H. SCHREINER.

CAR-STARTER.

No. 185,648. Patented Dec. 26, 1876.

Fig. 1.

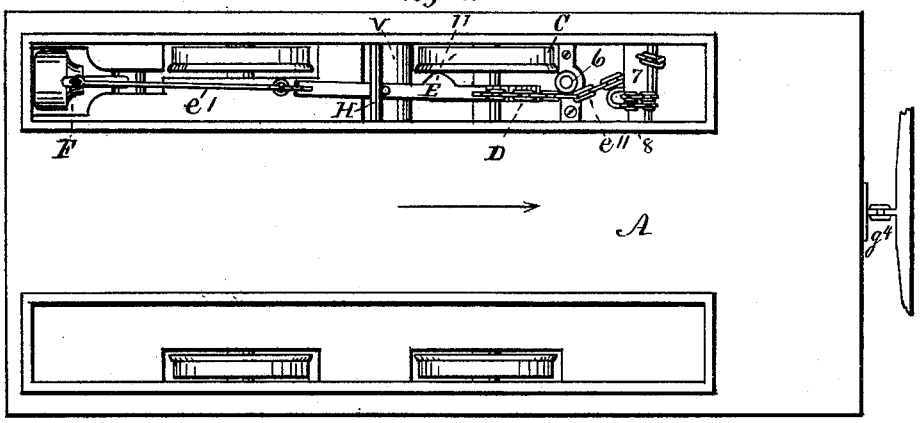


Fig. 2.

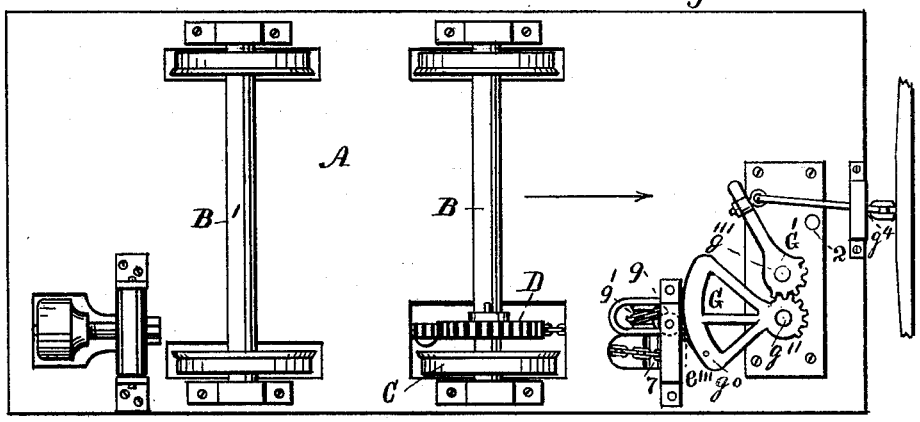
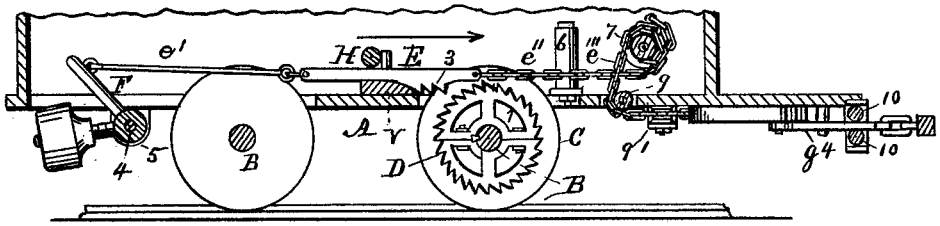


Fig. 3.



Witnesses.

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HENRY SCHREINER, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN CAR-STARTERS.

Specification forming part of Letters Patent No. **185,648**, dated December 26, 1876; application filed November 25, 1876.

To all whom it may concern:

Be it known that I, HENRY SCHREINER, of the city of Philadelphia, in the State of Pennsylvania, have invented a new and useful Improvement in Car-Starters, which improvement is fully set forth in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 is a plan view of the upper side of the platform of a railway-car having my invention applied thereto; Fig. 2, a plan view of the under side of Fig. 1; and Fig. 3, a vertical longitudinal section of the left-hand inner side of the platform, and a side elevation of my invention applied thereto.

My invention relates more especially to the invention described in the Letters Patent granted to me for a car-starter—No. 112,640—dated March 14, 1871, in which four of the wheels, or two at each side, of the car are required to be operated upon simultaneously, in order to start the car forward, and, consequently, when applied to the usual four-wheeled horse-cars, the said starter cannot be constructed and applied to start the same car forward alternately in opposite directions.

The object of my present invention or improvement is to provide a much more simple and durable car-starter, and, also, that will admit of being applied either singly or in pairs, as it may be desirable that the car shall be capable of being started forward at one end only, or at either end, as occasion may require.

In the drawings, the car-starter is shown as applied to the left-hand side of the platform, and the car as ready to be started forward in the direction of the arrows thereon, A being the platform of the car; B and B′, the forward and rear axles, respectively, provided with the usual flanged car-wheels. Near the forward car-wheel C is adjustably fixed to the axle B a ratchet-toothed wheel, D. This ratchet-toothed wheel D is in two semicircular parts, bolted firmly together around the axle B, and then rigidly fixed thereto by an ordinary wedge-key, 1, (see Fig. 3,) with the teeth on the upper edge of said wheel D inclining toward the rear end of the car, as shown in the same figure. The rack-bar E has only three teeth, 3, projecting from its under side, and each of them inclined toward the forward end of the car, and all adapted to gear accordingly into connection with any corresponding teeth of the ratchet-wheel D. This rack-bar E has its rear end supported nearly in a horizontal position above the ratchet-wheel D by means of a jointed rod, e', which connects with a weighted ⊥-lever, F, that turns on a pivot-fulcrum, 4, in a short projection or ear, 5, at the under side of the platform A, and also on a rounded cross-bar, V, of the platform, substantially as represented in Fig. 3, while the opposite end of said rack-bar E is supported by a chain, e'', that passes or extends along therefrom against and past the right-hand side of a vertical guide-roller, 6, thence under and partially around the larger diameter of a horizontally-arranged cylinder, 7, to which the end of said chain e'' is permanently fixed. The smaller diameter of said cylinder is about one-half the diameter of the former, and to this part another chain, e''', is rigidly fixed by its rear end, so as to pass over and about twice around the said part. Its forward end is passed down and under friction-roller 9, past friction-roller 9′ to the grooved eccentrically-curved or cam end g^o of a toothed sector, G, where it is permanently attached. The said sector G is secured so that it may be oscillated horizontally at the under side of the forward end of the platform A, it being secured by a nutted screw-bolt, g'', which also serves as its fulcrum. The teeth of this sector G corresponds with the teeth of another sector, G′, which is secured in like manner by a nutted screw-bolt, g''', to the under side of the platform A, so as to oscillate and co-operate with sector G, as represented in Fig. 3. The sectors G and G′ being levers of the first order, the power end of G has pivoted to it a draw-bar, g^4, which extends forward, through an oblong horizontal opening in the forward end of the platform A, far enough to permit of an easy attachment or detachment of the usual single or double trees of a horse-power, or of the coupling-link of a steam-power engine, as occasion may require either the one or the other to be used.

In the opening there are two horizontal friction-rollers, 10 10, and the draw-bar g^4 passes between them, substantially as shown in Fig. 3. The weighted arm of lever F must be

sufficiently preponderant to draw the rack-bar E, with its connecting-bars and chains, together with the usual single or double trees, backward, when the bar g^4 is not being drawn upon in a forward direction, as represented in Figs. 2 and 3. The sliding rack-bar E has a pin or projection on its upper side, so placed that when it comes in contact with the cross-bar H in the upright frame of the car, serves to stop the further backward motion of the lever F, and thus holds it in the position shown in Figs. 1 and 3; and a stud, 2, under the forward end of A, serves as a firm stop for the draw-bar g^4 when pulled out to its limited extent either in starting or in pulling the car on an up grade of the track. The object of making the cylinder 7, as shown, is that the longitudinal movements of the draw-bar g^4 shall not be greater in extent than about half that required in the rack-bar E in either starting, drawing, or stopping the car. On the outer or left-hand side of the forward part of the draw-bar E there is a cam-projection, 11, fixed, which, when the said bar is being drawn farther forward after its teeth 3 have left the teeth of the ratchet-wheel D passes along against the inner or right-hand side of the vertical guide-roller 6, which latter throws aside the said rack-bar sufficiently to prevent its teeth 3 from coming in contact with the teeth of the ratchet-wheel D during the return-motion of the rack-bar to its position of rest on the cross-bar V, as shown in Fig. 3.

In the operation of starting the car forward from a state of rest, the horses or other motive power used draw the bar g^4 outward from its position shown in Figs. 2 and 3, and thus eventually bring the teeth 3 of the rack-bar E into gear with the teeth of the ratchet-wheel D on the axle B, and compel a forward rotary motion in all the track-wheels of the car, thus reducing the power which would be required to start the car by pulling directly on the platform of the same proportionately to the amount of leverage gained by the co-operation of the two sector-levers G G′ and the eccentric g^0 in connection with the lever-age of the ratchet-wheel D, less the difference between the radii of cylinder 7. When the car has been started, and the draw-bar E is still being pulled upon to draw the car onward, the power-arm of sector-lever G′ will come in direct contact with the stud, and thus relieve the starting apparatus in rear thereof from all strain except that produced rearward by the weighted lever F; but when the pull upon the draw-bar ceases, or when the car and horses or other motive power are at rest, the weighted arm of lever F pulls the bar e', rack-bar E, chains e'' e''', and draw-bar g^4 backward into the respective positions shown in Fig. 3, ready for again being brought into action for starting the car forward.

It will be seen that my present invention is much more simple and less costly in construction, and quite as effective, if not more so, for the purpose than my former car-starter, patented, as aforesaid, in 1871; and, moreover, that, as my present starter requires only a narrow portion of the platform of a car, and this portion at one side only, to control a car intended to run exclusively in one direction on the track, it can readily be applied to the opposite side and platform at the same time, and thus provide for running the car in either direction, if desired.

I claim as my invention—

The sliding rack-bar E, the weighted lever F, connection e', or its equivalent, the vertical guide-roller 6, the cylinder 7 on the shaft 8, the friction-rollers 9 9′, chains or ropes e' e''', toothed eccentric G, sector-lever G′, draw-bar g^4, stud or stop 2, friction-rollers 10 10, and the divided ratchet-wheel D on the axle B, the said parts being constructed and arranged to operate in combination with the bottom frame and wheels of a car, substantially as and for the purpose hereinbefore set forth and described.

HENRY SCHREINER.

Witnesses:

WM. H. MORISON,

W. W. DOUGHERTY.