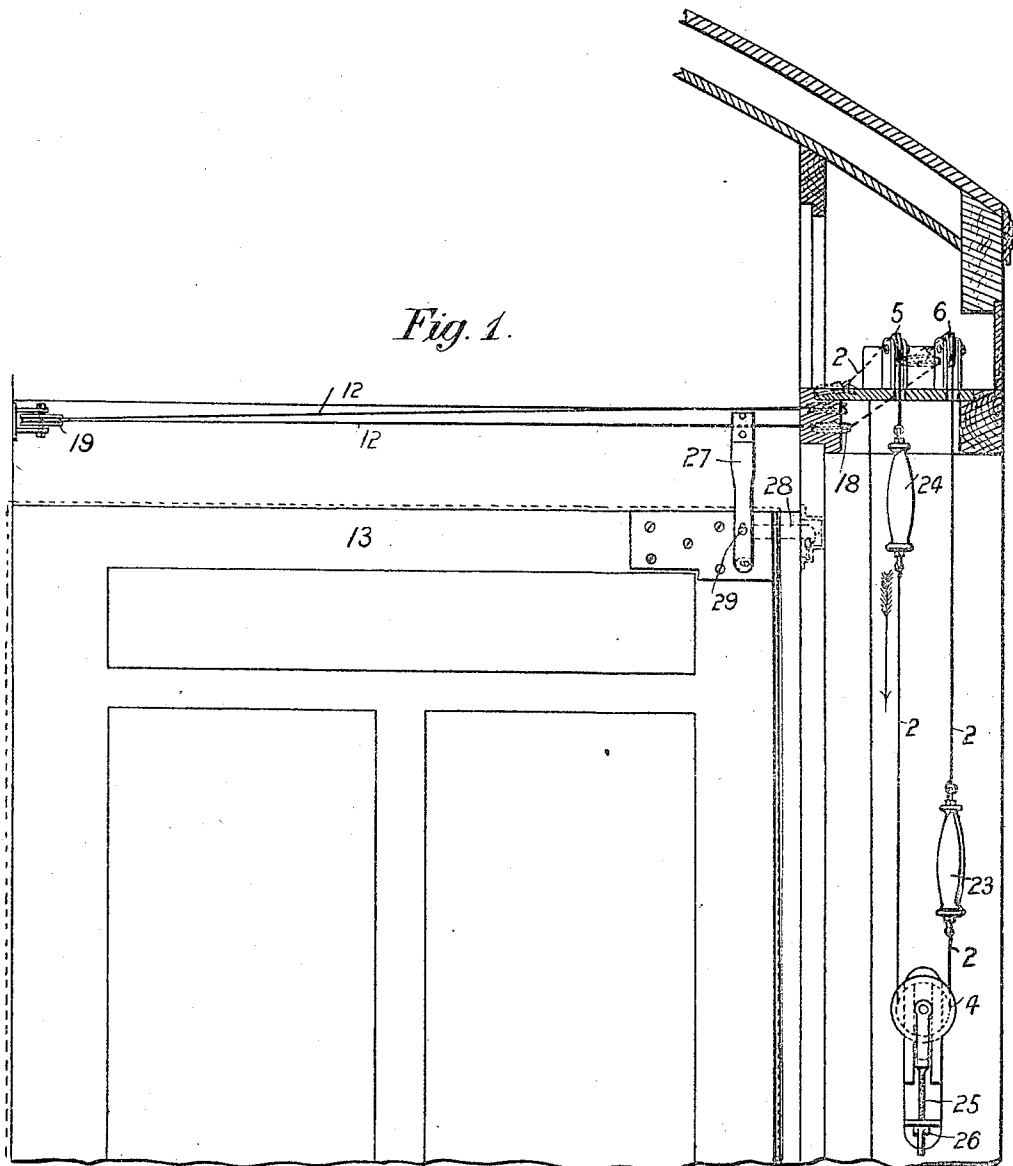


P. WHEELER.
SLIDING DOOR OPERATING MEANS.
APPLICATION FILED MAY 22, 1905.

957,284.

Patented May 10, 1910.
4 SHEETS—SHEET 1.



Witnesses.
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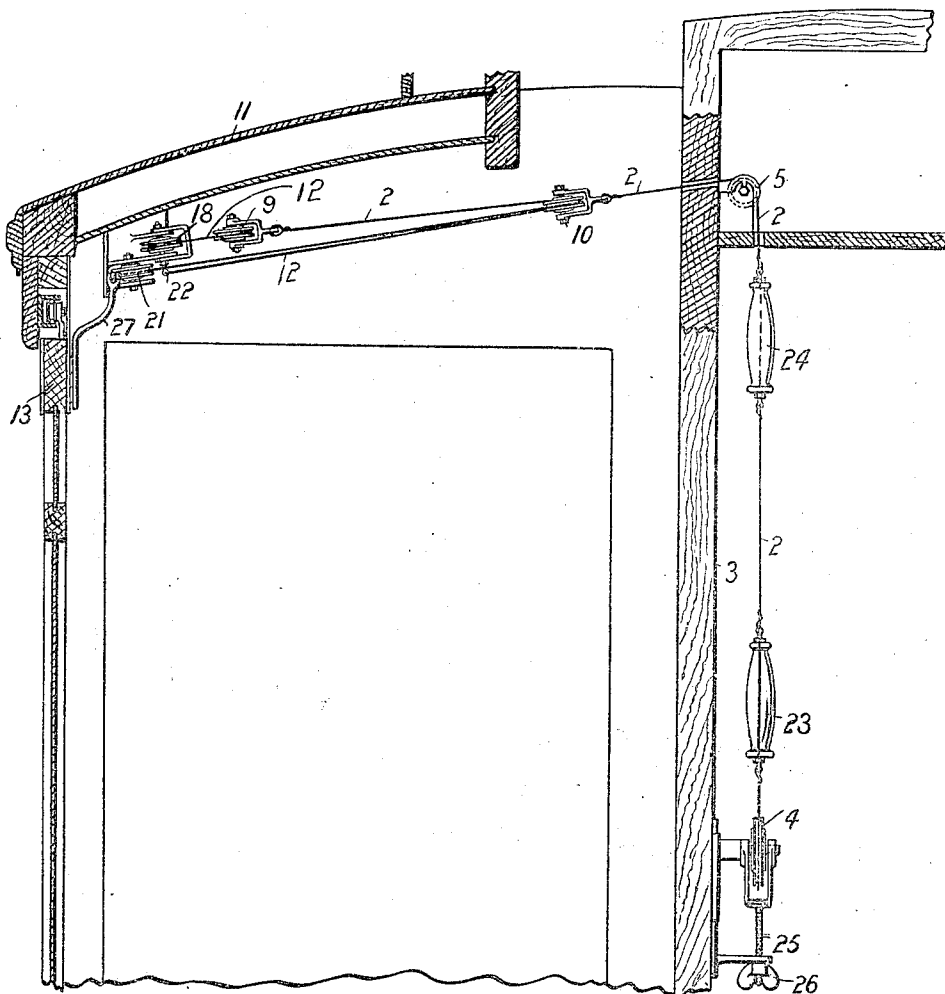
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4 SHEETS—SHEET 2.

Fig. 2.



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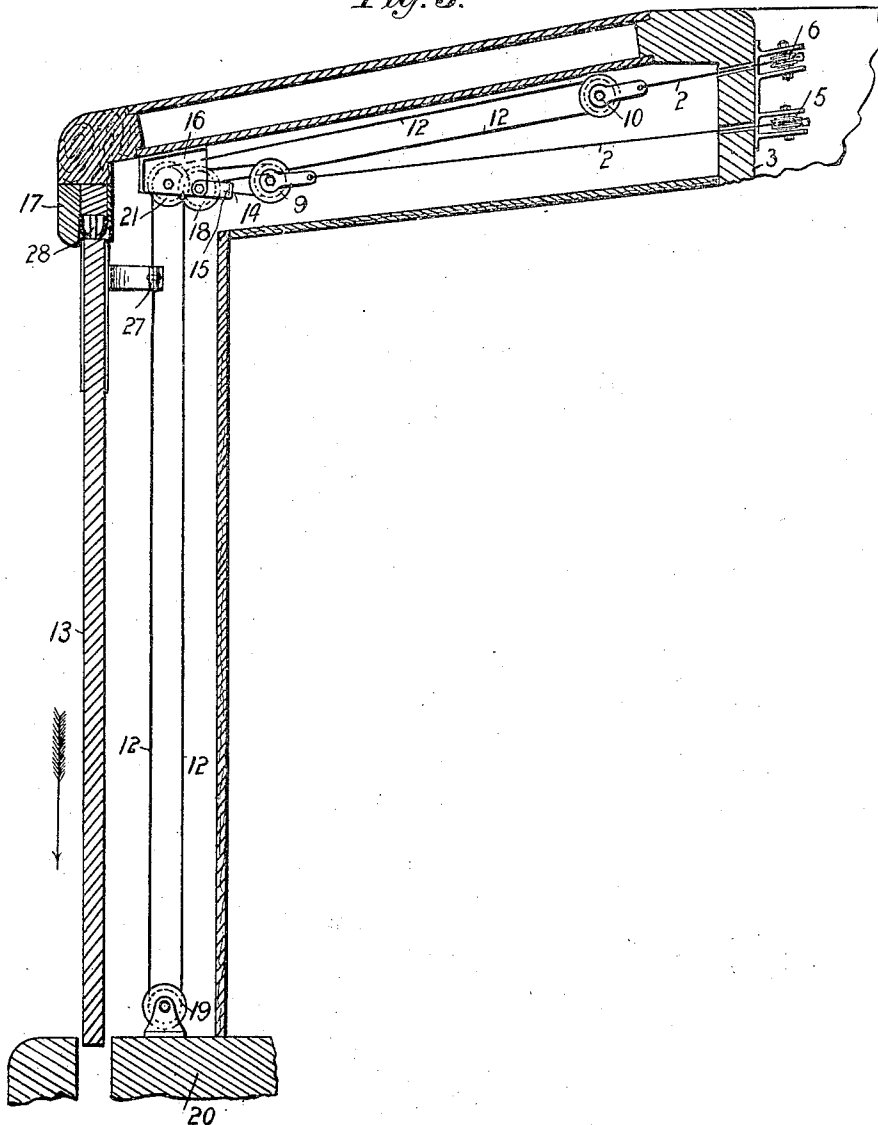
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4 SHEETS—SHEET 3.

Fig. 3.



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4 SHEETS—SHEET 4.

Fig. 4.

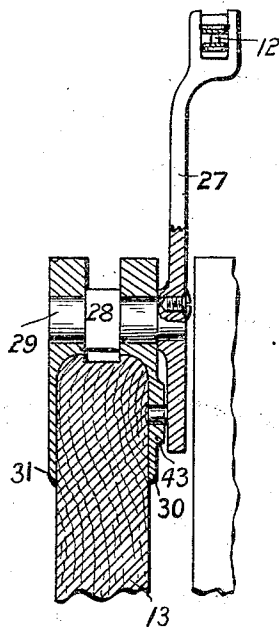


Fig. 5.

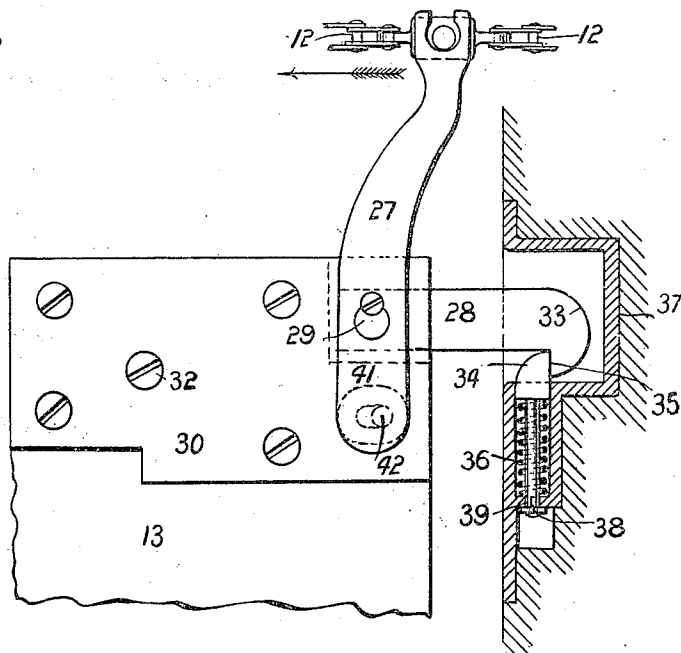
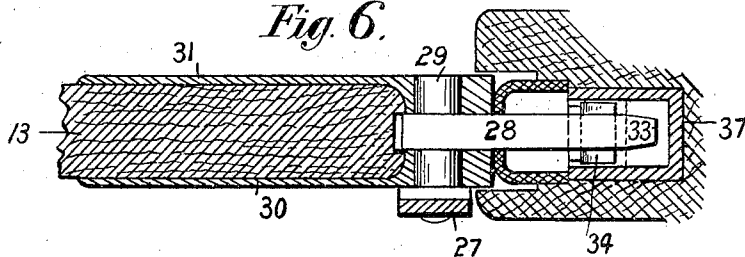


Fig. 6.



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UNITED STATES PATENT OFFICE.

PERCY WHEELER, OF OLDBURY, ENGLAND.

SLIDING-DOOR-OPERATING MEANS.

957,284.

Specification of Letters Patent.

Patented May 10, 1910.

Application filed May 22, 1905. Serial No. 261,609.

To all whom it may concern:

Be it known that I, PERCY WHEELER, a subject of His Majesty, the King of Great Britain and Ireland, residing at Broadwell Road, Oldbury, in the county of Worcester, England, managing director, have invented new and useful Improvements in Sliding-Door-Operating Means, of which the following is a specification.

This invention consists of the herein described improved means for opening and closing the sliding doors of Pullman cars and other railway cars and of tram cars and omnibuses and other vehicles. This invention is so arranged that the doors can be unfastened and opened, or closed and fastened, very expeditiously and with but little exertion on the part of the person operating them and this invention is particularly applicable to Pullman cars and other railway cars as it enables the attendant to unfasten and open, or to close and fasten, the sliding doors of two adjacent cars simultaneously. As an example I will describe my invention as applied to the sliding door of a Pullman car, which sliding door is suspended on overhead rollers or otherwise arranged in the usual way so as to slide easily to and fro.

My invention is illustrated by the accompanying drawings on which—

Figure 1 is a front elevation of the upper part of a sliding door of a Pullman car and a portion of the said car partly in section with my door operating mechanism applied thereto; Fig. 2 is a sectional side elevation of the same; Fig. 3 is a sectional plan of the same; Fig. 4 is a sectional side elevation of the door catch and the lever which operates it; Fig. 5 is a front elevation of the same partly in section and Fig. 6 is a sectional plan of the same.

The same reference numerals indicate the same or corresponding parts in all the figures.

In carrying out this invention I provide in the usual recess at the end of the car or in any other convenient position a wire, cord, or chain, or the like, 2 which for distinction I will call the "operating wire" and which is arranged vertically near the side 3 of the said recess and passes under a bottom pulley 4 and over two overhead guide pulleys 5, 6, and the two ends of this wire are connected to multiplying pulley blocks 9, 10, arranged under the roof 11 of

the car. Around these multiplying pulley blocks 9, 10 passes a wire, cord, chain, or the like, 12 which for distinction I will call the "traveling wire" and which is indirectly connected as hereinafter described to the sliding door 13 and is arranged as follows: The traveling wire 12 is situated by preference above the sliding door 13 and one end 14 of this wire is fixed as by the loop 15 to the bracket 16 which is fixed to the car near the side 17 of the door opening against which the door closes, and then the traveling wire is led round the pulley block 9 and then round a guide roller 18 which is carried by the bracket 16 above referred to, and then in a horizontal direction above the top of the door 13 and round a guide pulley 19 which is fixed to the part 20 of the car frame or body into which the door 13 has to slide when it is being opened in the direction indicated by the arrows in Fig. 3.

The traveling wire 12 after passing round the guide roller 19 is carried back above the top of the door 13 in a horizontal direction and round another guide roller 21 carried by the said bracket 16 and then round the other pulley block 10 and the end 22 of the wire is fixed to any convenient part such for instance as the axle pin of the pulley 18 as shown in Fig. 2. Fixed on the two portions of the operating wire 2 between the bottom pulley 4 and the overhead pulleys 5, 6, there are two handle grips 23, 24, so arranged that when one of the handle grips, that is the handle grip 24, is pulled down, the operating wire 2 is pulled in the direction indicated by the arrows in Fig. 1 thereby pulling the pulley block 9 fixed to this portion of the operating wire and moving the traveling wire 12 in one direction and sliding the door 13 open in the direction indicated by the arrows in Fig. 3. This causes the other handle grip 23 on the operating wire 2 to rise. When this second handle grip 23 is pulled down the operating wire 2 moves in the opposite direction to that indicated by the arrow in Fig. 1 and pulls the other pulley block 10 fixed to the end of the traveling wire 12 thereby causing the traveling wire 12 to travel in the opposite direction to that indicated by the arrow in Fig. 3 and to close the door 13. The wires are kept taut by the bottom pulley 4 being made as an ordinary tension pulley with an adjusting screw 25 and nut 26 or other suitable appliance.

The traveling wire 12 may be fixed directly to the door 13; or, and this is what I prefer, the traveling wire 12 is fixed to the upper end of a lever 27 which operates the catch or fastening 28 of the sliding door 13 so that the first movement of the traveling wire 12 to open the door 13 in acting through the lever 27 lifts the catch 28 and unfastens the door and when the door is by the traveling wire moved from its opened to its closed position the door is fastened closed by the catch 28. This fastening and unfastening mechanism is illustrated on a larger scale by Figs. 4, 5 and 6.

The object of using the multiplying pulley blocks 9, 10, is to obtain the necessary long travel of the traveling wire 12 and sliding door 13 with a smaller movement of the handle grips 23, 24, as the pulley blocks 9, 10 increase the movement as two to one so that the handle grips 23, 24, only move half the distance covered by the sliding door 13. This arrangement I find to work well in practice but it is to be understood that if desired multiplying pulley blocks may be used which will give a movement of more than two to one.

What I claim as my invention and desire to secure by Letters Patent is:—

1. A device for opening and closing sliding doors of railway cars and other vehicles, comprising a lower pulley and a pair of upper pulleys, a traveling flexible element passing around the lower pulley and having both ends passing over the upper pulleys, a multiplying pulley connected to each end of said flexible element, a substantially horizontal traveling flexible element having one end secured to a stationary part and passing around one of the multiplying pulleys, a pair of stationary pulleys arranged at one side of the door, said traveling flexible element after leaving the multiplying pulley passing around the stationary pulleys at one side of

the door and then around the pulley at the other side of the door, then around the other stationary pulley at the other side of the door, then around the other multiplying pulley, and having its end fastened to a stationary part, and means for connecting said horizontal traveling flexible element to the door.

2. An apparatus for opening and closing sliding doors of railway cars and other vehicles, comprising a substantially horizontal traveling flexible element arranged above the door and extending in two parallel lines, and having its ends connected to a stationary part, means for connecting said flexible element with the door, a vertically arranged operating flexible element extending in two vertical lines, pulleys for guiding said flexible elements, and multiplying pulleys secured to the ends of the operating flexible element and over which the traveling flexible element passes.

3. An apparatus for opening and closing sliding doors of railway cars, comprising a horizontally arranged traveling flexible element having its ends secured to stationary parts and arranged in two parallel lines, pulleys for guiding said traveling flexible element, means for connecting said flexible element to the door, means for unlocking the door by said connecting means, a vertically arranged operating flexible element extending in two parallel lines, pulleys for guiding said operating flexible element, and a multiplying pulley connected to each end of said operating flexible element and over which the traveling flexible element passes.

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

PERCY WHEELER.

Witnesses:

CHARLES BOSWORTH KELLEY,
THOMAS JOHN ROWE.