(No Model.)

M. POTTER.

CAR STARTER.

No. 355,712. Patented Jan. 11, 1887.

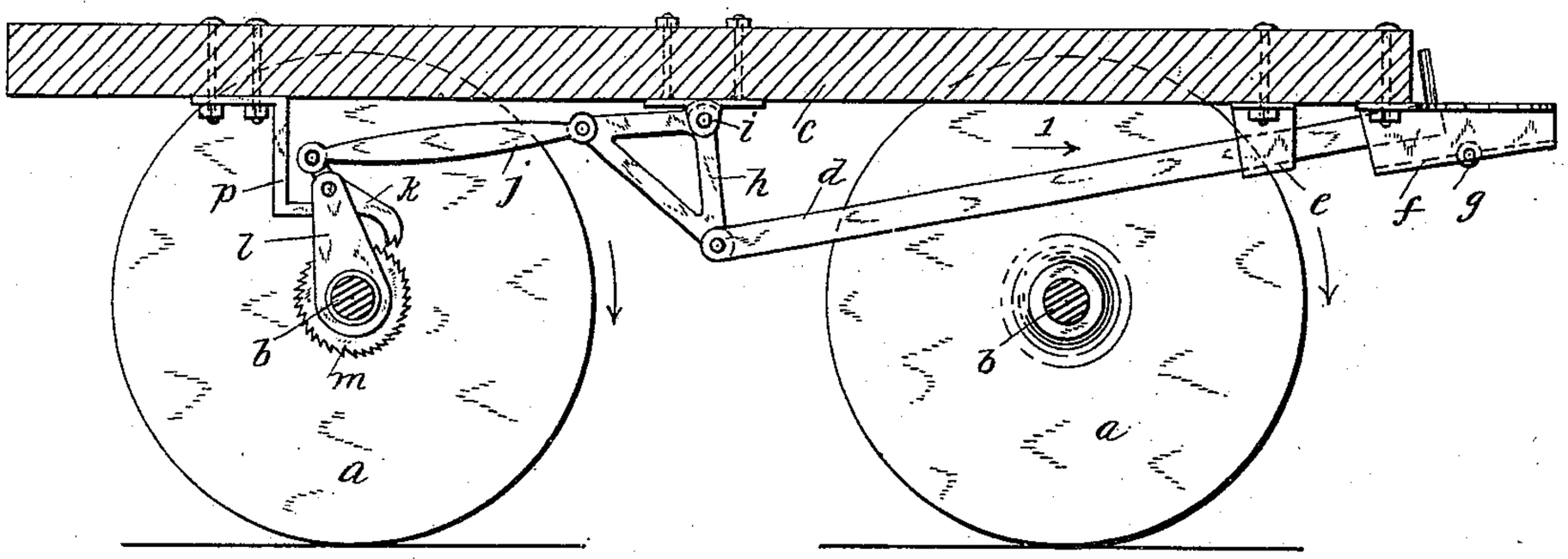


FIG-1-

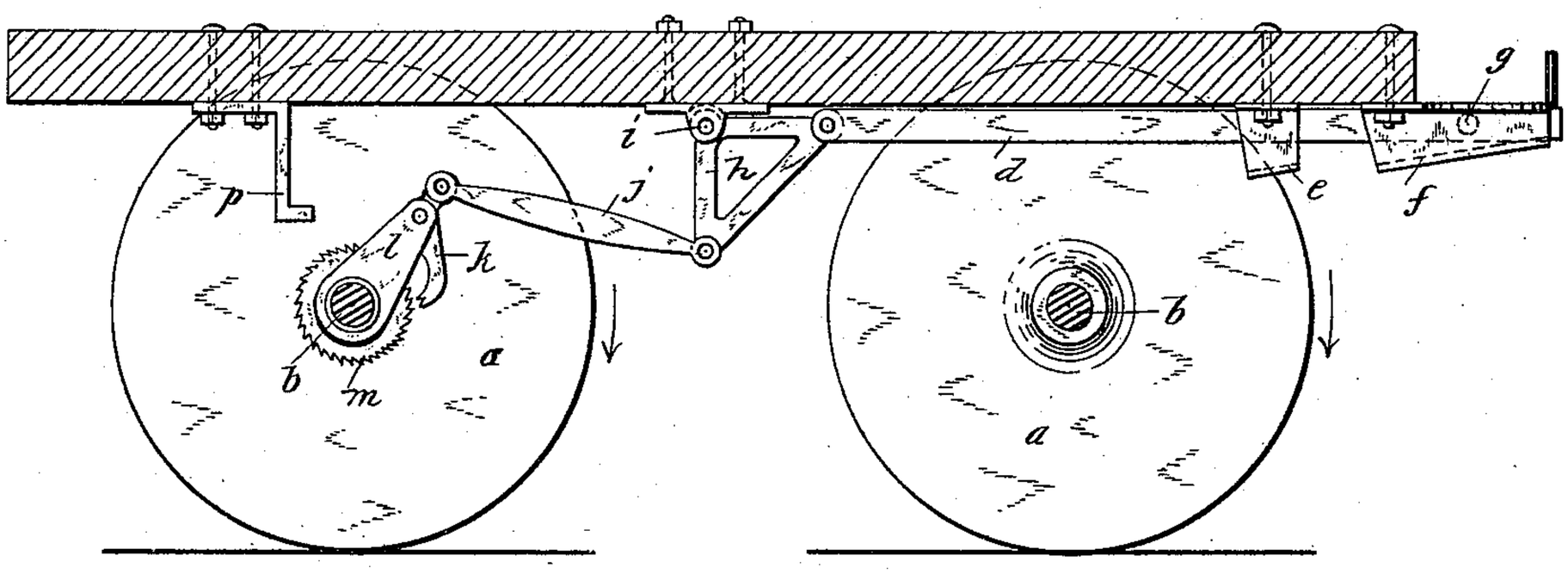


FIG-2-

FIG-4-

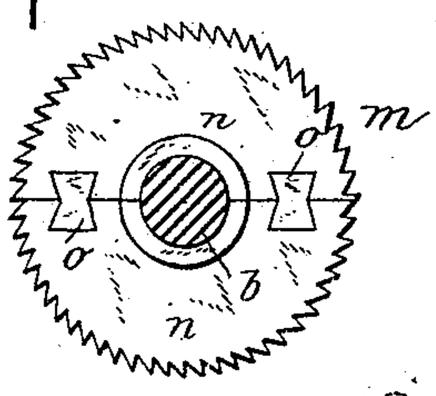


FIG-5-

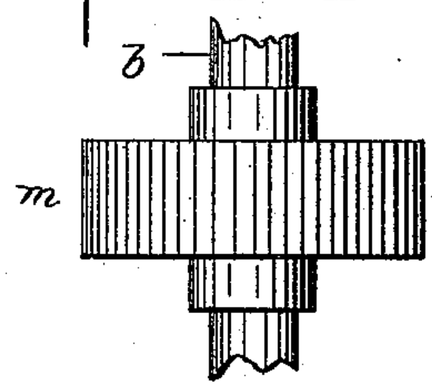
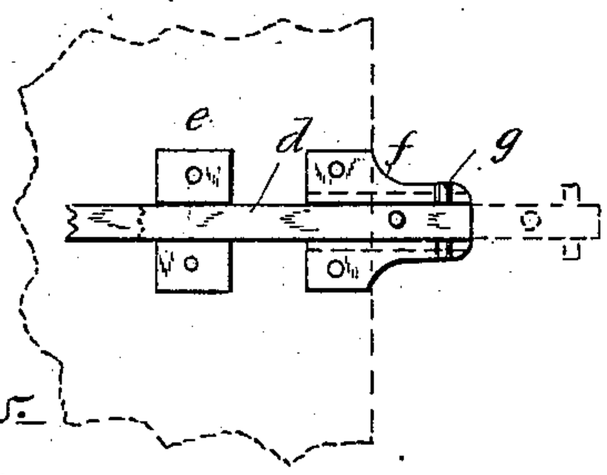


FIG-3-



ATTEST—

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UNITED STATES PATENT OFFICE.

MARK POTTER, OF SYRACUSE, NEW YORK.

CAR-STARTER.

SPECIFICATION forming part of Letters Patent No. 355,712, dated January 11, 1887.

Application filed May 15, 1886. Serial No. 202,261. (No model.)

To all whom it may concern:

Be it known that I, MARK POTTER, a citizen of the United States, residing at Syracuse, in the county of Onondaga and State of New York, have invented certain new and useful Improvements in Car-Starters, of which the following is a full, clear, and exact description.

This invention relates to mechanism for assisting draft-horses or other animals in starting horse and other railway cars, such devices being usually termed "car-starters."

The object of the invention is to secure greater leverage than is commonly had in similar devices, so as to impose a less draft upon the draft-animals in starting the car.

The invention consists in a car-starter comprising a compound double-acting system of levers, constructed and arranged to operate substantially in the manner and for the purpose hereinafter particularly set forth and claimed.

In the accompanying drawings, in the several figures of which like parts are similarly designated, Figure 1 is a longitudinal sectional elevation of one form of my invention, the parts being in the position they will occupy when about to start. Fig. 2 is a similar view with the parts in the position they take when the car is moving. Fig. 3 is a top or plan view of the forward end of the draw-bar and its guides; Figs. 4 and 5, side and top views of the ratchet-wheel.

The car-wheels *a*, axles *b*, and floor and timbers *c* may be and are herein shown as of ordinary construction.

The draw-bar *d* is arranged at the forward end of the car in brackets or guides *e* and *f*, the bottoms of which are inclined to accommodate the hereinafter-described play or movement of the draw-bar. These brackets are bolted to the bottom of the car, and are preferably stout metal castings, or may be of plate metal bent to shape to receive and guide the draw-bar. This draw-bar rides over an anti-friction roller, *g*, in the bottom of the guide *f*, Fig. 1; or said anti-friction device may be upon the bar itself, Figs. 2 and 3, and ride upon the bottom of the said guide to ease the movement of the said bar.

A triangular or elbow lever, *h*, is fulcrumed to a bracket, *i*, which is bolted beneath the car-floor between the front and rear wheels, and to one arm of this lever is pivoted the rear end of the draw-bar *d*. A link, *j*, is pivoted to and extends from the other arm of this lever *h* rearwardly, and is pivoted to a dog or pawl, *k*, which is fulcrumed between its active end and tail-piece to an arm, *l*, the latter turning upon the rear axle, *b*. Upon this same axle is keyed fast a ratchet-wheel, *m;* and as a simple and effective expedient for securing such ratchets to the axle I construct my ratchet *m* in segmental halves *n n*, (see Fig. 4,) having dovetail recesses in their meeting edges, and join such halves, after they are placed upon the axle, by dovetail or equivalent blocks or keys *o* driven in the dovetail recesses in said halves. A broken or worn ratchet may be thus easily replaced without removing the truck or wheel.

The rearward movement of the pawl or dog is limited by a stop-piece, *p*, which is adjustably secured to the car flooring or timbers, and said stop subserves the additional purpose of positively and automatically disengaging the pawl from the ratchet when the car is at rest or it is desired to back it.

The operation is as follows: The parts being in the position of rest and the car stationary, Fig. 1, draft upon the draw-bar in the direction of the arrow 1, Fig. 1, will be multiplied through the elbow-lever and transmitted through the link *j* to the pawl *k*, which, by gravity, will engage the ratchet, and so start the rotation of the wheels. When the draw-bar has assumed the position of Fig. 2, or the limit of its forward movement, the pawl will have passed its center of motion and got beyond its arc of activity and will fall away from the ratchet. When the car stops again, the retrograde movement of the draw-bar and its connections will serve to lift the pawl clear of the ratchet and carry it to the position of Fig. 1. These movements of the pawl make it silent, and hence diminish to that extent the wear upon the ratchet and itself.

As will be noticed, the draw-bar is suspended beneath the car, and the draft is finally placed upon the pivot of the elbow-lever and is in a right line, the draw-bar assuming this

position in a movement through the arc of a circle having the pivot of the elbow-lever as its center.

The arms of the elbow-lever may be of unequal length, and hence the variation of the leverage and its increase may be limited only by the capacity of the car to contain them. As shown, the leverage is double-acting and compound, very simple and very strong.

What I claim is—

1. In a car-starter, an elbow-lever fulcrumed at its angle between the front and rear wheels, a draw-bar having a lengthwise movement and jointed to one arm of said lever, and a link jointed to the other arm of said lever and connected with a pawl-and-ratchet mechanism, substantially as described.

2. In a car-starter, a ratchet, the arm *l*, loosely turning on the axle, the pawl pivoted on said arm between its active end and tail-piece, and a compound double-acting operating-lever connected with the tail-piece of the pawl and serving to positively lift said pawl clear of the ratchet in its return movement, substantially as described.

3. The combination, with an axle, of a split or divided ratchet having recessed or notched meeting faces, and dovetail-keys fitted in said recesses to clamp the halves of the ratchet upon such axle, substantially as described.

In testimony whereof I have hereunto set my hand this 13th day of May, A. D. 1886.

MARK POTTER.

Witnesses:

O. F. AUSTIN,

ARTHUR BEEBE.