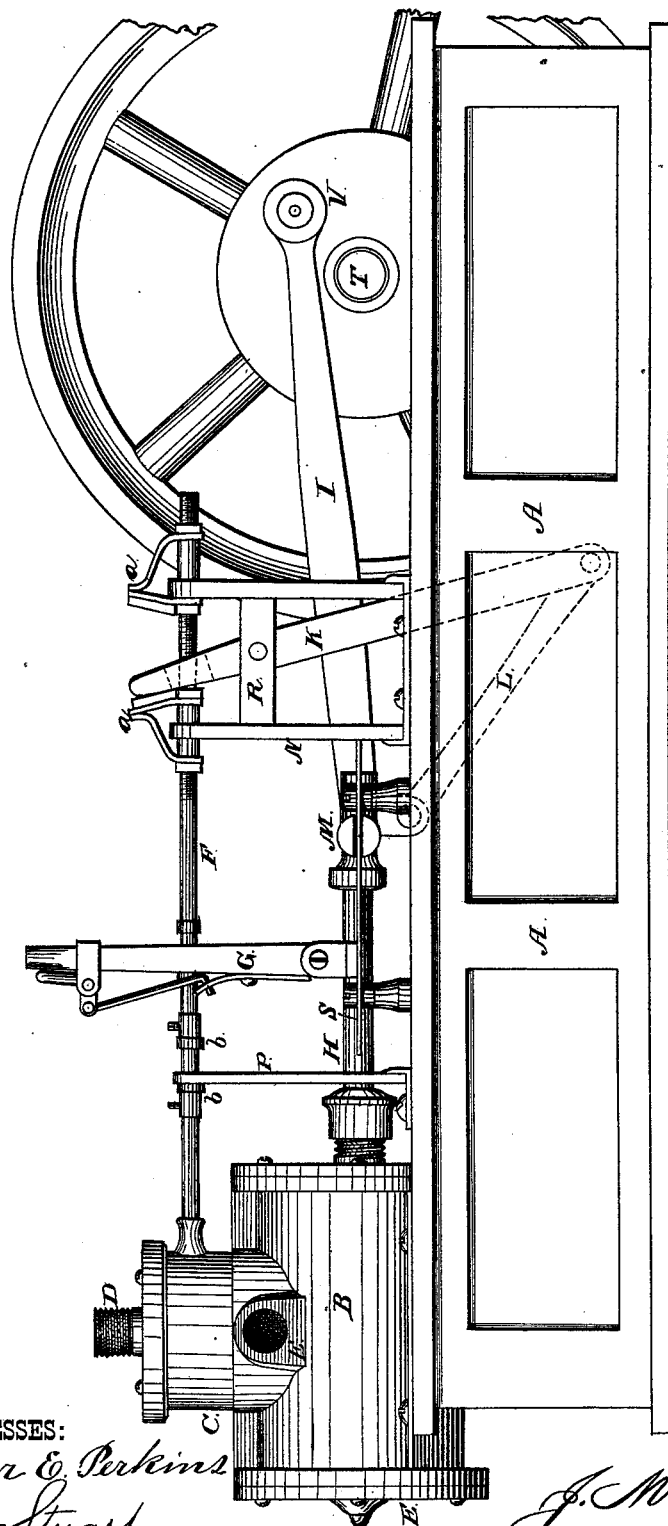


A. A. STEWART.
Cut-Off for Steam-Engine.
No. 213,534. Patented Mar. 25, 1879.



WITNESSES:

Arthur E. Perkins
D. G. Stuart

Alvin A. Stewart
INVENTOR.

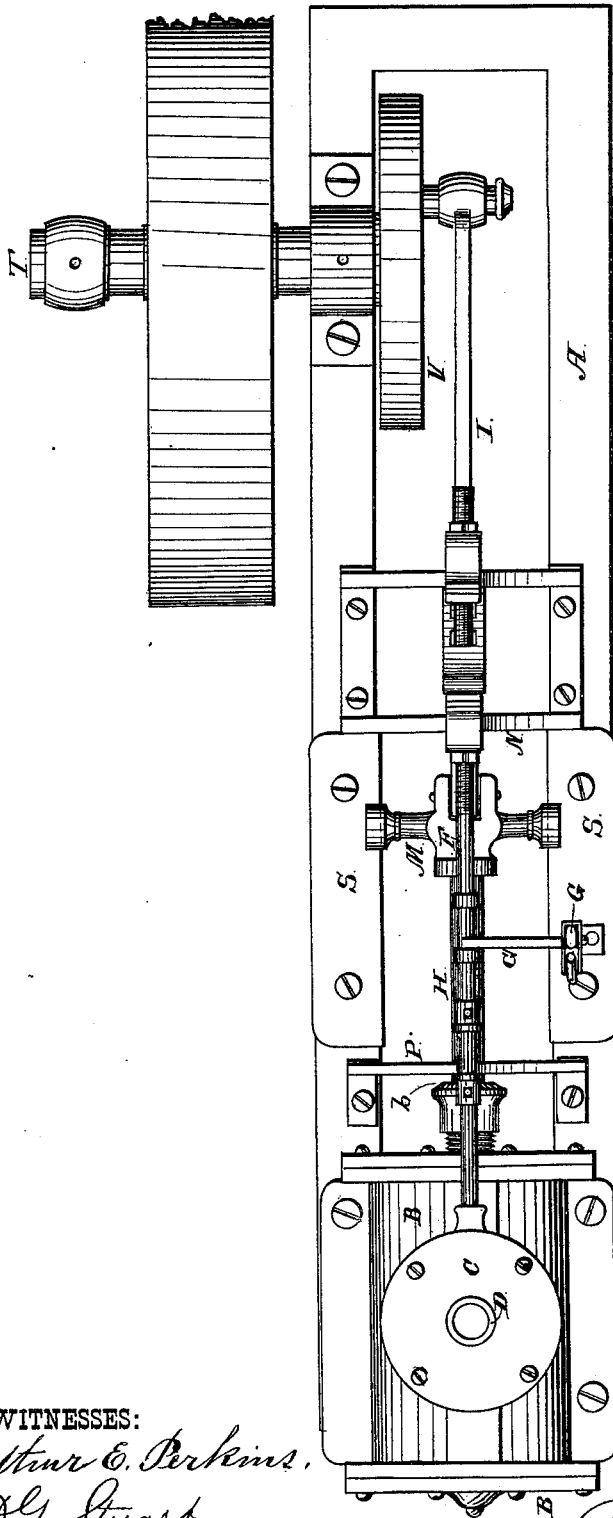
J. Mc. Perkin
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UNITED STATES PATENT OFFICE.

ALVIN A. STEWART, OF PLEASANT PLAINS, OHIO.

IMPROVEMENT IN CUT-OFFS FOR STEAM-ENGINES.

Specification forming part of Letters Patent No. **213,534**, dated March 25, 1879; application filed December 23, 1878.

To all whom it may concern:

Be it known that I, ALVIN A. STEWART, of Pleasant Plains, in the county of Warren and State of Ohio, have invented certain new and useful Improvements in Cut-Offs for Steam-Engines; and I do hereby declare that the following is a full, clear, and exact description of the invention, that will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

The same letters and figures of reference are used to indicate the corresponding parts.

After describing the invention its nature and extent will be shown in the claims.

The object of my invention is to provide a device which will cut off the steam to the cylinder at any desired point in the stroke of the piston; and consists in a novel combination of levers with the valve-rod, which produces a steady and regular movement of the steam-engine.

Figure 1 is a side elevation, and Fig. 2 is a plan view, of my invention.

A represents the engine-bed; B, the steam-cylinder; C, the steam-chest; D, the pipe by which steam is admitted into the steam-chest; E, the exhaust-port; F, the valve-rod; G, the reversing-lever; H, the piston-rod; I, the pitman; K, the vertical lever, which is pivoted to a cross-bar, R, of a double stand, N; P, a single stand in the rear of the guides S S; M, the cross-head at the end of the piston-rod H; L, a connecting-rod, which transmits motion from the cross-head M to the lever K; T, the main shaft; V, a crank, arranged on the main shaft to receive the motion transmitted from the pitman I; *a a*, blocks on the valve-rod F; *b b*, two collars or buffers, made of elastic material.

My improved cut-off saves from one-third to one-half the expense of running the steam-engine, as I find by practical experience.

When the crank attached to the main shaft has passed the dead-center by about one-sixteenth of a revolution, then a full head of

steam presses on the piston-head until the next dead-center is approached by about one-sixteenth of a revolution. This is caused by the vertically-inclined lever K, which receives its motion from the cross-head by means of the connecting-rod L. Just before the crank reaches the dead-center, the lever K strikes one of the blocks *a a* and moves the valve-rod F, transferring the steam from one side of the piston to the other.

The buffers *b b* act as a check to the valve-rod F when the valve has reached the position to uncover the steam-ports leading to the cylinder.

The reversing-lever G is pivoted to a stand on the guide S. The slotted arm G' is rigidly secured to the reversing-lever G at one end, while the slotted end embraces the valve-rod F. In order to reverse the engine the reversing-lever G is moved backward or forward, as may be desired.

The lever K is slotted, in order to allow the pitman I to pass through it.

Having now described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In cut-offs for steam-engines, the slotted lever K, in combination with the connecting-rod L, the piston-rod H, steam-cylinder B, steam-chest C, and the valve-rod F, provided with the blocks *a a* and the buffers *b b*, substantially as shown and described, and for the purposes herein set forth.

2. The reversing-lever G, provided with the slotted arm G', in combination with the valve-rod F, provided with the blocks *a a*, slotted vertical lever K, pitman I, connecting-rod L, and the piston-rod H, substantially as shown and described, and for the purposes herein set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 16th day of December, 1878.

ALVIN A. STEWART.

Witnesses:

THORNTON THOMPSON,
WM. B. STEWART.