No. 681,116. Patented Aug. 20, 1901.

F. GRANT.

POWER TRANSMITTING DEVICE.

(Application filed Oct. 25, 1900.)

(No Model.)

Fig. 2.

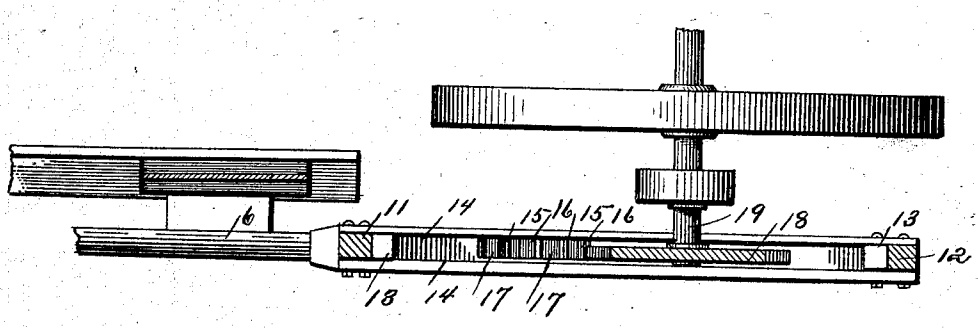
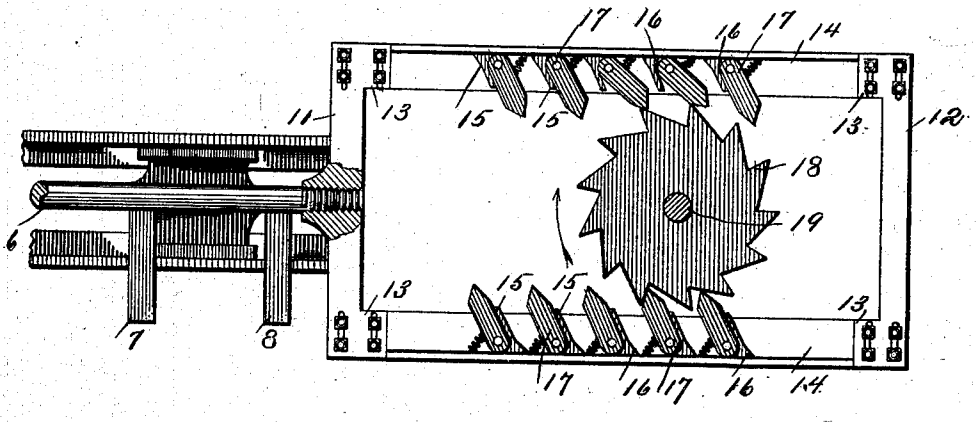


Fig. 1.



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UNITED STATES PATENT OFFICE.

FREEMAN GRANT, OF STONINGTON, MAINE.

POWER-TRANSMITTING DEVICE.

SPECIFICATION forming part of Letters Patent No. 681,116, dated August 20, 1901.

Application filed October 25, 1900. Serial No. 34,349. (No model.)

To all whom it may concern:

Be it known that I, FREEMAN GRANT, a citizen of the United States, residing at Stonington, in the county of Hancock, State of Maine, have invented certain new and useful Improvements in Power-Transmitting Devices; 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.

This invention relates to power-transmitting devices in general, and more particularly to a device for converting reciprocatory motion into rotary motion, and the principles involved may be employed in connection with any style of reciprocatory fluid-pressure engine, the object of the invention being to provide a simple and efficient construction wherein it will be impossible for the engine to get on a dead-center and wherein the leverage will be approximately constant.

Further objects and advantages of the invention will be apparent from the following description.

In the drawings forming a portion of this specification, and in which like numerals of reference indicate similar parts in the several views, Figure 1 is a side elevation showing the pawl-carrying frame, with the plates removed at one side to show the positions of the pawls with respect to the ratchet. Fig. 2 is a longitudinal section of the head of the piston-rod, taken in a plane above the rod and the engine-shaft and showing the disposition of the driving-ratchet with respect to the engaging-pawl frame.

Referring now to the drawings, 5 represents the cylinder of a reciprocatory steam-engine, in which is a piston having a projecting rod 6, which is adapted for reciprocation under the influence of steam admitted alternately to the ends of the cylinder in the usual and well-known manner, the cut-off mechanism, of usual construction, being operated by engagement of fingers 7 and 8 upon the piston-rod, with a stop 9 upon the valve-rod 10. The outer end of the piston-rod instead of having the usual cross-head attached thereto and operating in guides has attached to its outer end a frame. This frame comprises end plates 11 and 12, at the ends of which project flanges 13, laterally in pairs, and connecting the corresponding flanges of the end plates are side plates 14, which are oppositely disposed in pairs, each pair of side plates forming a guideway, so that two guideways are formed, one at each side of the frame.

Upon the inner face of each plate 14 are formed diagonal flanges or ribs 15, the flanges of each pair of plates lying parallel, and at the outer end of each of these flanges is formed a shoulder 16, having a curvilinear recess in its face in which is seated the curvilinear end of a pawl 17, which is held pivotally in place. These pawls 17 are held normally to lie flat against the flanges 15 by means of coil-springs, as shown, the extremities of the pawls being thus held normally engaged with the teeth of a ratchet-wheel 18, which is fixed upon the engine-shaft 19. The pawls being disposed in opposite directions at the two sides of the frame, it naturally follows that when the frame is moved in one direction one set of pawls successively engage the ratchet-wheel operatively and rotate it, while the other series of pawls snap idly over the ratchet-teeth, the former idle teeth being operative and the former active teeth being inoperative when the direction of movement of the frame is reversed. By the formation and arrangement of the flanges 15 and the shoulders at the bases thereof the strain is taken from the pivots of the pawls, so that a structure of great strength is obtained.

As shown in the drawings, the side plates may be adjustably connected with the end plates of the frame, so that the two series of pawls may be moved toward and away from each other, and thus when it is desired to rotate the engine-shaft at a greater or lesser speed, with a constant speed of reciprocation of the piston-rod, a smaller or larger ratchet-wheel may be secured upon the engine-shaft, and the side plates of the frame may be adjusted to properly engage the pawls with the substituted ratchet-wheel.

It will of course be understood that in practice various modifications of the construction shown may be made and that any suitable materials and proportions may be used for the various parts thereof without departing from the spirit of the invention.

What is claimed is—

1. In a device of the class described, the combination with the reciprocating rod and shaft, of a frame comprising side portions having guideways, pawls pivotally mounted in the guideways, the pawls at opposite sides of the frame being disposed oppositely, and a ratchet-wheel fixed upon the shaft and lying with its periphery in operative relation to the pawls.

2. In a device of the class described, the combination with the reciprocating rod and shaft, of a frame comprising side portions adjustable toward and away from each other, pawls pivoted upon the side plates and adjustable therewith, and a ratchet removably disposed upon the shaft in operative relation to the pawls, said shaft being adapted to receive ratchets of different diameters interchangeably.

3. In a device of the class described, the combination with the reciprocating rod and shaft, a ratchet removably engaged with the shaft to permit of substitution of a ratchet of different diameter, and a frame fixed to the rod, said frame comprising side plates disposed in pairs, and pawls pivoted between the pairs of plates in operative relation to the ratchets oppositely, said pairs of side plates being adjustable toward and away from each other to engage their pawls with ratchets of different diameters.

In testimony whereof I hereunto sign my name, in the presence of two subscribing witnesses, on this 1st day of September, 1900.

FREEMAN GRANT.

Witnesses:
EDWIN R. BACHELDER,
A. G. MURRAY.