(No Model.) 2 Sheets—Sheet 1.

J. H. NEAL.

CONTROLLING DEVICE FOR ELECTRIC CARS.

No. 494,344. Patented Mar. 28, 1893.

Fig: 1.

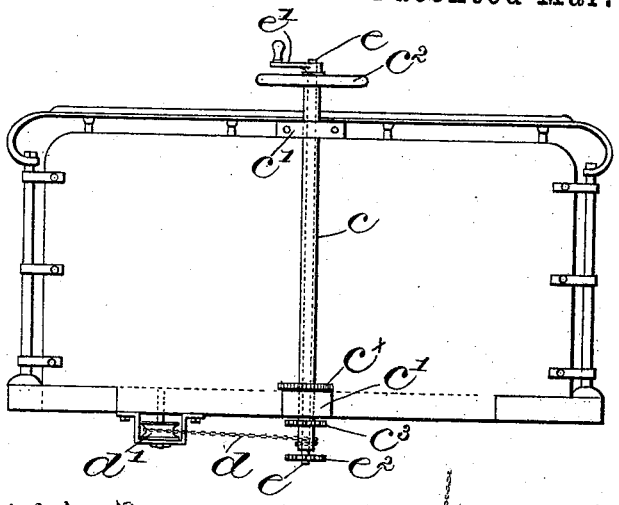
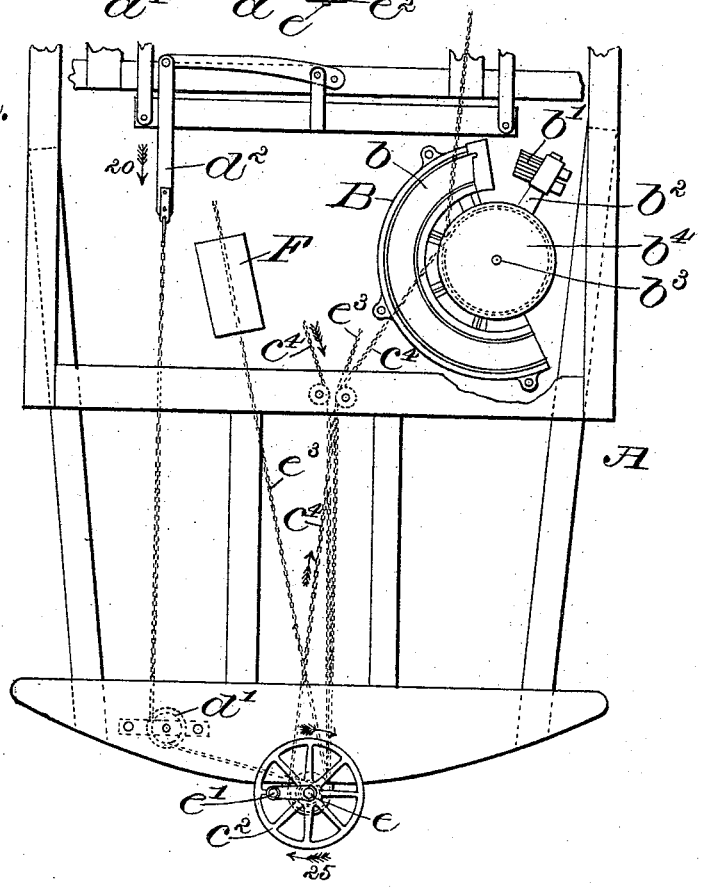


Fig: 2.



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(No Model.) 2 Sheets—Sheet 2.

J. H. NEAL.

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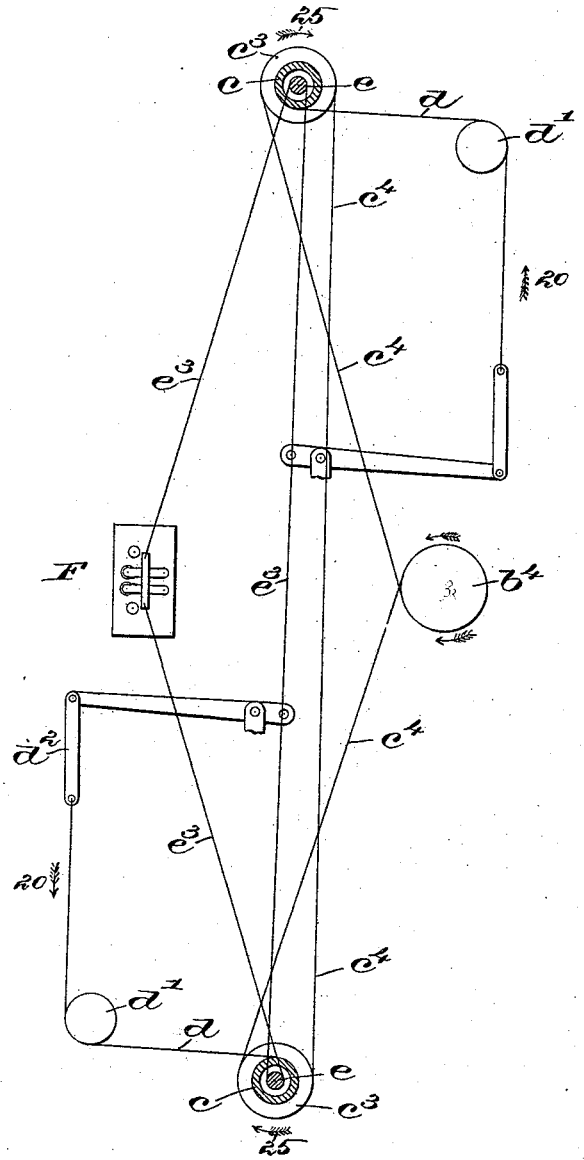
Fig: 3.



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UNITED STATES PATENT OFFICE.

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CONTROLLING DEVICE FOR ELECTRIC CARS.

SPECIFICATION forming part of Letters Patent No. 494,344, dated March 28, 1893.

Application filed December 30, 1891. Serial No. 416,529. (No model.)

To all whom it may concern:

Be it known that I, JAMES H. NEAL, of Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Controlling Devices for Electric Cars, of which the following description, in connection with the accompanying drawings, is a specification, like letters and figures on the drawings representing like parts.

In electric cars as at present generally constructed and operated, the brake mechanism by which the car is stopped is actuated by one handle, generally arranged at one side of the motor man, while the electric current is controlled by means of a resistance regulated by a separate handle generally arranged at the opposite side of the motor man, it being necessary to operate both these handles independently to cut off the current to apply the brakes or to cut in the circuit and release the brakes.

This invention has for its object to provide an improved device whereby both the brake mechanism and current regulating mechanism may be actuated or controlled from a single actuator or shaft, and also to provide means in connection therewith whereby the current may also be reversed when it is necessary to change the direction of movement of the car.

Figure 1 of the drawings represents in front elevation a sufficient portion of a car to enable my invention to be understood; Fig. 2, a plan view of the floor frame-work showing the arrangement of the various parts, and, Fig. 3 a diagram view showing the arrangement of the sprocket chains and their connections with the operative shafts and the current reverser and current regulator.

Referring to the drawings, A represents a portion of the frame-work of a car, which may be of any suitable or desired construction, such not entering into the present invention.

B represents a rheostat or resistance of common form wherein the resistance contacts b are arranged in the arc of a circle and are adapted to be swept by a brush b' on the regulating arm b^2 pivoted on the shaft b^3, which, in the present construction is fitted with a sheave b^4 about which a cable or chain may be passed for the rotation of the shaft b^3 and movement of the arm b^2. The actuator in this instance is shown as a tubular shaft c mounted in suitable bearings c', secured as herein shown, to the car fender, or it may be arranged in any other desired position, said tubular shaft at its upper end being provided with an operating wheel c^2, or it may be a crank or other device by which the said shaft may be rotated, the latter at its lower end being fitted with a sprocket wheel c^3 about which an endless sprocket chain c^4 is passed which is extended back and about the sheave b^4 on the regulating device B, and thence as indicated, in Fig. 3 to the opposite end of the car, where it is passed about a sprocket wheel, similar to c^3, and arranged in similar manner, the arrangement of shafts and chains at the opposite end of the car being substantially like the arrangement at the end of the car shown in Fig. 2, as will be understood by reference to Fig. 3. A cable or chain d at each end of the car and attached to the tubular shaft or actuator c is extended over a sheave d' and is attached to a rod or bar d^2 which controls the brake mechanism of the car, movement of the said bar in the direction of the arrow 20 Fig. 2, acting to apply the brakes, while movement in the opposite direction will release the brakes.

The operation of the device so far as described is as follows:—The motor man standing upon the platform of the car by grasping the wheel c^2 and turning the same in the direction of the arrow 25, Fig. 2, will move the sprocket chain c^4 in the direction of the arrows to move the arm b^2 of the regulating device B to cut off the electric current, and at the same time such rotation of the wheel c^2 will cause the cable or chain d to be wound about the tubular shaft or actuator c to thereby move the bar d^2 in the direction of the arrow to apply the brakes. On the other hand, if the wheel c^2 is moved in a direction opposite to that indicated by arrow 25 the cable or chain d will be unwound to release the brake mechanism and the sprocket chain c^4 will be moved in the direction opposite that indicated by the arrows to cause the arm b^2 of the current regulator B to sweep the contacts b and admit current to the motors of the car. Thus it will be seen that to stop the car the wheel c^2 and the shaft or actuator c may be rotated

in one direction in the present instance to the right, such rotation cutting off the current of electricity from the motor, and at the same time applying the brakes to the car to stop the same, while if the wheel c^2 and shaft or actuator c be rotated in a direction opposite to the arrow 25, or to the left, the brakes will be released while the current will be admitted to the motor thus permitting the entire movements of the car to be controlled by the single shaft or actuator c. In the present instance I have arranged within the tubular shaft c at each end of the car a second shaft e fitted at its upper end above the wheel c^2 with an operating device or handle e', and at its lower end, which projects beyond the end of the tubular shaft c, with a sprocket wheel e^2 about which is passed the endless sprocket chain e^3 extending to the opposite end of the car where it is passed about a similar sprocket wheel similarly arranged and operated, see Fig. 3, said sprocket chain when moved operating a reversing switch F of any suitable construction to reverse the polarity of the current in the motor. This inner shaft e is not necessarily moved by rotation of the tubular shaft c, but may remain stationary except when positively rotated by the motor man for the purpose of changing the direction of movement of the car.

While I have herein represented the switch and current regulator as operated through the medium of sprocket chains, still ropes, cables, or other suitable devices may be employed connected with and actuated by the tubular shaft c.

The tubular shaft c may be provided with the usual ratchet wheel $c^\times$, shown only in Fig. 1, to co-operate with a suitable dog controlled by the foot of the motor man, all as usual.

This invention includes within its scope any power brake to be controlled by the actuator instead of the hand brake, herein shown.

I claim—

A tubular shaft, a wheel thereon to rotate it, a shaft arranged within said tubular shaft, and a crank to rotate said inner shaft, the crank being adjacent to and above the wheel, and of a lesser radius, combined with a brake mechanism, a current regulator, intermediate connections between said brake mechanism and current regulator and said tubular shaft, a circuit reverser, and an intermediate connection between it and the inner shaft, rotation of the wheel in either direction positively controlling the current and brake mechanism equally at all times, rotation of the crank reversing the current, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JAMES H. NEAL.

Witnesses:

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FRANCES M. NOBLE.