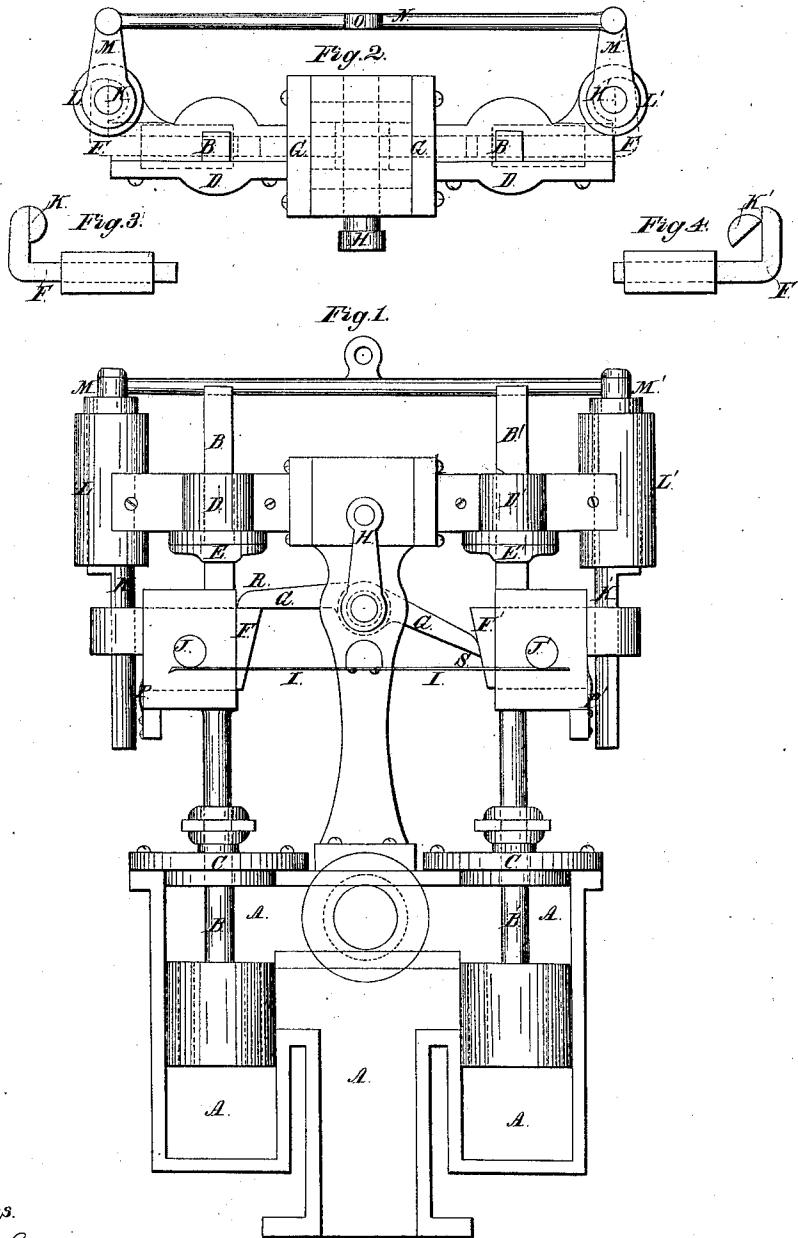


P. L. Weimer,
Steam-Engine Valve-Gear,
N^o 31,272, Patented Jan. 29, 1861.



Witnesses.
Lucian E. Warner
William Pennock

Inventor.
Peter J. Weimer

UNITED STATES PATENT OFFICE.

PETER L. WEIMER, OF LEBANON, PENNSYLVANIA.

STEAM-ENGINE.

Specification of Letters Patent No. 31,272, dated January 29, 1861.

To all whom it may concern:

Be it known that I, PETER L. WEIMER, of Lebanon, in the county of Lebanon, in the State of Pennsylvania, have invented a new and Improved Cut-Off; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 represents a front view of my invention. Fig. 2 is a top view of same. Fig. 3 is a top view of the latches and cam. Fig. 4 is a view of the same with the cam in a different position.

The letters of reference in the different figures correspond.

The nature of my invention consists in arranging a double vibrating lever, to operate on two sliding latches in the valve stems of the valves; the projection of which latches from the valve stems are regulated by cam shaped rods. Said cam shaped rods are actuated by the governor in such a manner that when the balls fly out the latches recede whereby the motion or travel of the valve is diminished, and when the balls of the governor fall the latches project which gives greater motion or travel to the valves consequently admitting more or less steam to the cylinder as the case may be. When the latches are out their full length the steam is admitted the entire stroke as they then remain in contact with the double vibrating lever during the entire stroke of the engine. The said double vibrating lever is vibrated by an eccentric on the engine shaft.

To enable those skilled in the art to make and use my invention, I will proceed to describe its construction and operation with reference to the accompanying drawing making a part of this specification.

The valve chest A contains in this case two common plug valves sliding over openings in the chest; the valves may however be made in any other known form. This chest A is intended to be placed on the valve chest of any engine or inserted in the steam pipe as near the steam cylinder as possible. The valves in the chest A are operated by means of the valve stems or rods B B' extending through the covers C C' and are guided at their upper ends by the guides D D'. Directly beneath these guides on the valve stems are formed the circular projecting plates E E' between which and the

guides are placed the circular pieces of india rubber to act as buffers. Between the plates E E' and covers C C' on the valve rods B B' are the sliding latches F F'. These latches project toward the double vibrating lever G G' which lever is vibrated by means of an eccentric on the engine shaft attached to the arm H. The vibration of the double vibrating lever G G' alternately acting on the latches F F' depress the valve stems and valves and admit steam to the cylinder. The line of motion of the points R and S of the double vibrating lever G G' being in a circle, that of the latches F F' in a straight line consequently they will move out of contact with each other when the valves are depressed. The valves on their release are carried back by the pressure of the steam acting on the valve stems or rods B B' assisted by the spring I acting on the pins J J' and strike on the india rubber buffers which arrests their motion. The double vibrating lever G G' it will be observed is bent or its ends R and S are not in line with its center of vibration the one end R as shown at Fig. 1 is in a horizontal position the other end S is depressed a distance equal to the amount of the full throw of the valve so that when the end S arrives at its lowest point of travel the end R will be in a horizontal position. This is done to give the lever ends R and S their proper line of motion so as to carry them out of contact with the latches F F' and obtain a proper time of opening for the valves, as one end of the double vibrating lever G G' must be in position to open one valve the moment the other end has arrived at its full length of travel or all the points of cut-off from nothing to full stroke cannot be obtained.

In proportion to the amount of contact between the arm G G' and the latches F F' will be the amount of motion or travel communicated to the valves. This contact is regulated by the cam shaped rods K K' working in suitable bearings L L' and moved by small cranks M M' fastened to their upper ends. These cranks are connected by the rod N on the center of which is the lug O to which lug the governor is attached, when the valve is working full stroke the position of the cam K K' and latches F F' are as shown at Fig. 3. The movement of the cranks M M' by the action of the governor causes the cams to partly revolve and assume the position Fig. 4, when the point of

contact between the double vibrating lever G G' and the latches F F' will be reduced and consequently they will become detached sooner and cut off the steam. The latches F F' are held in position by the small springs P P' which allows them to be depressed and spring back when the double vibrating lever G G' passes over them on its return stroke. The latches F F' are bent at right angle at the back end so as to embrace the cam shaped rods K K' as shown at Fig. 3 and Fig. 4.

The manner of operation is as follows: When the balls of the governor are down the cam shaped rods K K' and latches F F' are in the position as shown at Figs. 1 and 2 the latches F F' being held in contact with the cam shaped rods K K' by the springs P P'. The vibration of the double vibrating lever G G' alternately brings it in contact with the latches F F' in the valve stems and the valves are opened. On the return stroke of the vibration of the double vibrating lever G G' the springs P P' allow the latches F F' to yield sufficient for it to pass to their upper side. It will be readily understood that the valves will be kept open for a longer period when the latches F F' project further, and a shorter period when the said latches are drawn back. When the speed of the engine is increased the balls of the governor fly out and being properly attached to the lug O cause the cam shaped rods K K' to partly revolve and withdraw the latches

F F'. The cam shaped rods K K' are so arranged that when the governor balls are at their full height the latches F F' are so far drawn back that the double vibrating lever G G' will not come in contact with them and consequently admit no steam to the cylinder. It will thus be seen that the quantity of steam admitted to the cylinder regulates itself as the engine needs more or less power; and by the use of my invention a very regular and uniform motion of the engine is obtained and a very large percentage in the saving of fuel is effected. This cut-off is extremely simple in its construction, the working parts are made of steel and hardened and are so arranged that when worn they can be easily repaired. All that is necessary is to grind on a common grind stone the latches and double vibrating lever to their proper shape.

Having thus fully described the nature of my invention and its construction and operation what I claim and desire to secure by Letters Patent is—

The cam shaped rods K K' cranks M M' rod N in combination with the latches F F' for the purpose of regulating the projecting length of said latches from the valve stems B B' for the purpose as herein described and specified.

PETER L. WEIMER.

Witnesses:

LUCIAN E. WEIMER,

WILLIAM REINOCHÉ.