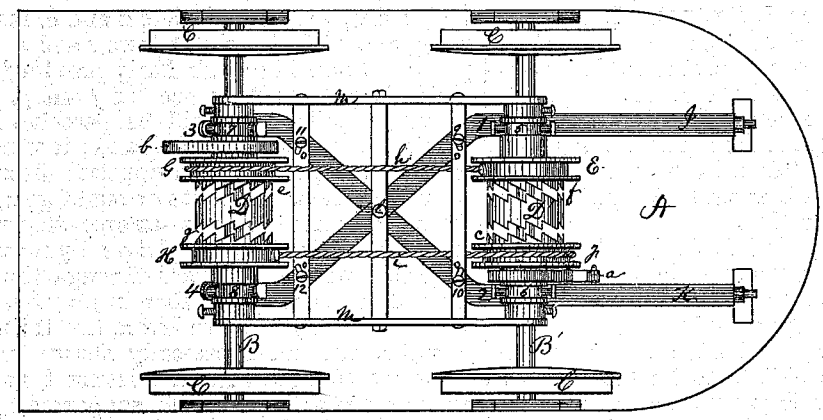
C. B. BROADWELL.

Improvement in Combined Car-Brake and Starter.

No. 129,782. Patented July 23, 1872.



WITNESSES

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CHARLES B. BROADWELL, OF NEW ORLEANS, LOUISIANA.

IMPROVEMENT IN COMBINED CAR BRAKES AND STARTERS.

Specification forming part of Letters Patent No. **129,782**, dated July 23, 1872.

Be it known that I, CHARLES B. BROADWELL, of the city of New Orleans and State of Louisiana, have made certain Improvements upon a Combined Car Brake and Starter; and I hereby declare the following to be a full, clear, and exact description of my said improvement when taken in connection with the drawing herewith annexed, constituting a part of this specification.

My present invention is designed to be a more complete and practicable development of the essential features embodied in my patent of July 26, 1870, and of my allowed application of August 10, 1871, relating to the same thing. The objects to be attained by me in my present improved device are precisely those which are clearly set forth in my former patents above mentioned, and need, therefore, to be but briefly recapitulated in this specification. They are as follows: First, the supersedure of the friction-brakes in present use. Second, the relief of the draft-animals from the destructive duty of starting street-railway cars. Third, the retention of the power required to stop a car, to be made available, at the will of the driver, to start it again or run it backward, as occasion may require.

My invention is designed to be applicable to all railway cars, irrespective of the motive power employed for their propulsion, and to become of great public utility by economizing the power so employed, and by diminishing the destructive effects of the friction-brake at present in common use. Repeated experiments in the application of my device have furthermore amply demonstrated a great saving of time and hand-labor—matters of the utmost importance, not only to railway companies, but to the public in general.

My improvement will now be more clearly understood and appreciated by referring to the drawing, whereon it is shown in connection with the bottom of platform of a street-car and the axles and wheels thereof.

A is the said platform, and B B′ the axles, while the wheels are represented at C C C C. Upon both the axles and at the center of their lengths are placed the clutches D D′ and rigidly keyed thereto. At both sides of the said clutches are placed the loose pulleys E, F, G, and H. The pulleys F and G are provided, at their sides, with the springs *a* and *b*, respectively, and with the clutch-jaws *c* and *e*. The pulleys E and H are similarly provided with clutch-jaws, as will be seen at *f* and *g*. The aforesaid pulleys, as will be perceived, are grooved to allow the cords *h* and *i* to wind upon them, respectively, in opposite directions when they are thrown into or out of gear with their proximate clutches—an operation which is easily executed by the driver by means of vertical levers, which pass through the platform of the car and are therein pivoted. The lower extremity of these levers (for the above purpose, but not necessarily shown on the drawing) connect with the levers I and K, which are pivoted at *l*, and supported by the frame *m*. The levers I and K are provided with yoke-clutches 1, 2, 3, and 4. The said yoke-clutches slide freely in the grooves 5, 6, 7, and 8, and when operated by the said levers I and K, as above described, serve to move the aforesaid pulleys E, F, G, and H in the required directions in practice. The said levers I and K are guided in their lateral movements, and held securely in position upon the frame *m*, not only by the pivot *l*, but likewise by the set-screws 9, 10, 11, and 12 inserted in the said levers with their shoulder-bearings slightly against the under side of the cross-bars of the frame *m*, which cross-bars are provided with the slots *o* to admit the free lateral movement of the aforesaid set-screws therein. The said frame *m* has its bearings upon the axles of the car, and serve the further purpose of confining within proper limits the several parts of my device.

The operation of my device I will now simply and briefly explain, by supposing the car to be in full motion, at which time all the parts of my device occupy the several positions shown upon the drawing, the clutches D and D′ revolving freely with the axles to which they are fixed, while the remaining parts of the device are motionless. The driver now wishes to stop the car. He at once moves the lever I so as to throw the pulley H into gear with the clutch D, and this operation at the same time throws the pulley E into gear with the clutch D′. This operation unwinds the cord *i* from the spring-pulley F from its upper face, to and upon the pulley H upon its opposite face, and at the same time the cord *h* is

passing from the lower face of the pulley G to the upper face of the pulley E. The effect of this operation is to wind up the springs *a* and *b* to the extent necessary to arrest the progress of the car and bring it to a stop. The tensile force of the said springs *a* and *b* now being brought into full play would have the effect of backing the car, which, in some cases, might be desirable; but should such an operation not be required the lever K may be moved to throw the pulley G into connection with the clutch D, and the pulley F into connection with the clutch D′, which completely locks the car and holds it firmly in a stationary position. If it now be desired to start the car forward the position of the lever I is reversed, thereby throwing the pulleys E and H out of connection with their proximate clutches, and thus permitting the tensile power of the springs *a* and *b* to move forward the pulleys G and F, and as they are at this time in gear with the clutches D and D′, their respective axles will be revolved to move the car in the desired direction. As the car now proceeds forward the position of the pulleys F and G will, it is obvious from the construction of the proximate clutches, assume their normal and proper position out of gear. The whole operation is thus complete.

Claims.

Having thus described my invention, what I desire to secure by Letters Patent is the following:

1. The springs *a b*, secured to the pulleys F and G and to the bottom of the car, the parts being arranged as shown and described, and for the purpose set forth.

2. The clutches D D′, constructed as described, pulleys E, F, G, and H, axles B B′, and levers I K, combined and arranged substantially as described, and for the purpose specified.

3. The angular levers I K pivoted at *l*, as shown, so as to operate the pulleys E H or F G, substantially as described, and for the purpose specified.

C. B. BROADWELL.

Witnesses:

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