

1,016,948.

2 SHEETS—SHEET 1.

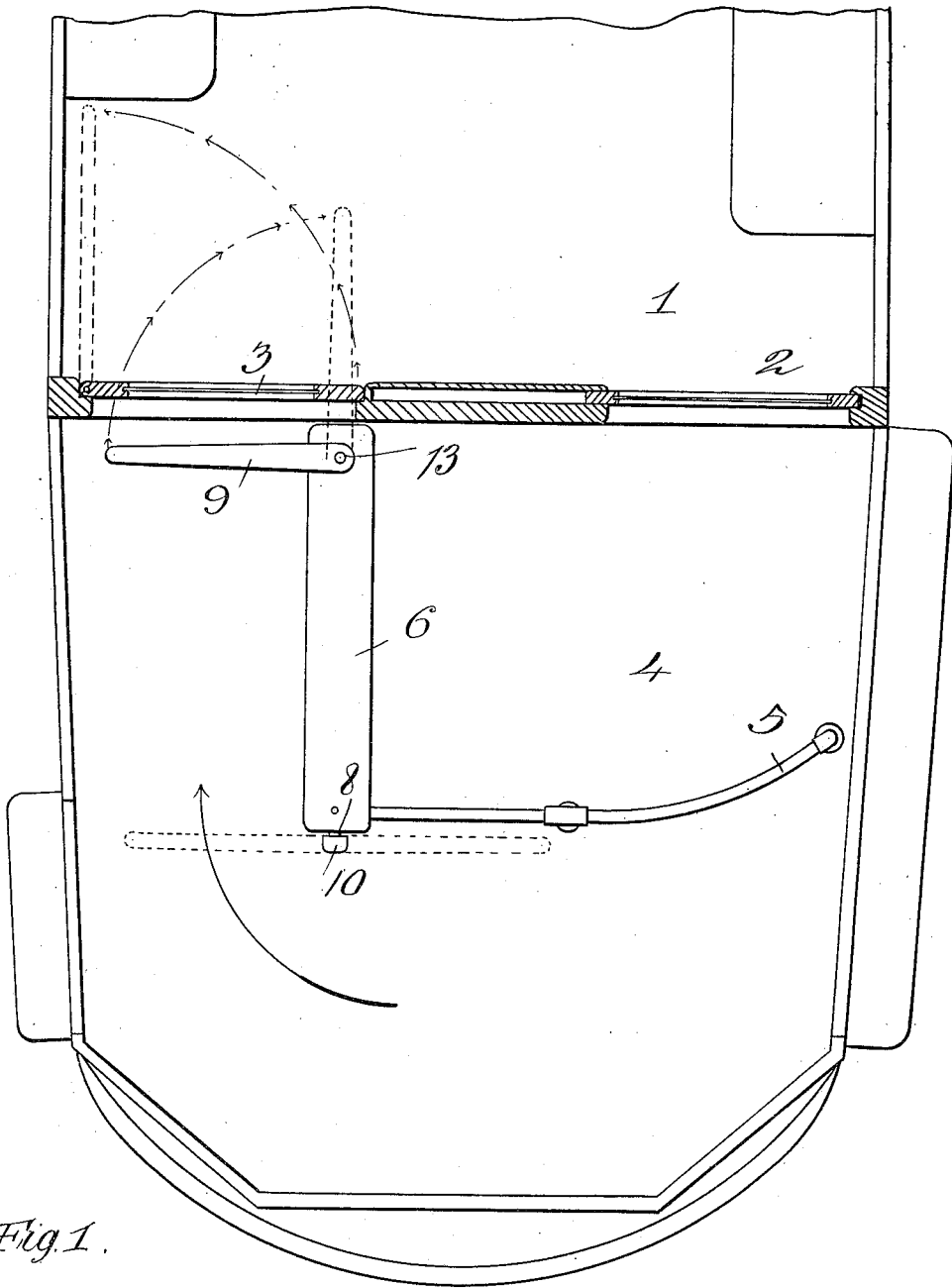


Fig. 1.

Witnesses:
 L. W. Benjamin
 J. H. Radzinsky

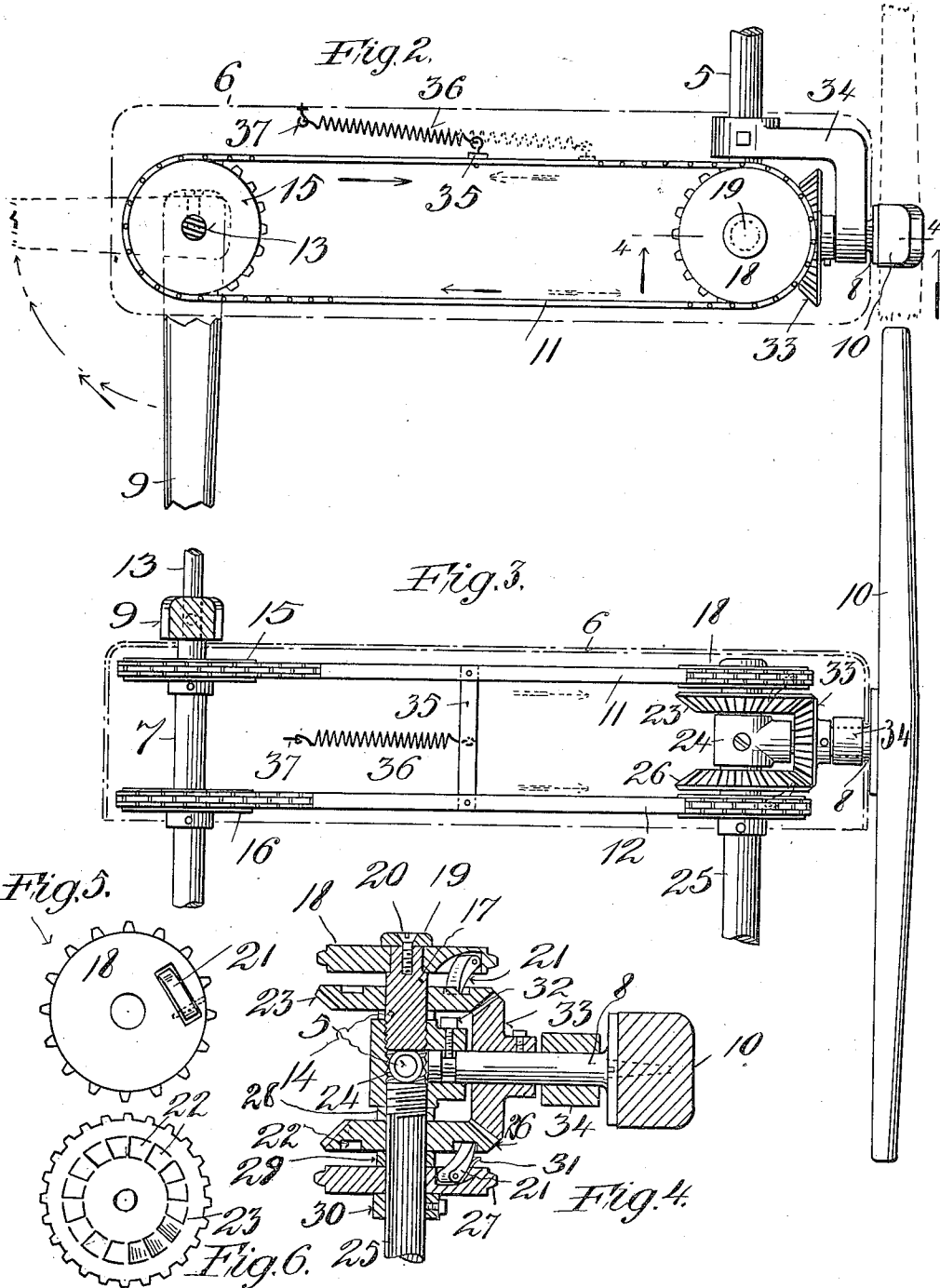
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D. A. L. McDONALD.
TURNSTILE MECHANISM.
APPLICATION FILED SEPT. 27, 1910.

1,016,948.

Patented Feb. 13, 1912.

2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

DUNCAN A. L. McDONALD, OF MONTREAL, QUEBEC, CANADA, ASSIGNOR TO THE PAY-
AS-YOU-ENTER-CAR CORPORATION, OF NEW YORK, N. Y., A CORPORATION OF NEW
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TURNSTILE MECHANISM.

1,016,948.

Specification of Letters Patent. Patented Feb. 13, 1912.

Application filed September 27, 1910. Serial No. 583,984.

To all whom it may concern:

Be it known that I, DUNCAN A. L. McDONALD, a subject of the King of Great Britain, and a resident of Montreal, Province of Quebec, Dominion of Canada, and whose post-office address is care of Montreal Street Railway Company, Montreal, Canada, have invented a new and useful Improvement in Turnstile Mechanism, of which the following is a specification.

The object of my invention is to provide a car of the pay-as-you-enter class in which there will be an entrance where only one passenger is admitted at a time and the passenger while in this part of the car will be separated from other passengers. This object is accomplished by my invention, one embodiment of which is hereinafter set forth.

For a more particular description of my invention, reference is to be had to the accompanying drawings forming a part hereof, in which:

Figure 1 is a sectional-plan view of a car provided with my improvement. Fig. 2 is a plan view of a portion of the mechanism with parts removed to show the structure. Fig. 3 is a side elevation of the structure shown in Fig. 2. Fig. 4 is a sectional view taken on the line 4-4 of Fig. 2, looking in the direction of the arrows. Fig. 5 shows a sprocket wheel. Fig. 6 shows a gear wheel.

Throughout the various views of the drawings similar reference characters designate similar parts.

In the well-known type of pay-as-you-enter-cars 1, is a door 2 provided for exit purposes and a door 3 for entrance. If desired, only one large door may be employed, which is sufficient to allow entering and departing passengers to move at the same time without interfering with each other. Large platforms 4 are provided for this purpose and have rails 5 which separate the incoming from the outgoing passengers.

In the particular embodiment of my invention herein shown, the rail 5 has an enlarged casing 6 through which extends the vertically disposed stud shaft 7, near the door 3, and at the other end, a horizontally disposed shaft 8. The shaft 7 supports a bar 9 which is horizontally disposed and adapted to rest, in its normal position, parallel with the door 3 when in its closed position, and on the shaft 8 is mounted a bar 10 which is normally in a vertical position. The

casing 6 incloses the mechanism, described below, which causes the bars 9 and 10 to move in unison in a manner hereinafter set forth. The casing 6 conceals two sprocket chains 11 and 12 which run on sprocket wheels mounted on vertical shafts 7 and 14, respectively. The shaft 7 is fixed to the sprocket wheels 15 and 16 which it carries by means of collars and set screws or in any other suitable manner. The shaft 7 is extended upwardly, as far as desired, to form a shaft 13, which is connected with any suitable register in the conventional manner.

The shaft 14 is more complicated than the shaft 7 for reasons that will appear below. Its upper member 17 carries a sprocket wheel 18 which runs loosely thereon and is held in place at its lower edge by a shoulder and at its upper by means of a washer 19, which is held in place by a screw 20. The sprocket wheel 18 coöperates with the sprocket wheel 15 to carry the sprocket chain 11 and is provided with a pawl 21 which is pivotally mounted on its lower surface and adapted to engage ratchet teeth 22 on the upper surface of a beveled gear 23, which is loosely mounted on the stud shaft 17 below the sprocket 18. This construction causes the sprocket wheel to move the beveled gear 23 when rotating in one direction, but not when rotating in the other. If made as shown in Fig. 4, the gear wheel 23 is turned when the sprocket wheel 18 moves clockwise, but not when the sprocket wheel 18 moves anti-clockwise.

The stud shaft 17 is secured in a T by screw threads or otherwise, and so is a second stud shaft 25 which carries a beveled gear 26, a sprocket wheel 27 and suitable collars 28, 29 and 30, which secure the beveled gear 26 and the sprocket wheel 27 in proper positions on the shaft 25. The lower surface of the gear 26 is provided with teeth 22 which are adapted to be engaged by a pawl 21 carried by the sprocket 27. As the pawl 21 which is carried by the sprocket 27 works against the action of gravity, it is controlled by a leaf spring 31 in the conventional manner. The sprocket 27 and the beveled gear 26 are so connected and arranged that the sprocket 27 will drive the gear 26 in the reversed direction from the direction of movement of the gear 23. In Fig. 4 the structure is shown so that the gear 26 is driven in an anti-clockwise direction only.

The T 24 carries a set screw 32 which enters an annular recess on the stud shaft 8 and near the end thereof. This stud shaft 8 has a beveled gear 33 fixed thereon and protrudes through a suitable bearing 34, secured to the railing 5, in any desired manner. If desired, the railing 5 may be extended into the T 24 to make a strong connection. The beveled gear 33 meshes with the beveled gears 23 and 28 and by one or the other of them is always driven in the same direction so that the upper end of the bar 10 is shifted to the left of a person entering the car. This is important because all danger of injuring a person so entering the car is obviated. If the movement were reversed, the upcoming end might strike and injure a passenger. The precise manner in which the stud shaft 8 is fixed to the bar 10 is immaterial. It is sufficient if these parts be fixed together in any suitable manner as by a face plate and screws.

The sprocket wheel 27 is so arranged and disposed that it coöperates with the sprocket wheel 16 to carry the sprocket chain 12. The sprocket chains 11 and 12 might be continuous as they move in both directions. Their intermediate portions may be straps, if desired. These chains are united by a crossbar 35 to the center of which is secured a coiled spring 36 that connects this crossbar to an eyelet 37, which is fixed in any suitable structure, as the casing 6.

In view of the foregoing description of my invention, its operation will be readily understood. Assuming the parts to be as shown in Fig. 1, a passenger enters the car at the rear of the rail 5 and passes to the bar 9. At this point he pays his fare and then opens the door 3, if necessary, and then shifts the bar 9 to the position shown in dotted lines, thereby rotating the shaft 7 and causing the same to move clockwise for about 90 degrees, and thereby puts the spring 36 in tension, as shown by dotted lines in Fig. 2. This movement of the bar 9 causes the sprocket wheels, through the mechanism described, to drive a gear wheel 23 clockwise, which causes a corresponding movement of the beveled gear 33 and forces the bar 10 to change from a vertical to a horizontal position, thereby blocking the space opposite the casing 6, as indicated by the dotted lines in Fig. 1. When the passenger releases the bar 9, the spring 36 causes this bar to return with an anti-clockwise movement to its initial position and the return movement, through the beveled gear 26, forces the bar 10 to continue its movement through another angle of 90 degrees or thereabout, until it resumes a vertical position. In other words, while the bar 9 oscillates in a horizontal plane through an

angle and back, the bar 10 shifts in a vertical plane through double the angle and always moves in the same direction.

While I have shown and described one embodiment of my invention, it is obvious that it is not restricted thereto, but is broad enough to cover all structures that come within the scope of the annexed claims.

What I claim is:

1. In a device of the class described, a railing supporting two bars, means connecting said railing and bars, so that one of said bars moves in a horizontal plane and the other moves in a vertical plane, and mechanism connecting said bars, so that when the horizontally disposed bar swings through an angle of or about 90° and back, the vertically disposed bar will swing through an angle of or about 180°.

2. In a device of the class described, a railing supporting two bars, one adapted to oscillate through an angle in a horizontal plane and one adapted to rotate in a vertical plane, and mechanism connecting said bars.

3. In a device of the class described, a railing supporting two bars, shafts on which said bars are mounted, intermeshing bevel gears, sprocket chains, sprocket wheels on one of said shafts, sprocket wheels operatively connected with said bevel gears and coöperating with said chains, and pawl and ratchet mechanism connecting said bevel gears and the adjacent sprocket chains so that one of said bars will oscillate and the other will rotate.

4. In a device of the class described, a railing supporting two bars, shafts on said railing fixed to said bars, stud shafts adjacent to one of said bars, sprocket wheels and chains connecting said stud shafts and one of said shafts, bevel gears adjacent to said sprocket wheels on said stud shafts, pawl and ratchet mechanism connecting said last mentioned sprocket wheels and said bevel gears, and an additional bevel gear fixed to the shaft to which one of said arms is fixed and adapted to be driven by either of said first mentioned bevel gears, and means for driving said bars in one direction.

5. In a device of the class described, a railing supporting two bars, shafts to which said bars are secured, means for connecting said shafts so that when one bar is oscillated through an angle in a horizontal plane, the other bar is rotated in a vertical plane.

Signed at the city of Montreal this 22nd day of August, 1910.

DUNCAN A. L. McDONALD.

Witnesses:

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S. DESJARDINS.