

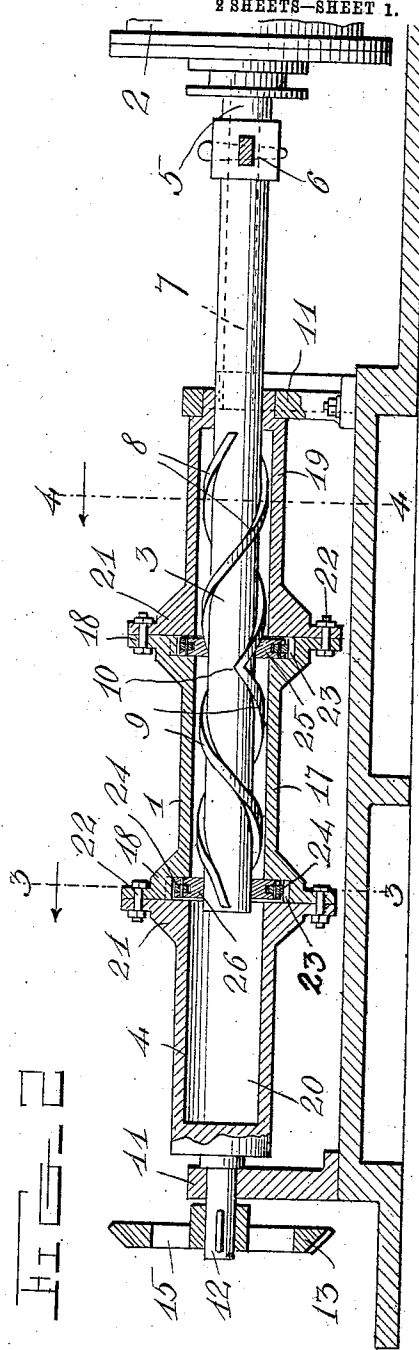
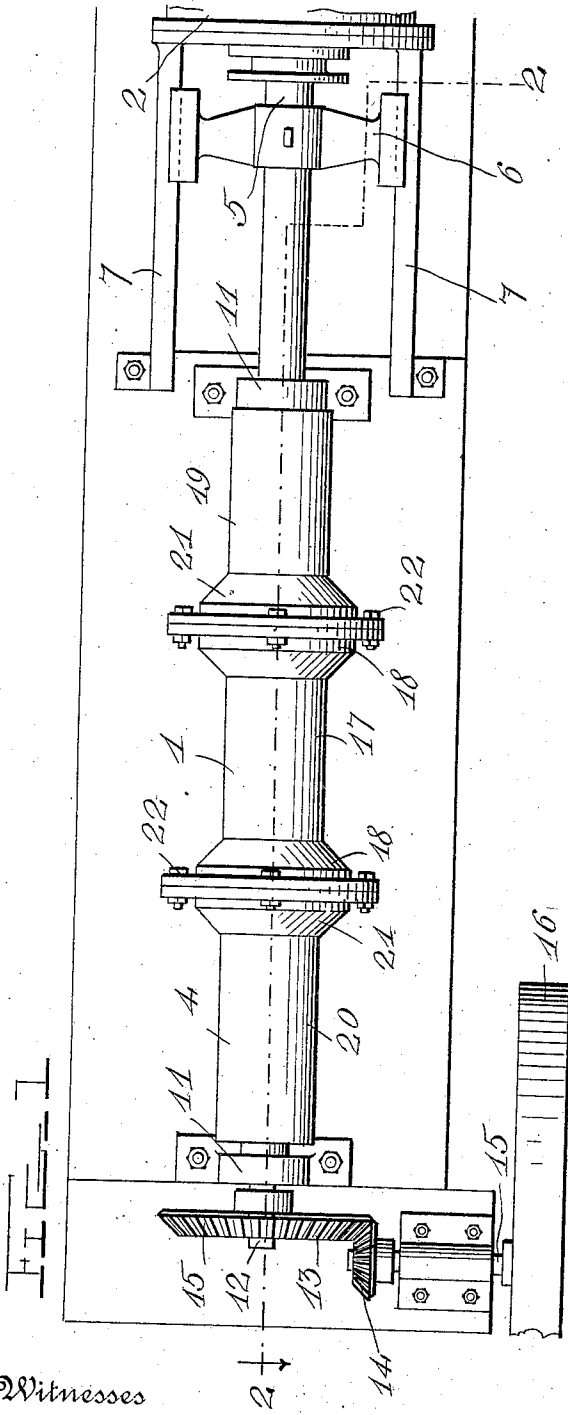
No. 848,703.

PATENTED APR. 2, 1907.

C. A. TAYLOR.
POWER TRANSMISSION DEVICE.

APPLICATION FILED MAR. 19, 1906.

2 SHEETS—SHEET 1.



Witnesses
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Inventor
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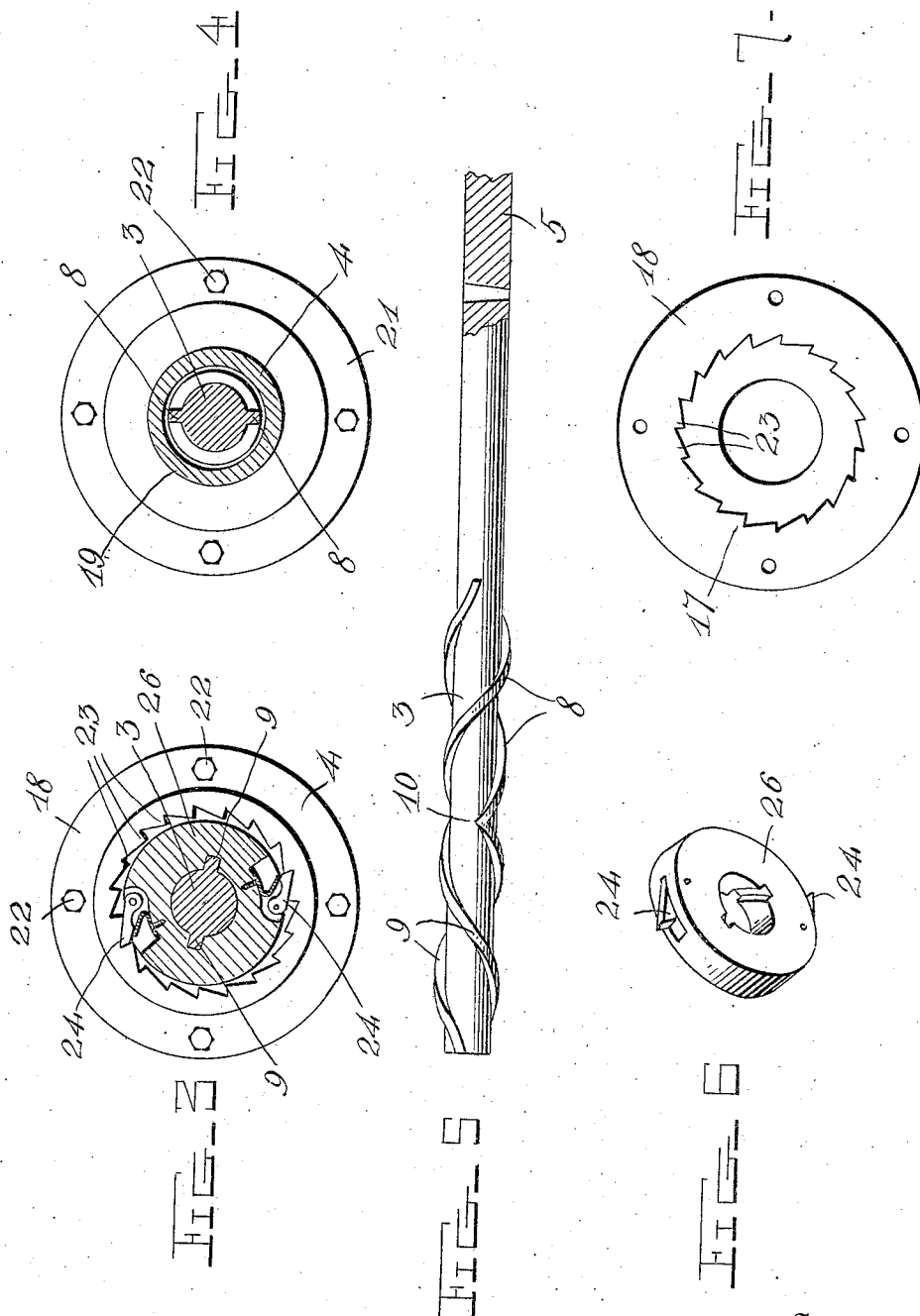
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Witnesses
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UNITED STATES PATENT OFFICE.

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POWER-TRANSMISSION DEVICE.

No. 848,703.

Specification of Letters Patent.

Patented April 2, 1907.

Application filed March 19, 1906. Serial No. 306,884.

To all whom it may concern:

Be it known that I, CHARLES A. TAYLOR, a citizen of the United States, residing at Jacksonville, in the county of Morgan and State of Illinois, have invented certain new and useful Improvements in Power-Transmission Devices; 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.

My invention relates to improvements in power-transmission devices of that class in which reciprocatory motion is changed to an even or regular rotary motion, thereby obviating the danger of dead-centers.

The object of the invention is to provide a power-transmission device or gearing of this character which will be of simple, durable, and comparatively inexpensive construction, very efficient in operation, and well adapted for use on all kinds of engines and other machinery.

With the above and other objects in view the invention consists of certain novel features of construction, combination, and arrangement of parts hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a plan view of my improved power-transmission device, showing it applied to a steam-engine. Fig. 2 is a vertical longitudinal sectional view through the same, taken on the plane indicated by the line 2 2 in Fig. 1. Figs. 3 and 4 are detail transverse sectional views taken, respectively, on the planes indicated by the lines 3 3 and 4 4 in Fig. 2. Fig. 5 is a detail view of the extended end of the piston-shaft or sliding element, showing the spiral screw thereon. Fig. 6 is a detail view of one of the nuts or clutches which work upon the spiral screw, and Fig. 7 is a view of the inner end of one of the end sections of the rotary element or cylinder.

Referring to the drawings by numeral, 1 denotes my improved power-transmission device or gearing, which is here shown as applied to the reciprocatory steam-engine 2, and which comprises a sliding or reciprocating shaft or element 3 and a rotary cylinder or element 4.

The reciprocatory element or member 3 is

formed by extending the outer end of the piston-rod 5 of the engine, which rod carries a cross-head 6, adapted to slide in the usual guides 7 upon the engine base or support.

The extended end 3 of the piston-rod has formed or secured upon it spiral screw-threads or ribs 8 9, which extend in opposite directions from a point 10 upon said rod, as clearly shown in Fig. 5 of the drawings.

The rotary element or member 4 surrounds the extended end 3 and rotates upon the same and in a suitable bearing 11, the outer end 12 of said member, which projects through said bearing, carrying a beveled gear 13, keyed or transversely secured thereto, and which meshes with a beveled pinion 14 upon a transverse shaft, which carries a rotary driving or power-transmission wheel 16. But the rotary element 4 may be adapted for driving any suitable gearing or machinery.

The member or element 4 consists of a central section 17, having enlargements 18 at its ends and two end sections 19 20, which are also provided with enlargements 21 at their inner ends. Said enlargements 18 and 21 are boted or otherwise secured together, as shown at 22. The outer faces of the enlargements 18 are recessed concentrically, and the outer walls of said recess are formed with an annular series of ratchet-teeth 23, which are engaged by spring-actuated pawls or dogs 24 upon nuts or clutches 25 26, which are mounted within said recesses and upon the extended end 3 of the piston-rod. These nuts or clutches are in the form of circular plates or disks having central openings and diagonal notches or slots at opposite points in said opening for the purpose of receiving the rod 3 and the screw-threads or ribs 8 9. The rod 3 reciprocates within the cylinder or member 4 and actuates the clutches or nuts 25 26 simultaneously in opposite directions and alternately in the reverse directions. It will be seen that the nut 25 works upon the screw-threads 8 and that the nut 26 works upon the screw-threads or ribs 9, so that when the piston-rod moves in one direction one of these nuts or clutches will be rotated, so that its dogs or pawls engage the internal ratchet-teeth at one end of the central section of the member or cylinder 4 to rotate the latter, and when said rod moves in the reverse direction

the said nut will move idly in the opposite direction, while the other will actuate the cylinder or member in the same direction owing to the engagement of the dogs or pawls of the last-mentioned nut with the ratchet-teeth at the opposite end of the central section 17 of the member 4. An even regular continuous motion will thus be imparted to the member or element 4, and hence to the machinery which it drives, and there will be no dead-centers on any of the parts. One stroke of the piston-rod will cause the gearing to make one revolution, and the return stroke will cause it to make one complete revolution, so that the device will increase the speed of the gearing with the same output of power.

From the foregoing description, taken in connection with the accompanying drawings, the construction, operation, and advantages of the invention will be readily understood without requiring a more extended explanation.

Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of the invention as defined by the appended claims.

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

1. A power-transmission device comprising a reciprocatory element having oppositely-extending spiral threads thereon, a rotary element, clutches or nuts engaged with the screw-threads upon said reciprocatory element, spring-actuated pawls carried by

said clutches or nuts, and annular rows of ratchet-teeth upon said rotary element to co-act with said pawls, substantially as described.

2. A power-transmission device comprising a sliding rod having oppositely-extending spiral screw-threads thereon, a rotary element or cylinder consisting of a central section having recessed ends and end sections secured upon the ends of said central section, clutches or nuts engaged with the screw-threads upon said rod and disposed in the recessed ends of said central section of the cylinder, ratchet-teeth in said recessed ends of the central section of the cylinder, and spring-actuated pawls carried by said clutches or nuts and engaged with said ratchet-teeth, substantially as described.

3. A power-transmission device comprising a suitable support having bearings and guides, a reciprocating rod, a head on said rod to slide in said guides and prevent said rod from turning, oppositely-extending spiral screw-threads on said rod, a rotary element mounted in said bearings, and alternately-acting clutch devices cooperating with respective screw-threads of said rod to actuate said rotary element, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

CHARLES A. TAYLOR.

Witnesses:

J. O. PRIEST,
E. G. HARRIS.