves *n*, which have their pivots on which they vibrate coincident with said parting-line *c*. The cylinder and chest may then be securely connected by bolts or other suitable means.

The pivots at one end of these cut-off valves are made to extend out sufficiently to receive the pendent arms *m*, which catch against the ends of the yielding bar *p*, secured to the side of the cylinder at *g*, to hold said valves in an open position, and, by its flexibility, to release them when depressed at either end by the vibration of the forked lever *k*, which has its fulcrum at *r*. This lever is caused to vibrate in unison with the reciprocation of the piston by any suitable means under control of the governor, so as to release the arms *m* by the depression of the bar *p*, at either end, alternately, when the passing steam, acting upon the upper edge and back of the valve, will immediately close it, as represented in dotted lines; and as soon as the slide-valve opens a passage for the escape of the exhaust-steam its pressure on the under side will open the cut-off valve, by which action it becomes locked again by the bar *p*.

What is here claimed as new, and desired to be secured by Letters Patent, is—

1. The construction of a steam-engine cylinder and its valve-chest, with their dividing-line intersecting the side steam-passages, substantially as and for the purpose set forth.

2. The cut-off valves *n*, constructed and arranged substantially as described, whereby they can be opened and closed by the passage of the spent and live steam respectively, without other agency, substantially as specified.

3. The arrangement of the cut-off valves in a separate chamber or chambers from the slide-valve-chest, and between it and the cylinder, substantially as shown and described.

4. The combination of the forked lever *k* and flexible bar *p*, with the arms *m* on the axes of the cut-off valves *n*, to effect the retention and release of the latter, substantially as specified.

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Witnesses:

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