L. Eikenberry,

Governor.

No. 34,821. Patented Apr. 1, 1862.

Fig. 3.

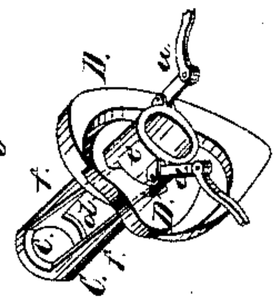


Fig. 5.

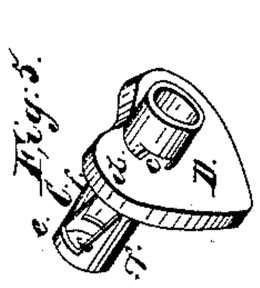


Fig. 6.

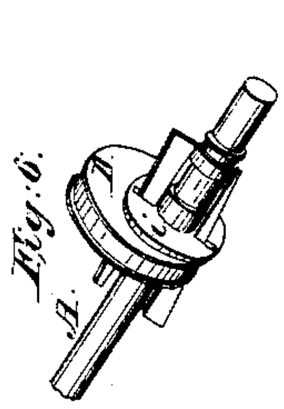


Fig. 4.

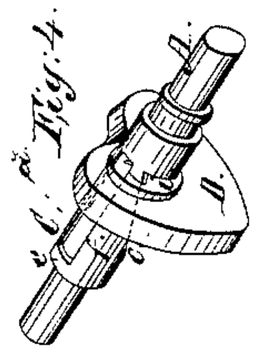


Fig. 1.

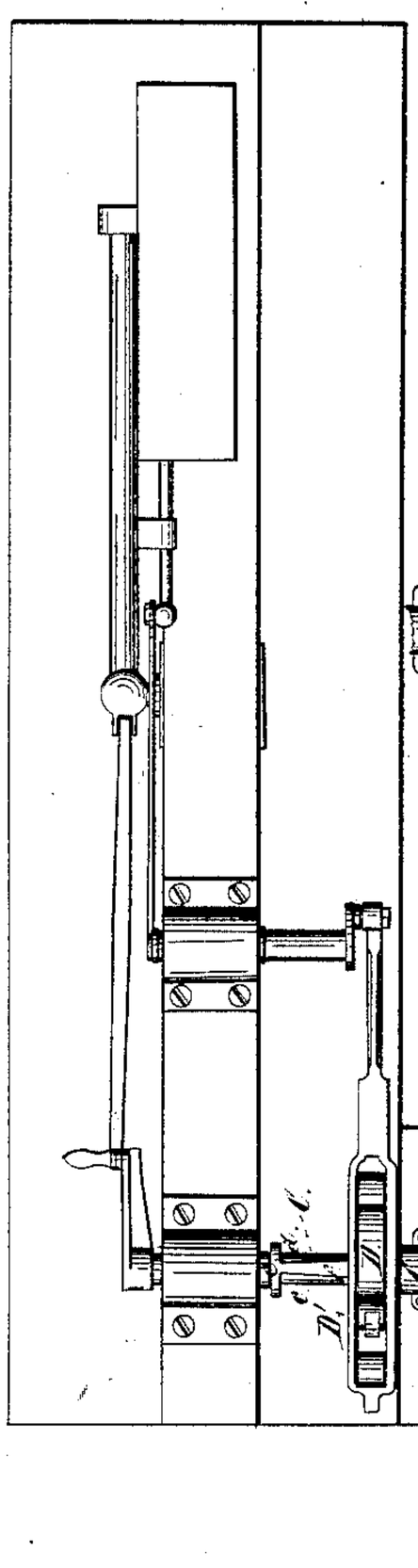


Fig. 7.

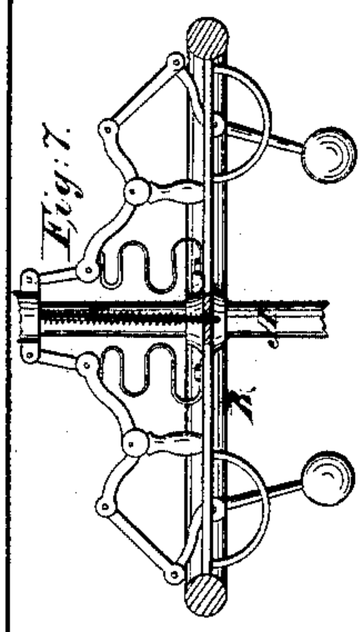
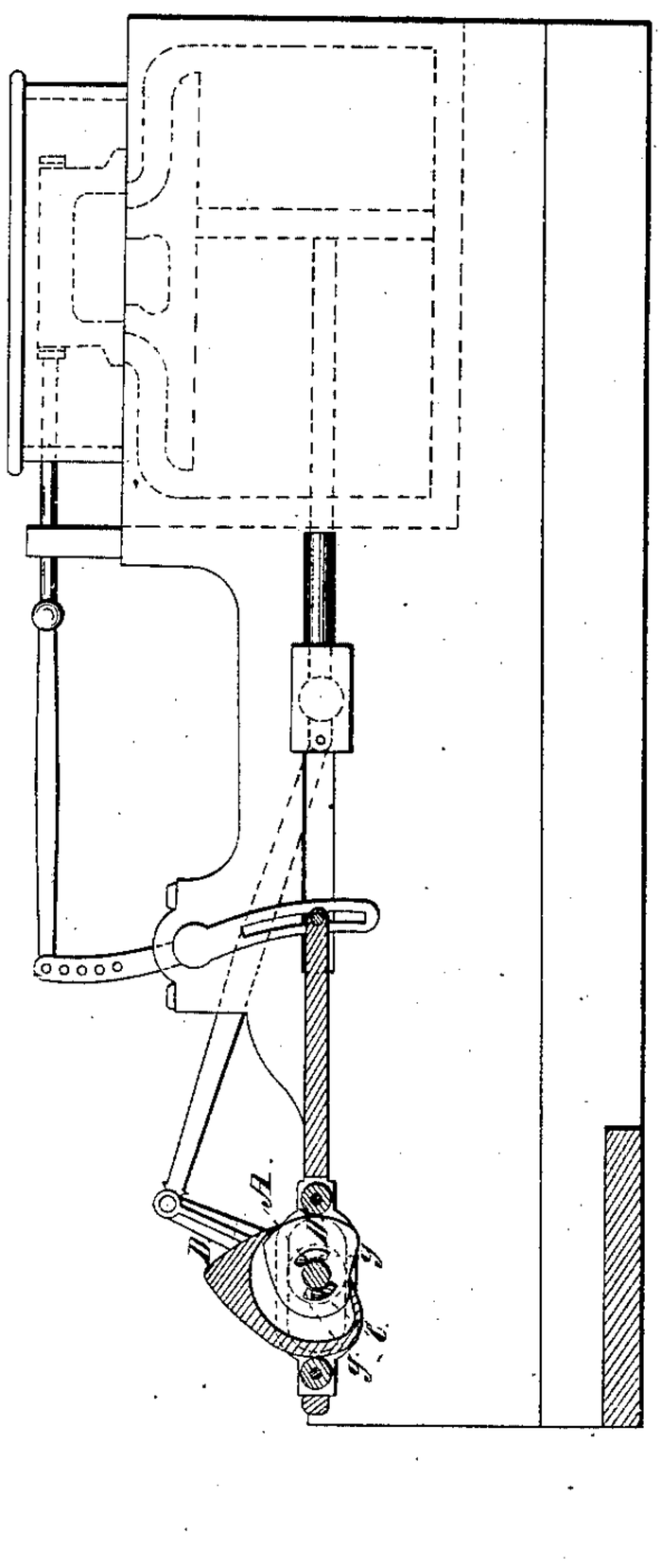


Fig. 2.



Witnesses:

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UNITED STATES PATENT OFFICE.

LEWIS EIKENBERRY, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN VARIABLE-CUT-OFF VALVES.

Specification forming part of Letters Patent No. **34,821**, dated April 1, 1862.

To all whom it may concern:

Be it known that I, LEWIS EIKENBERRY, of the city and county of Philadelphia, and State of Pennsylvania, have invented a new and useful Improvement in Means for Adjusting the Gearing which Effects the Cut-Off in Steam-Engines; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a plan view of my improvement applied to a steam-engine. Fig. 2 is a vertical longitudinal section of the same. Fig. 3 is a perspective sectional view of the devices for effecting and varying the cut-off. Figs. 4 and 5 are perspective views of the same means used for reversing a cam or eccentric, and thereby reversing the engine. Fig. 6 is a perspective view of a modification of the invention patented to me April 16, 1861. This view is drawn for the purpose of illustrating the difference between my present improvement and that already patented. Fig. 7 is a detached view of a governor which I regard as well adapted for use in connection with my improvements, the same style of governor, with the exception of the arrangement of the springs, being also shown in Fig. 1.

Similar letters of reference in each of the several figures indicate corresponding parts.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

A, Figs. 1 and 2, represents the main shaft of an engine; B, the fly-wheel with a governor arranged upon its arms.

C is a sliding shifter fitted loosely on the main shaft A and connected to the governor by means of links *a a*. The shifter consists of a tube with an upper portion of its circumference cut out so as to form a diagonal slot *c* through it, and with a lower portion of its circumference cut out so as to form a parallel longitudinal slot *d* through it, as shown in Fig. 3. Instead of having the shifter with the unslotted tubular termination *e*, the parts *f f* may be left disconnected at one of their ends, and thus be made to form two separate wedge-shaped keys; and instead of using the oblique keys formed by cutting away the tubular shifter, there might be one or more oblique keys and a straight feather used, or one or more straight keys and an oblique feather, the keys being formed of the tube itself and the feather being formed or arranged on the inner or outer circumference of the tube or semi-tube, as the case may be.

D D′ is a valve-mover formed of two parts, one of which is fitted within or in relation to the other, substantially as shown, and both having a fixed position longitudinally on a common axis. The eye of both parts is shaped so as to admit through it the main shaft A and also the shifter, as shown in Fig. 2. The part D of the valve-mover is fitted fast on the main shaft, while the part D′ is arranged loosely on the same. It will be observed that the circle of the eye of the valve-mover D D′ is enlarged sufficiently to admit the parts *f f* of the shifter at opposite sides of its center by cutting away a portion of the binding metal of the eye, about as shown at *g g*, Fig. 2. The movable piece D′ might be located alongside the part D.

From the above description it is evident that if the shifter is moved longitudinally through the eye of the valve-mover on the main shaft the oblique edges of the keys or parts *f f* act against the binding metal of the eye of the part D′ of the valve-mover and gradually raise the longest portion of said part out of its recess in the part D, and thereby throw said longest portion to a position which effects a change in the cut-off.

It should be here stated that the operation of the valve-mover herein described and shown is the same as the valve-mover shown and described in an application for a patent made by me on an even date with this application; and, therefore, as the subject-matter of this application does not necessarily involve the peculiar circumferential configuration of the valve-mover, it is unnecessary to describe the effects produced by said circumferential configuration.

In Figs. 4 and 5 the valve-mover D is made without the adjustable portion D′ and with one half of its circumferential configuration the exact counterpart of the other half, in order that the valve-mover shall answer for reversing the engine, and under such reversal of the engine perform its usual functions of operating the valve. The valve-mover when

thus constructed is fitted loose on the shaft, so as to be adjusted in the path of a circle, but is confined from longitudinal play by means of collars *i*, which are on opposite sides of it. Of course the length of the circumferential recesses *g g* and extent of the obliquity of the wedge-keys or portions *f f* of the shifter must be increased when the valve-mover is to be used for reversing the engine.

Instead of a valve-mover such as last described, and shown in Figs. 4 and 5, an eccentric of the character shown in Fig. 6 may be substituted for reversing the engine; but instead of using such keys and straight slots as and shown in Fig. 6 the sliding wedge-keys or portions *f f* and the curved recesses *g g*, shown in Fig. 2 are used, as the plan shown in Fig. 6, would only give a greater or less throw to the valve, while the plan shown in Fig. 4 effects the reversal of the engine and the motions of the valve.

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

1. The shifter C, constructed substantially as described, in combination with a cam, eccentric, or movable piece D′, which has a fixed position longitudinally, whereby a greater or less circular movement in the cam, eccentric, or movable piece is produced, and at the same time the said cam, eccentric, or movable piece is held by the shifter at any desired point of adjustment on its shaft, as set forth.

2. The movable piece D′, substantially as and for the purpose set forth.

3. The combination, with an engine-governor, of a movable piece D′, which has a fixed position longitudinally, as described, and also of the movable piece D′ and shifter C, combined substantially as and for the purpose described.

LEWIS EIKENBERRY.

Witnesses:
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DE WITT C. LAWRENCE.