

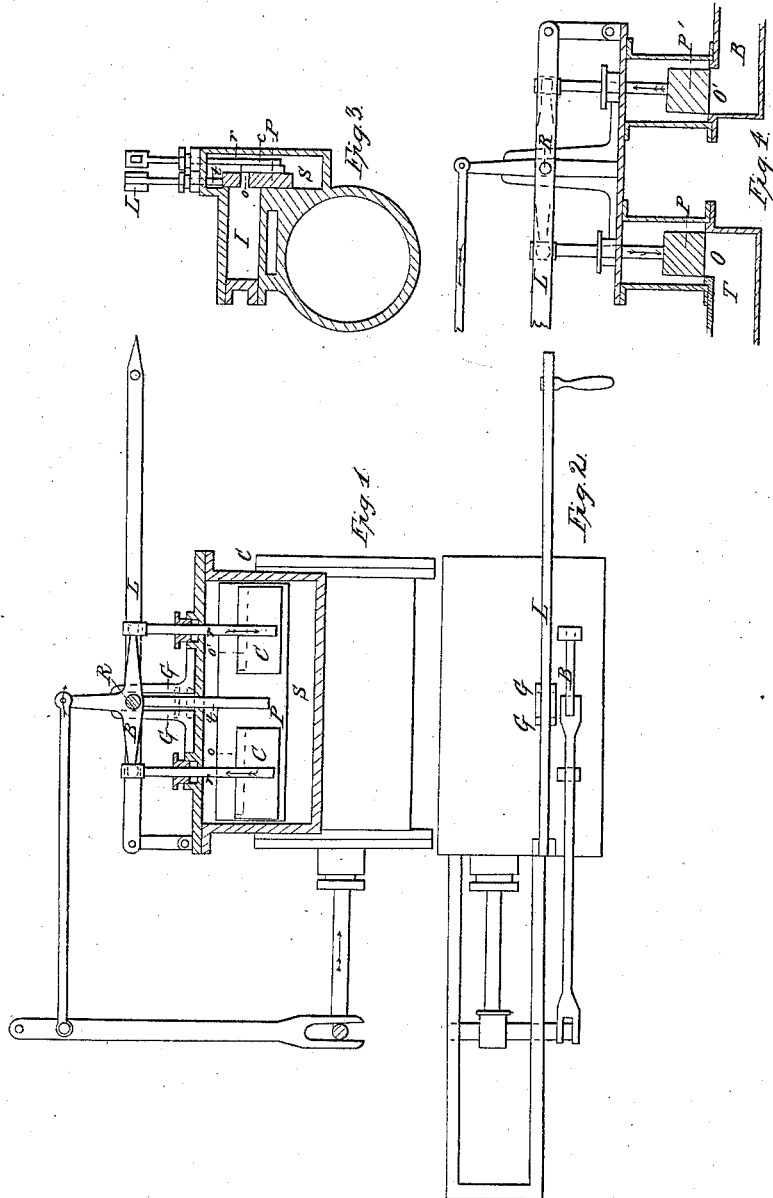
2 Sheets-Sheet 1.

H. Allen,

Steam Cut-Off.

No 2,597.

Patented Apr. 30, 1842.



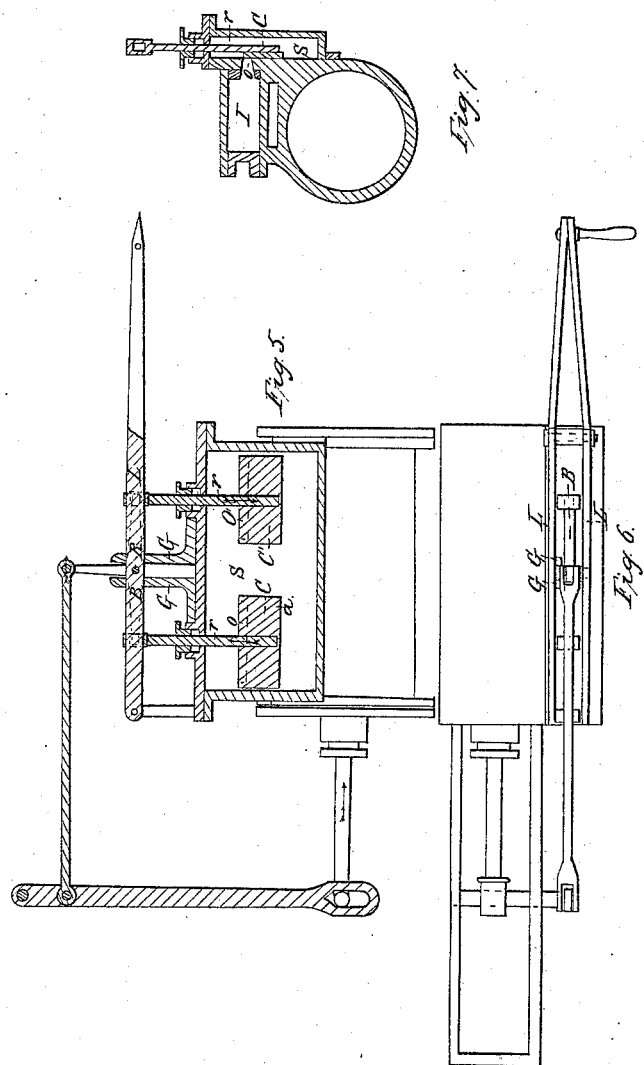
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Patented Apr. 30, 1842.



# UNITED STATES PATENT OFFICE.

HORATIO ALLEN, OF NEW YORK, N. Y.

## CUT-OFF VALVE FOR STEAM-ENGINES.

Specification of Letters Patent No. 2,597, dated April 30, 1842.

*To all whom it may concern:*

Be it known that I, HORATIO ALLEN, of the city and county of New York, in the State of New York, have made certain Improvements on my Invention for which Letters Patent for "Improvement in the Cut-Off Valve for Steam-Engines" were granted me August 21, 1841, and that the following is a full and exact description of said additional improvements.

In the original specifications I described, by reference to Plates 3 and 4 Figures 5, 6, 7 and 8 the arrangement therein denominated "cut off with adjustable seats" wherein "a cut off slide or two cut off slides on the same rod, are combined with two adjustable seats, one for each end of the cylinder, and each containing an opening for the passage of steam to its respective end."

As a further improvement, I propose the combination represented in Plates I and II, a reference to which will render the description more concise and clear.

S is the steam chamber, in which are placed the cut off slides C and C'.

O is the opening leading to one inner steam chamber, and O' the opening leading to the other; both being in one plate P. When the slides C, and C' cover the openings, the passage of the steam is cut off. The slides C and C' are by the rods *r* and *r'* connected with opposite ends of the beam B, which receives a vibratory motion from the rock shaft R, which receives its motion, either from the cross head of piston rod, in the manner represented in the drawing, or other similar methods or from an eccentric or cam on the engine shaft.

As the parts are represented in the drawings, and supposed in motion in the directions indicated by the arrows, the steam is cut off by the slide C, at half stroke, and on the return stroke, it is evident that the other slide C', will cut off the steam also at half stroke. I propose to make this arrangement adjustable, either by making the plate P movable, which is the plan represented in Plate I, and which I denominate "cut off with single adjustable seat," or by making the rock shaft R movable, which is the plan represented in Plate II, and which I denominate "cut off with movable rock shaft."

In the first case (see Plate I) the plate P, which contains both openings O and O', is by the rod *t* connected with the lever L. It is evident that if the lever L be raised or

depressed, the openings O and O' will be raised or depressed, and the proportion of cut off will be increased or diminished, and that the openings can be so placed that no steam will be cut off, or in another position, so that no steam will be allowed to pass.

In the second case (see Plate II) the rock shaft R is supported by the lever L, and the plate P is stationary. It is evident that when the lever L is raised the rock shaft R will be raised, and consequently both the slides C and C' will be equally raised, and thus the steam will be cut off at an earlier point in the stroke, and if depressed will be cut off at a later point in the stroke. If the width *a*, *b* of the slide, be as much greater than the extent of its movement, as the width of the opening, then the slides can be placed in a position that will allow no steam to pass during any part of the movement, and if the slides be so depressed, that they do not cover the openings except at the end of the stroke, then the engine will work at full stroke. The rock shaft may in various other ways have a movable support, as by being attached to parts through which a screw runs, in which case, when the screw is turned the parts carrying the rock shaft will be either raised or depressed. The principle of the combination is essentially the same viz that of raising or depressing the rock shaft while the beam, slides &c. may be in full motion.

The combination represented in Plate II is not limited to the use of the slide valve, but can be used with any valve that is at liberty to pass over or through the opening which it closes, either by covering it as is the case with the slide valve, or by entering it, as would be the case when a plunger enters the mouth of a cylinder or pipe which it closely fits. Such a combination is represented in Fig. 4 Plate I. The pipe T leads to one end of the cylinder, the pipe B to the other end. The plungers P and P' enter the openings O and O', and fit them as nearly as practicable. As the parts are represented, and being supposed in motion in the direction indicated by arrows, the plunger P enters the opening O, and cuts off the steam at half stroke. If the rock shaft be raised or depressed by the lever L, the proportions of cut off will be changed in like manner.

To embrace the improvements herein described, I make the following claims:

1. The combination of two slide valves,

having their simultaneous motions in opposite directions, with a single movable seat containing two openings, leading respectively, to opposite ends of cylinder, as here-  
5 in fully described.

2. The combination of the levers or beams, which give simultaneous motions in opposite directions, to two cut off valves, with a rock shaft or shafts having bearings on movable  
10 supports; said valves being any valves, which are at liberty to pass over or into the openings, which they are intended to close, and said supports of rock shaft being such

that they can readily be raised or depressed at pleasure, in the directions of the alternating motions of the valves, without interrupt- 15  
ing their movements.

I testimony whereof I the said HORATIO ALLEN hereto subscribe my name in the presence of the witnesses whose names are here- 20  
to subscribed on the twentieth day of April, A. D. 1842.

HORATIO ALLEN.

Witnesses:

JNO. S. WOODWARD,  
WM. J. SINCLAIR.