

UNITED STATES PATENT OFFICE.

ANTON E. H. J. THOELLDEN, OF ANSONIA, CONNECTICUT.

DRIVING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 653,123, dated July 3, 1900.

Application filed April 19, 1900. Serial No. 13,460. (No model.)

To all whom it may concern:

Be it known that I, ANTON E. H. J. THOELLDEN, a citizen of the United States, and a resident of Ansonia, in the county of New Haven and State of Connecticut, have invented a new and Improved Driving Mechanism, of which the following is a full, clear, and exact description.

This invention relates to improvements in driving or power mechanism; and the object is to provide a driving mechanism of simple construction adapted for general use—such, for instance, as operating stationary machinery, motor-vehicles, bicycles, or the like—and which will develop a desired combination of speed and power with a comparatively small amount of initial power, either manual or mechanical.

I will describe a driving mechanism embodying my invention, and then point out the novel features in the appended claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a perspective view of a driving mechanism embodying my invention. Fig. 2 shows one of the driving ratchet-wheels with its operating-pawl in one position; and Fig. 3 is a similar view, but showing the pawl in another position.

Referring to the drawings, 1 designates a power-shaft having on its opposite ends ratchet-toothed wheels 2 3. Coacting with these ratchet-wheels are operating-levers 4 and 5, the fulcrum-points 6 and 7 of said levers being near the ratchet-wheels. I have here shown the levers as fulcrumed in standards and also the shaft 1 as having its bearings in boxes arranged on standards. It is obvious, however, that these parts may have bearings in hangers, depending upon the work required of the device. Each lever is provided with a pawl 8, designed to swing upward when the shorter end of the lever is moved downward, so as to pass or disengage itself from the tooth; but when the other end of the lever is moved downward the pawl will have a stationary rigid connection therewith.

Carried by each lever and arranged above its pawl is a thrust-pin 9, movable longitudinally in a boxing 10 on the lever and normally moved outward by means of a spring 11, surrounding the shank portion of the thrust-pin and arranged within the boxing. The object of the thrust-pin is to cause the pawl 8 to move quickly to its operative position after becoming released from a tooth of the wheel or, in other words, to prevent the pawl from being thrown too far upward or to a vertical line, where it will remain by its frictional engagement with its pivot-pin.

The longer members of the levers 4 and 5 are engaged, as here shown, respectively, with cranks 12 and 13 on a crank-shaft 14. Each lever is movable between antifriction-rollers 15 and 16, the rollers 15 being journaled on the crank-pins of the cranks, while the rollers 16 are journaled on hangers 17, having swinging connection with the crank-pins. The crank-shaft may be driven by any desired power—such, for instance, as by a motor having band engagement with a pulley 18 on the crank-shaft, or in case the device is to be used in connection with a bicycle or the like pedals may be attached to pedal-pins 19 and 20, connected to the cranks. It is to be understood, however, that the levers may be operated by other devices than that of a crank-shaft. For instance, when the mechanism is used in connection with a motor-vehicle carrying a steam or similar engine piston-rods may be connected by links or otherwise directly to the long members of the levers. The levers are operated alternately up and down, one moving downward while the other is moving upward, thus imparting continuous motion to the shaft 1, which may have any suitable connection with the device to be driven. For instance, when operating in connection with a motor-vehicle a band may extend from a band-wheel 21 on the shaft 1 to a band-wheel on the axle of the vehicle.

In operation when the longer member of a lever is moved downward its shorter member will of course be moved upward, and during this upward movement the pawl 8, by engaging with a tooth of its wheel, will impart a rotary motion to said wheel. At this time the opposite lever will have its shorter member moved downward, and the pawl 8 will swing to the position indicated in Fig. 3, so as to re-

lease itself from a tooth of its wheel, and the thrust-pin engaging with said pawl will quickly move it to its operative position, as before mentioned.

5 It is obvious that by the short fulcrum of these levers a comparatively small amount of power on the end members of the levers will impart a greatly-increased power to the short members, and this power will be considerably
10 augmented by the ratchet-wheels, which in themselves act as levers on the power-shaft.

While I have shown but two ratchet-wheels and two levers, it is obvious that the number may be increased, depending upon the speed
15 desired. The thrust-pins may be held from turning by any suitable means, such as a feather-key.

Having thus described my invention, I claim as new and desire to secure by Letters
20 Patent—

1. A driving mechanism, comprising a driving-shaft, ratchet-wheels mounted on said shaft, levers coacting with said wheels, a vertically-swinging pawl carried by each lever,
25 a boxing on the upper side of each lever, a spring-pressed thrust-pin in each boxing for

engaging with the pawls, and means for operating the levers, substantially as specified.

2. A driving mechanism, comprising a driving-shaft, ratchet-wheels mounted on said shaft, levers coacting with the wheels, a crank-shaft, cranks on said shaft one for each lever, and rollers mounted on the cranks and between which the longer members of the levers engage, substantially as specified. 30

3. A driving mechanism, comprising a driving-shaft, ratchet-wheels mounted on said shaft, levers coacting with the wheels, a crank-shaft, cranks on said shaft, one for each lever, and rollers between which the longer
40 members of the levers engage, one roller being journaled on the crank-pin and the other roller being journaled on a hanger mounted to swing on the crank-pin, substantially as specified. 45

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ANTON E. H. J. THOELLDEN.

Witnesses:

OTTO F. BERGER,
AUGUSTA BERGER.