

(No Model.)

2 Sheets—Sheet 1.

G. W. SMITH.

CAR STARTER.

No. 265,547.

Patented Oct. 3, 1882.

Fig.1.

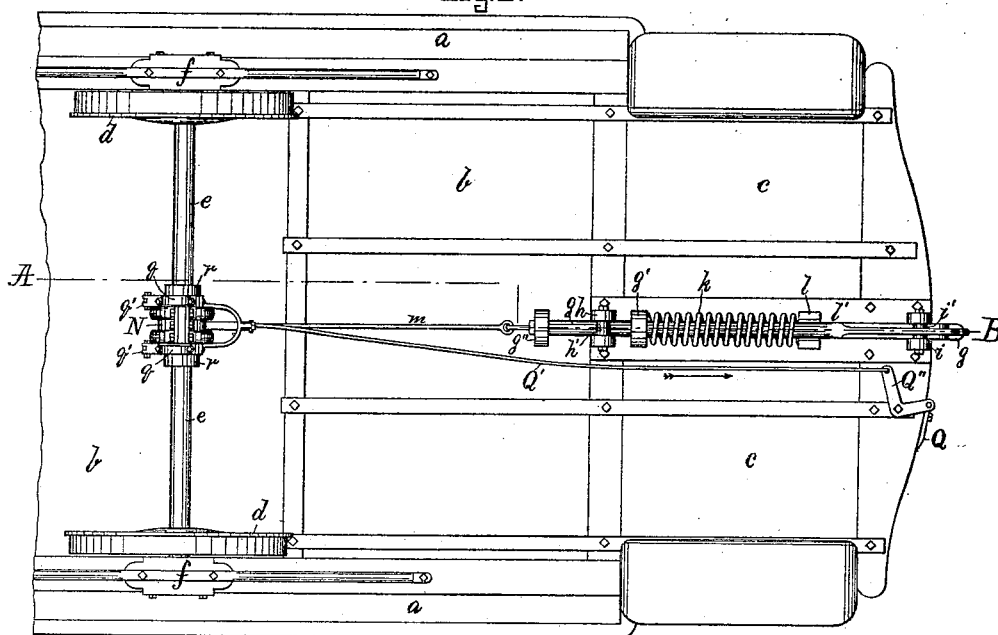
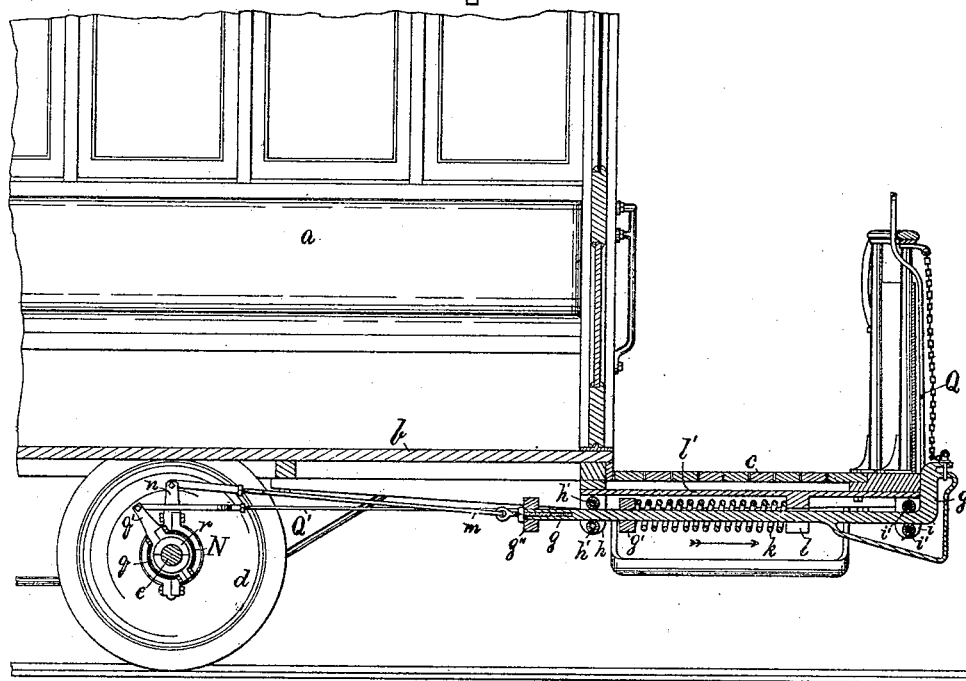


Fig.2.



Witnesses

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his atty.

(No Model.)

2 Sheets—Sheet 2.

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Fig. 3.

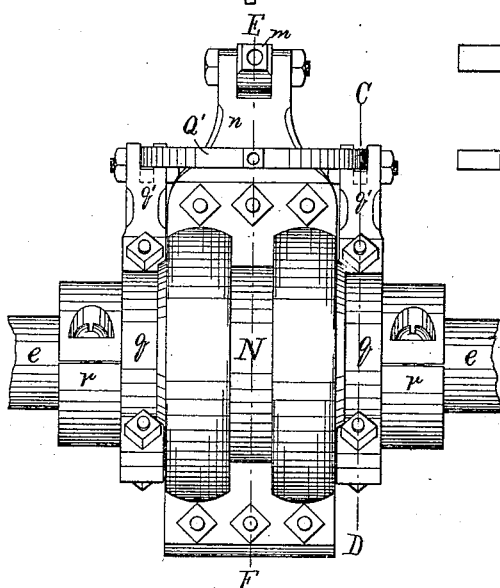


Fig 4.

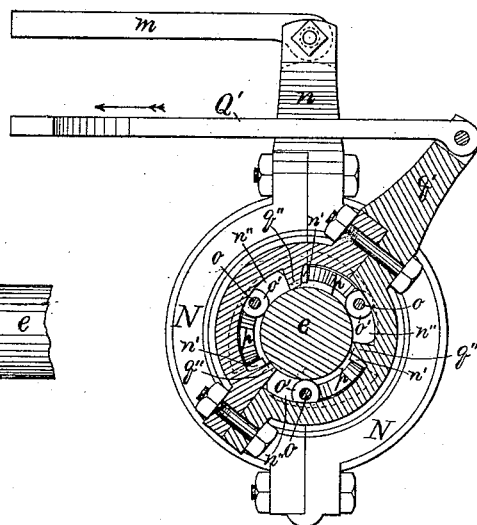


Fig. 6.

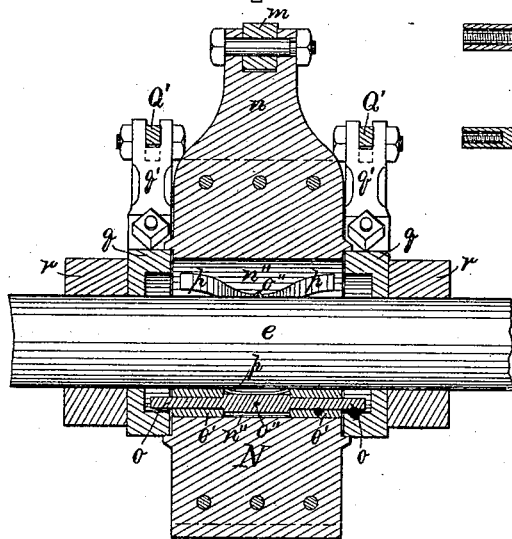
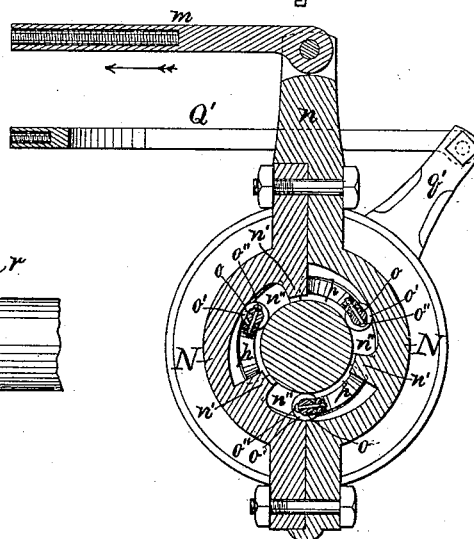


Fig. 5.



Witnesses

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# UNITED STATES PATENT OFFICE.

GEORGE W. SMITH, OF BOSTON, ASSIGNOR OF ONE-HALF TO BENJAMIN F. SMITH, OF SOMERVILLE, MASSACHUSETTS.

## CAR-STARTER.

SPECIFICATION forming part of Letters Patent No. 265,547, dated October 3, 1882.

Application filed April 22, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE W. SMITH, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Horse-Car Starters; and I do hereby declare that the same are fully described in the following specification and illustrated in the accompanying drawings.

This invention relates to improvements in horse-car starters, and it is carried out as follows, reference being had to the accompanying drawings, in which—

Figure 1 represents a bottom view of a horse-car, showing the starter mechanism applied to one of the axles. Fig. 2 represents a longitudinal section on the line A B, shown in Fig. 1. Fig. 3 represents a front view of the improved starter mechanism. Fig. 4 represents a cross-section on the line C D, shown in Fig. 3, showing the shipper mechanism of the improved car-starter. Fig. 5 represents a cross-section on the line E F, shown in Fig. 3; and Fig. 6 represents a central longitudinal section of the improved car-starter.

Similar letters refer to similar parts wherever they occur on the different parts of the drawings.

The object I have in view is to arrange, in combination with the draw-bar of a horse-car, a starter device which will enable the animals when starting to set the car in motion to convey the pulling strain to a lever at some distance from the center of the car-axle, which lever is provided with a hollow hub that surrounds the axle, and is provided with tapering recesses containing rollers that lie in contact with the axle and each of said tapering recesses by influence of elliptic springs, by which arrangement the hollow hub, rollers, and axle are locked together by pulling on the draw-bar, causing the wheels to start and the car to be started with less expenditure of force as compared with the ordinary devices for this purpose. As soon as the car is started and when it acquires sufficient momentum the pulling strain on the draw-bar is necessarily somewhat relieved, causing the draw-bar to be forced back by the influence of a coiled spring, and by the connection of the rear end of the draw-bar to the lever on the recessed hub on the

axle such lever is moved back to its original starting position. In connection with this improved car-starter I use a shipper device operated by the driver to enable the car to be backed or drawn in an opposite direction if made as a "double-ender," such shipper device consisting of a pair of hollow hubs surrounding the axle, one on each side of the starter-lever, such hubs having inwardly-projecting teeth adapted to act on the ends of roller-spindles in the central hub, so as to release them from their hold on the axle, and thus permit of the car being backed or moved in an opposite direction. In double-ender cars I use a yielding draw-bar and car-starter in each end, and a shipper device for each starter device.

In the drawings, *a* represents the body of an ordinary horse-car, on which *b* is the bottom, and *c* the platform, as usual.

*dd* represent a pair of wheels secured to the axle *e*, which is located in bearings *ff*, as usual.

*g* is the yielding draw-bar, movable longitudinally in the guides *hi*, preferably provided with anti-frictional rollers *h' h'* and *i' i'*, as shown in Figs. 1 and 2.

*g'* is a collar, secured to the draw-bar *g*, and *k* is a coiled-spring surrounding the latter between the collar *g'* and a stationary support or bearing, *l*, secured to the plate *l'* below the platform *c*, as shown in Figs. 1 and 2, by which arrangement the draw-bar is automatically held in the position shown in said figures when not pulled on by the animals.

*g''* is another collar, secured to the inner end of the draw-bar *g*, and it serves as a stop against the inner guide or bearing, *h*, after the car is started. The inner end of the draw-bar *g* is joined to the connecting-rod *m*, the rear end of which is hinged to the lever *n*. (Shown in details in Figs. 3, 4, 5, and 6.) The lever *n* forms a part of the hollow hub *N*, which is preferably made in two parts bolted together, as shown in said figures. The hollow hub *N* has inwardly-projecting parts *n' n' n'* and tapering recesses *n'' n'' n''*, as shown in Fig. 5. Within the tapering recesses *n''* is located a spindle, *o*, with loosely-journaled rollers *o' o'*, as shown. Midway on each spindle *o* is secured by means of a bolt or rivet, *o''*, the elliptic spring *p*, the ends of which rest against the projection *n'*, and cause the rollers *o' o'* to be automatically

crowded toward the narrowest part of their recesses  $n'' n'' n''$ , so as to lie in contact with the axle  $e$  and the inside of the hub  $N$ , as shown in Fig. 5, and it will thus be seen that if the draw-bar  $g$  is pulled in the direction shown by the arrows in Figs. 2 and 5, the lever  $n$ , rollers  $o' o'$ , hub  $N$ , and axle  $e$  become firmly attached to each other, and for the time being they form, as it were, one single piece, and consequently the leverage for turning the axle and its wheels is largely increased, and consequently the car may be started with less amount of force as compared with the ordinary kind. As soon as the car obtains a speed greater than the motion of the lever  $n$  the rolls  $o' o'$  free themselves from binding contact with the axle, which then revolves loosely within the hub.

The releasing device or shipper arrangement consists of a pair of hollow hubs,  $q q$ , surrounding the axle  $e$ , one on each side of the hub  $N$ , as shown in Figs. 3, 4, 5, and 6. Each such hub  $q$  is provided with a lever,  $q'$ , and hinged to a shipper-lever,  $Q$ , by means of rod  $Q'$  and knee-levers  $Q''$ , as shown in Figs. 1 and 2. The interior of the hubs  $q q$  is provided with inwardly-projecting teeth  $q'' q'' q''$ , adapted to act upon the projecting ends of the spindles  $o o o$  when the connecting-rod  $Q'$  is pulled in the direction of the arrows shown in Figs. 1 and 4, causing the rollers  $o' o' o'$  to be disengaged from contact with the axle  $e$ , as may be desired

if the car is to be backed or pulled in an opposite direction.

$rr$  are collars secured to the axle  $e$  on each outer side of the hubs  $q q$ , so as to prevent a longitudinal motion of said hubs as well as the hub  $N$  on the axle  $e$ .

This improved car-starter device will also serve the purpose to retard the motion of the car when going down grades, and thus act as a safety-brake.

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

The herein-described horse-car starter, consisting of the lever  $n$ , joined in its upper end to the yielding draw-bar  $g$ , and having a hollow hub,  $N$ , surrounding the axle  $e$ , such hub having tapering recesses  $n''$ , containing rolls  $o'$  on spindles  $o$ , and elliptic spring  $p$ , interposed between the spindles  $o$  and projections  $n'$ , combined with the shipper device composed of levers  $q' q'$ , connected to shipper bar or lever  $Q$ , and having hollow hubs  $q q$  surrounding the axle  $e$ , and provided with projecting teeth  $q''$ , adapted to engage the outer ends of the spindles  $o$ , as and for the purpose set forth.

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

GEORGE W. SMITH.

Witnesses:

ALBAN ANDRÉN,  
HENRY CHADBourn.