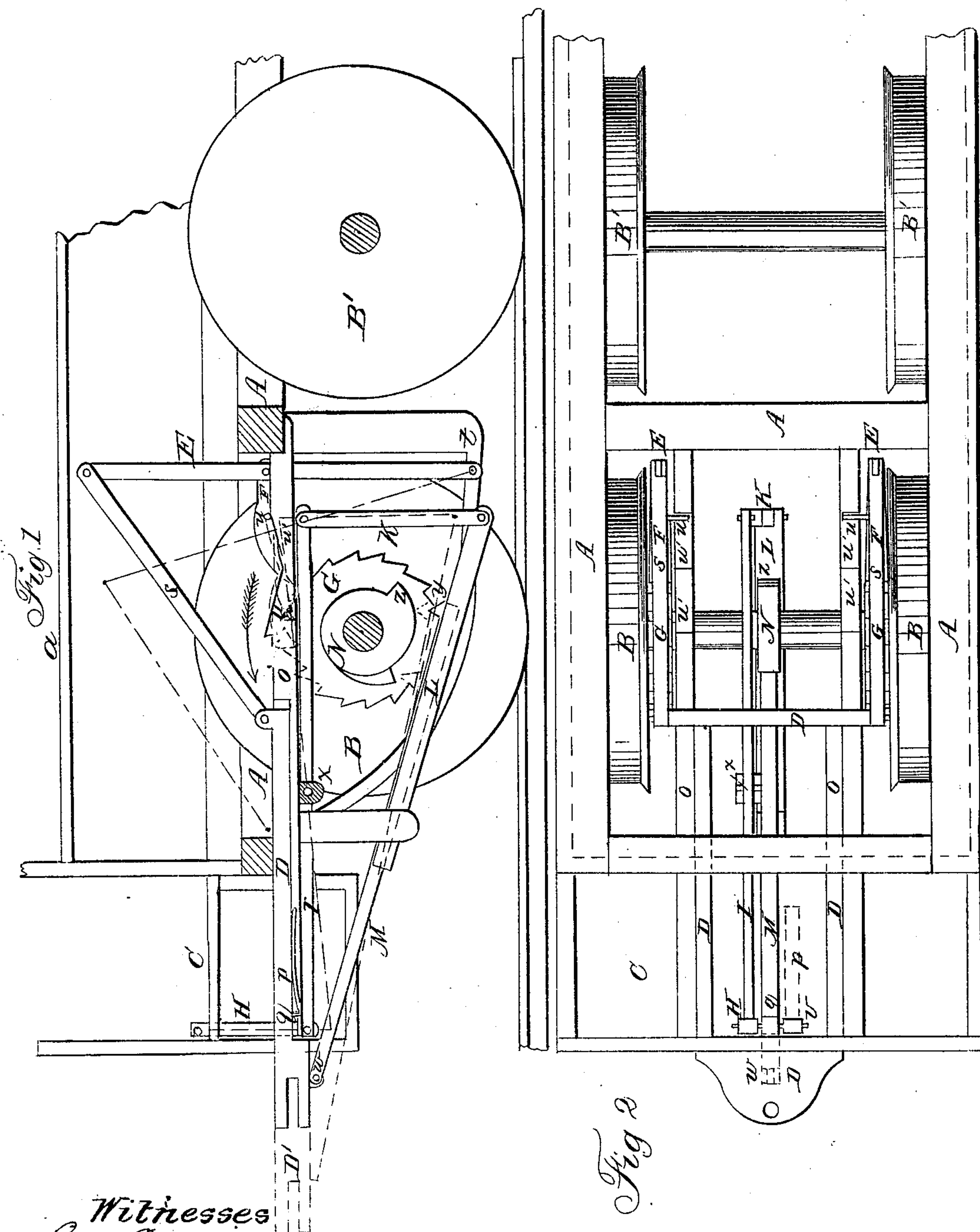


G. HAMEL.
Car Starter.

No. 26,101.

Patented Nov. 15, 1859.



Witnesses
Benj. Morison
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UNITED STATES PATENT OFFICE.

GEORGE HAMEL, OF ABINGTON, PENNSYLVANIA.

APPARATUS FOR STARTING CITY-RAILROAD HORSE-CARS.

Specification of Letters Patent No. 26,101, dated November 15, 1859.

To all whom it may concern:

Be it known that I, GEORGE HAMEL, of Abington, in the county of Montgomery and State of Pennsylvania, have invented a new and Improved Apparatus for Starting Horse-Cars on Rail-Tracks; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 represents a vertical longitudinal section of the lower part of a car having the improved apparatus applied thereto, and Fig. 2, a plan view of the same—like letters in both figures indicating the same objects.

In the starting of horse-cars on railroad tracks after each stoppage, especially when the grade is upward or the cars heavily loaded with passengers or freight, is attended with excessive or injurious strain upon the horses, and to avoid this is the object of my invention.

It consists in the relative arrangement and combination of certain devices, hereinafter fully described, whereby the horse cars used on city and other railways may not only be readily started, or moved from a state of rest, with greatly diminished strain upon the horses, but the forward motion of the cars on an upward, as well as on a level grade, will re-adjust the said devices after each starting, at the will of the driver, and without impeding the said forward motion of the cars.

In the drawings, A, represents the bed frame of the car; B and B' the track wheels, and C, the platform.

D, represents the draw-bar; E, E, the levers, and F, F, their pawls, for acting on the ratchet-wheels G, G, in starting the car; and H, I, K, L, M, the devices which, in connection with a notched eccentric wheel, N, fixed on the axle of the operating wheels (B B), serve the purpose of automatically readjusting the operated starting part of the apparatus, for subsequent action.

The draw bar of frame (D) is arranged horizontally between guides or bearings o, o, so as to admit of its being moved longitudinally, or backward and forward, as occasion may require. Attached to its under side is a spring p, which abuts against the side of another spring q, and prevents thereby the draw bar (D) from being pulled outward, in the usual drawing of the car, until the

spring (q) is depressed by the driver's foot being placed upon the vertical stem v, and the said spring thereby forced down sufficiently to let the spring (p) pass over it. 60 Whereby the draw bar (D) is brought, by the pulling of the horses, into the position shown by the red lines D'. The rear end of this draw-bar (D) is jointed into connection with the upper ends of the vertical 65 levers (E, E,) by means of the two inclined pieces s, s; and the lower ends of the said levers (E, E,) are jointed, respectively, to the stationary piece, t, below, substantially as shown in Fig. 1. Near the middle 70 of these two levers (E, E) their pawls (F, F,) are jointed thereto, and a small rest-pin, u, is fixed in the side of each pawl, which slides on its respective inclined planes u', u', as the levers (E E) are moved 75 backward and forward, or vice versa, so as to cause the said pawls to enter their points between any two of their respective ratchet wheel's teeth to face around the axle and car wheels (B, B) by the pulling of the 80 horses on the draw-bar D, and so also as, afterward, to cause the said pawls (F, F,) to be raised up out of contact with the teeth of the ratchet wheels when the car is running. In the operation of this part of my 85 invention when the draw-bar (D) is held back by the springs (p, and q,) the different parts will be in the positions shown in the drawings; but when the said draw-bar is released from its staying springs (p and q) 90 by the foot of the driver, as before specified, the said draw-bar (D), pieces (S, S,) levers (E, E) and pawls (F F) are brought, respectively into the positions shown by the red lines in Fig. 1, and in being brought 95 into these latter positions the pawls (F, F,) move the ratchet wheels around the space of one or more notches, and so overcome the inertitude of the car, or start it, in the direction of the arrow, with the expenditure of 100 considerably less than half the power that would be required without the use of the said starting devices described, because the pawls (F, F,) being placed, respectively, near the centers of the levers (E, E,) and 105 operating upon ratchet wheels (G, G,) whose respective diameters are greatly larger than the axle of the wheels (B, B,) which carry them, the leverage afforded thereby must proportionably diminish the power that 110 would, as heretofore, be required to start the car. To bring the said starting devices back

again to their normal positions, after the car is under way, so that they may be ready for another of the operations just described, the devices H, I, K, L, M, and N, are devised.

5 M, is a bar which is pivoted to the under side of the draw bar (D), at *w*, and slides longitudinally within another bar (L) which is pivoted to the lower end of the bar (K) whose upper end is also pivoted to the
10 horizontal lever-bar (I). The lever-bar (I) is supported upon its fulcrum, at *x*, and has its power-end pivoted to the vertical treadle (H) which projects up through the platform (C) near the driver's feet. The lower
15 end of the sliding bar (M) has a tooth or upward projection *y*, at its lower end; and, near the middle of the axle of the wheels (B, B), a notched eccentric wheel (N) is fixed so that the projecting part, *z*, of the
20 said eccentric shall pass clear of the tooth (*y*) as the former is carried around by the axle, when the sliding bar (M) is in its normal position, or as shown in the drawings. The operation of this part of my in-
25 vention is as follows: The draw-bar (D) having been pulled out into the position indicated by the red lines in Fig. 1—as before described—and the car under way; to bring it back again, the driver places his
30 foot upon the treadle (H), and thus depressing the power-end of the lever (I), elevates the sliding bar (M)—as is indicated by the blue lines in the same figure—and thus brings the tooth (*y*) into connection
35 with the projection (*z*) on the rotating eccentric (N), which thereby forces back the sliding bar (M) and consequently also, the draw-bar (D), into their normal positions, and where the springs *p* and *q*, hold it se-

curely. The inclined bars (S, S,) and the upper ends of the levers (E, E,) pass up, and move beneath the usual seats (*a*) on each side of a passenger car, and so produce no obstruction.

It will be readily perceived that while this starting apparatus is fully competent to relieve the horses from the usual excessive straining in starting the car, especially on an upward grade, it is also capable of being re-adjusted by the forward motion of the car, on such a grade, with great facility and certainty, and without impeding the said forward motion of the car.

Having thus fully described my improved apparatus, and pointed out its utility, what I claim as new therein of my invention, and desire to secure by Letters Patent is,

1. The relative arrangement of the levers (E, E,) ; the pawls (F, F,) in combination with their rest-pins (*u*) and inclined planes (*u' u'*) ; the draw-bar (D) in combination with the inclined pieces (S, S,) ; and the staying springs (*p* and *q*), or their equivalents, for holding and releasing the draw-bar (D) ; the same being constructed and arranged to operate substantially in the manner and for the purposes specified and described.

2. I also claim, in combination with the said draw-bar (D), the devices H, I, K, L, and M, the same being arranged so as to be operated by the cam (N) for their re-adjustment, substantially in the manner set forth and described.

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Witnesses:

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