(Model.)

C. SWAN.

REVERSING GEAR FOR STEAM ENGINES.

No. 446,746. Patented Feb. 17, 1891.

Fig. 1.

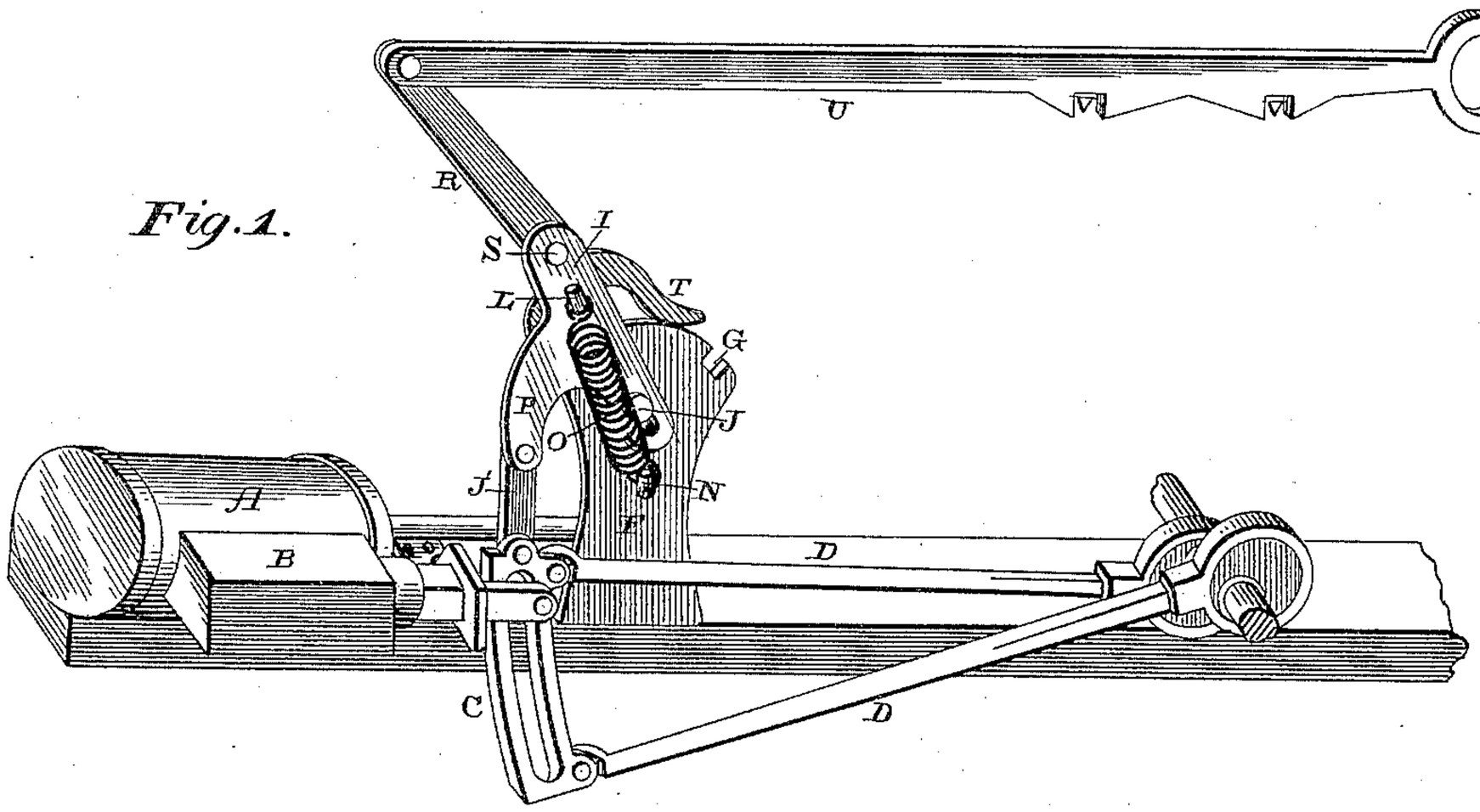
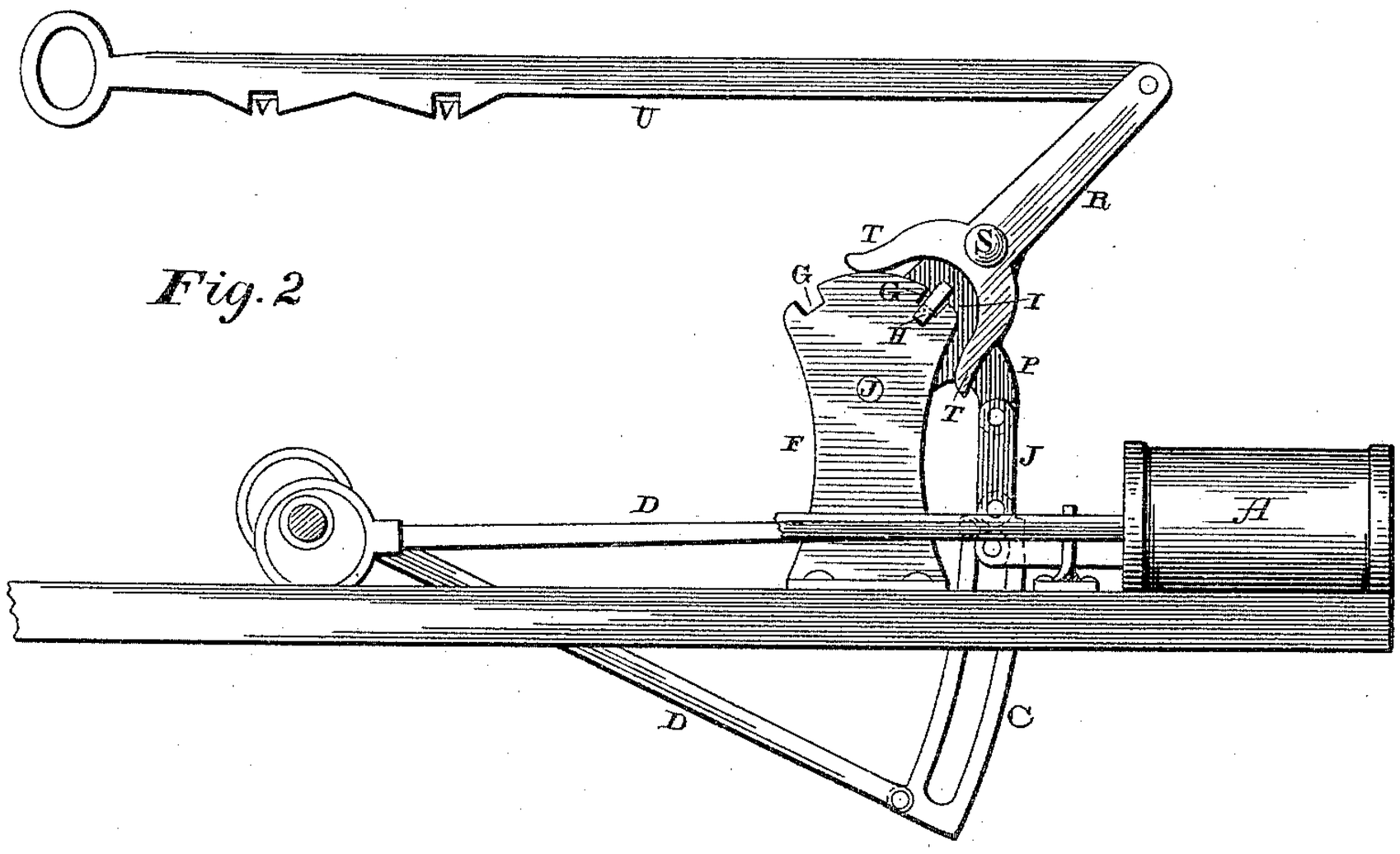


Fig. 2



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UNITED STATES PATENT OFFICE.

CHARLS SWAN, OF CORRY, PENNSYLVANIA.

REVERSING-GEAR FOR STEAM-ENGINES.

SPECIFICATION forming part of Letters Patent No. 446,746, dated February 17, 1891.

Application filed November 15, 1890. Serial No. 371,537. (Model.)

To all whom it may concern:

Be it known that I, CHARLS SWAN, of Corry, in the county of Erie and State of Pennsylvania, have invented certain new and useful Improvements in Reversing-Gear for Steam-Engines; and I do hereby 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 pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to an improvement in reversing-gear for steam-engines; and it consists in the combination, with the reversing link and valve, of a connecting-rod, a slotted spring-actuated lever provided with a catch, a suitable notched support upon which the spring-actuated lever is pivoted, an operating-lever pivoted to the upper end of the slotted spring-actuated lever, and which is provided with prongs upon its lower end to bear upon the top edge of the notched support, and the hand-rod by which the operating-lever is moved, all of which will be more fully described hereinafter.

The objects of my invention are to so construct the operating-lever that the vibration of the engine is not communicated to the hand-rod by which the lever is operated, and to make either a push or a pull through the hand-rod upon the operating-lever to first detach the slotted spring-actuated lever from its locked position, and then move it so as to reverse the valve.

Figure 1 is a perspective of a reversing-gear which embodies my invention. Fig. 2 is a side elevation taken from the opposite side.

A represents the steam-cylinder, B the valve-chest, C the reversing-link, and D the two eccentric-rods which operate the link, all of which may be constructed in the usual manner.

Secured to the frame of the engine is the L-shaped quadrant or support F, upon which are mounted the parts which comprise my invention. In the upper edge of this quadrant F are formed the two notches G, with which the catch H upon the lever I engages for the purpose of holding the link in any desired position. The lever I, which is preferably of the shape shown, has a slot formed through its lower end, where the pivotal bolt J passes through it for the purpose of allowing the lever I an endwise movement, in order to raise the catch H out of the notch G, in which it is held. For the purpose of returning this lever I always to position after having been moved there is formed a hook L upon the side of the lever I near its upper end and a second hook N upon the quadrant or support F, and fastened to these two hooks L N is the spring O, which exerts all of its tension in forcing the lever I endwise, so that the pivotal bolt J will always rest in the upper end of the slot through which it passes. Projecting from one edge of this lever I is the curved arm P, to the lower end of which is pivoted the connecting-link J′, which connects the lever with the slotted link. The lever I has both a turning movement upon its pivotal bolt and an endwise movement, as described.

Pivoted to the upper end of the lever I, which projects a suitable distance above the upper notched edge of the quadrant, is the operating-lever R, which turns upon the pivot S, and which has its lower end provided with the two prongs T, which, when the lever R is in a vertical position, has the two prongs T to bear upon opposite corners of the segment F, and thus hold the lever R rigidly in position, but which prongs T, when the catch H is in either of the recesses G, allow the lever a reciprocating movement upon its pivot, so that the vibration of the engine will not be communicated to the hand-rod U, pivoted at one end to the upper end of the lever R, and which is provided with the two notches V for catching over a stop of any kind for the purpose of locking the lever R in position. Midway between the notches V is a recess which catches over the stop when the lever R is in a vertical position. This rod U will be of any desired length and extend to the operator, so that a mere push or pull will cause the prong T, which is bearing upon the top edge of the quadrant, to form a lever, by means of which the lever I is raised or moved endwise to lift its catch H out of the notches G, in which it is held, and thus enable the lever I to be moved, so as to reverse the link and shift the valve.

At times the speed of the engine, in connec-

tion with its unbalanced condition, causes an endwise movement of the engine from one to three inches, and if no means is used to prevent it this movement is communicated to the lever R and the hand-rod U. By providing the lower end of the lever R with the two prongs T the lever R can vibrate upon its pivot without communicating its motion to the hand-rod U.

Having thus described my invention, I claim—

1. The combination of the quadrant upon which the operating-lever is pivoted and to which the connecting-rod for making connection with the link is pivoted within the lever R, having its lower end provided with prongs, and the hand-rod U, connected to the lower end of the lever, substantially as shown.

2. The combination of the quadrant, an endwise-moving spring-actuated lever pivoted thereon and provided with a catch for engaging with the quadrant, a connecting-rod and the link for shifting the valve with the lever R, pivoted near its lower end, and the hand-rod U, substantially as described.

3. In a reversing-gear for a steam-engine, the combination of a pivoted vibrating lever and the hand-rod which is connected thereto with a spring-actuated endwise-moving lever and the quadrant upon which the spring-actuated lever is pivoted, the spring-actuated lever being connected to the link which shifts the valves, and provided with a catch for locking it in position, substantially as specified.

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

CHARLS SWAN.

Witnesses:
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