(No Model.) 3 Sheets—Sheet 1.

C. L. N. T. HANSEN & C. N. FISCHER.

CAR STARTER.

No. 342,959. Patented June 1, 1886.

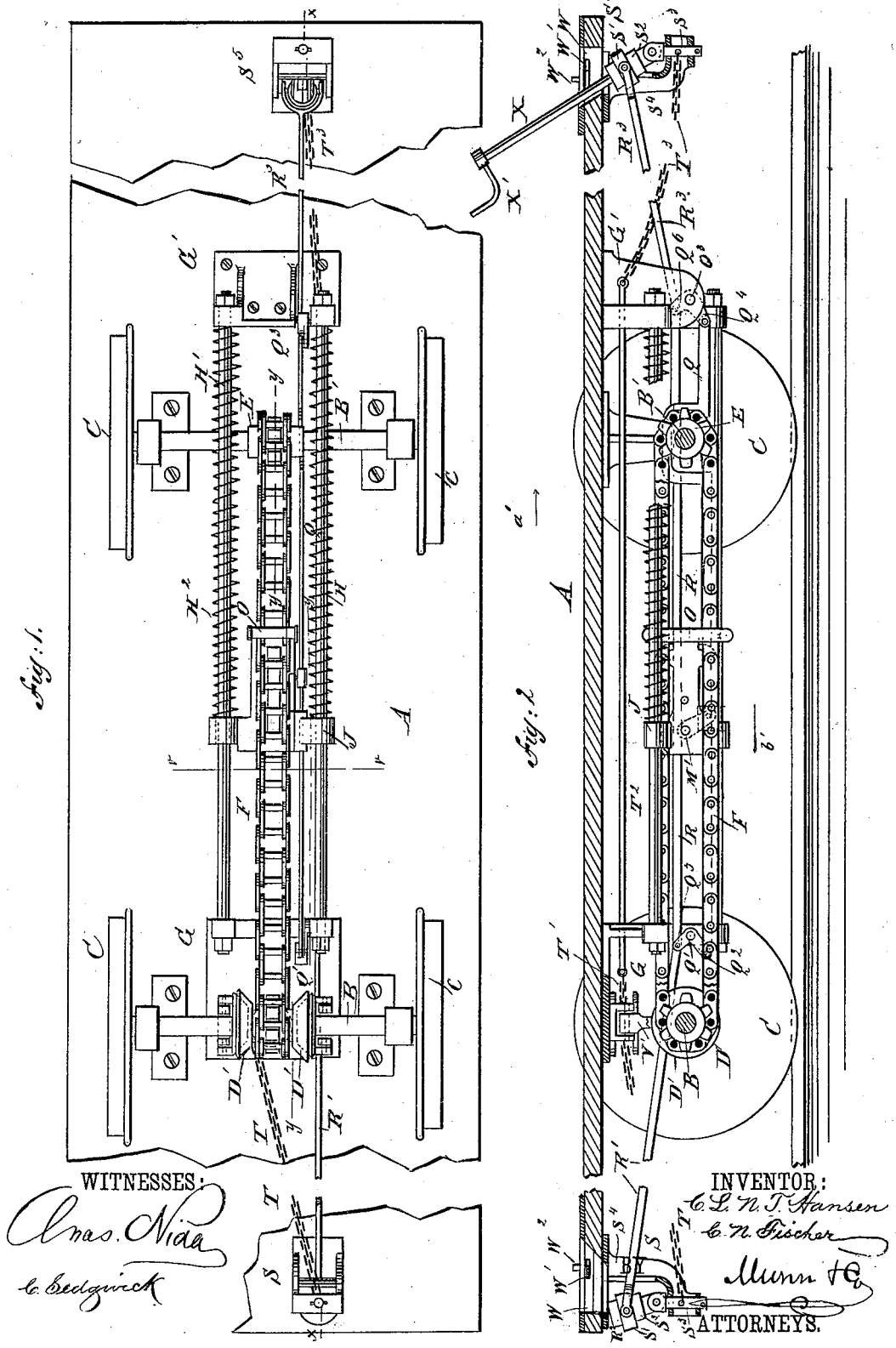

Fig. 1.

Fig. 2.

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C. L. N. T. HANSEN & C. N. FISCHER.

CAR STARTER.

No. 342,959. Patented June 1, 1886.

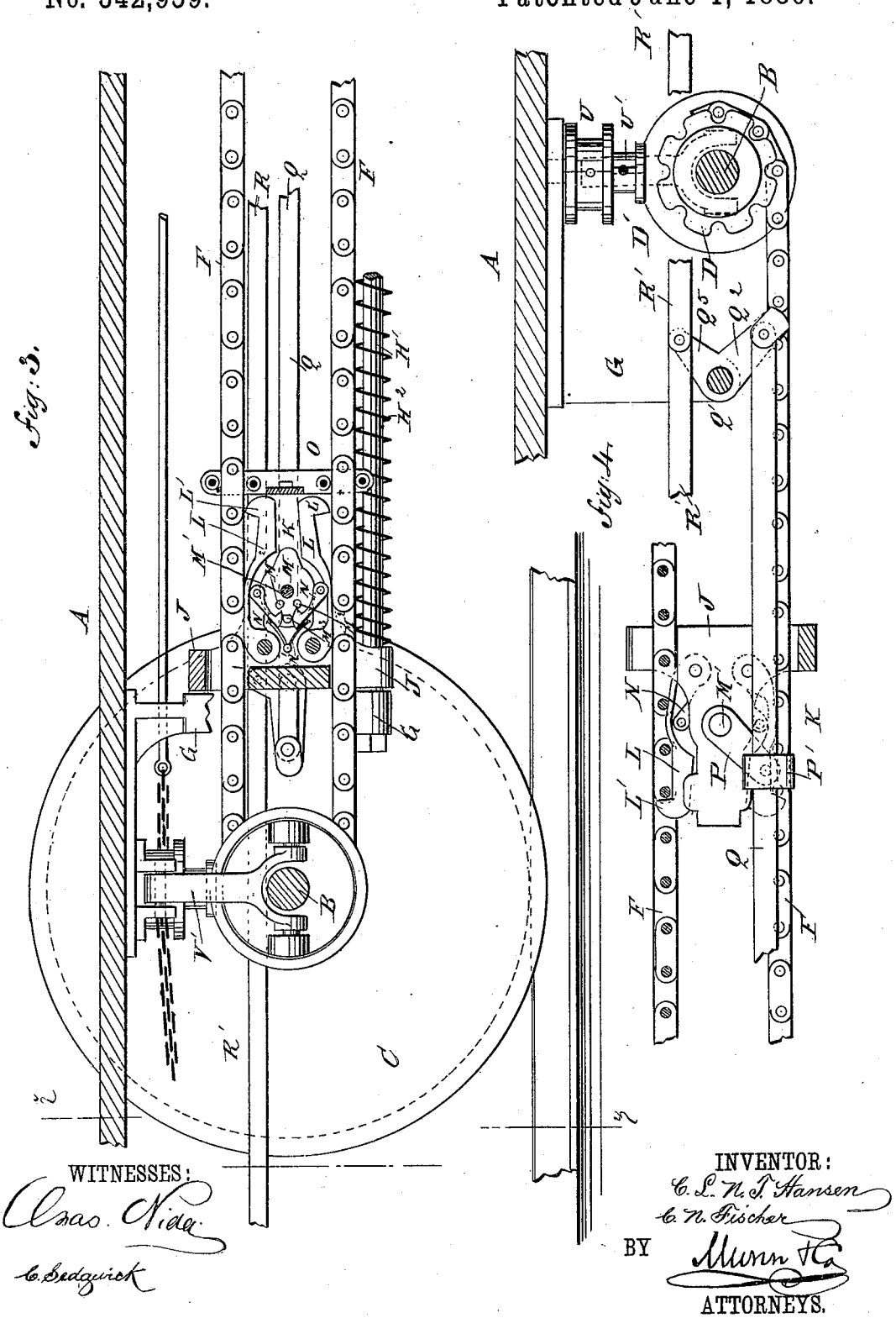

Fig. 3.

Fig. 4.

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C. L. N. T. HANSEN & C. N. FISCHER.

CAR STARTER.

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Fig: 5.

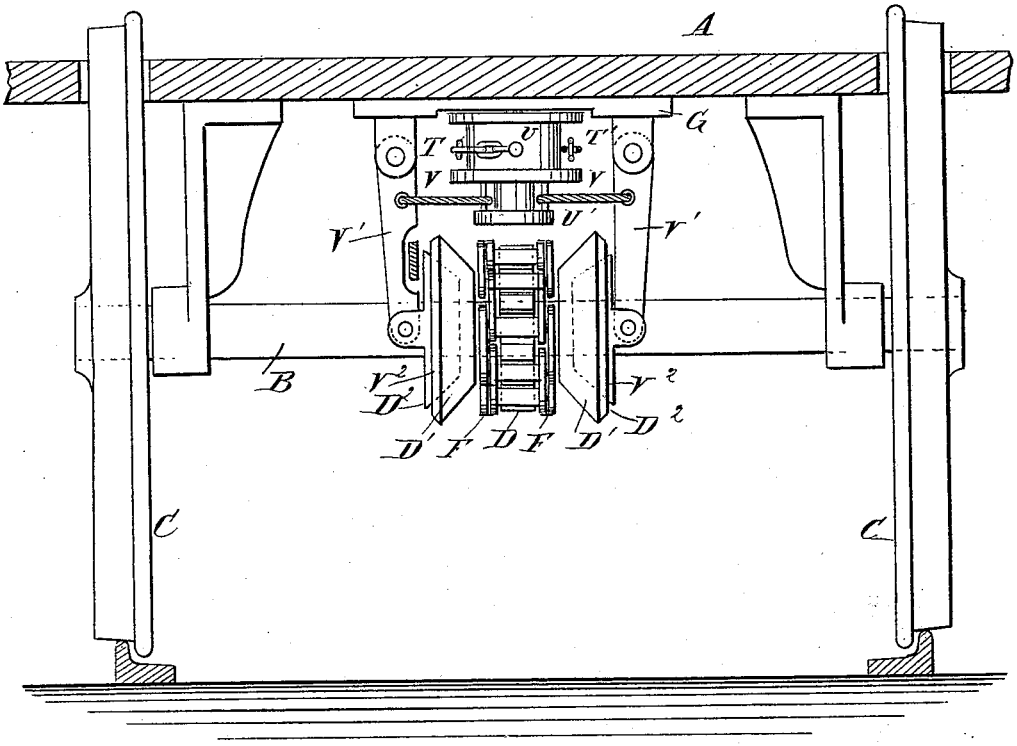


Fig: 6

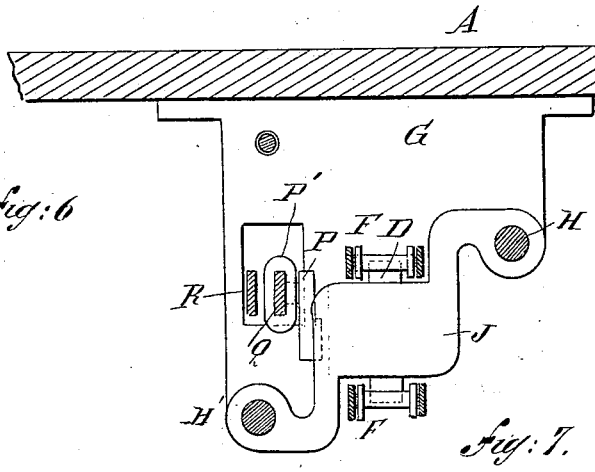
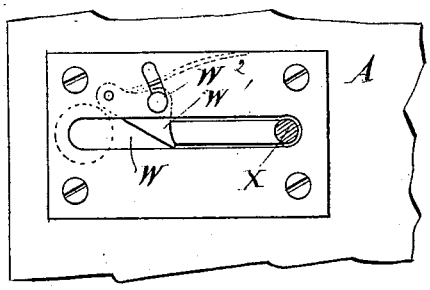


Fig: 7.



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UNITED STATES PATENT OFFICE.

CHARLES L. N. T. HANSEN AND CHRISTIAN N. FISCHER, OF NEW YORK, N. Y.

CAR-STARTER.

SPECIFICATION forming part of Letters Patent No. 342,959, dated June 1, 1886.

Application filed April 5, 1886. Serial No. 197,774. (No model.)

To all whom it may concern:

Be it known that we, CHARLES L. N. T. HANSEN and CHRISTIAN N. FISCHER, of the city, county, and State of New York, have invented a new and Improved Car-Starter, of which the following is a full, clear, and exact description.

The object of our invention is to provide a new and improved car-starter which will accumulate power at the will of the operator while the car is in motion.

The invention consists of an endless chain and pulleys attached to the driving-shafts, of a clutching device operating on the chain and against the springs, of a device for throwing the clutch in and out of gear with the chain, and of a brake.

The invention also consists of various parts and details and combinations of the same, as will be fully described hereinafter, and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a bottom view of our improvement. Fig. 2 is a longitudinal sectional elevation of the same on the line *x x*, Fig. 1. Fig. 3 is a sectional elevation of part of our improvement. Fig. 4 is a detail sectional elevation of the same on the line *y y*, Fig. 1. Fig. 5 is a vertical cross-section of our improvement on the line *z z* of Fig. 3. Fig. 6 is a vertical cross-section on the line *v v* of Fig. 1. Fig. 7 is a plan view of part of the front end of the top of the platform.

The under side of the bottom or platform A of the car to which our improved car-starter is attached is provided with the usual bearings, in which are mounted the car-axles B and B′, carrying the car-wheels C. On the axle B is secured the sprocket-wheel D, having the conical side flanges, D′ D′, and to the axle B′ is attached a sprocket-wheel, E, which is connected with the sprocket-wheel D by the sprocket-chain F, consisting of links pivoted to cross-rods in the usual manner. To the under side of the platform A are secured the brackets G and G′, which are connected with each other by the stays or rods H and H′, around each of which is coiled a spring, H^2, one end of which rests against the bracket G′, the other end of said spring being attached to the casting J, adapted to slide on the stays H and H′. The casting J carries the chain-gripping device K, which consists of the levers L, pivoted to the casting J, and each having a hook, L′, and of an eccentric-cam, M, secured to a shaft, M′, mounted in the casting J, and provided with the projecting lugs M^2 and M^3 on its face, of which the lugs M^2 engage alternately with the catches N N, pivoted to the levers L and held in contact with the lugs M^2 by the springs N′, attached to the casting J. The chain F is guided above and below the casting J in the guiding-frame O. The shaft M′ projects from one side of the casting J, and is provided on its outer end with a crank-arm, P, to which is attached a guide-block, P′, having a recess, through which passes a bar, Q, pivoted at one end to the arm Q^2 of the bell-crank-lever Q′, fulcrumed on the bracket G, and the other end of the bar Q is pivoted to the arm Q^4 of the bell-crank lever Q^3, fulcrumed on the bracket G′. The arm Q^5 of the bell-crank lever Q′ is connected by a bar or rod, R, with the arm Q^6 of the bell-crank lever Q^3. To the arm Q^5 of the bell-crank lever Q′ is also pivoted a bar or rod, R′, having the outer forked end, R^2, to which is attached the starting device S, consisting of the ring S′, pivoted to the forked end R^2, and having its bearing on the sleeve S^2, pivoted to the brake-shaft S^3, mounted to turn on the hanger S^4, attached to the under side of the end of the car bottom or platform A. To the arm Q^6 of the bell-crank lever Q^3 is pivoted a rod, R^3, similar to the rod R′, and connected at its front forked end to a starting device, S^5, similar in every respect to the one above described in connection with the rod or bar R′.

To the brake-shaft S^3 is attached one end of a chain, T, one end of which is wound on and attached to the vertical drum U, mounted to turn on a shaft secured to the bracket G. A second chain, T′, is also wound around and attached to the drum U, and is connected with the rod T^2, which is connected by the chain T^3 with the other brake-shaft, S^3, of the starting device S^5. To each side of an extension, U′, of the drum U is secured a short chain, V, which connects with the arm or link V′, piv-

oted at its upper end to the bracket G, and to its lower forked end is pivoted the conical brake-disk V^2, which can be thrown in contact with the recessed conical side flanges, D', attached to the sprocket-wheel D.

A longitudinal slot, W, is formed near each end of the platform A, into which projects a pivoted spring-catch, W', provided with a foot-piece, W^2, which extends a short distance above the top of the platform A.

The starting bar or lever X is provided at its upper end with a handle, X', and the lower end of said lever X is squared off to fit into a corresponding central opening or aperture formed in the sleeve S^2 of either starting device S or S^5.

The operation is as follows: The car starting mechanism S or S^5 is operated by the driver from the platform by means of the brake and starting lever X, and as a starting mechanism is placed at each end of the platform of the car the starter can be operated from either end, according to the direction in which the car travels. In its normal position, as shown in Fig. 3, the gripping device K is closed, and the car travels as usual, the sprocket-chain F simply passing over the revolving sprocket-wheels D and E, attached to the car-axles B and B'. The starting devices S and S^5 are in a vertical position, and the operator can turn the brake-lever X, which is fitted to the sleeve S^3, so as to operate the brake-drum U, which causes the conical disks V^2 to come in contact with the conical side flanges, D', of the sprocket-wheel D, and thereby brake the axle B. We will assume that the car travels in the direction of the arrow *a'*. (Shown in Fig. 2.) Now, as soon as the operator desires to accumulate power, he moves the vertically-standing brake-lever X inward in the slot W, whereby he causes the rod R^3 to throw the arm Q^4 of the bell-crank lever Q^3 downward, which causes the sliding block P' to move downward, taking the crank-arm P with it in its downward movement, and as the latter is attached to the shaft M' of the eccentric M the said eccentric is caused to move the upper lever L upward until the hook L' catches the next cross-bar of the upper part of the moving chain F, which pulls the lever L and the casting J along with it, so that the springs H^2 on the rods H and H' are compressed. The catches N, pivoted to the levers L, engage with the lugs M^2 on the face of the eccentric M, and hold the latter in a locked position until the eccentric is moved to its normal position again. The lower part of the chain F passes over the hook L' of the lever L without engaging the same, as that part of the chain travels in the opposite direction from the upper part. As soon as the casting J has compressed the springs H^2 sufficiently to bring the car to a stop, then the operator, whenever he desires to start, moves the lever X forward until it strikes against the spring-catch W', so that the eccentric M is swung downward again and the hook L' releases the cross-bar of the chain F', but the casting J is prevented from flying back to its original position by the pressure of the compressed spring, by means of the hook L' of the lever L catching on the cross-bar of the lower part of the chain, and the pressure of the compressed spring against the casting J forces the latter to its normal position, and pulls the lower part of the chain in the direction of the arrow *b'*, (see Fig. 2,) whereby the car is propelled in the direction of the arrow *a'*.

The operator, by pressing his foot on the projecting pin or lug W^2, causes the catch W' to leave the slot W in the platform A, so that the operator is enabled to move the starting and brake lever X into a vertical position, and to apply the brake as before described.

It will be seen that when the car travels in the direction of the arrow *b'* the operator is on the other end of the platform A, and by means of the brake-lever X he operates the starting device S in the same manner and with the same effect as he operated the starting device S^5 above described. When the operator moves the starting device S into the position occupied by the starting device S^5, as shown in Fig. 2, the eccentric M is swung downward, and the lower lever L is thrown downward, so that its hook L' catches the next cross-bar of the passing lower part of the chain, whereby the casting J slides on its rods H and H' in the direction of the arrow *a'*, and thereby compresses the springs H^2, the upper part of the chain passing over the hook L' of the upper lever L without engaging the same.

When sufficient pressure has accumulated, the car will be brought to a stop, and the operator, by moving the starting-lever against the spring-catch W', causes the eccentric M to swing upward again, so that the lower lever L disengages the lower part of the chain F, but the upper lever L will engage the upper part of the chain, and by the pressure of the springs H^2 forces the casting J in the direction of the arrow *b'*, so that the car is propelled in the same direction.

Having thus fully described our invention, we claim as new and desire to secure by Letters Patent—

1. In a car-starter, the combination of a gripping device and an endless chain passing over sprocket-wheels attached to the car-axles, with a starting mechanism connected to the gripping device by bars and crank-arms, substantially as shown and described.

2. In a car-starter, the combination of an endless chain passing over sprocket-wheels attached to the car-axles, with a gripping device, substantially as described, and operated from the platform of the car, as set forth.

3. In a car-starter, the combination of an endless chain, F, passing over the sprocket-wheels D and E, attached to the car-axles B B', with the casting J, the stays or rods H and H', mounted on the brackets G and G', the springs H^2, and the gripping device K, operated from

the platform, substantially as shown and described.

4. In a car-starter, the combination of an endless chain, F, passing over sprocket-wheels D and E, attached to the car-axles B B′, with the stays H H′, mounted on the brackets G G′, the springs H^2, the gripping device K, consisting of the eccentric cam M, having the lugs M^2 and M^3, the levers L, and the hooks N, substantially as shown and described.

5. In a car-starter, the endless chain F, the casting J, the stays or rods H H′, the springs H^2, and the gripping device K, consisting of the eccentric cam M, attached to the shaft M′ and having the lugs M^2 and M^3, and the levers L, and hooks N, in combination with the crank-arm P, the sliding block P′, the bar or rod Q, and the bell-crank levers Q′ and Q^3, operated from either starting device S or S^5, substantially as shown and described.

6. In a car-starter, the bell-crank levers Q′ and Q^3, operating the eccentric cam M and rods R and R′, in combination with the ring S′, the pivoted sleeves S^2, and the brake-shafts S^3, operated by the starting-lever X, substantially as described.

7. In a car-starter, the ring S′, the pivoted sleeves S^2, and the brake-shaft S^3, in combination with the brake-lever X, having the handle X′, and the spring-catch W′, having the projecting lug W^2, substantially as shown and described.

8. In a car-starter, the brake-lever X, having the handle X′, the pivoted sleeves S^2, the brake-shafts S^3, the chains T and T^3, in combination with the drum U, the short chains V, the pivoted arms V′ V′, carrying the disks V^2 V^2, and the conical flanges D′, having recesses D^2, and being attached to the sprocket-wheel D, secured on the axle B, substantially as shown and described.

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