

UNITED STATES PATENT OFFICE.

ALBERT WM. STERNKE, OF GAYLORD, MINNESOTA.

MECHANICAL MOVEMENT.

SPECIFICATION forming part of Letters Patent No. 465,003, dated December 15, 1891.

Application filed July 13, 1891. Serial No. 399,297. (No model.)

To all whom it may concern:

Be it known that I, ALBERT WM. STERNKE, a citizen of the United States, residing at Gaylord, in the county of Sibley and State of Minnesota, have invented certain new and useful Improvements in Mechanical Movements; 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 appertains to make and use the same.

My invention relates to mechanical movements, and has for its object to provide a simple and efficient device for communicating rotary motion in opposite directions from a shaft running in a constant direction. In many machines it is desirable to reverse the direction of a counter-shaft without reversing the direction of the driving-shaft. I accomplish this result by equipping the shaft, which runs in a constant direction, with right and left worms or screw-threads and providing an intermediate gearing for driving the counter-shaft, which is engageable at will with one or the other of said worms or disengageable from both to stop the counter-shaft.

In my preferred construction the counter-shaft is provided with a gear-wheel fixed thereto, and the intermediate gearing is mounted on a pivoted support, which is preferably the counter-shaft, and is made to throw one or the other of said worms into action on the counter-shaft by swinging the gearing on its pivoted support.

I have illustrated the invention as a reversing device for varying the direction of the driving-wheel of a traction-engine without reversing the engine.

In the accompanying drawings, like letters referring to like parts throughout, Figure 1 is a side elevation of a traction-engine embodying the said invention. Fig. 2 is a plan view of the power-shaft saddle and the reversing device detached. Fig. 3 is a similar view showing a slightly-modified form of the reversing device, some of the parts being broken away.

A is one of the driving-wheels, B one of the front truck-wheels, C the boiler, D D' the engine, and E the power-shaft, of an ordinary traction-engine.

F is the saddle, mounted on the boiler and supporting the power-shaft.

A' is a bevel gear-wheel fixed to the driving-axle or driving-wheel A.

G is the counter-shaft, provided at its lower end with a beveled pinion G', engaging the gear-wheel A' for imparting motion thereto from the power-shaft. At its lower end the counter-shaft G is mounted in a suitable bearing, (not shown,) and at its upper end it is journaled in a bracket f, projecting from the saddle F. The upper end of the power-shaft projects through the bearing-bracket f and is provided with a gear-wheel G'', fixed thereto.

H H' are a pair of plates spaced apart and pivoted at their center on the upper end of the counter-shaft, the same constituting a pivoted support, in which is mounted the intermediate gearing. In my preferred construction, as shown in Figs. 1 and 2, a pair of double gears K K' are mounted in the opposite extremities of this pivoted support. The power-shaft E has keyed thereto a sleeve L, provided with the right and left worms or screw-threads M M'. The smaller member of each of the double gears is in constant engagement with the gear-wheel on the counter-shaft, and the larger member of each of the same corresponds to and is adapted to engage with corresponding worms M and M' to connect the same or throw the same into action on the counter-shaft.

N is a hand-lever with catch-pawl N' moving over the segment or lever-arch N'', provided with a connecting-rod P, connected to an extension h, projecting from one end of the pivoted support H H' for swinging the said support on its pivot, as may be required. The connection of the rod P to the extension h is preferably made by a swivel-head p. By this hand-lever the intermediate gears K and K' can be either both disengaged entirely from the power-shaft or either of the same may be thrown into engagement with its corresponding worm M or M'. Hence the power-shaft may be driven in a constant direction and the motion of the counter-shaft G be reversed at will.

In the modification shown in Fig. 3 a single intermediate gear Q is employed, and the pivoted support, instead of having simply a short

rocking motion, is adapted to swing around through about three-fourths of the circle, so as to engage either one or the other of the gears, as may be desired. It is locked in its working position by a pin R or in any other suitable way.

It is evident that a reversing device of this kind is generally applicable throughout the mechanic arts wherever it is desired to communicate rotary motion in opposite directions at will from a shaft running in a constant direction. Another such device might be employed—for example, on a traction-engine—to control the steering-wheel from the power-shaft.

The device has a special value in traction-engines or in connection with the power-shaft of engines generally, as it avoids the necessity of using a reversing-valve motion for the engine. Even with some forms of reversing-valve gear this device would be of service, as many of them can be set to give good steam distribution when running in a single direction, but not when arranged to run both ways. In other words, with some forms of valve-gear a good motion can be obtained in one direction at the expense of the other.

What I claim, and desire to secure by Letters Patent of the United States, is as follows:

1. The combination, with a shaft running

in a constant direction and equipped with right and left worms or screw-threads, of a counter-shaft having a gear-wheel fixed thereto, a pivoted support, and intermediate gearing mounted in said support constantly in connection with the gear of the counter-shaft and movable by swinging the said support to engage one or the other of said worms, substantially as described.

2. The combination, with a shaft moving in a constant direction and equipped with right and left worms or screw-threads, of a counter-shaft having a gear-wheel fixed thereto, a pair of intermediate gears both in constant connection with the gear of said counter-shaft, corresponding to and adapted to engage one with each of said worms, and a support for said intermediate gears pivoted to the counter-shaft and movable thereon to throw one or the other of said intermediate gears into connection with its corresponding worm or to disengage both from the power-shaft, substantially as described.

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

ALBERT WM. STERNKE.

Witnesses:

CHARLES W. CLASEN,
FRANK M. NORTON.