(No Model.)

2 Sheets—Sheet 1.

L. HELM.

CAR STARTER.

No. 253,044. Patented Jan. 31, 1882.

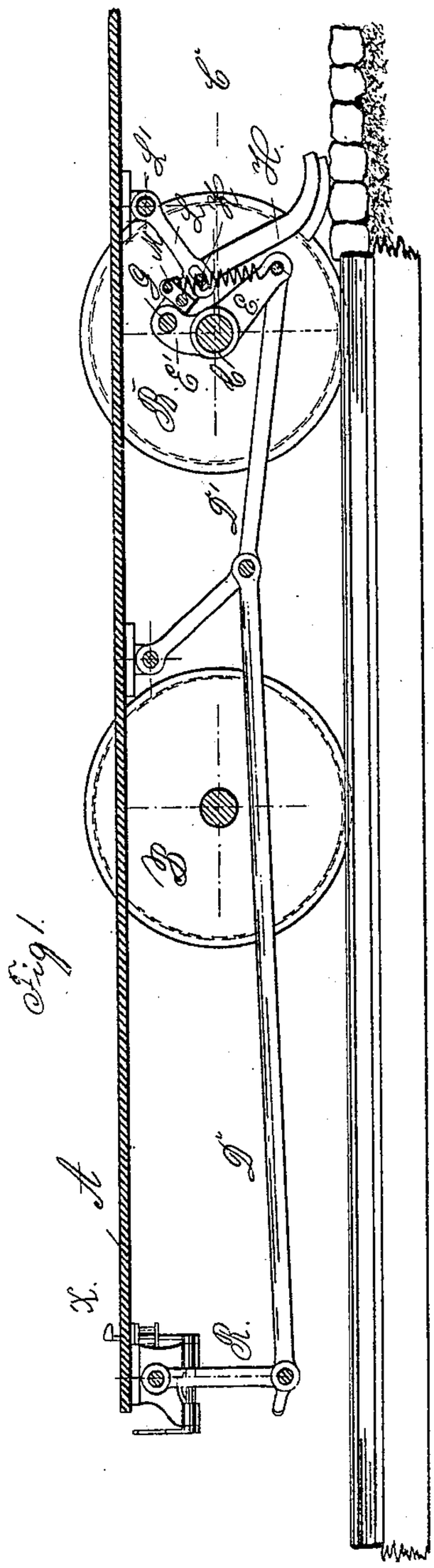

Fig. 1.

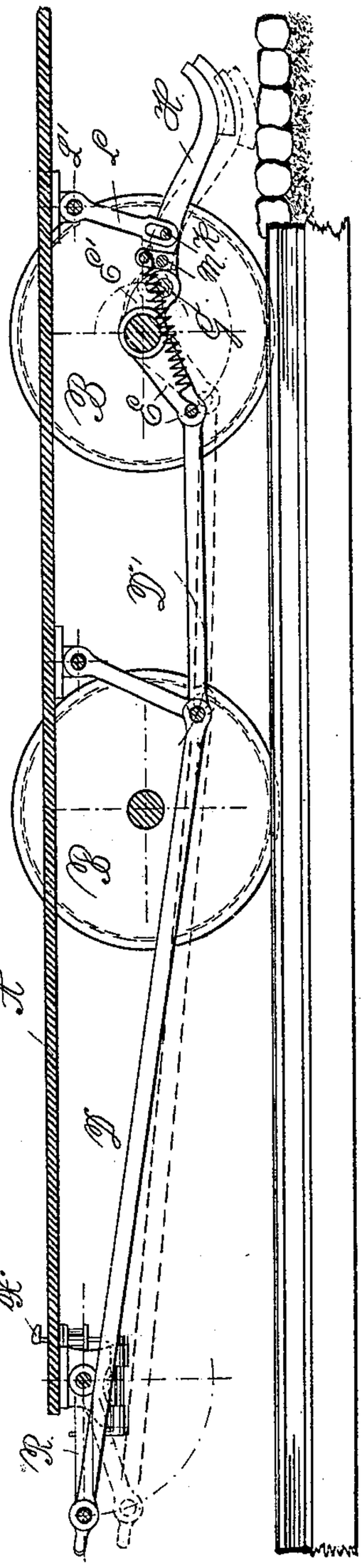

Fig. 2.

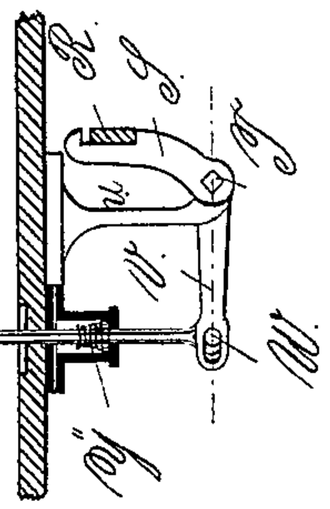

Fig. 4.

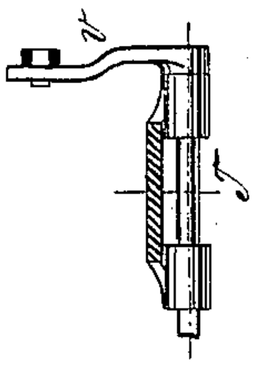

Fig. 5.

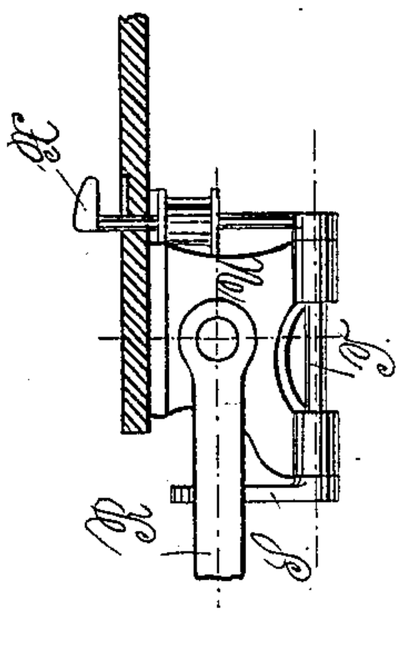

Fig. 3.

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(No Model.) 2 Sheets—Sheet 2.

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CAR STARTER.

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Fig 6.

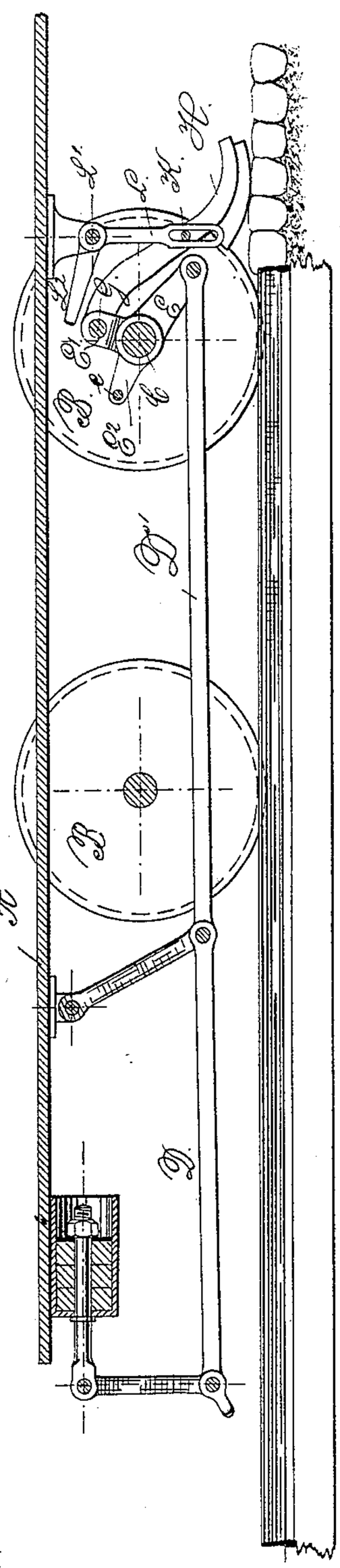
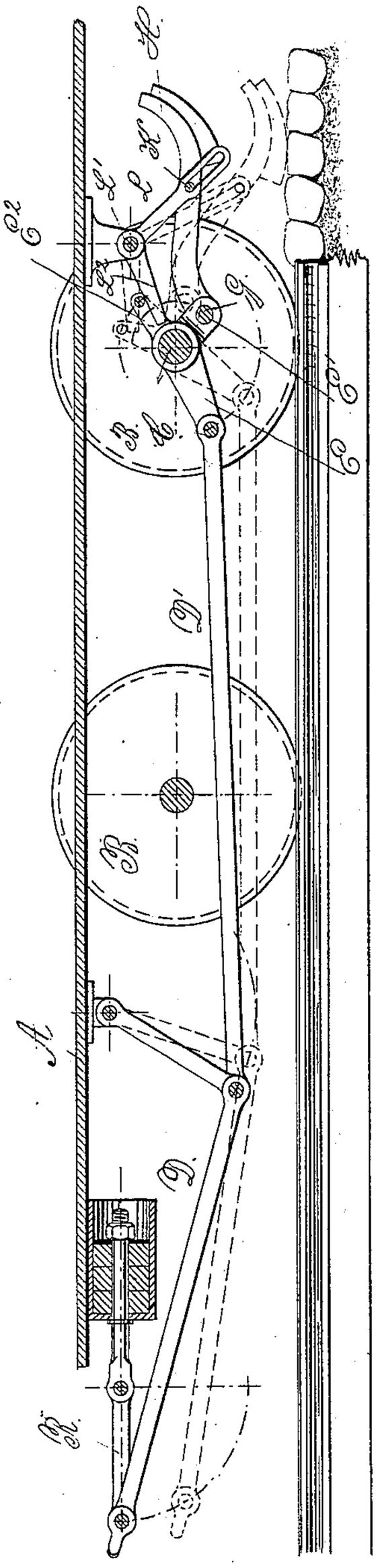


Fig 7.



Witnesses.
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UNITED STATES PATENT OFFICE.

LUDWIG HELM, OF BERLIN, GERMANY.

CAR-STARTER.

SPECIFICATION forming part of Letters Patent No. 253,044, dated January 31, 1882.

Application filed November 21, 1881. (No model.) Patented in Germany September 3, 1880.

To all whom it may concern:

Be it known that I, LUDWIG HELM, a subject of the Kingdom of Prussia, residing at the city of Berlin, in the said Kingdom of Prussia and German Empire, have invented certain new and useful Improvements in Apparatus for Starting Tramway-Cars and other Vehicles, (for which I have obtained Letters Patent in the German Empire, No. 14,068, bearing date September 3, 1880,) of which the following is a specification.

My invention relates to improvements in apparatus for starting tramway-cars and other vehicles in order to ease the horses or other draft animal or animals from unnecessary strain.

Figure 1 is a side view of a tram-car with the pressure-foot ready to commence operation. Fig. 2 is a side view of a tram-car with the pressure-foot raised out of contact with the pavement or roadway. Figs. 3, 4, and 5 are detailed views of the catch and releasing mechanism. Figs. 6 and 7 are side views of a modification.

A is the floor or frame-work of the car or other vehicle. B are the wheels; C, the axles. D D′ are the draft or connecting rods.

E E′ is a two-armed lever, which is so attached to the axle C that the same can carry out a vertical movement about equal to the radius of the axle by means of the slotted arm L. The upper lever-arm, E′, is connected to the pressure foot or lever H by means of the bolt G. The pivot or projecting nose K of the pressure-foot H moves in the slot in the arm L, so that the pressure-foot can be raised out of contact with the pavement or roadway when not employed for starting the vehicle.

L′ is the pivot on which the arm L turns.

M is a lug, which is bolted to the pressure-foot, and is provided with a pin or pivot, to which a spiral spring is attached in order to facilitate the operations of the parts. The opposite end of this said spring is attached to the bolt which connects the rod D′ to the two-armed lever E E′.

R is a rod, arm, or lever, which connects the rod D with the catch and releasing mechanism.

The cross-beam or the whiffletrees can be attached to a suitable hook or other equivalent, which is attached to the bolt connecting the arm with the rod D, or can be made of one piece with the hinge part of the arm R. This arm R is arranged to describe a sector of a circle from the vertical to the horizontal position. When the arm R is in a vertical position the pressure-foot H is in contact with the pavement or roadway. As soon as the horse, horses, or other draft-animals have drawn the arm R into a horizontal position the pressure-foot has started the car and is raised out of contact with the roadway or pavement. The arm R is caught by the catch S and held in horizontal position until the catch is released.

S is the catch. T is the fulcrum for the same. U is the bracket which contains the bearing for the pivot or fulcrum T, to which both catch S and lever-arm V are keyed. The rod to the treadle X is connected to the arm V by means of the pivot W, which works in a slot in the said arm V.

Y is a volute spring, which operates so on the treadle-rod that the same is returned to the position shown in Fig. 4 as soon as the treadle is released. Figs. 6 and 7 show a modification of my invention, whereby the spiral spring is dispensed with.

L L^2 is an angle-lever. The arm E^2 of the three-armed lever E E′ E^2 is in this modification provided with a pin pivot or projection, *e*, which said pivot or projection operates so on the arm L^2 of the lever L L^2 that the foot is raised a suitable distance from the ground when not required to start the car or other vehicle.

The lower or frictional surface of pressure-foot H consists of vulcanized india-rubber or other suitable elastic or semi-elastic material, in order to prevent shocks or concussions, to avoid injury to the roadway or pavement, and assure a good gripe for the foot.

Having now described my said invention, I desire it to be understood that I do not confine myself to the exact form or arrangement of the mechanism, as this can be varied without departing from the tenor of my invention; but

What I do claim, and desire to secure by Letters Patent, is—

1. The combination and arrangement of the pressure-foot H with the spiral spring for assuring a firm gripe of the foot H, and with the

lever combination E E′ and slotted arm L, substantially as described in the foregoing specification and shown in the accompanying drawings.

2. The combination of the lug M and the pivot or pin for the spiral spring with the lever E E′, connecting-rods D D′, and the arm R, substantially as described in the foregoing specification and shown in the accompanying drawings.

3. The construction and arrangement of the clutch or catch and releasing mechanism, consisting of the catch or hook S, bearing U, spindle T, pivot W, foot or treadle-piece X, and volute spring Y, substantially as described in the foregoing specification and shown in the accompanying drawings.

4. In a car-starter, the combination of a presser-foot, H, a slotted arm pivoted to the bottom of the car, and a lever pivoted upon the axle, and connected to the draw-bar and to the presser-foot, said presser-foot being adapted to drop into contact with the roadway when the pull on the draw-bar is relaxed.

5. In combination with the draw-bar D and connecting mechanism, substantially as described, the presser-foot H, having a shoe of elastic, or partially elastic, material.

LUDWIG HELM.

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