(No Model.)

N. J. ROBERTS.

CAR STARTER.

No. 348,238. Patented Aug. 31, 1886.

Fig. 1.

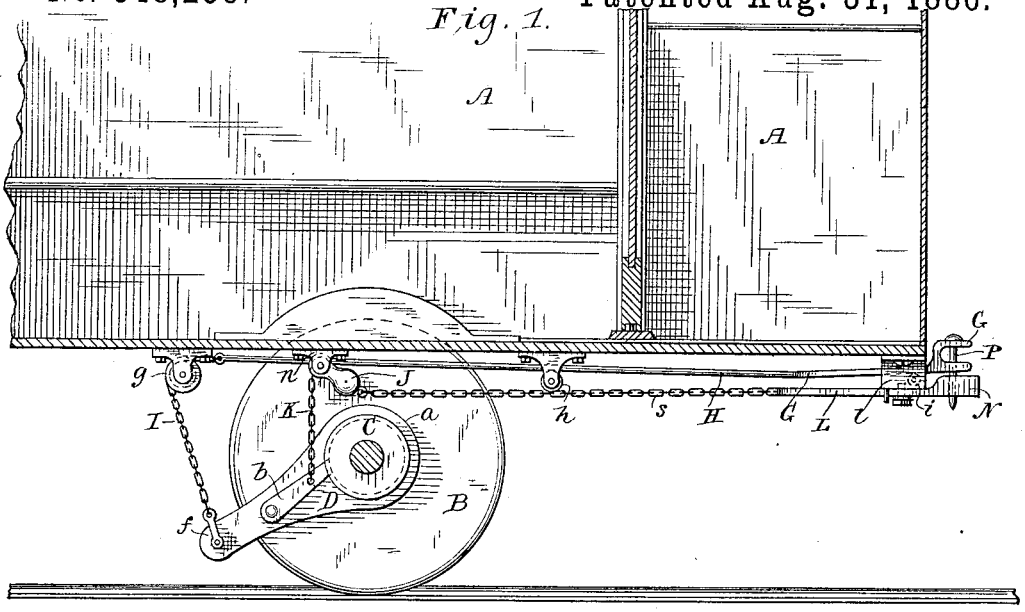


Fig. 3.

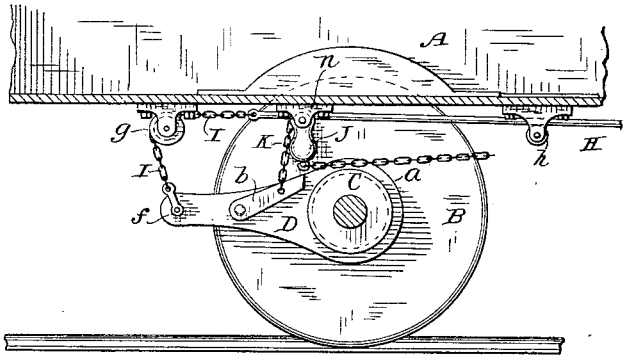


Fig. 2.

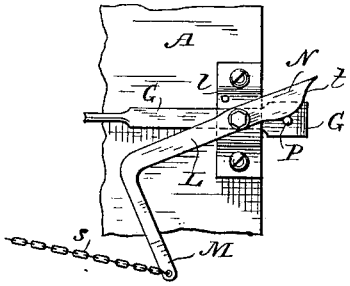


Fig. 4.

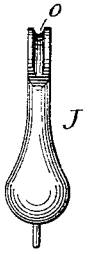


Fig. 6.

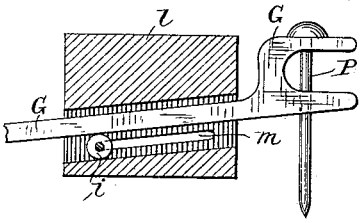
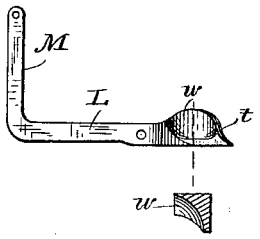


Fig. 5.



Witnesses
Jos. S. Latimer
A. Paul Spencer

Inventor
Newell J. Roberts
By his Attorney
Arthur S. Brown

N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

NEWELL J. ROBERTS, OF BATTLE CREEK, MICHIGAN.

CAR-STARTER.

SPECIFICATION forming part of Letters Patent No. 348,238, dated August 31, 1886.

Application filed May 1, 1886. Serial No. 200,845. (No model.)

To all whom it may concern:

Be it known that I, NEWELL J. ROBERTS, a citizen of the United States, residing at Battle Creek, in the county of Calhoun and State of Michigan, have invented certain new and useful Improvements in Car-Starters; and I do 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, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

In Letters Patent No. 314,299, granted to me March 24, 1885, is shown and described a car-starter, which in practice, while serving admirably to facilitate the starting of the car, still is found to be open to one quite serious objection. This starting mechanism has been particularly used in street-cars of the usual type, the mechanism being duplicated at both ends of the car, in order that the car may be equally easily started whichever way it is running. As only one set of mechanism is to be used at a time, it is essential that the other set be thrown out of gear when not in use; but this the drivers of the cars frequently forget to do, and the consequence is, that the ratchets are stripped of their teeth, the pawls are broken, and injury is done to other parts of the mechanism.

To obviate this difficulty is a main object of the present invention; and to this end the main feature of the invention consists in an automatic clutch-releasing mechanism. In addition to this the invention embraces other improvements in the starting mechanism.

The various improvements are illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation, partly in section, showing one end of a car provided with the improved starting mechanism, the starting mechanism being shown in operative position. Fig. 2 is a bottom view of the lever which controls the automatic releasing mechanism, the lever being shown in position to permit the clutch to be in gear. Fig. 3 is a detail view of the clutch mechanism, showing the same out of gear. Fig. 4 is a detail view of the weighted lever. Fig. 5 is a detail view of the doubly-beveled face of the automatic controlling-lever; and Fig. 6 is a detail view of the draw-bar housing, showing a different construction from that shown in Fig. 1.

As in my patent above mentioned, A is the body of the car; B, one of the wheels; *a*, the stationary hub; C, the clutch-wheel fixed to said hub; D, the movable collar, and *b* the clutch or pawl pivoted to the collar D, and adapted to engage the clutch-wheel. The clutch-wheel may be provided with ratchet-teeth, as in my former patent, or may have a smooth surface, against which a gravity-clutch holds by frictional contact, as shown in the present drawings. In the present case, also, the extension *f* of the movable collar is made larger and heavier than in my patent, so that its weight will cause it to assume its lowermost position.

G is the draw-bar, which has secured thereto a long rearwardly-extending arm, H. To the rear end of this arm is attached a chain, I, which extends over an anti-friction pulley, *g*, mounted in a bracket on the under side of the car, the other end of the chain being connected to the free end of the extension *f* of the movable collar. The arm H is supported on a roller, *h*, mounted in a bracket on the under side of the car. The draw-bar G is held in a rearwardly-inclined channel in the housing *l*, resting on a roller, *i*, mounted therein. The object of thus mounting the draw-bar is, so that it will move downward when relieved from the strain incidental to the drawing of the car.

Instead of mounting the draw-bar in an inclined channel, it may rest upon a roller, *i*, which has its axis mounted in rearwardly-inclined slots *m* in the housing, as shown in Fig. 6. When the car stops, and the draw-bar is relieved from the pulling strain, it moves down and back of its own weight, being assisted in this movement by the weight of the extension *f* of the movable collar. If, then, in this position the friction-clutch is thrown in gear with the clutch-wheel, the forward movement of the draw-bar will effect the rotation of the wheels. The friction clutch or pawl *b* is controlled by a weighted lever, J, which is pivoted to a bracket, *n*, on the under side of the car. This lever has at its upper end a cylindrical head, on the periphery of which is a groove, *o*. Secured to this lever on its front face and held in this groove is a small chain,

K, which at its other end is fastened to the clutch *b*, near the free end thereof. The cylindrical head, being concentric with the pivot of the lever, constitutes a pulley for the chain K. Normally the weighted lever assumes a vertical position, as shown in Fig. 3, and the clutch is held out of contact with the clutch-wheel; but when the lower weighted end of the lever is raised the chain is slackened, and the gravity-clutch drops into contact with the clutch-wheel. Normally the clutch will be held out of gear by the weighted lever, and the weighted lever will only be raised when the car is to be started.

To raise the weighted lever the following mechanism is adopted: A short lever, L, is pivoted near its center to and beneath the housing *l* of the draw-bar. On the rear end of this lever is formed a long arm, M, which extends horizontally and at right angles to the lever. The free end of this arm is connected by a chain or cord, *s*, to the lower end of the weighted lever J. The forward end of the lever L has a head, N, which has two beveled faces, *t w*, one face being beveled in a vertical plane and the other in a horizontal plane. When the car is in motion, the draw-bar in its forward position, and the weighted lever in its vertical position, the lever L, acted upon by the weighted lever through arm M and chain *s*, assumes a position parallel with the draw-bar and with its head N immediately in the rear of the usual coupling-pin, P, carried by the draw-bar. When, however, the car is stopped and the draw-bar runs backward, the lower end of the coupling-pin comes in contact with the beveled face *t* of the lever-head N, and thus turns the lever on its pivot. This movement of the lever L moves forward the arm M, which in turn elevates the weighted lever, and thus the clutch is brought into engagement with the clutch-wheel, and the starting mechanism is in operative position, in readiness for the starting forward of the car. When the car is stopped, this will always be the position of the parts; but it is essential, when the car is to be moved in the other direction, that the clutch mechanism should be disengaged.

In order to unhitch the car-horses, the coupling-pin must be removed, and the removal of the coupling-pin in this mechanism disengages the clutch from the clutch-wheel, because when the coupling-pin is raised the stop which holds the lever L is removed, and the weighted lever J then automatically assumes its vertical position, and the clutch is accordingly disengaged. When the horses are again to be hitched to this end of the car, the insertion of the coupling-pin brings it into contact with the beveled face *w* of the head N of lever L, which again engages the clutch mechanism, as before, in readiness for the starting of the car. The first effect of the starting forward of the horses is to release the coupling-pin from the lever; but the clutch being now held in tight frictional contact with the clutch-wheel, it will not be affected by the weighted lever J until the movable collar D has been moved as far as is requisite to start the car.

I claim as my invention—

1. In a car-starter wherein the wheels are positively rotated to start the car, a movable draw-bar which actuates the rotating or starting mechanism, in combination with the coupling-pin, which is carried by said movable draw-bar, and which controls the operativeness of said rotating or starting mechanism through intermediate devices, substantially as set forth.

2. In a car-starter, the car-axle, a clutch mechanism which rotates said axle by engagement therewith, and a movable draw-bar which actuates said clutch mechanism, in combination with the coupling-pin carried by said draw-bar, which controls the engagement of said clutch mechanism with said axle through intermediate devices, substantially as set forth.

3. The clutch-wheel, the movable collar, the clutch carried by said movable collar, the movable draw-bar connected to said movable collar, and the coupling-pin carried by said draw-bar, in combination with the weighted lever connected to said clutch, and the lever L, connected to said weighted lever and co-operating with said coupling-pin, substantially as set forth.

4. The pivoted clutch and the pivoted weighted lever formed with a cylindrical head, constituting a pulley, in combination with a chain connected to said clutch and to said lever and passing over said pulley, substantially as set forth.

5. The sliding draw-bar and the coupling-pin carried thereby, in combination with a lever pivoted beneath said draw-bar, said lever having two beveled faces co-operating with said coupling-pin, substantially as set forth.

6. The movable collar having a heavy extension, *f*, in combination with the downwardly and rearwardly inclined draw-bar connected to said extension, substantially as set forth, whereby said draw-bar automatically assumes its lowermost position.

7. The housing provided with inclined slots and a roller mounted in said slots, in combination with the draw-bar which rests upon said roller, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

NEWELL J. ROBERTS.

Witnesses:

GEORGE W. MECHEM,

STEVEN S. HULBERD.