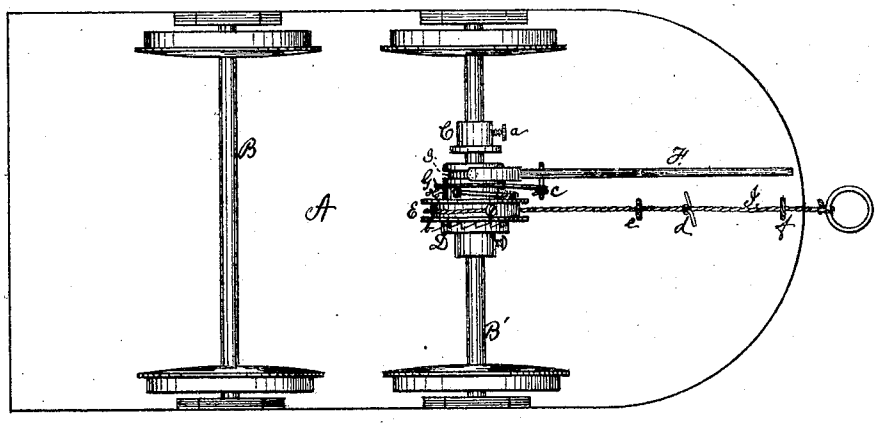
C. B. BROADWELL.

Improvement in Railway-Car Starters.

No. 130,275. Patented Aug. 6, 1872.



WITNESSES.

H. A. Jenkins
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INVENTOR.

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AM. PHOTO-LITHOGRAPHIC CO. N.Y. (OSBORNE'S PROCESS)

UNITED STATES PATENT OFFICE.

CHARLES B. BROADWELL, OF NEW ORLEANS, LOUISIANA, ASSIGNOR OF ONE-HALF HIS RIGHT TO PAUL COOK, OF SAME PLACE.

IMPROVEMENT IN RAILWAY CAR-STARTERS.

Specification forming part of Letters Patent No. **130,275**, dated August 6, 1872.

Be it known that I, CHARLES B. BROADWELL, of the city of New Orleans and State of Louisiana, have invented an Improved Railway Car-Starter; and I hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawing forming a part of this specification.

The present improvement is one of a series of devices relating to the same object, and for which already two separate patents have been allowed me by the United States Patent Office. The invention herein described consists of a simple mechanical arrangement, through the agency of which the draft animal or animals are materially assisted and relieved from the difficult and necessarily oft-repeated burden of starting street-railway cars. This object I effectually accomplish by placing upon the forward axle of the car a movable grooved pulley, of a diameter somewhat less than that of the wheels upon which the car rests, and at the outer periphery of this pulley attaching the end of the draft-chain, thereby, in effect, giving the draft-animal at the moment of starting the advantage of pulling the car from the outer circumference of an axle of greatly increased diameter—an advantage of the greatest importance, as experience has amply demonstrated; but my device will be more clearly understood by referring to the drawing, whereon it is plainly exhibited, and whereon the similar letters refer to the similar parts thereof.

On the drawing is shown a bottom view of my apparatus in connection with the floor of a street-railroad car, together with the wheels and axles thereunto pertaining.

A is the floor of the car, which may be constructed in the usual manner; B B′, the axles of the car. In order to apply my invention I place upon the axle B′ the collar C, which is rigidly fixed thereto by means of the screw *a* or its equivalent. The clutch D is likewise rigidly fixed to the axle B′ in the manner described for the aforesaid collar C. Between the collar C and the clutch D aforesaid I place the movable grooved pulley E, upon one side of which are placed projections *b*, corresponding to those upon the proximate sides of the clutch D, so that when they are thrown together by means of the lever F, the said grooved pulley E may thereby be temporarily held rigidly in connection with the said clutch D, and consequently with the axle B′ aforesaid. Upon the side of the pulley E opposite to that upon which is placed the clutch projections or jaws *b*, I place the spiral spring G, connected at one end with the staple *c*, which staple is attached to the platform of the car, and at its opposite end with the drum H, which latter is rigidly connected with the pulley E. I is the draft-chain, one end of which is connected with the outer periphery of the pulley E, and to its opposite end is attached the draft-animal. Upon the said draft-chain is placed a short cross-bar, *d*, which serves to confine the forward-and-backward movements of the said chain to the distance intervening between the staples *e* and *f*, which, for that purpose, project below the platform of the car.

The operations of my device are exceedingly simple, as will be apparent from the following brief description: Supposing the car and the draft-animal to be at rest, with the slack of the draft-chain I wound upon the pulley E, which operation is effected by means of the aforesaid spiral spring G to the extent of drawing the cross-bar *d* as far back as the staple *e*, the pulley E is now placed in connection with the clutch D by means of the lever F operated by the hand or foot of the driver. The draft-animal starts forward and draws the draft-chain and cross-bar *d* aforesaid the distance from the point *e* to the point *f*, where its further progress is arrested, the car in the meantime having moved forward and acquired sufficient momentum to enable the draft-animal to proceed with comparative ease, and as the axle B′, to which the clutch D is fixed, revolves it necessarily relieves the said clutch from the pulley E. The reversal of the pulley E and the consequent winding up of the draft-chain will again be repeated as soon as the draft-animal stops.

The advantages of my device will now be clearly apparent from the fact, hereinbefore stated, of the attachment of the draft-chain to the periphery of a greater diameter than could otherwise be effected from its attachment either to the platform of the car or directly to the axle thereof.

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

1. The pulley E, constructed with clutch projections *b*, groove for draft-chain I, drum H, and groove *g*, substantially as and for the purpose set forth.

2. The spiral spring G, in combination with the drum H, pulley E, draft-chain I, and staple *c*, the several parts being arranged substantially as and for the purpose specified.

3. The pulley E, constructed as described, and combined with the clutch D, collar C, spiral spring G, lever F, and axle B′, as and for the purpose specified.

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Witnesses:
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