

CAR DOOR MECHANISM.

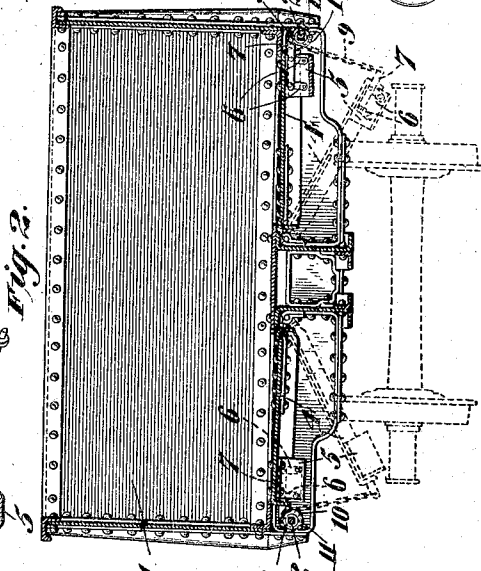
942,108.

Fig. 1.

Fig. 2.

Fig. 7

Fig. 6.



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CAR-DOOR MECHANISM.

942,108.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, RALPH V. SAGE, a citizen of the United States, residing in the borough of Westmont, in the county of Cambria and State of Pennsylvania, have invented certain new and useful Improvements in Car-Door Mechanism; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to operating and locking the drop doors of gondola or other cars, and the object of the invention is to provide quick and effective means for closing a series of car doors by employing a shaft, provided with worms, flexible connections or chains winding thereon, and means for securing the individual doors when in their closed position independently of each other and of the chains.

Briefly stated, the invention consists in using a locking mechanism in connection with a worm-shaft and chain, or other flexible connection, such mechanism consisting of a bar pivoted to the door and adapted to rest on the end of the worm when the door is in its closed position.

In order to simplify the description and illustration, I have shown my improved car door mechanism as applied to what is known as a steel drop-bottom gondola car, although my improvements are equally applicable to other forms of cars, as may be readily understood.

In the accompanying drawings forming part of this specification and in which similar characters refer to corresponding parts—Figure 1 is a view in side elevation of a portion of a railway car, provided with my improved locking mechanism; Fig. 2 is a transverse vertical section of a car similarly provided; Fig. 3 is a side elevation of one of the worms with a portion of the chain attached thereto; Fig. 4 is an end view of the construction shown in Fig. 3; Fig. 5 is also an end view of the same construction taken from the opposite end of the device; and Fig. 6 is a view in section of the locking mechanism. Fig. 7 is a separate perspective view of my pivoted locking-bar 7 showing its supporting links and attachment of the chain for closing the door and drawing the bolt into its locking position.

Referring to the drawings in detail, 1 represents

the body of a car provided with longitudinal shafts 2 located at the sides immediately beneath the floor and having worms 3 mounted thereon at points adjacent to the drop doors 4. U-shaped plates 5 (see Fig. 6) are secured to the under sides of these doors at the ends thereof and serve to support the locking mechanism. This mechanism consists of two short links 6 pivoted to the lower portion of the plate and extending upwardly, and bars 7 to which the short links are pivoted in the manner shown in Figs. 2 and 6 of the drawings. The outer ends of the bars 7 project beyond the end of the door, and have openings through which a bolt 8 is passed, the latter having secured thereto a chain 9 connecting with the worm 3 on the horizontal shaft. The bars 7 and their connecting bolt will be termed the locking-bar. The worm is provided at one end with ears 10 through which pass bolts 11 for securing the chain. These ears have several openings, as shown in Figs. 4 and 5, in order to provide for adjustment. At the opposite end of the worm the flange is slightly deflected and formed into a lug 12 for engaging the end of the bars 7.

The operation of my apparatus in closing the car door is as follows: Referring to Fig. 2 of the drawings, in which the drop-doors are shown in their lowered positions, the shaft 2 is rotated in a proper direction by the use of a wrench applied to the ratchet mechanism 13, or other suitable means, causing the flexible connection or chain 9 to be wound upon the worm 3. When this has proceeded sufficiently to allow the extreme end of the locking-bar to come close to or in contact with the surface of the worm 3, the winding of the shaft is continued in the same direction, whereby the end of the locking-bar moves upward and around the worm and finally is projected over and rests upon the upper surface of the said worm, thus serving as a positive support and lock for the doors. I may substitute a cylindrical sleeve for the worm or may omit it altogether, using the surface of the winding-shaft itself as a bearing for the locking-bar. However, I prefer to use a worm, as under certain conditions it distributes the chain more evenly and prevents kinks in the same. The use of some such secondary member to form the bearing surface is economical in that it is easily renewed and, owing to its larger circumference, does not spread the

wound-up chain over as great a distance as would the winding-shaft itself, so that the bolt is subjected to less pull in a sidewise direction. In unlocking the door, the rotation of the shaft and the worm thereon in the reverse direction causes the lug to come in contact with the end of the locking-bar throwing it inwardly, releasing it from its bearing on the worm and allowing the door to drop into the position shown in dotted lines in Fig. 2. It will be observed that when the doors are in their closed position each door is held by its individual lock, the principal function of the chain being to close the unlocked door. The shaft is well out of the way of the cargo and the advantages resulting from a wide door-opening are secured.

While I have shown and described my invention in considerable detail, I do not wish to be limited to the exact construction specified; but may use such substitutions, modifications or alterations as fall within the scope of the invention set forth in the claims. What I claim as new and desire to secure by Letters Patent is:

1. In a car door locking mechanism, a shaft, a sleeve thereon, a door, means for connecting the door with the sleeve, and a pivoted locking-bar secured to the door and bearing on said sleeve when the door is closed.

2. In a car door locking mechanism, a shaft mounted on the car-body, a door, means for connecting the same with the shaft, and a pivoted locking-bar secured to the door, said bar having a bearing on the shaft when the door is closed.

3. In a car door operating and locking mechanism, a shaft revolubly mounted on the car-body, a winding sleeve thereon, a swinging door, a locking-bar connected thereto by pivoted links, and a flexible connection between the sleeve and the locking-bar, whereby the rotation of said shaft closes the door, and then projects the locking-bar over and upon the upper surface of the sleeve, locking and supporting said door.

4. In a car door locking mechanism, a shaft mounted on the car-body, a swinging door, means for connecting the same with the shaft, and a pivoted locking-bar secured to the door, said bar having a bearing on the shaft when the door is closed.

5. In a car door locking mechanism, a shaft mounted on the car-body, a door, means for connecting the same with the shaft, a pivoted locking-bar secured to the door, said bar having a bearing on the shaft, and means for releasing the locking-bar.

6. In a car door locking mechanism, a shaft mounted on the car-body, a door and means for connecting the same with the shaft, a pivoted locking-bar secured to the door, said bar having a bearing on the shaft,

and a lug for releasing the locking-bar upon the rotation of the shaft in unlocking the door.

7. In a car door locking mechanism, a shaft mounted on the car-body, a door, a chain connecting the same with the shaft and a pivoted locking-bar secured to the door, said bar having a bearing on the shaft when the door is closed.

8. In a car door locking mechanism, a shaft mounted on the car-body, a door, a chain connecting the same with the shaft, a pivoted locking-bar secured to the door, said bar having a bearing on the shaft, and means for releasing the locking-bar.

9. In a car door locking mechanism, a shaft mounted on the car-body, a door, a chain for connecting the same with the shaft, a pivoted locking-bar secured to the door, said bar having a bearing on the shaft, and a lug for releasing the bar when the shaft is rotated in unlocking the door.

10. In a car door locking mechanism, a shaft mounted on the car-body, a sleeve thereon, a door, a pivoted locking-bar on the door bearing on the sleeve when the door is closed, and a chain connecting the locking-bar with the sleeve.

11. In a car door operating mechanism, a shaft mounted on the car-body, a sleeve thereon, a door, a locking-bar on the door bearing on the sleeve when the door is closed, a chain connecting the locking-bar with the sleeve, and a lug on the sleeve for releasing the locking-bar.

12. In a car door locking mechanism a shaft mounted on the car-body, a sleeve thereon, a door, a pivoted locking-bar on the door bearing on the sleeve when the door is closed, a chain connecting the locking-bar with the sleeve, and a lug on the sleeve for releasing the locking-bar.

13. In a car door locking mechanism, a shaft mounted on the car-body, a sleeve thereon, a door, a U-shaped plate secured thereto, a locking-bar pivoted to the plate and adapted to rest on the sleeve when the door is closed, a chain connecting the locking-bar with the sleeve and a lug on the sleeve for releasing the locking-bar.

14. In a car door locking mechanism, a shaft mounted on the car-body, a sleeve thereon, ears on the said sleeve, a door, a U-shaped plate secured thereto, a locking-bar pivoted to the latter and adapted to rest on the sleeve when the door is closed, a chain connecting the pivoted locking-bar with the ears on the sleeve, and a lug on the sleeve for releasing the locking-bar.

15. In a car door locking mechanism, a shaft mounted on the car-body, a sleeve thereon, ears on said sleeve, a door, a U-shaped plate secured thereto, a shaft, pivoted links secured to the plate, a locking-bar pivoted thereto and adapted to rest on

the sleeve when the door is closed, a chain connecting the pivoted locking-bar with the ears on the sleeve, and a lug on the sleeve for releasing the locking-bar.

secured to the door and having a bearing on 10 said shaft when the door is closed.

In testimony whereof I hereto affix my signature in the presence of two witnesses.

RALPH V. SAGE.

Witnesses:

WM. J. FITZMAURICE, Jr.,

CYRUS E. BROWN.

5 16. In a car door locking mechanism, a shaft, a door the body of which when closed is entirely in a higher horizontal plane than said shaft, means for connecting the door with the shaft, and a pivoted locking bar