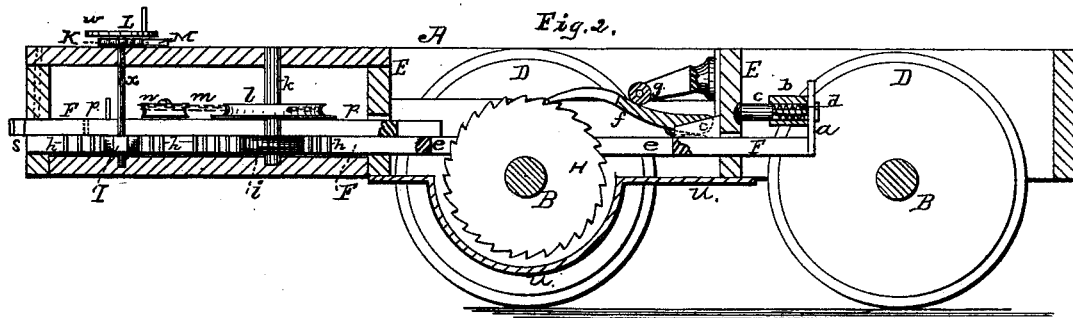
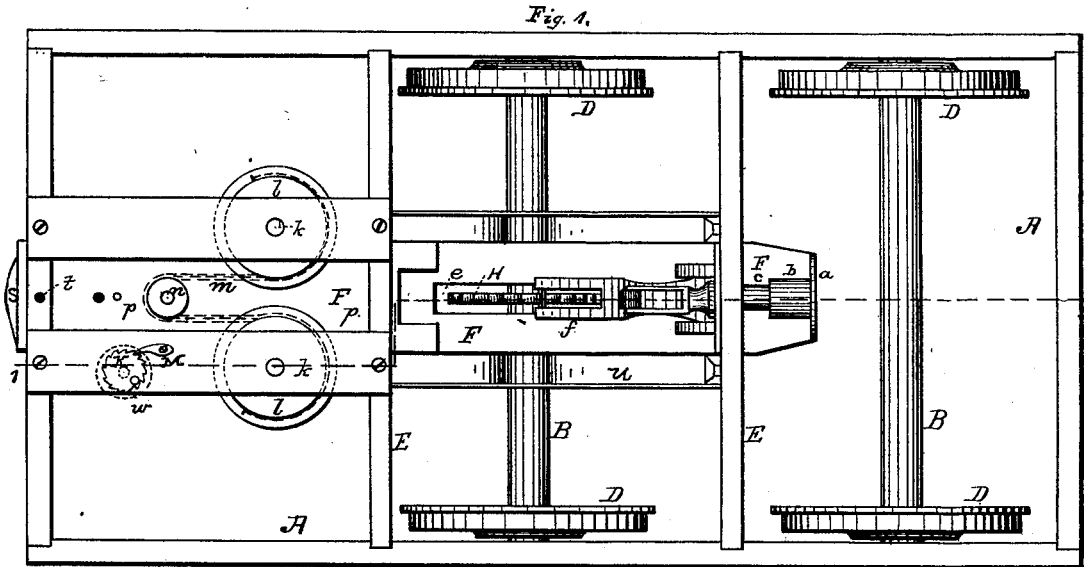


S. GRAHAM.
Car-Starter.

No. 213,895.

Patented April 1, 1879.



WITNESSES -

Chas. O. Hill
Jos. H. Newton

INVENTOR -

Samuel Graham
By his Atty
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UNITED STATES PATENT OFFICE.

SAMUEL GRAHAM, OF FREEPORT, ILLINOIS.

IMPROVEMENT IN CAR-STARTERS.

Specification forming part of Letters Patent No. **213,895**, dated April 1, 1879; application filed January 18, 1879.

To all whom it may concern:

Be it known that I, SAMUEL GRAHAM, of Freeport, in the county of Stephenson and State of Illinois, have invented a new and useful Improvement in Car-Starters, of which the following is a specification, reference being had to the accompanying drawings.

The invention relates to an improvement in car-starters; and consists in the devices hereinafter set forth and claimed.

The object of the invention is to furnish an effective means for starting cars.

In the accompanying drawings, Figure 1 is a top view of a device containing an embodiment of the elements of the invention. Fig. 2 is a vertical longitudinal section of same through the line 1 2.

In the accompanying drawings, A represents the frame of the starter, having the ordinary axles B and wheels D. The frame is also divided vertically by the transverse partitions E, as shown. Along the longitudinal center of the frame, through suitable apertures in its front portion and the transverse partitions, extends the slide F, the rear end of which, in its initial position, is slightly beyond the rear partition E, while its front end is flush with the front edge of the frame A. Upon the rear end of the slide F is rigidly secured a plate, *a*, having the tubular journal *b*, in which is placed the rod *c*, the front end of which is provided with an enlargement which impinges the rear partition E, and serves as a bearing for the coiled spring *d*, while the rear end of the rod *c* passes beyond the plate *a*, and is provided with a nut to retain it in place. The purpose of the spring *d*, rod *c*, and their connections is, when the slide F is drawn forward, to force it back to its former position. The slide F between the two partitions is provided with a slot, *e*, wherein the ratchet-wheel H, mounted upon the front axle, B, moves. In rear of the slot *e* is pivoted the pawl *f*, having an upward spring-tension, and its front end extending forward in proper relation to the teeth of the ratchet-wheel H. Above the pawl *f* is arranged, in a suitable hanger, the friction-wheel *g*, which controls the movement of the pawl. When the slide F is in its initial posi-

tion the wheel *g* presses the pawl in contact with the ratchet; but when the slide is drawn forward the wheel ceases to exert pressure upon the pawl, and is allowed to rise free of the ratchet. Upon each side of the slide F, between the front partition E and the front of the frame A, is secured the gearing *h*, which meshes with the cog-wheels *i*, secured upon the lower ends of the vertical shafts *k*, for the purpose hereinafter mentioned.

The shafts *k* extend upward upon each side of the slide F, and have upon their upper portions the grooved wheels *l*, which are connected by the chain *m*, which passes partially around the said wheels *l* and over the wheel *n*, pivoted upon the slide *p*. The slide *p* is placed horizontally upon the slide F, its front end extending forward beyond the edge of the frame A, and being provided with a buffer, *s*, to prevent it sliding too far rearward. In rear of the wheel *n* the slide *p* has an aperture, which, when the slide is drawn forward, comes directly below the aperture *t* in the front edge of the frame. The slide may be thus retained in position by passing a pin down through the two apertures. Upon one side of the slides F *p* is arranged a brake, *w*, consisting of the vertical shaft *x*, having upon its lower end the segmental gearing *Y*, which engages the gearing *h*, and upon its upper end the ratchet K and crank-handle L, the former of which engages the pawl M, whereby its movement may be controlled.

It is obvious that when the slide *p* is drawn forward it will carry the wheel *n* with it, which wheel will draw the ends of the chain *m* on each side of it, causing the wheels *l*, with their shafts *k*, to revolve toward each other. The cog-wheels *i*, being secured upon the lower ends of the said shafts *k*, also revolve toward each other, and, as they mesh with the gearing *h*, secured on each side of the slide F, thereby impel this slide forward. The forward movement of the slide F causes the point of the pawl *f* to press against the teeth of the ratchet-wheel H, causing it to revolve toward the front of the frame A, and at the same time preventing a reverse movement. As the wheel H is rigidly secured upon the forward axle, B,

it is obvious that its movement will also cause the latter to revolve, thereby moving the wheels and starting the car.

When the slide F has been drawn forward to its farthest point, the pawl *f* passes from under the impact of the wheel *g*, and is forced upward clear of the ratchet H by its spring-tension. When the pawl is in this position, the ratchet-wheel, and consequently the car-wheels, can be moved either forward or backward. By simply applying the brake *w*, the slide F and pawl *f* can be retained in this position. If one forward movement of the slides F *p* does not sufficiently move the wheels to ease the starting of the car, the brake *w* may be disengaged, when the spring *d* will draw the slides to their former position and permit the above operation to be repeated.

It is obvious that by operating the brake *w* a forward movement could be communicated to the slide F through its gearing without the use of the slide *p*.

Upon the lower surface and sides of the ratchet H and slides *p* is provided a casing, *u*, which preserves the mechanism from the effects of mud and slush.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a car-starter, the slide F, provided with gearing *h*, in combination with the slide *p*, having wheel *n*, and with the shafts *k*, carrying the wheels *l*, chain *m*, and gear-wheels *i*, substantially as set forth.

2. The combination of the slides F *p*, gearing *h*, cog-wheels *i*, wheels *l*, chain *m*, pawl *f*, ratchet H, and a brake, substantially as specified.

3. The combination, in a car-starter, of the slide F, having gearing *h*, with the slide *p*, having wheel *n*, and with the shafts *k*, carrying the wheels *l*, chain *m*, gear-wheels *i*, and a brake, whereby the movement of the slides may be arrested or suspended, substantially as specified.

4. The slide F, having gearing *h* and pawl *f*, in combination with the brake *w*, consisting of a pawl and ratchet, and gearing *l*, substantially as set forth.

In testimony that I claim the foregoing improvement in car-starters, as above described, I have hereunto set my hand this 16th day of December, 1878.

SAMUEL GRAHAM.

Witnesses:

PHILIP J. GEIB,

A. S. GRASEN.