W. JASPER.
Car-Starter.

No. 201,421. Patented March 19, 1878.

Fig. 1

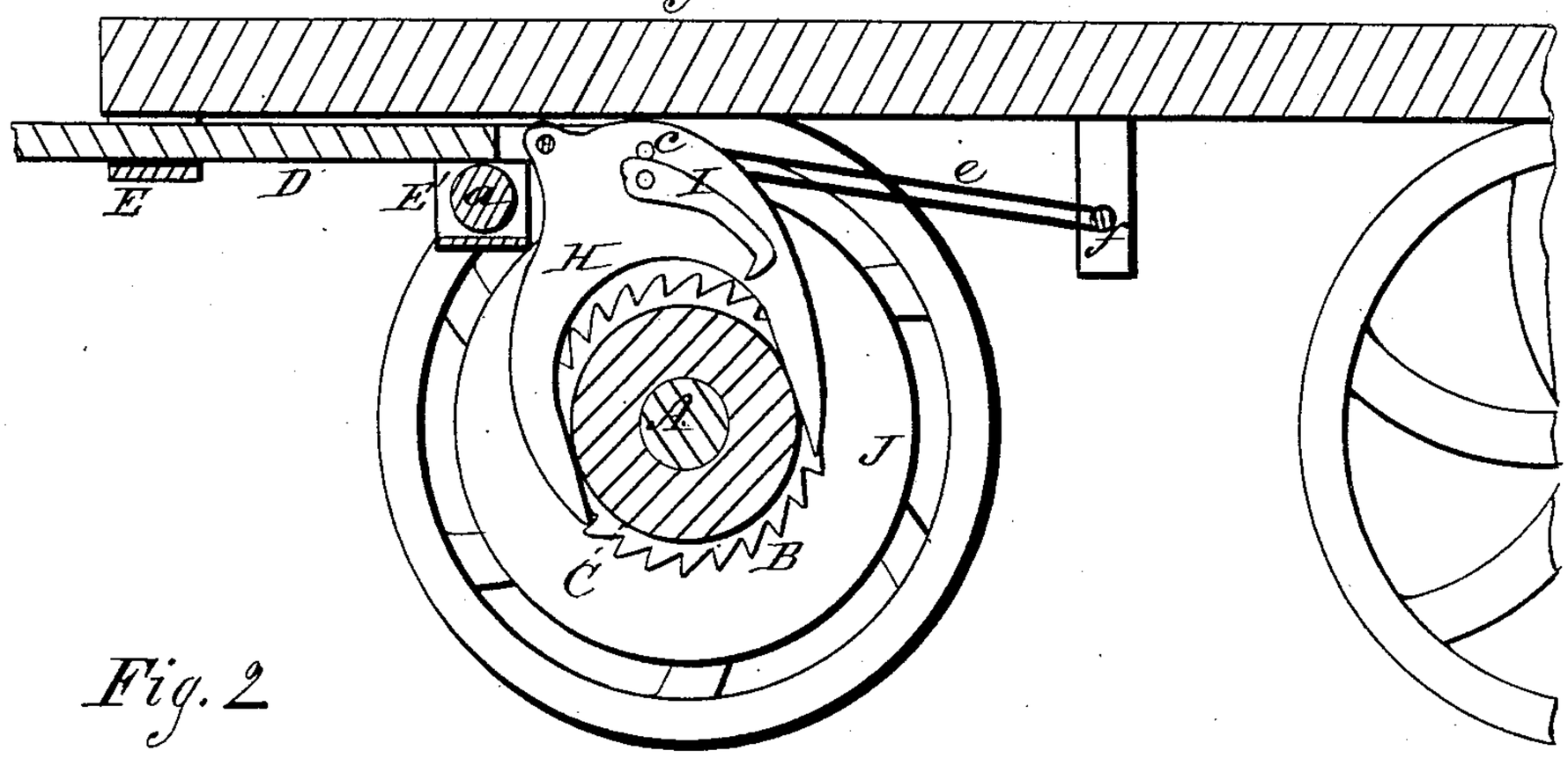


Fig. 2

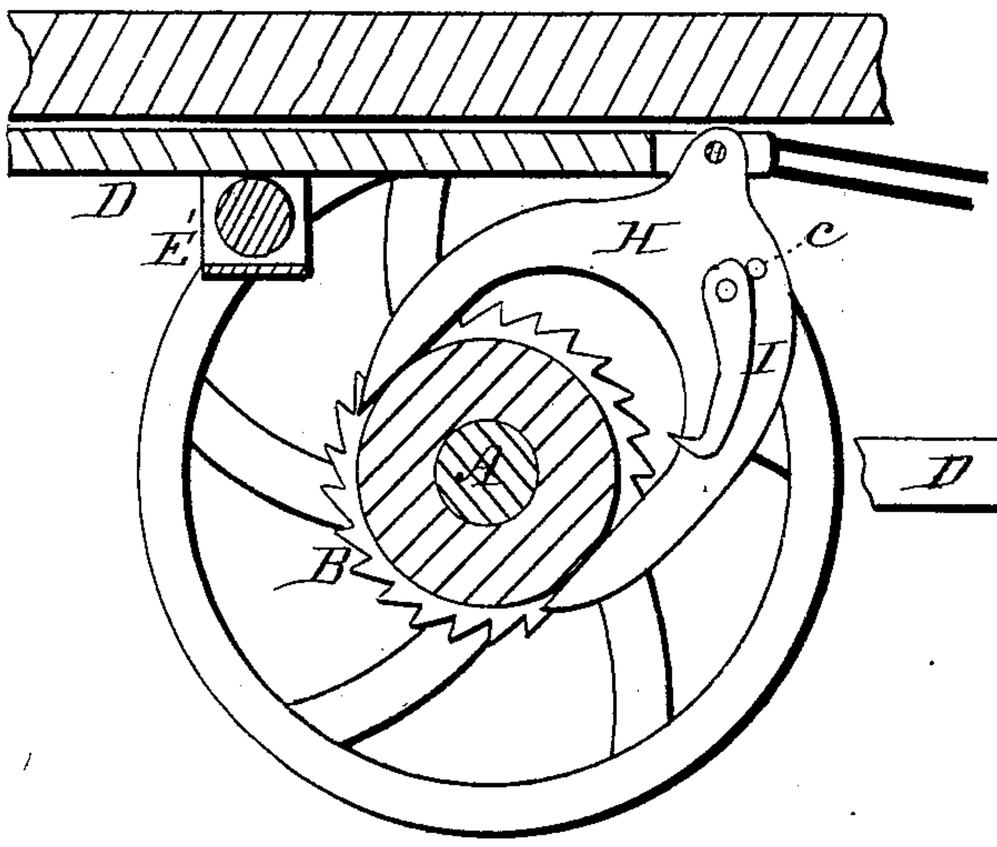


Fig. 3

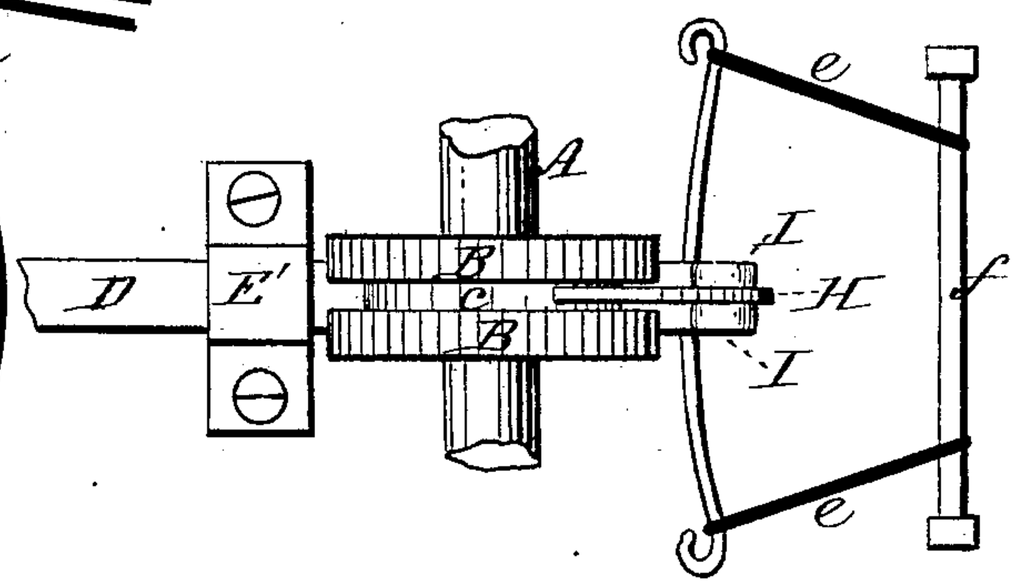
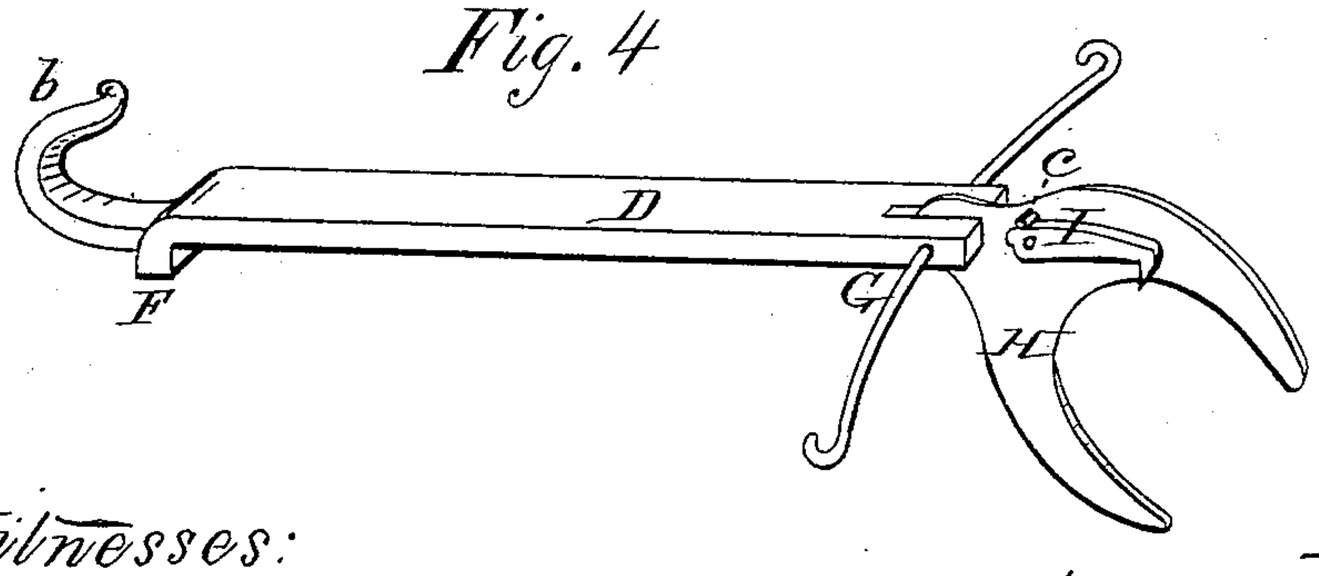


Fig. 4



Witnesses:
Floyd Norris.
J. E. Carpenter.

Inventor:
Wilhelm Jasper
by Johnson & Johnson
Attys

UNITED STATES PATENT OFFICE.

WILHELM JASPER, OF MORRISANIA, ASSIGNOR OF ONE-HALF HIS RIGHT TO JOHN C. KELLEY, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN CAR-STARTERS.

Specification forming part of Letters Patent No. **201,421**, dated March 19, 1878; application filed August 24, 1877.

To all whom it may concern:

Be it known that I, WILHELM JASPER, of Morrisania, in the county of New York and State of New York, have invented certain new and useful Improvements in Starters for Street-Railway Cars; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawing, and to letters of reference marked thereon, which form a part of this specification.

My object is to obtain an effective device of simple construction for starting railway street-cars. It is adapted for application to the axle of the car, and is operated by means of a sliding draw-bar, the design being to aid in starting the car and relieve the strain upon the horses in moving the car at each stopping. The device for this purpose is applicable alike to each end of the car. The draw-bar is fitted to have a sliding movement, and carries at its inner end a pivoted yoke, the open ends of which fit within a groove between two ratchets secured upon the axle, by which groove the open ends of said yoke are held in position. Two pawls are pivoted to the opposite sides of the inner branch of the yoke in positions to be held up out of engagement with the axle-ratchets when the car is being drawn, and to present their acting ends for engagement with the rear side of the ratchets when the car has stopped.

The pawls are, in effect, a single or divided pawl, so that they will both move in unison, and for this purpose they are fast upon the same pivot to give the best effect, although they may be pivoted for independent action. It is important that their release from the axle-ratchets when the car has been started and the horses are pulling should be automatic; and for this purpose I combine, with the pawls and their carrying-yoke, detents arranged in such relation to the pivoted ends of the pawls as to carry and maintain their acting ends free from and above the upper circumference of the axle-ratchets when the draw-bar is fully drawn forward and the car is moving. It is equally important, when the car has stopped, that the pawls shall be automatically placed in position, to seize into the axle-ratchets, and for this purpose a spring pulls in the draw-bar so as to bring the pawls from a horizontal position above the axle-ratchets to vertical positions behind the same, in which they are held for proper engagements with the ratchets by the detents when the horses are started to turn the axle and relieve them of the great starting strain.

In this way my device is adapted to release the pawls from their engagement with the ratchets, and to place them in positions for engagement therewith at the time of starting. In such operation the yoke swings upon its pivot within the groove between the axle-ratchets.

In the drawings, Figure 1 represents a vertical section of so much of a street-railway car as illustrates the application of my improved starting device, showing the pawls held from engagement with the axle-ratchets; Fig. 2, a similar view, showing the pawls in positions for engagement with the axle-ratchets; Fig. 3, a bottom view of the starting device in the position shown in Fig. 2, and Fig. 4 the draw-bar and its pivoted yoke carrying the pivoted ratchets detached.

I shall describe and show the device as applied to one of the axles of a car; but it will be understood that such device is applicable to each axle of cars known as "double-enders," for drawing both ways; but in cars drawing only from one end the device will be only applied to the front axle.

I provide the axle A with a double ratchet, B B, having a groove, C, between them, and fixed permanently in the middle of the length of said axle.

The draw-bar D is fitted to have a sliding movement in guides E E′, the inner one, E′, of which has an anti-friction roll-bearing, *a*, for said slide to render its movement easier. It has the usual hook end *b*, to which the horses are attached, and its sliding movement is limited by stops F G—the outer one, F, to determine its inward movement by striking against the outer guide E, and the inner stop, G, to determine its outward movement, and by which to draw the car.

A yoke, H, is pivoted to the inner end of the draw-bar D, having its open ends fitted within the groove C, between the axle-ratchets, by which its open ends are held in place and allowed to move over the hub and between the ratchets. Pawls I are pivoted to the rear branch of the yoke at a point near the pivot of the latter, so as to hang vertically in positions to engage with the teeth of the axle-ratchets when the car has stopped and the draw-bar is at the limit of its inward movement.

On starting the car, the yoke will be oscillated and its pivoted end drawn forward, causing the pawls to take into the double ratchets, and move the car with comparative ease to the horses. In this action the pawls are drawn up to horizontal positions above the ratchets; and at this point it is important to effect the disengagement of the pawls from said ratchets. For this purpose I have combined with the pivoted yoke, its pawls, and the draw-bar a detent or detents or pins, *c c*, arranged in such relation to the yoke and the pivots *d* of the pawls as to automatically disengage the pawls from the ratchets, and hold them above and free from contact with the teeth thereof, to avoid noise and wear. As shown, this is effected by placing the detents *c c* on each side of the yoke-arm, so as to bear upon the pivoted ends of the pawls, and prevent their acting ends from falling below a certain line when the car is moving. This action of the detents takes effect after the pawls have performed the function of starting the car.

The detent or detents thus arranged perform another function—that of holding the pawls from swinging back at their lower ends beyond a certain distance, when they assume vertical positions when the car is stopped, and thus hold them for instant and proper engagement with the rear sides of the axle-ratchets, so that whether the pawls be out of action or in positions to act, their detents perform the functions stated. This I have found, in practice, to give the best results.

The pulling-stop G of the draw-bar is extended at each side thereof to form attachments for springs *e*, which are secured to the under side of the platform of the car by a cross-rod, *f*, or in any suitable manner, to pull in the draw-bar and its pivoted yoke when the car is stopped. A single spring may be used.

I may use disks J, secured to the axle on each side of the ratchets; but they are not deemed essential, and the ratchets may be used without them, as they perform no part in holding the yoke in place.

I have used the device, and it is found to be effective and satisfactory. It can be applied to any car in use, and with comparatively small expense.

I prefer to secure the pawls upon the same pivot to insure their simultaneous and equal action on each side of the yoke-arm; but they may be secured upon independent pivots, as in either case their detents will perform their functions alike.

The arrangement of the divided or double axle-ratchets, in connection with the divided or double pawls, gives greater strength and effectiveness to the action of the device, although a single ratchet, pawl, yoke, and detent, arranged and operating as described, would be within my invention; but I prefer the plan described.

The starter may be applied to steam-cars.

I claim—

1. In a starter for railway-cars, the combination, with the draw-bar and the axle-ratchets, of the open yoke H, pivoted to said draw-bar, and the pawls I I, pivoted to said yoke, for operation as described.

2. The combination, with the draw-bar D and the axle-ratchets B, of the open yoke H, pivoted to said draw-bar, the pawls I I, pivoted to said yoke, and the detents *c*, arranged on the yoke and moving with it, for conjoint operation as set forth.

3. The detents carried by the pivoted yoke, combined with the pivoted pawls, and adapted to automatically carry and hold the pawls free from engagement with the ratchets, and to present and hold the pawls in positions for engagement therewith, substantially as herein set forth.

4. The combination, with the double or divided ratchets, having a groove, C, between them, of a pivoted yoke having its ends open, and held in position for the operation of its pivoted pawls by means of said groove between said ratchets, as herein set forth.

5. The combination, with the draw-bar and its retracting spring or springs, of the pivoted yoke, its pivoted pawls, its detents, and the axle-ratchets, whereby the draw-bar and the pivoted pawls are automatically operated to release the pawls from engagement and present them for action with the axle-ratchets.

In testimony that I claim the foregoing I have affixed my signature in the presence of two witnesses.

WILHELM JASPER.

Witnesses:
FRANK VINTON,
HENRY BERGE.