No. 680,934. Patented Aug. 20, 1901.

T. S. MILLER & J. H. DICKINSON.

HOISTING AND CONVEYING DEVICE.

(Application filed June 19, 1900.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1

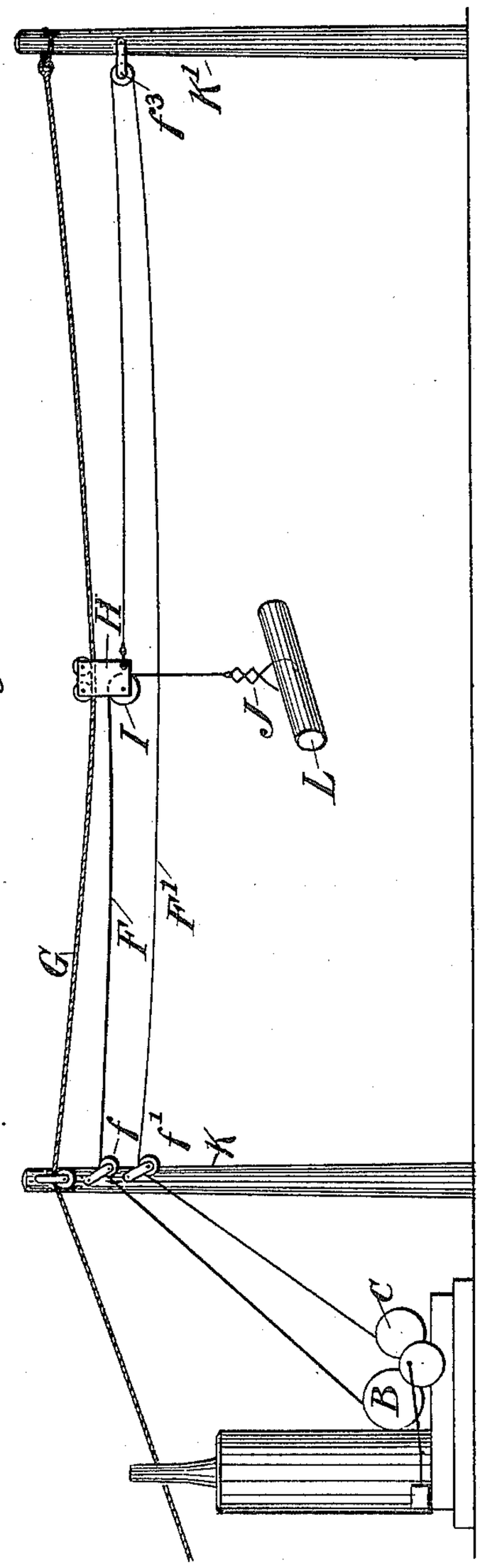

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Fig. 2

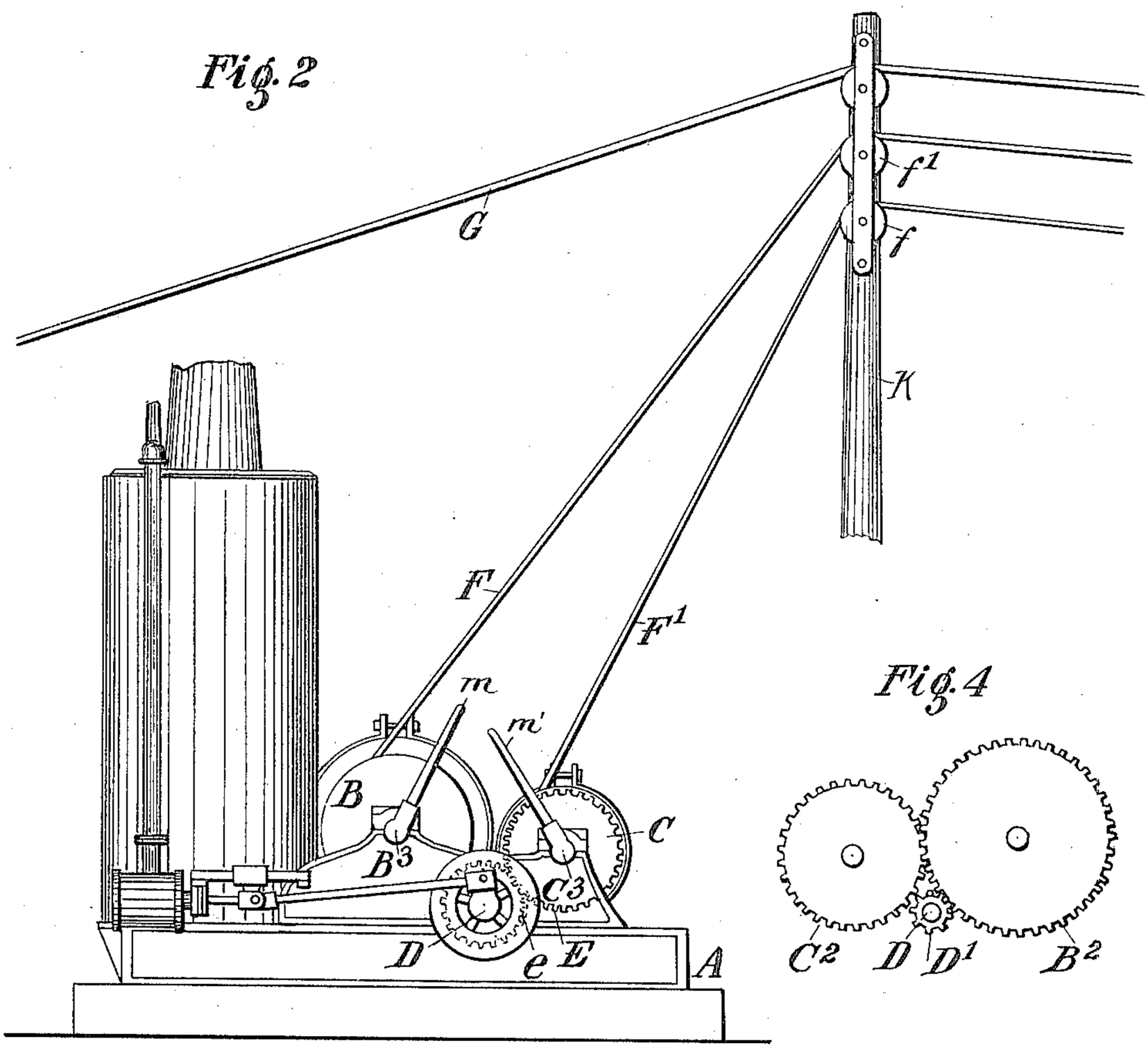


Fig. 4

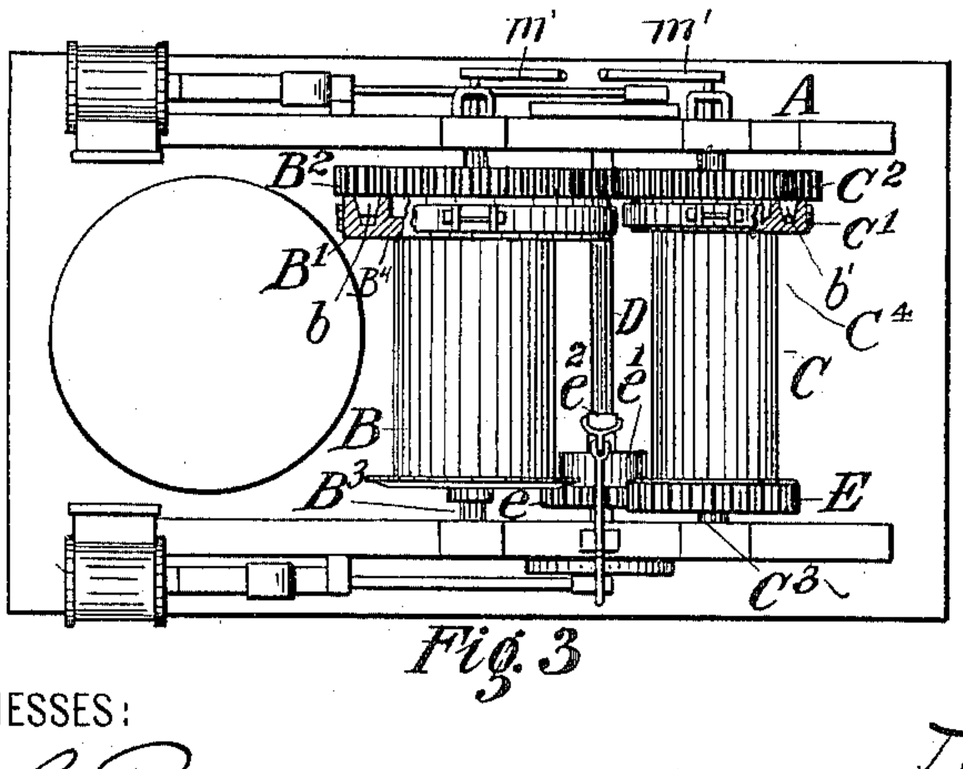
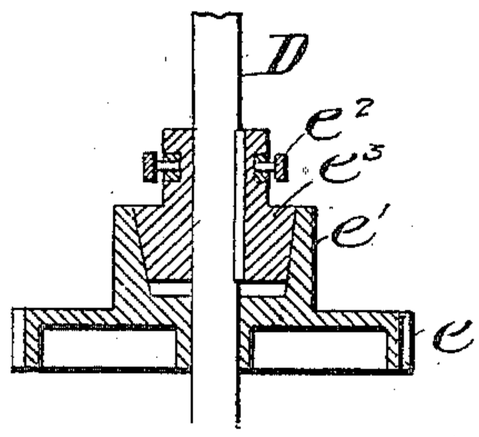


Fig. 3

Fig. 5.



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UNITED STATES PATENT OFFICE.

THOMAS SPENCER MILLER, OF SOUTH ORANGE, NEW JERSEY, AND JOSEPH H. DICKINSON, OF ATLANTA, GEORGIA.

HOISTING AND CONVEYING DEVICE.

SPECIFICATION forming part of Letters Patent No. 680,934, dated August 20, 1901.

Application filed June 19, 1900. Serial No. 20,795. (No model.)

To all whom it may concern:

Be it known that we, THOMAS SPENCER MILLER, a resident of South Orange, in the county of Essex and State of New Jersey, and JOSEPH H. DICKINSON, a resident of Atlanta, in the county of Fulton and State of Georgia, citizens of the United States, have invented a new and Improved Hoisting and Conveying Device, of which the following is a full, clear, and exact description.

Our invention relates to certain improvements in hoisting and conveying devices of the cableway type, and is herein shown and particularly adapted for use in logging operations, although it is evident that it may be used for conveying any kind of material.

Our invention comprises the novel features which are herein described, and particularly pointed out in the 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 shows our device in its general design. Fig. 2 is a side elevation of the engine for operating the device and the cables connected therewith. Fig. 3 is a plan view of the engine, and Fig. 4 is a diagram showing more fully the manner of connecting the power-shaft with the drums. Fig. 5 is a section of the friction device on the power-shaft.

The form of device as herein shown is given as an illustration of a preferred form of construction, although it is well understood that this might be changed in many of its details and the arrangement of parts without departing from the spirit of our invention.

In using our device a tramway is provided, which, as herein shown, consists of a cable G, which is suspended between two supports K and K′ of any suitable form. In using our device for logging purposes these supports would ordinarily consist of trees to which the device is attached. This cable is anchored back from the supports K and K′, if necessary, in any suitable or convenient manner. Upon the cable G is mounted a carrier H, which has a sheave I therein, over which passes the hoist-rope F, said hoist-rope being also used for pulling the carrier in one direction and is thus a combined pulling and hoisting rope. Upon the head-support K is mounted a sheave *f*, over which the hoisting-rope F passes. An outhaul-rope F for conveying the carriage H toward the tail-support K′ is provided, said rope being conveyed over sheaves *f′* and f^3, supported, respectively, upon the head and tail supports. The hoisting-rope F at its outer end is provided with a pair of tongs J, by means of which the log L may be supported from the rope. The engine for operating the device is fully shown in Figs. 2 and 3. This engine has two drums B and C, which are loosely mounted upon shafts B^3 and C^3. Secured to these shafts are two intermeshing gear-wheels B^2 and C^2, and said gears are adapted to be connected each with its respective drum by means of a friction device of any suitable form. As herein shown, such friction devices consist of annular flanges or rings *b b′*, carried, respectively, by the gears B^2 C^2 and fitting corresponding grooves in the faces of the heads B^4 and C^4 of the drums B and C. The engagement of these friction-surfaces is controlled by levers *m m′*, which are secured to the outer ends of threaded shafts which lie within bores formed in the axes of the two shafts B^3 and C^3 of the drums and at their inner ends engage the gears B^2 and C^2 by means of cross-keys and slots in the shafts, the whole being a well-known form of friction operating device.

The gears B^2 and C^2 are made of a diameter proportioned to the diameters of the drums B and C, so that when both gears are connected with the drums by the friction devices the peripheral speed of the two drums will be equal. Each drum is also provided with band-brakes, as B′ and C′, by means of which the revolution of the drums may be checked, as desired. A power-shaft D is connected with the engine or other motor used, so as to be revolved thereby, and is provided with a pinion D′, which meshes with the gear upon one of the drums, said gear in this case being the gear B^2, which is adapted to turn the drum B.

A gear E is secured to the drum C, so as to turn therewith at all times. A gear *e* is loosely mounted upon the power-shaft D and meshes with the gear E. A friction device, herein shown as consisting of the hollow flange *e'*, secured to wheel *e* and the coöperating cone e^3, mounted to slide upon and turn with the power-shaft D, is provided, so that the gear *e* may be made to turn with said shaft or turn loosely thereon. This friction device is operated by means of a lever e^2 or any suitable device. The gears *e* and E are preferably proportioned so as to revolve the drum C at a higher rate of speed than when it is turned by the friction device which connects it with the gear C^2. By reason of the fact that only two gears are used in one case and three in the other to communicate the power from the power-shaft to the drum C said drum will be revolved in opposite directions by said devices.

The operation of our device is as follows: Starting with the carriage near the head-support K the friction *e'* is applied, which will cause the drum C to be turned so as to wind up the outhaul-rope F', and thus to cause the carriage H to travel toward the tail until it has reached the desired position. As the end of the hoisting-rope F cannot pull through the carriage H, the hoisting-rope F will be carried along with the carriage, the drum B, upon which said hoisting-rope winds, being loose upon its shaft. When the carriage H has reached the desired position, the friction *e'* is released, and the end of the hoisting-rope is pulled downward and out as much as necessary to enable it to be secured to a log or other object to be moved. In order to hoist the log, the friction is applied to turn the drum B, so as to wind up the hoisting-rope. To prevent the carriage from traveling toward the head-support while this is being done, the brake C' is applied to the drum C. As soon as the log has been raised to the desired point the brake C' is released, and simultaneously therewith the friction is applied to the drum C to turn it, so as to allow the outhaul-rope to be unwound as fast as the hoisting-rope is wound up. This will result in the carriage being drawn upon the supporting-rope G toward the head-support. When it has reached the place where it is desired to deposit the log, the friction devices are released from both drums and the brakes applied to both drums. By then releasing the brake upon the drum B the log may be lowered. By having the two drums B and C connected to turn together at the same rate of speed without being obliged to use a friction-brake upon either drum considerable saving in power is made. Unless the two drums and their driving mechanism are thus proportioned, so as to wind up and pay out their ropes at equal speeds, it will be necessary to run one of the drums under a slipping friction, which will consume considerable power. The second set of driving mechanisms for the drum C, or that set which is operated by the friction *e'*, being geared to turn the drum at a higher speed than the other driving device, the outward travel of the carriage is considerably faster than its inward travel, and considerable time is thus saved.

Having thus fully described our invention, we claim as new and desire to secure by Letters Patent—

1. In a hoisting-engine in combination two drum-shafts, two drums loosely mounted on said shafts, two intermeshing gears secured one to each drum-shaft and approximately proportioned in diameters to the diameters of the drums, driving devices adapted to connect each gear with its drum, a power-shaft, a pinion thereon intermeshing with the gear on one of the drum-shafts, a gear secured to the drum upon the other shaft, an intermeshing gear loosely mounted upon the power-shaft, and friction devices for turning said gear from the power-shaft, said last train of gears being adapted to turn the drum oppositely and at a higher speed than its other driving device, substantially as described.

2. In a hoisting-engine in combination, two drum-shafts, two drums loosely mounted one on each of said shafts, a brake upon each drum, two intermeshing gears secured one to each drum-shaft and approximately proportioned in diameters to the diameters of the drums, friction devices adapted to connect each gear with its drum, a power-shaft, a pinion thereon intermeshing with the gear on one of the drum-shafts, a gear secured to the drum upon the other shaft, an intermeshing gear loosely mounted on the power-shaft, and friction devices for turning said gear from the power-shaft, said last train of gears being adapted to turn the drum oppositely and at a higher speed than its other driving device, substantially as described.

3. In a hoisting-engine, two drums, a power-shaft, a separate set of driving mechanisms from the power-shaft to each drum, means for connecting or disconnecting either set of driving mechanisms, and means for connecting both drums.

4. In a hoisting-engine the combination with two drums, a power-shaft, separate sets of gears at opposite ends of the drums adapted respectively to connect the power-shaft with different drums, means for throwing each set of gears into or out of action at will, and gears adapted to directly connect the drums.

5. In a hoisting-engine, two drums, a power-shaft, a separate set of driving mechanisms from the power-shaft to each drum, means for connecting or disconnecting either set of driving mechanisms, means for connecting both drums, and a brake for each drum.

6. In a hoisting-engine in combination, two

drum-shafts, two drums loosely mounted one on each of said shafts, two intermeshing gears secured one on each drum-shaft, means for connecting each drum to turn with its shaft, a power-shaft, a pinion fixed on the power-shaft and meshing with the said gear upon one of the drum-shafts, a gear fixed to the drum upon the other drum-shaft, a pinion loose upon the power-shaft and meshing with the last-mentioned gear, and means for connecting said loose pinion to turn with the power-shaft when desired.

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