

J. L. ALEXANDER.
REVERSE MOTION FOR STEAM ENGINES.

No. 545,437.

Patented Sept. 3, 1895.

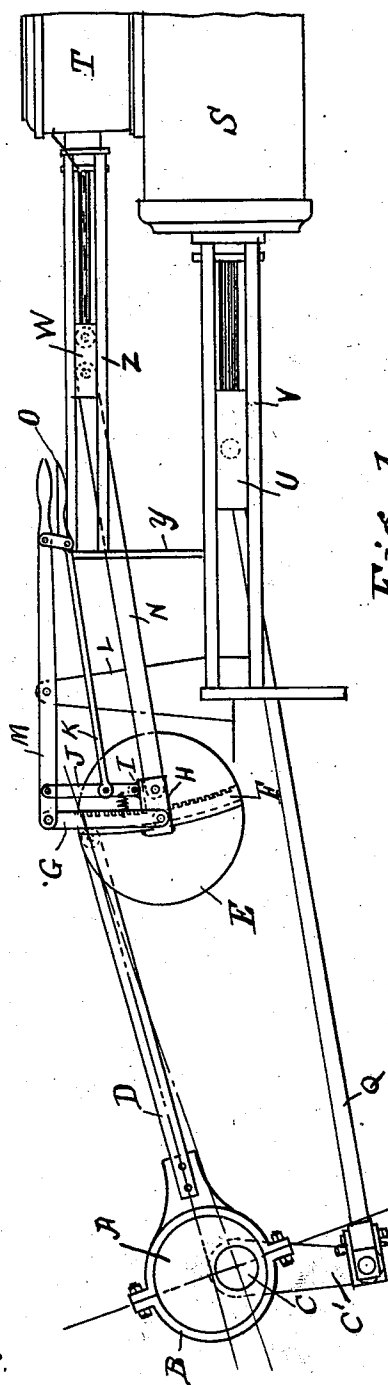


Fig 1.

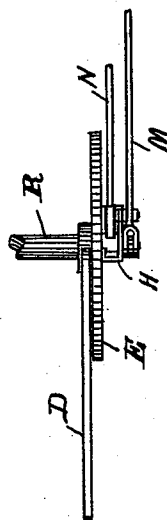


Fig 2.

WITNESSESS.

W. M. Donald.

G. A. Roth.

INVENTOR

John L. Alexander

By

Geo Schurman

ATTORNEY

UNITED STATES PATENT OFFICE.

JOHN L. ALEXANDER, OF HAZELRIGG, INDIANA.

REVERSE-MOTION FOR STEAM-ENGINES.

SPECIFICATION forming part of Letters Patent No. 545,437, dated September 3, 1895.

Application filed May 18, 1895. Serial No. 549,753. (No model.)

To all whom it may concern:

Be it known that I, JOHN LEWIS ALEXANDER, a citizen of the United States, residing at Hazelrigg, in the county of Boone and State of Indiana, have invented certain new and useful Improvements in Reverse-Motions for Steam-Engines; and I do declare the following to be a full, clear, and exact description of the invention, such as 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 of reference marked thereon, which form a part of this specification.

My invention relates to an improvement in reverse-motion or valve-gear for steam-engines.

The object of my invention is to provide a reverse-gear that will practically have no loss motion, and, further, to provide a valve-gear that will equally distribute the steam at both ends of the stroke of piston or that will have an equal cut-off.

A further object of my invention is to provide means to effectually reduce the stroke of the valve or to reverse the engine while the engine is in motion with practically no effort on the part of the operator.

The invention still further consists in certain novel details of construction, combination, and arrangement of parts, as will be more fully hereinafter described, and pointed out in the claims.

A practical embodiment of my invention is illustrated in the accompanying drawings, in which—

Figure 1 is a side view of my invention, showing the reverse-gear attached to the parts of a steam-engine. Fig. 2 is a part plan view of Fig. 1. Fig. 3 is an enlarged detail view of the rocker-disk. Fig. 4 is a side view showing the teeth. Fig. 5 is a plan view.

Referring to the drawings, A is the eccentric-block, which is secured to the shaft c.

B is the eccentric-strap, and C' is the crank which is connected to the cross-head U by means of the driving-rod Q.

V is the guides.

S is the cylinder, and T is the steam-chest.

E is the rocker-disk, and is connected to the eccentric by means of the eccentric-rod D. The disk E is mounted on the shaft R.

F is the disk-block, and is provided with the teeth *f*. This block is described in the arc of a circle, the radius-point being taken from where the valve-stem rod is fulcrumed to the valve-stem cross-head U, which slides in the guide Z, and said guides are supported by the brace *y*.

H is the dog, which slides on the block F and has the gib E' to take up any loss motion should it occur. This dog is lifted by means of the lifting-rod G, which is connected to the reverse-lever M, which is fulcrumed to the support L.

I is the locking-pawl, which engages in the teeth *f* and is designed to slide in grooves of the dog H, which securely holds it in place. This pawl is pivoted to the rod J, which is connected to the reverse-lever M, and is operated by means of the handle O and rod K of the reverse-lever M.

n is a spiral spring connected to the connecting-rods G and J to hold the pawl I into the grooves when the handle O is released.

It will be seen by this arrangement of a reverse-motion and valve-gear that the valves can be easily set, that the valves will more evenly distribute the steam and can be effectually reversed while the engine is in motion, and it is cheap and simple in construction.

It is obvious that many minor changes can be made and substituted for those shown without in the least departing from the nature and scope of the invention.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. The combination with a steam engine a disk mounted thereon, an eccentric to operate said disk, a slidable dog on the block of said disk, said block in the arc of a circle, teeth in said block, a reverse lever connected to the dog by means of a connecting rod, and means to lock the reverse lever at any portion of the stroke desired substantially as shown and described.

2. In a reverse or valve gear for steam engines consisting of a disk operated by the eccentric of the engine and mounted on the crank shaft, a block on said disk in the arc of a circle, said block provided with teeth on one side, a dog slidable on said block, a valve rod connecting said dog with the valve-

stem, a cross head and reverse lever connected to said dog by means of a link, said reverse lever fulcrumed to a suitable bracket, a pawl slidable in said dog, a lever connected
5 to said dog and reverse lever, a connecting rod between said lever and the handle of the reverse lever, and a spiral spring between the two said connecting levers to hold said

pawl in position, substantially as shown and described. 10

In testimony whereof I affix my signature in presence of two witnesses.

JOHN L. ALEXANDER.

Witnesses:

JNO. S. THURMAN,
M. H. PEACOCK.