

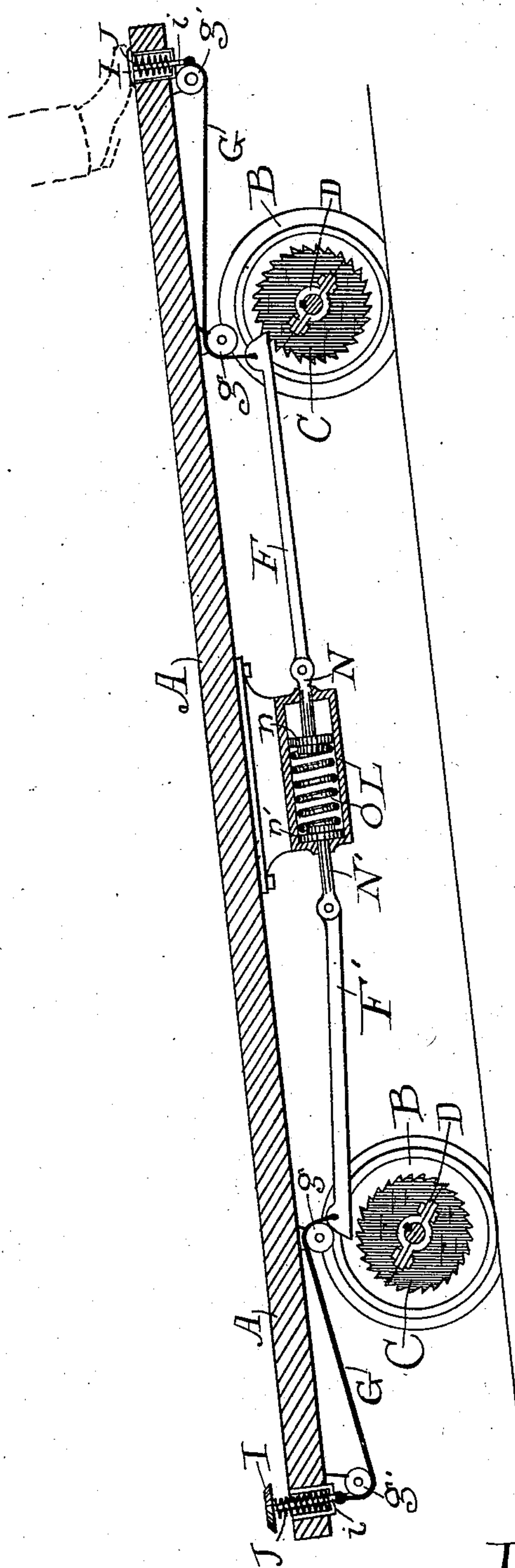
(No Model.)

H. R. STICKNEY, 2d.

CAR STARTER.

No. 364,061.

Patented May 31, 1887.



Witnesses:
Robert A. Davis,
A. M. Sampson.

Inventor:
Henry R. Stickney 2d,
by S. W. Bates
his atty.

UNITED STATES PATENT OFFICE.

HENRY R. STICKNEY, 2D, OF PORTLAND, MAINE.

CAR-STARTER.

SPECIFICATION forming part of Letters Patent No. 364,061, dated May 31, 1887.

Application filed February 19, 1887. Serial No. 228,179. (No model.)

To all whom it may concern:

Be it known that I, HENRY R. STICKNEY, 2d, a citizen of the United States, residing at Portland, in the county of Cumberland and State of Maine, have invented certain new and useful Improvements in Car-Starters; and I do hereby 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.

My invention relates to starters for horse-cars and other vehicles; and it consists of a ratchet-wheel attached to the car-truck, a pawl engaging such ratchet-wheel, a spring or buffer connected with the said pawl, and means for engaging and disengaging the pawl and the ratchet-wheel, whereby the wheel, as it turns backward by the settling of the car down the grade, forces the ratchet to compress the spring or buffer and thus holds the car in equilibrium, so that it can be started with comparatively small force.

My invention further consists in the method of starting cars, wherein the backward motion of the car, as it stops on the grade and settles backward, is utilized to compress a spring or buffer, the force of which reacts as the car is started.

Hitherto great difficulty has been experienced in running horse-cars on account of the great force required to start them when stopped on an upgrade. When a car is once stopped on a grade, it requires several times the force to start it that is required to keep it in motion when once started. As a result, great injury is frequently done to the horses in starting them on a grade, since they are liable to fall on their knees and otherwise strain and injure themselves.

The difficulty of starting cars on grades has led to the practice of refusing to stop cars when on upgrades to take on passengers, and for other purposes. When motors other than horses are used to propel cars, the same difficulty of starting requires the employment of motors of much greater force than would otherwise be the case.

The design of my invention is to provide a simple, effective, and cheaply-constructed device which will exert sufficient propelling

force at the point of starting to overcome the gravitation due to the grade.

My invention is illustrated in the accompanying drawing, which represents a central longitudinal section through a car furnished with my device.

A is a car-body, and B B are the trucks.

C is a ratchet-wheel, made in two parts and clamped on the trucks by means of clamps D, or otherwise secured thereto.

F F' are two straight pawls, the pawl F engaging the ratchet-wheel at one end of the car, and F' the other.

L is a cylinder secured to the under side of the car-body, and n' is a piston contained therein and connecting by the piston-rod N' with the pawl F'. In the opposite end of the cylinder L is the piston n , connecting by the rod N with the pawl F. The spring or buffer O lies between the two pistons n and n' and is free to move lengthwise in the cylinder L. The cords or chains G G are secured to the ends of the pawls F F', and, passing over rolls or trucks $g g'$, are secured to the lower ends of the vertical rods $i i$, which pass one through the forward and one through the rear platform of the car. Each of these rods i has on its upper end a foot-plate, I. When the plate I is not depressed, the spring J presses it upward, drawing up the cord G sufficiently far to raise the end of the pawl to which it is attached from the ratchet-wheel. When the plate I is depressed, the pawl falls of its own weight and engages the wheel C. It will thus be seen that each pawl is engaged by depressing the plate I, and when that plate is released the pawl becomes disengaged.

When the car is moving up a grade and stops, the forward plate I is depressed, thus engaging the pawl F. As the car now settles back down the grade, as it always will, the pawl F is forced against the spring O, thus compressing it until the car is stopped. The spring O now exerts a forward pressure, acting through the pawl F on the wheel B, and tending to turn said wheel, equal to the force by which it was compressed—namely, the downward pull of the car due to the grade. The effect of the grade is thus neutralized, and when it is desired to start the car the action of the

spring overcomes the inertia due to the grade.

Any convenient means of shipping and unshipping the pawls may be substituted for the means here shown.

- 5 The ratchet-wheel C, being in two parts, can be readily adapted to any car, or it can be cast in one piece with the truck, or otherwise secured thereto. Rubber buffers may be substituted for the spring shown, or by inclining
10 the pawls upward a weight may be used; or advantage may be taken of the weight of the car, the upward thrust of the pawl raising it slightly.

I claim—

- 15 1. A car-starter composed of a ratchet-wheel attached to the car-truck, a pawl adapted to engage said ratchet-wheel, a compressible spring or buffer connected with said pawl, and means for shipping and unshipping said
20 pawl, combined, substantially as described, whereby the backward motion of the car compresses said spring and the force thus stored is re-exerted when the car is started.

- 25 2. A car-starter composed of ratchet-wheels secured to the forward and rear trucks of the car, pawls engaging said ratchet-wheels, pistons connected with said pawls, a cylinder or

case secured to the car and containing said pistons, a compressible spring or buffer within said cylinder and between said pistons, and
30 means for shipping and unshipping said pawls, in combination, substantially as described, whereby the backward motion of the car compresses said spring and the force thus stored is re-exerted when the car is started. 35

3. In a car-starter, a ratchet-wheel secured to the car-truck, a pawl adapted to engage said ratchet, a piston connected with said pawl, a cylinder or case secured to the car and containing said piston, a spring or buffer within
40 said cylinder and placed to be acted on by said piston, and means for shipping and unshipping said pawl, all in combination, substantially as described, whereby the backward
45 motion of the car compresses said spring and the force thus stored is re-exerted when the car is started.

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

HENRY R. STICKNEY, 2D.

Witnesses:

S. W. BATES,
HARRY LEVY.