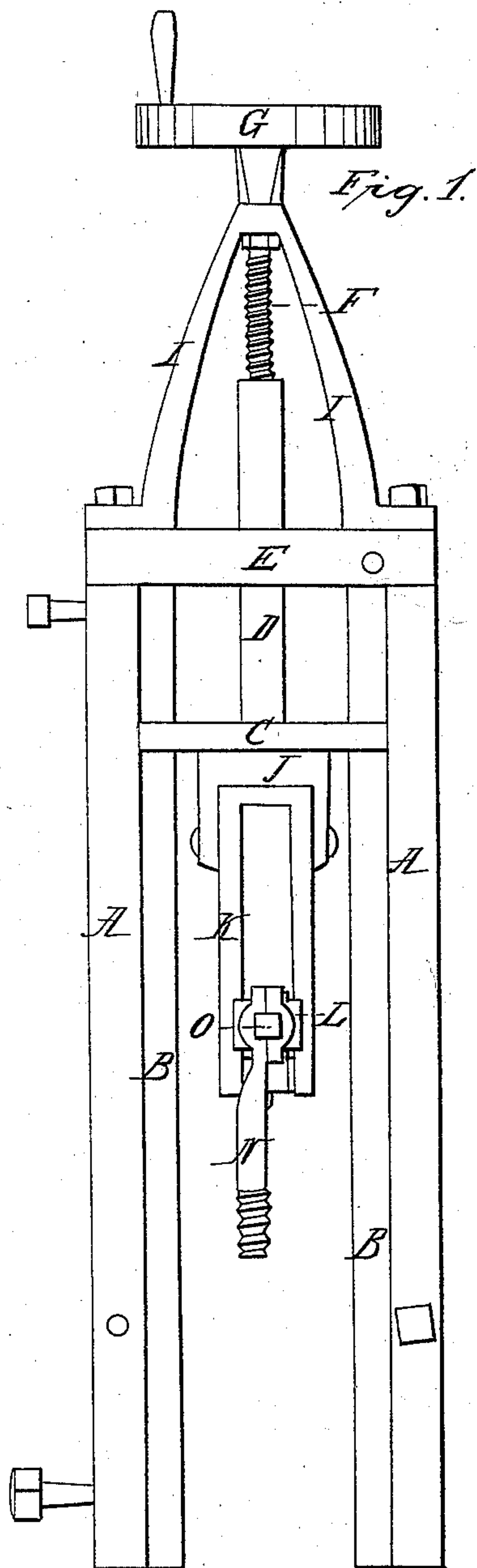
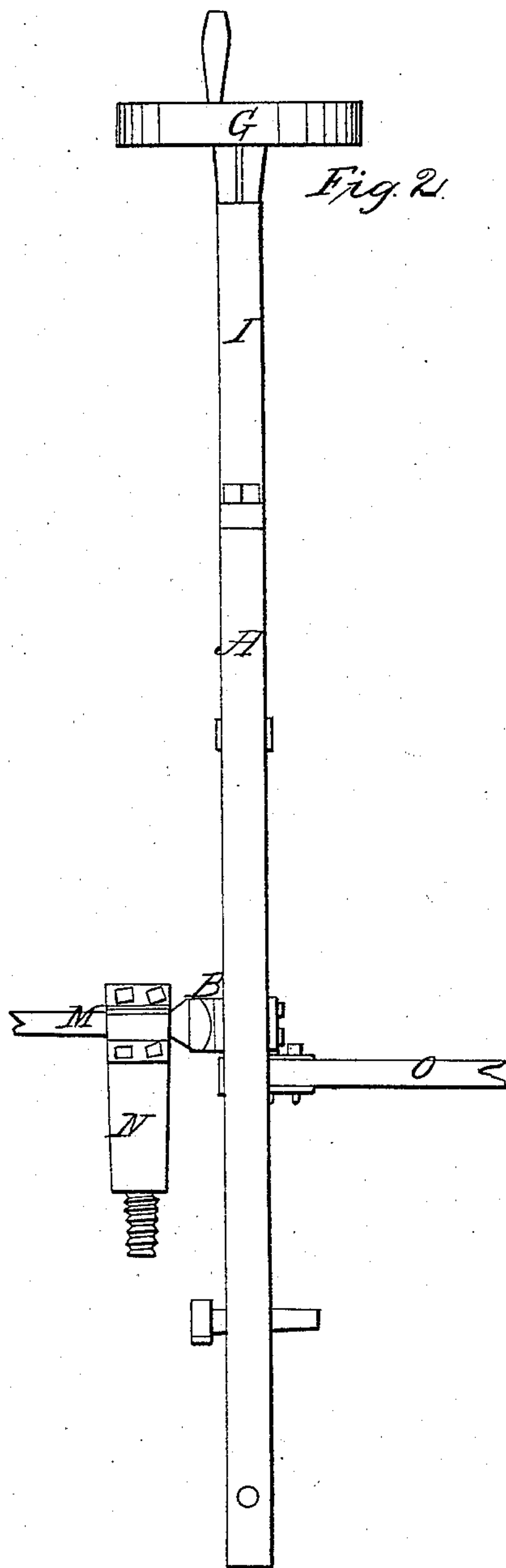


E. M. Bates,
Steam-Engine Valve-Gear.
N^o 63,984. Patented Apr. 23, 1867.



Witnesses:
W. H. Burdick
L. Holmes



Inventor:
E. M. Bates

United States Patent Office.

E. M. BATES, OF EAST ROCHESTER, OHIO, ASSIGNOR TO HIMSELF AND
J. H. AND G. W. SANOR, OF HANOVERTON, OHIO.

Letters Patent No. 63,934, dated April 23, 1867.

IMPROVEMENT IN VALVE GEAR.

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, E. M. BATES, of East Rochester, in the county of Columbiana, and State of Ohio, have invented certain new and useful Improvements in Steam Engines; and I do hereby declare that the following is a full and complete description of the construction and operation of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a front view of the cut-off.

Figure 2 is a side view of the same.

Like letters of reference refer to like parts in the views.

This apparatus consists of the rectangular frame A, fig. 1, the inner edges of which are rabbeted out, thus leaving a tongue or guide, B, on the inner side. C is a cross-head, fitted to and made to slide upward and downward upon the tongue or guide referred to. From this cross-head projects upwards the shaft D, sliding through the cross-tie E, and by which it is guided and retained in a vertical position. This shaft is provided with an adjusting screw, F, by the means of which it and the cross-head are screwed upward and downward by the hand-wheel G, for a purpose hereafter shown. I is a stay supporting the screw and wheel. To the lower side of the cross-head is secured the stay J, between the arms of which is pivoted the rectangular frame K. To this frame is fitted the cross-head L, which slides upward and downward within the frame, as and for the purpose hereafter described. To this cross-head L is connected the rod M, fig. 2, which is secured in a horizontal position by the stay N, and through which it slides reciprocally. O is the eccentric-rod, and is pivoted to the lower end of the rectangular frame K, and by which it is operated as follows: The apparatus is fixed to the engine at some convenient point, and connected to the eccentric by the rod O, and by which the frame K is made to oscillate. The rod M is connected to the cut-off valve, and operates the same conjointly with the reciprocating action of the frame and rod K O. It will be obvious that the reciprocating action of the valve will be in proportion to the vibratory action of the frame to which it is connected, or rather the distance that the cross-head L may be from the centre of oscillation. Now if the head and rod operating the valve be near the centre, the stroke of the valve will be correspondingly lessened, and thus the amount of steam cut off will be greater than if the head were more distant from that point. By this it will be evident that any amount of steam may be cut off by simply changing the distance, more or less, of the cross-head from the centre of vibration, and which is done by screwing the frame K toward or from the cross-head as the case may be, by means of the screw referred to, which is in effect the same as moving the head for that purpose, the head and rod M being secured in one position in order to adapt it to the condition of the valve by means of the stay N above described.

The advantage resulting from the use of this apparatus is the convenience in its application, for it is not necessary to stop the engine in order to regulate the stroke of the valve for cutting off the steam, as it can be done while the engine is running as well as when at rest, by operating the screw in the manner above described, which in no way interferes with the general movement of the apparatus and engine. It can be graded to the utmost nicety, so as to cut off at any point, without interfering with its regular movements, and can, if so desired, be used to cut the steam entirely off, and let it on, instead of the usual stop-valve. It is inexpensive and simple in its structure, and easily adapted to all kinds of engines using a cut-off.

What I claim as my improvement, and desire to secure by Letters Patent, is—

1. The screw F, shaft D, cross-head C, and stay J, as arranged in combination with the frame A, for the purpose and in the manner set forth.
2. The frame K, cross-heads L and C, when arranged and operated conjointly by the eccentric-rod O, valve-rod M, and adjusting screw F, for the purpose and in the manner as substantially described.

E. M. BATES.

Witnesses:

W. H. BURRIDGE,

J. HOLMES.