(No Model.)

# E. HARTMANN.

## CAR STARTER AND BRAKE.

No. 353,632. Patented Nov. 30, 1886.

*Fig. 1.*

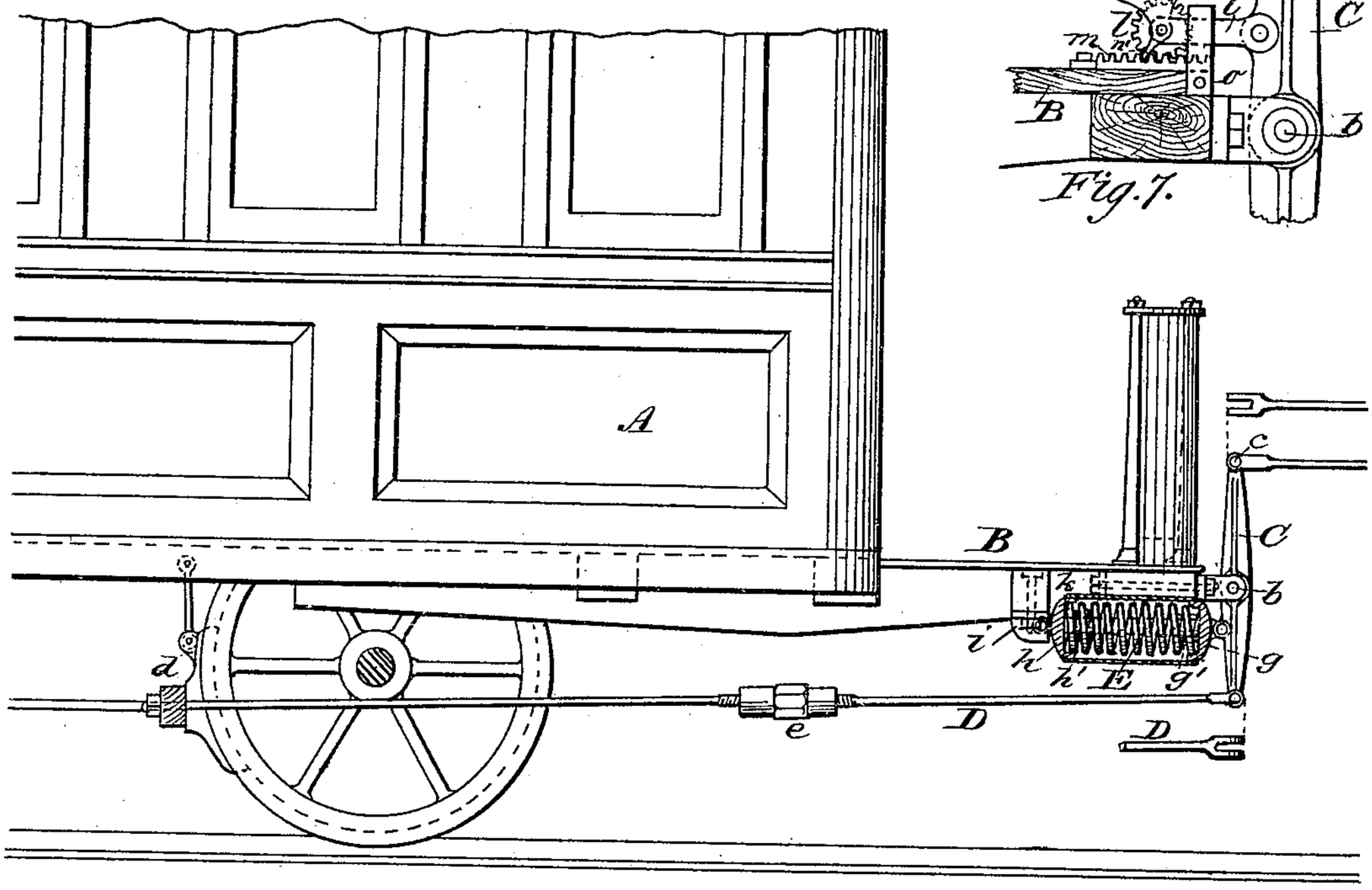



*Fig. 7.*




*Fig. 3.*

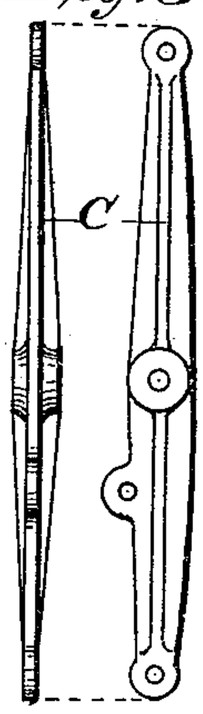



*Fig. 4.*

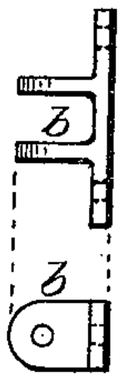



*Fig. 5.*

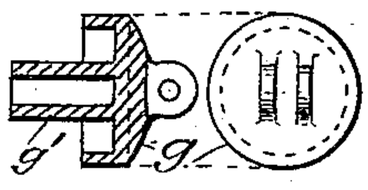



*Fig. 6.*

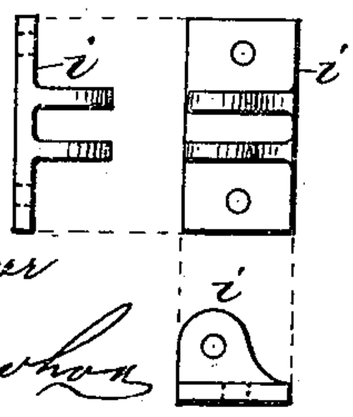
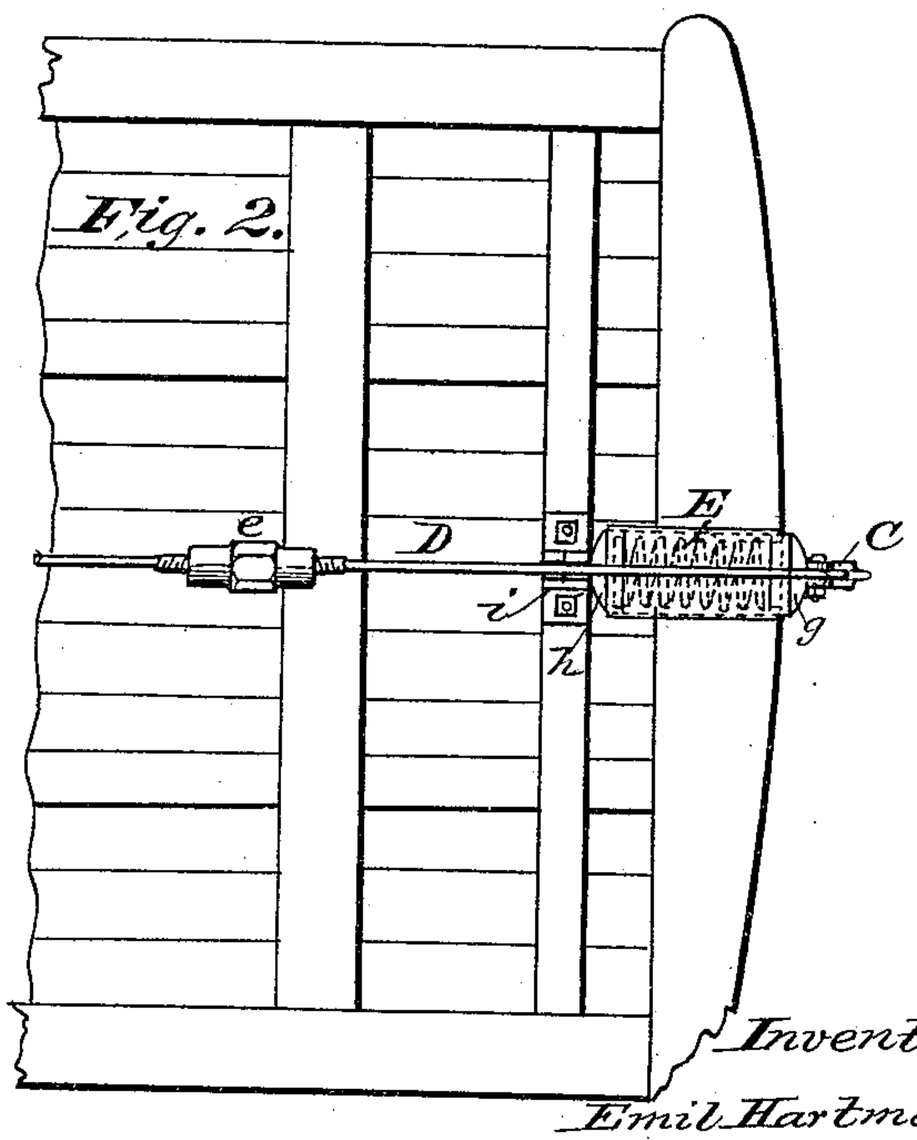



*Fig. 2.*

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Attorney.

# UNITED STATES PATENT OFFICE.

EMIL HARTMANN, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO CHARLES WENDT, OF SAME PLACE.

## CAR STARTER AND BRAKE.

SPECIFICATION forming part of Letters Patent No. 353,632, dated November 30, 1886.

Application filed September 4, 1885. Renewed July 24, 1886. Serial No. 208,947. (No model.)

*To all whom it may concern:*

Be it known that I, EMIL HARTMANN, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Combined Automatic Car Starter and Brake; 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 improvements in a combined automatic car starter and brake, more especially adapted to city passenger railway-cars; and the object is to produce an arrangement of devices by which the unpleasant jerking and jarring on the street-cars in stopping and starting can be overcome and prevented or entirely obviated, and to also thereby greatly assist the animals in starting the car, as the momentum is thereby overcome, and, further, to do this in a very simple and efficient manner and at very small expense.

To this end my invention consists in the construction of certain details and arrangement of parts, as will be more fully described, and more specifically pointed out in the claims, reference being had to the accompanying drawings and the letters of reference marked thereon.

Like letters indicate similar parts in the different figures of the drawings, in which—

Figure 1 represents a side elevation of one end of a car with my apparatus in position. Fig. 2 is a bottom view of the same. Fig. 3 are detail views of the operating-lever on an enlarged scale. Figs. 4, 5, 6, and 7 are detail views of parts of the apparatus more particularly described hereinafter.

In the drawings, A represents the end of a car having the platform B, to the front side of which is secured a bracket, *b*, having the operating or starting lever C pivoted to it. To this lever the horses are attached in any suitable manner, as shown at *c*. The lever should be made sufficiently strong to withstand the sudden strain brought upon it by the horses. To the lower end of said lever is attached the brake-rod D, connected at the opposite end to the ordinary brake blocks and bar, as shown at *d*. A turn-buckle, *e*, is arranged in the brake-rod to take up any slack or to adjust it to its proper length.

The bracket *b* forms the fulcrum for the lever C, and a short distance below, at *f*, is attached a cup-shaped plate, *g*, having suitable ears to pivot it to the lever C. Into this plate fits a coil or other shaped spring, E, which is supported at its opposite end by a similar-shaped plate, *h*, that is pivoted to a bracket, *i*, secured to a cross-piece of the framing of the car. The plates *g* and *h* are provided with hubs *g'* or *h'*, to one of which a guide-rod, *k*, is secured, while the other one receives the end of said rod, and when the spring is compressed the rod slides into said hub.

To prevent dust or other objectionable matter interfering with the action of the spring or clog it, I arrange a suitable covering of flexible material around it; or, if desired, a metallic cover may be placed around said spring, made in two parts which telescope into each other. Each part must then be secured to one of the dished plates *g* and *h*. Instead of a coiled spring, a rubber, volute, or other suitable spring may be employed.

The lever, brackets, and other parts may be made of wrought-iron, steel, cast-iron, or other material, as desired, and should be made sufficiently strong to withstand the strains.

In cases when the car is empty and it is desired to operate the brake, the device shown in Fig. 7 is applied to the lever C. In this case the lever C is provided with a pinion, *l*, which meshes into a rack-bar, *m*, secured to the platform B. The link *l'*, carrying the pinion, is guided in a bracket, *o*, secured to the platform. The lever C is supported by the bracket *b*, as in Fig. 1, and is connected to the brake-rod D. The treadle *n* is provided with a finger or pawl, *n'*, which engages with the rack-teeth when the driver places his foot on the treadle, and serves to regulate the brake in case the car is empty and the car has been started by the action of the spring. The pinion moves freely, ordinarily, upon the rack-bar, acting like an idler-wheel, but is prevented from turning back when the pawl is brought into action.

The operation is as follows: When the horses

are about to start the car, the spring exerts its power against the car, and will reduce the jarring or jerking occasioned ordinarily in starting a car. In like manner said spring will exert its force in stopping the car by gradually drawing the brake-blocks against the wheels, and thus prevent jarring of the car. It will be readily seen that when the horses are drawing on the lever C the brake-blocks are free from the wheels; but the instant the car comes to a standstill the brake-blocks will be drawn against the wheels and gradually stop the car, thus operating automatically. If the car is empty and the driver wishes to apply the brakes, he places his foot on the treadle *n*, (shown in Fig. 7,) which then acts on the lever C and its connections, as described.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a car-starter, the combination of the lever C and spring E with the brake-rod and brake-blocks, arranged substantially as shown, and for the purpose herein specified.

2. In a car-starter, the lever C, pivoted to the platform and having attached to it the spring E, which is connected at its opposite end to a bracket, *i*, and supported in cup-shaped plates *g* and *h*, all constructed substantially as and for the purpose set forth.

3. The combination of a spring, E, supported in cup-shaped plates *g* and *h*, and incased in a suitable casing, with a lever, C, and arranged to exert its tension both in starting and stopping the car, substantially as specified.

4. The combination of a spring, E, supported in cup-shaped plates *g* and *h*, with an expansible casing, and connected to a lever, C, fulcrumed at *b*, and having attached to it the brake-rod at one end and the horses at the upper end, in the manner shown, and for the purpose set forth.

5. The car-starter herein described, consisting of a fulcrumed lever, C, to which the brake-rod D, having turn-buckle *e*, is connected, and the spring E, supported in cup-shaped plates *g* and *h*, a guide-rod, *k*, and the brackets *b* and *i*, all constructed and arranged as herein shown, and for the purpose specified.

6. In a car-starter, a lever, C, pivoted to a bracket, *b*, and connected to the brake-blocks at one end and to the horse-harness at the other, and carrying a pinion, *l*, meshing with a rack, *m*, and a treadle, *n*, having pawl *n'*, all arranged as and for the purpose set forth.

7. The combination of a treadle, *n*, having pawl *n'*, engaging with the teeth of a rack-bar, *m*, with the pinion *l* and lever C, operated by a spring, E, as and for the purpose specified.

8. The combination of a treadle, *n*, having pawl *n'*, engaging with the teeth of a rack-bar, *m*, a pinion, *l*, meshing with said rack-bar and connected to the lever C, connected to the spring E, brake blocks, and the horse-harness, all substantially as and for the purpose set forth.

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

EMIL HARTMANN.

Witnesses:

MATT. CLIFTON,

GEORG A. SPRINGMANN.