

(No Model.)

2 Sheets—Sheet 1.

W. WEAVER.
CAR STARTER.

No. 488,462.

Patented Dec. 20, 1892.

Fig. 1.

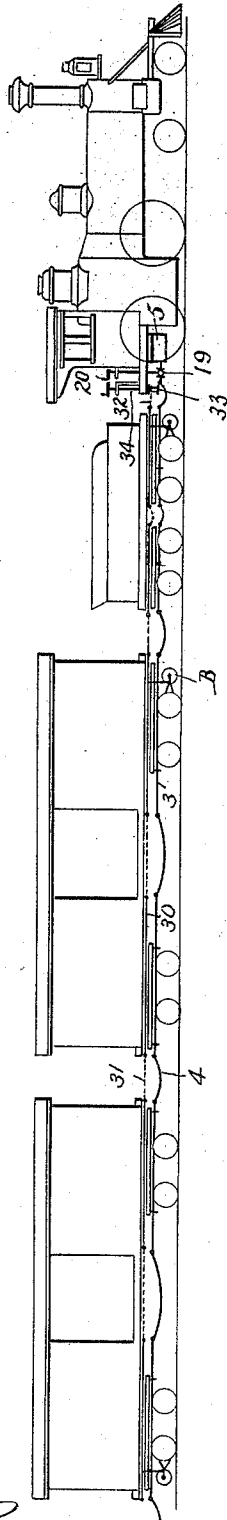
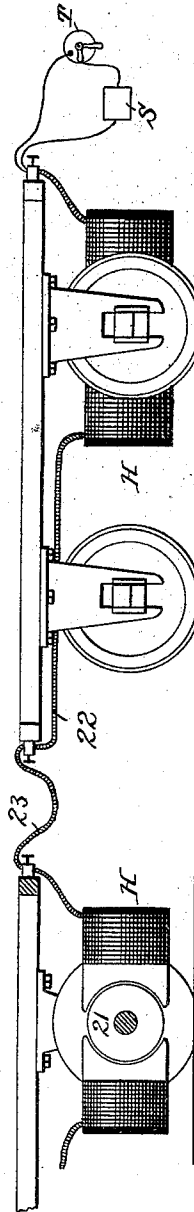


Fig. 2.



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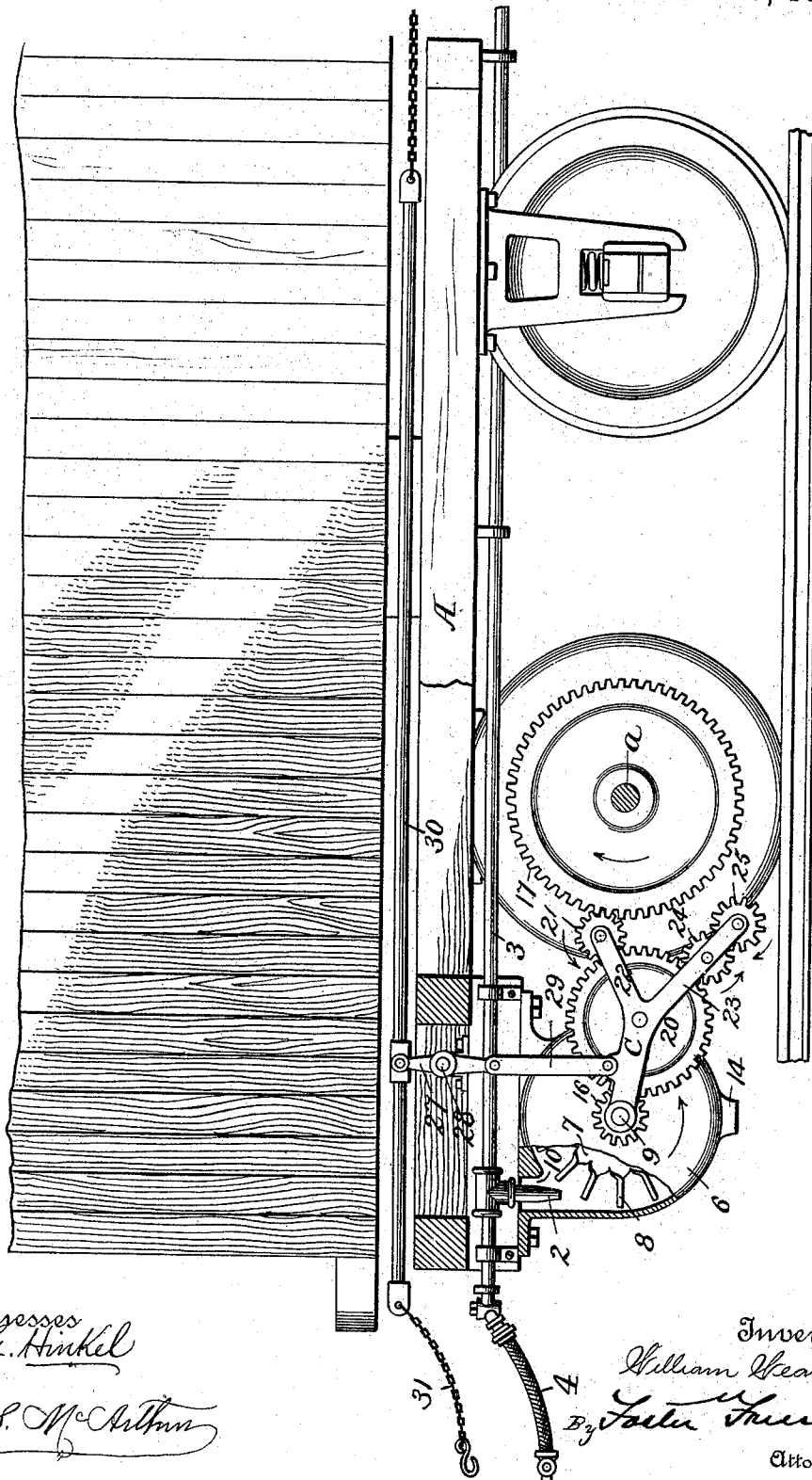
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Fig. 2.



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UNITED STATES PATENT OFFICE.

WILLIAM WEAVER, OF WESTPORT, ASSIGNOR TO HIMSELF, AND WILLIAM A. CURTIS, ARTHUR C. WHEELER, DEXTER HITCHCOCK, AND CHARLES LAPHAM, OF NORWALK, CONNECTICUT.

CAR-STARTER.

SPECIFICATION forming part of Letters Patent No. 488,462, dated December 20, 1892.

Application filed October 28, 1891. Renewed November 21, 1892. Serial No. 452,655. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM WEAVER, a citizen of the United States, residing at Westport, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Car-Starters, of which the following is a specification.

My invention relates to that class of appliances used for starting trains, and more especially trains in which several cars are coupled rigidly together, and has for its object to facilitate the operation of the starting devices upon the different cars of the train, which are used as auxiliary to the starting force of the engine.

In the accompanying drawings, Figure 1, is a side view illustrating a locomotive engine, tender, and two cars provided with my improved starting apparatus; Fig. 2, is an enlarged view in part section, illustrating the starting apparatus upon a single car; Fig. 3, is a view illustrating a modification.

In the drawings, A represents the different car trucks which may be rigidly secured to the frame of the cars, or swiveled upon king bolts as usual, *a* being the axles of the wheels and upon each truck is mounted preferably so as to occupy a permanent position in respect to the adjacent axle, a motor B, which in the present case is in the form of a rotating engine of any suitable type or construction.

In Figs. 1 and 2, the rotary engine is shown as constructed to be operated by a blast or stream of air or other fluid, passing from a nozzle 2, of a pipe 3 upon each truck, the pipes of the different trucks being coupled by flexible couplings 4, and the forward coupling extending to a reservoir 5 upon the locomotive, or elsewhere as may be most suitable, which reservoir is supplied with air or other fluid, either from the air pump of the locomotive, or in any other suitable manner.

The casing 6 of each rotary motor is constructed to receive a flat disk 7, provided with a series of radial blades 8 and mounted upon a shaft 9 extending through central bearings of the casing, and an inlet branch 10 receives the nozzle 2 in a position about tangential to the periphery of the disk, so that the blast or

stream issuing from the nozzle, will strike upon each blade in succession as it comes before the nozzle, whereby a rapid rotary motion is imparted to the said disk, the fluid after acting upon the disk, escaping through a discharge nozzle 14. On one end of the shaft 9, is a small pinion 16, which gears through intermediate gears with a large toothed wheel 17, upon the shaft of the adjacent axle *a*.

The engineer controls a cock 19, by means of a handle 20, so that he can at any time open the cock to permit the fluid to pass to the pipes 3, and flow through all the nozzles, thereby imparting a rapid motion to the shaft 9 of each motor. Gears between the motor and the adjacent axle are so proportioned, that but a slow motion will be imparted to the axles thereby gaining in power, as it is only required to turn each axle a small part of a revolution to secure the desired starting effect throughout the train. By thus reducing a rapid motion, I am enabled to make use of a rotary motor, as for instance an air motor as described, requiring comparatively little power, but rotating at a rapid speed.

Inasmuch as it is essential that the engineer shall be enabled to start the cars in either direction, and as it would not be practicable to impart two positive movements from the single operating device, which it is desirable for him to employ, I provide means whereby variations in the operations of a single device will alter the gears between each shaft 9, and the axle *a*. Thus as shown, there is hung to each shaft 9, a frame C, carrying a large toothed wheel 20, gearing with the pinion 16, a pinion 21 gearing with the wheel 20, and carried by an arm 22 of the shaft, and two pinions 24—25 carried by an arm 23 of the shaft, and one gearing with the wheel 20, and the other with the pinion 24.

Normally the frame C is in position shown in Fig. 2, and the rotation of the shaft 9 in the direction of the arrow, will rotate the axle *a* in the direction of its arrow, and propel the car to the right. When the frame C is sufficiently elevated, the pinion 25 will be brought into gear with the wheel 17, and the axle A will be turned in the reverse direction, and the car will be driven to the left. The pin-

ions 25—21 are so arranged, that the frame C may be carried to an intermediate position with both pinions out of gear with the wheel 17, whereby the travel of the car under the draft of the locomotive, will not impart any movement to the gears.

In order to enable the engineer to shift the frames to their different positions, by a draft upon the connecting devices in one direction, which free end of the trucks may be toward the engine, I make use of the connections of the character illustrated in Figs. 1 and 2, where each frame C is suspended from a lever 27 pivoted to a stud 28 upon the truck, and connected with the frame by a link 29, and all of the levers 27 are connected with an operating rod or cable 30 extending to the engine. The different sections of the rod 30 upon the different trucks, are connected by links 31, capable of separation, and the forward end of the rod 30, is connected by a chain 32 to a drum 33 on a vertical handled shaft 34 upon the engine. When the shaft 34 is released, all of the frames C fall to their lowest positions, as shown in Fig. 2. When a partial draft is exerted upon the connections, the frames C are held to their mid positions which is the normal position in running, the shaft 34 being then prevented from turning by means of any suitable locking device. By further turning the shaft 34, the frames C are all elevated, and the lower pinion 25 is brought into gear with the wheel 17.

In the construction shown in Fig. 3, the electro-motor H, is carried by the car in such position that the armature 21 thereof may be directly upon the axle and the conductor 22 of each car may be coupled to that of the other by a coupling 23, and said conductor is in circuit with a storage battery or generator S, and switch-device T, by the movement of which the circuit may be completed or broken so as to put the starting motors into or out of circuit, the switch device being a reversing switch so as to start the motor in either direction required.

By the use of a rotary motor as above described, I am enabled to utilize the action of a rapidly revolving shaft in starting the train, and can therefore make use of such motor fluids as would be too weak in character to

impart positive movements to pistons connected directly with the devices for rotating the axles.

Without limiting myself to the precise construction and arrangement of parts, I claim:—

1. The combination with a train of cars and a locomotive, of a car starter upon each car, and a rotary motor for each starter, all of the motors being connected to receive motor fluid from a single source, and means upon the locomotive for shutting off or controlling the flow of the motor fluid while the train is being propelled by the locomotive and for reversing the motion of the starter, substantially as described.

2. The combination in a car starter with a train of cars and a locomotive, of a rotary motor upon each car, all the motors being connected to receive the motor fluid from the same source, and means upon the locomotive for controlling the flow of the motor fluid and for reversing the motion of the starter and disconnecting it from the car wheels, substantially as set forth.

3. In a car starter the combination with the axle of a railway car and a gear wheel upon said axle, of a rotary motor and a frame carrying two sets of gears driven by said motor, said frame being adjustable to bring the final gear of either set into mesh with the wheel upon the axle of the car whereby the direction of rotation of the axle may be changed, substantially as set forth.

4. The combination in a car starter with the locomotive and cars, of a rotary motor upon each car, a frame carrying two sets of gears driven by said motor said frame being adjustable to bring either set into mesh with a gear upon the axle, a lever connected with the frame to lift the latter by movement in either direction, and connections between all of the levers, and an operating device upon the locomotive, substantially as set forth.

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

WM. WEAVER.

Witnesses:

W. S. MCARTHUR,
GEO. G. COLEGATE.