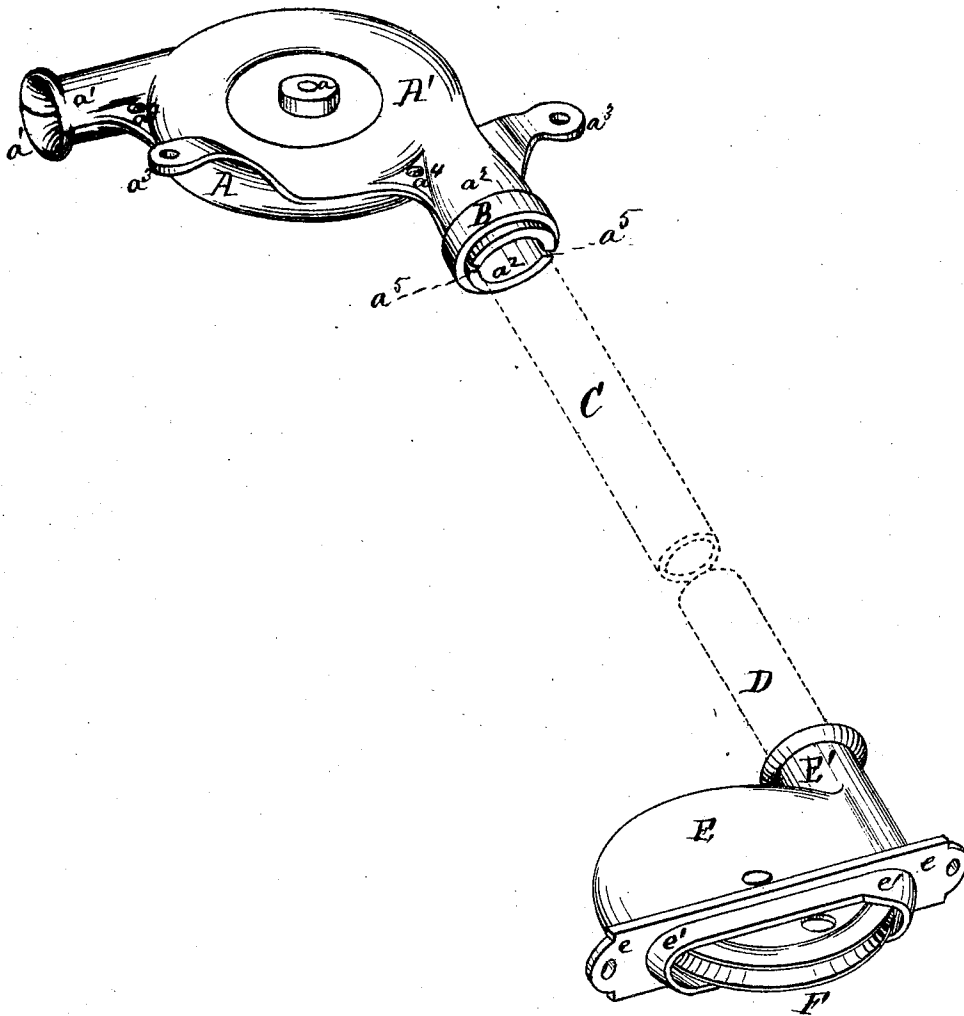


J. STEPHENSON.

Devices for Operating Street-Car Doors.

No. 147,190.

Patented Feb. 3, 1874.



Witnesses.
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UNITED STATES PATENT OFFICE.

JOHN STEPHENSON, OF NEW YORK, N. Y.

IMPROVEMENT IN DEVICES FOR OPERATING STREET-CAR DOORS.

Specification forming part of Letters Patent No. **147,190**, dated February 3, 1874; application filed September 3, 1872.

To all whom it may concern:

Be it known that I, JOHN STEPHENSON, of the city, county, and State of New York, have invented certain new and useful Improvements in Pulleys for Street-Cars, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings making part of this specification, in which—

Figure 1 represents a pulley, adapted more particularly for use at the front end of the car; and Fig. 2 is intended to be employed at the rear end of the car.

In the modern construction of fare-box street-cars, so called, the rear or entrance door is mounted in such manner as to slide laterally, instead of swinging upon hinges, and is operated by the driver by means of a cord or cords, which pass through the hand-rails near the roof of the car. As will be readily understood, the cord, after leaving the hand-rail, must turn at a right angle to slide the door into and out of a recess formed for its reception in the end of the car, and must pass over pulleys placed in the angle thus formed in said cord. The object of my invention is to produce a pulley which shall be especially adapted for this purpose; and to this end the invention consists in, first, mounting the pulley or sheave in an inclosing shell, having a tangential tube or tubes, through which the pull-cord is guided to or from the pulley; second, in combining the hollow hand-rail with the tangential tubes of the pulley-shell, whereby the shell may be made to support the end of the rail, and effectually protect the cord against accidental displacement or injury. The invention further consists in certain details of construction, as will be hereinafter described.

In the drawings, A A' represent a circular shell, case, or box, divided centrally into two parts, and adapted to receive an ordinary grooved pulley or sheave. By preference, I form the pulley with a central hub or boss, which fits into and is supported by a seat, a , cast in each half of the shell, the hub of the pulley being bored so as to admit a rivet, which assists in securing the two parts of the case to each other. $a^1 a^2$ are tubes, cast with the shell, and arranged tangentially to the circle occupied by the sheave, and at right angles to each other. The semi-cylindrical sheaves which

form tube a^2 form less than a complete cylinder, leaving open slots a^5 between their ends, as plainly shown in the drawings. The outside of this tube is made slightly tapering. B is a ring, fitting the tube accurately. C represents the front end of the hand-rail, which fits closely into the end of tube a^2 , in which it is clasped tightly by driving on the ring B, the elasticity of the metal permitting the necessary compression of the two portions of the tube. a^3 are lugs or ears cast upon shell A A', by means of which the device may be secured to the wall of the car. a^4 are webs, through which rivets pass, as shown. D represents the rear end of the hand-rail. E is a shell, usually cast in one piece, and inclosing another pulley, F, one side being open for the insertion of the sheave. This shell has also a tangential tube, E', similar to those attached to shell A A'. e is a flange projecting from shell E, in such relation to the open side e' that when the flange is secured to the wall with the part e' projecting through a mortise, the periphery of the sheave shall be on a line with the inner face of the wall, so that the cord shall pass readily to the door.

It will be understood that two sets of these pulleys and hand-rails are required in those cars in which the driver both opens and closes the door by hand—that is, without the employment of weights or counter-balances—the tubes a^1 in each turning inward toward the driver from each side of the door; and, when preferred, a single continuous cord may extend from one side of the door through tube E', through hand-rails D C, through tubes $a^2 a^1$, across the doorway, and back through the other set of devices to the opposite side of the door; and it is apparent that the cord is entirely hidden from sight and protected from injury from the time it leaves the door until it reaches the driver.

After the pulleys are in position the cord can be thrust through them and through the hand-rail before said rail is inserted in the tubes, after which the rail can be put in place by inserting one end, C, in tube a^2 far enough to permit end D to enter tube E', when it (the rail) may be secured by driving on ring B, as has been explained above. I do not wish to be limited to the method shown of connecting the

rail with the tubes, as they may be screwed in, or any other well-known joint may be adopted; but I regard this as being very convenient and effective.

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

1. The pulley case or shell provided with the tangential tube, one or more, through which the cord is guided to the sheave, substantially as described.

2. The pulley-shell provided with tangential sleeves, in combination with the hollow hand-rail, substantially as described.

3. The pulley-shell A A', provided with lugs

or ears a^3 , for securing said shell to the wall of the car, as set forth.

4. The pulley-shell A A', provided with the circular seats a , in combination with the pulley having projecting hubs, by means of which the pulley is supported in said seats, and with a rivet passing through said hubs to secure the two parts of the shell together, substantially as described.

5. In combination with the tube a^2 , provided with the slots a^5 , the ring B, substantially as and for the purpose set forth.

Witnesses: JOHN STEPHENSON.

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