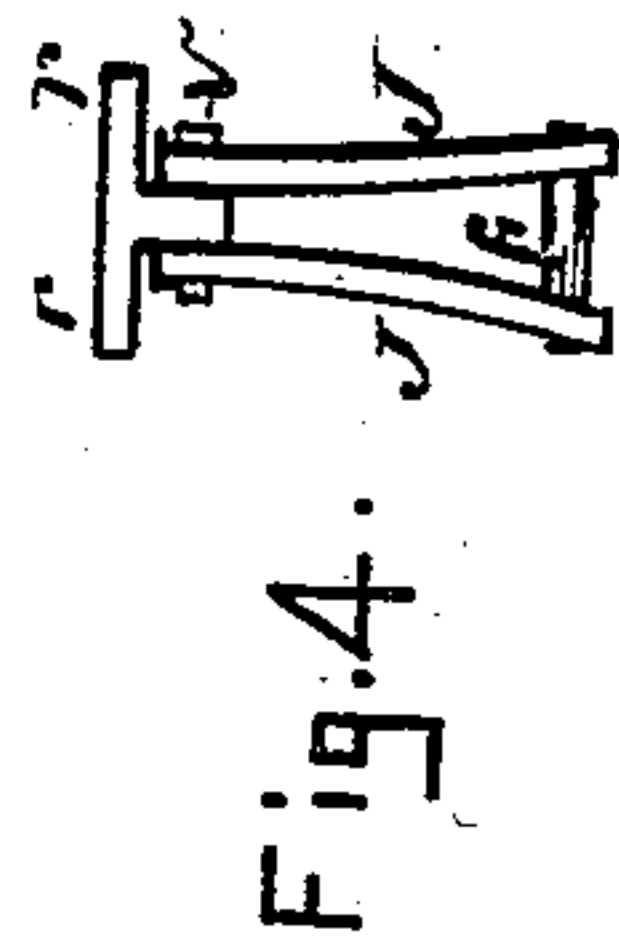
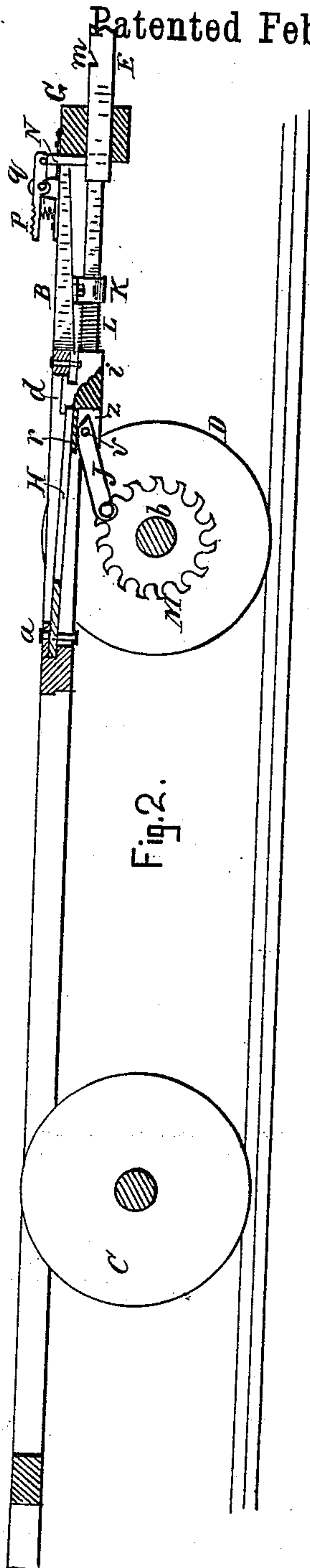
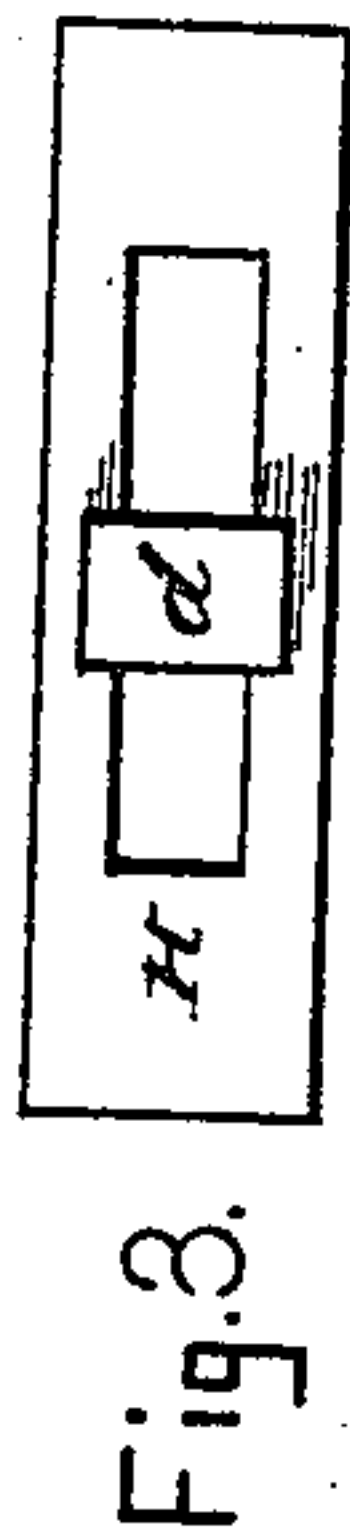
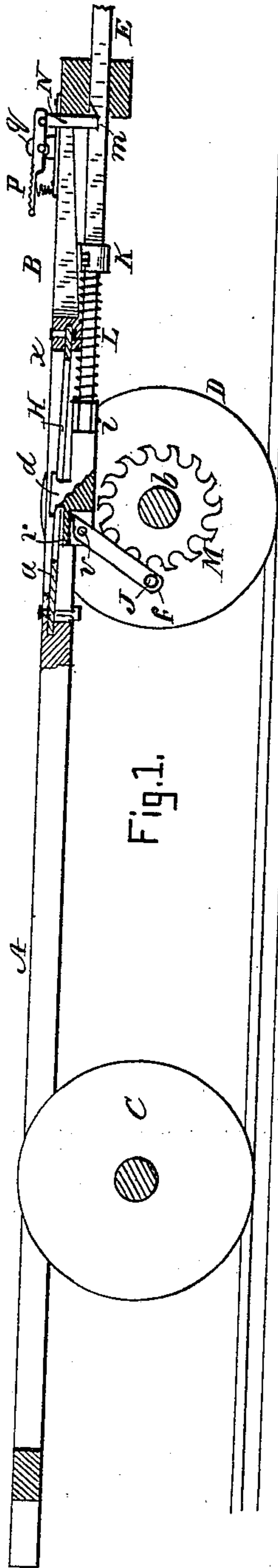


(No Model.)

A. W. SMITH.
CAR STARTER.

No. 271,661.

Patented Feb. 6, 1883.



Witnesses:
No. E. Pernick.
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UNITED STATES PATENT OFFICE.

ALFRED W. SMITH, OF BOSTON, MASSACHUSETTS.

CAR-STARTER.

SPECIFICATION forming part of Letters Patent No. 271,661, dated February 6, 1883.

Application filed December 13, 1882. (No model.)

To all whom it may concern:

Be it known that I, ALFRED W. SMITH, of Boston, in the county of Suffolk, State of Massachusetts, have invented a certain new and useful Improvement in Car-Starters, of which the following is a description sufficiently full, clear, and exact to enable any person skilled in the art or science to which said invention appertains to make and use the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a vertical longitudinal section, showing the starter in position for use with the draw-bar locked; Fig. 2, a like view, showing it in use with the draw-bar unlocked; Fig. 3, a view of the plate and lug, and Fig. 4 a view of the link and rear end of the draw-bar.

Like letters of reference indicate corresponding parts in the different figures of the drawings.

My invention relates more especially to that class of car-starters which are employed for starting the cars on horse-railways; and it consists in a novel construction and arrangement of the parts, as hereinafter more fully set forth and claimed, by which a simpler and more effective device of this character is produced than is now in ordinary use.

The nature and operation of the improvement will be readily understood by all conversant with such matters from the following explanation, its extreme simplicity rendering an elaborate description unnecessary.

In the drawings, A represents the floor of the car; B, the platform; C, the rear trucks; D, the forward trucks, and E the draw-bar.

The forward end of the draw-bar is arranged to slide horizontally in proper bearings in the cross-beam G, its rear end being supported by a T-shaped lug, *d*, and slotted plate H. This plate is fitted into the floor or frame-work of the car in an inclined position, as shown in Figs. 1 and 2, its inner end, *a*, being higher than its forward end, *x*, or in such a manner that when the bar E is drawn forward its rear end will be gradually lowered as it advances and raised when it recedes.

Pivoted at *v* to the inner end of the draw-bar there are two arms, J, arranged as shown in Fig. 4, being connected at their lower ends by the rod *f* in such a manner as to form a link which is

widest at its free end *f* and narrowest at its pivoted end *g*. The upper ends of the arms are inclined or beveled, as shown at *z*, and when the draw-bar recedes or assumes the position shown in Fig. 1 the inclined ends come into contact with the under side of the horizontal flanges *r r*, projecting from either side of the draw-bar, thereby preventing the free end of the link from falling into a vertical position when the draw-bar has fully receded.

Projecting downwardly from the under side of the platform B there is a bracket or stud, K, through which the draw-bar passes, a coiled spring, L, being disposed on the bar, its inner end abutting against the shoulder *i* and its outer end against said stud, the spring acting expansively to force the draw-bar inward to its fullest extent.

Disposed on the axle *b* there is a fixed gear or spur wheel, M, provided with teeth, which curve or incline in the direction of the link, the spaces between the teeth being so formed as to adapt them to receive the rod *f*, as shown in Figs. 1 and 2.

A spring-treadle, P, pivoted to the standard *q* and provided at its forward end with the vertically-arranged lever N, is arranged on the platform B, the lever being designed to lock the draw-bar E by falling into the notch *m* when the bar recedes.

In the use of my improvement, the draw-bar being locked and its link in the position shown in Fig. 1, to start the car the driver first raises the locking-lever N by placing his foot on the treadle P, and then starts up the horses attached to the draw-bar. As the draw-bar advances, the rod *f* in the arms J engages the spur-wheel M, the power of the horses thereby being applied to the periphery of said wheel and exerted to the best advantage in starting up the car, in a manner which will be readily obvious without a more explicit description. When the car is fully under way, as shown in Fig. 2, the horses may be slackened up or partially stopped, permitting the spring L to force the draw-bar E inward and the parts to again assume the position shown in Fig. 1, causing the wheel M to revolve out of contact with the link and the power required to draw the car to be exerted on the locking-lever N.

In some car-starters there is no spring in

connection with the draw-bar, and the strain produced upon the horses in overcoming the inertia of the car is frequently very injurious. My invention is designed to obviate this objection, and also to afford a simple and effective device for the purpose for which it is intended; and to this end I make use of the spring L, in connection with the other parts described, the spring serving to relieve the sudden shock or strain upon the horses which would otherwise occur. As the draw-bar commences to advance in starting up the car its inner end gradually drops as the part *d* slides down the inclined plate H, thereby lowering the rod *f* and enabling it to engage a tooth on the wheel M, which might be passed over were said plate perfectly level or arranged in a horizontal position. The inclined plate also lifts the inner end of the draw-bar out of the way of the spur-wheel as the bar recedes. As the car, when moving, is liable to have a lateral or vibratory motion caused by the roughness or inequalities of the track, the link is constructed wider at its lower than at its upper end, as seen in Fig. 4, thereby preventing it from binding or cramping on the wheel M.

The arms J and rod *f* may be integral or formed of one piece, if preferred, and the link may be made in any other shape desired, provided it properly performs the same functions.

Having thus explained my invention, what I claim is—

1. The improved car-starter described, the same consisting of the draw-bar E, spring L, lever N, notch *m*, flanges *r*, arms J, rod *f*, plate H, and wheel M, all constructed, combined, and arranged to operate substantially as set forth.

2. In a car-starter substantially such as described, the inclined plate H, in combination with the bar E, substantially as and for the purpose specified.

3. In a car-starter substantially such as described, the pivoted arms J, provided with the beveled ends *z* and rod *f*, in combination with the bar E, provided with the laterally-projecting flanges *r*, substantially as specified.

4. In a car-starter substantially such as described, the pivoted arms J and rod *f*, in combination with the draw-bar E and spur-wheel M, said arms and rod being arranged to form a link which is wider at its lower than at its upper end, substantially as and for the purpose set forth.

ALFRED W. SMITH.

Witnesses:

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