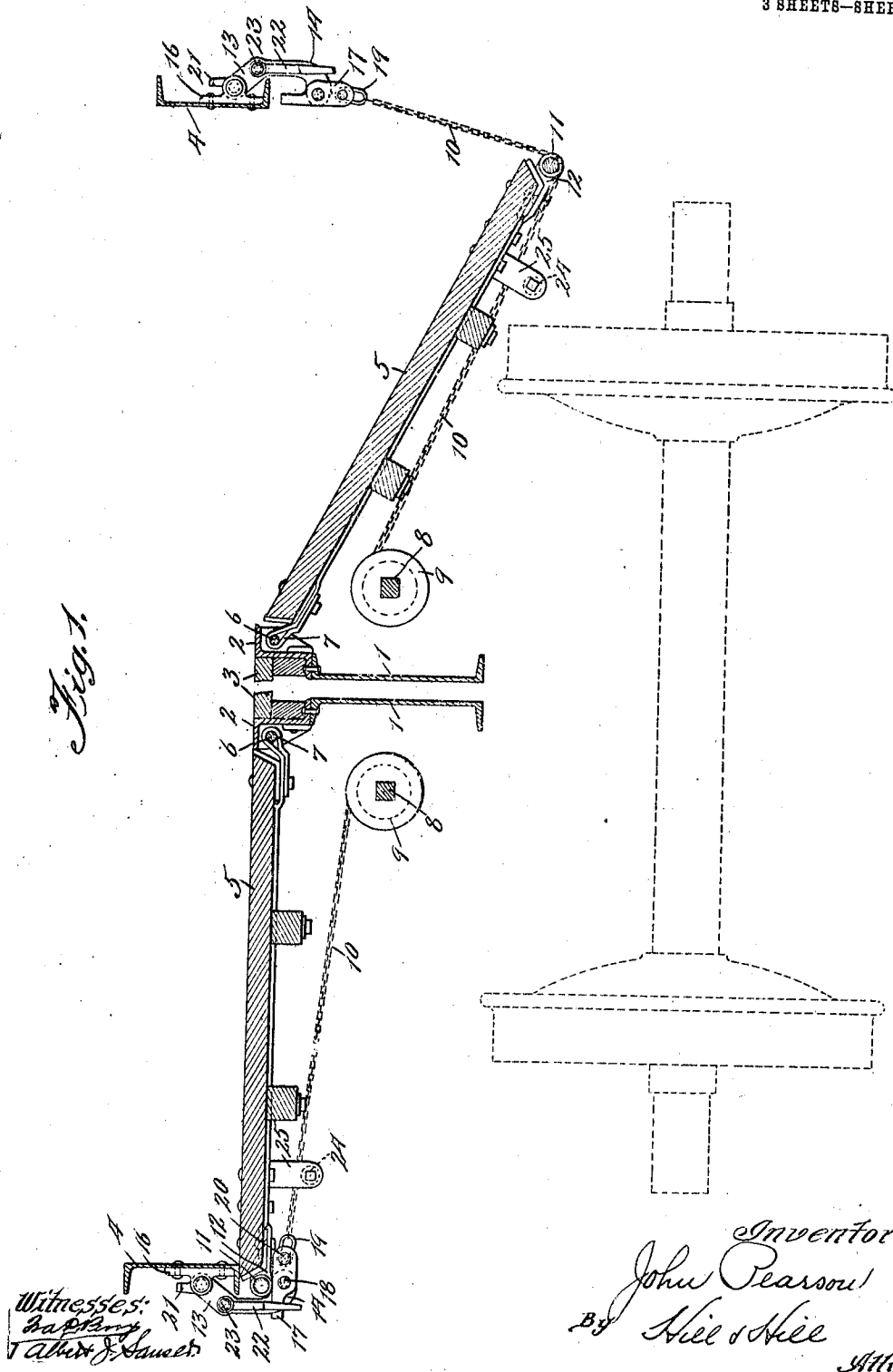


J. PEARSON.
DOOR MECHANISM.
APPLICATION FILED DEC. 16, 1908.

945,108.

Patented Jan. 4, 1910.
3 SHEETS—SHEET 1.



945,108.

Patented Jan. 4, 1910.
3 SHEETS—SHEET 2.

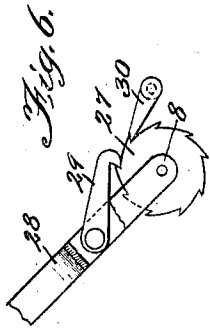


Fig. 3

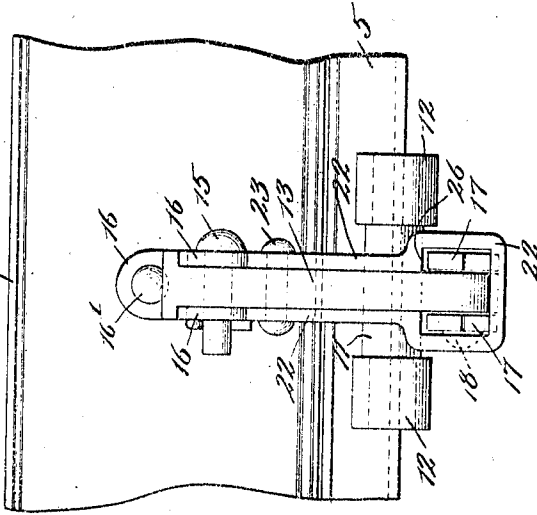
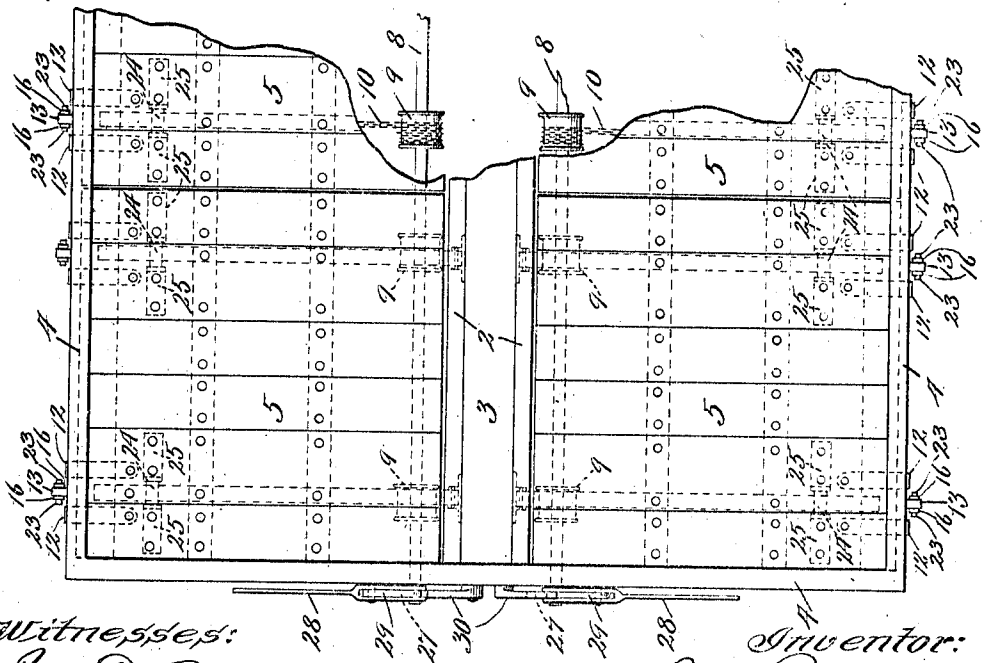


Fig. 2.



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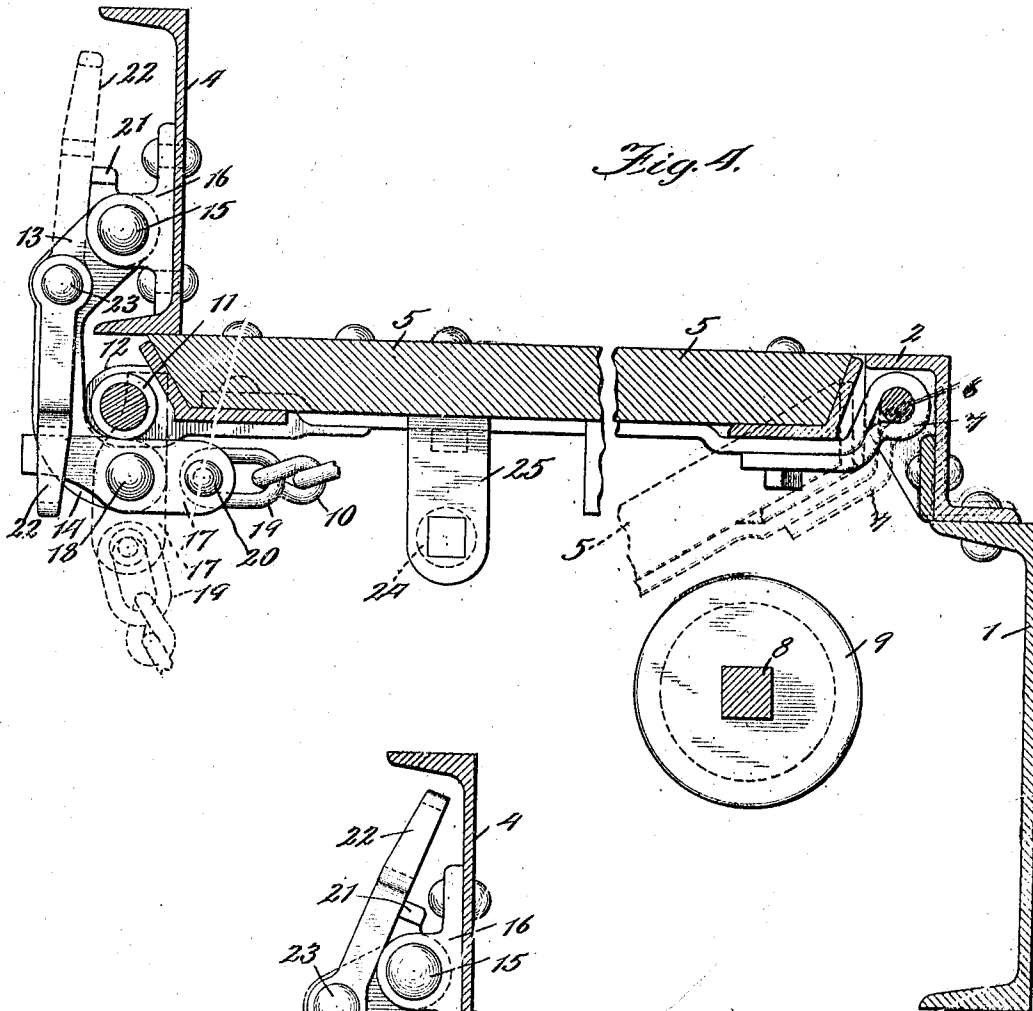


Fig. 4.

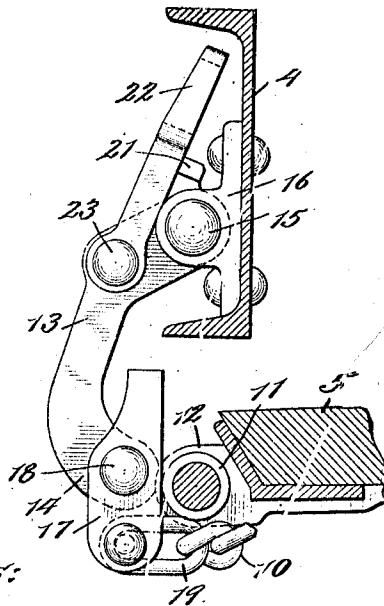


Fig. 5.

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UNITED STATES PATENT OFFICE.

JOHN PEARSON, OF CHICAGO, ILLINOIS.

DOOR MECHANISM.

945,108.

Specification of Letters Patent.

Patented Jan. 4, 1910.

Application filed December 16, 1908. Serial No. 467,839.

To all whom it may concern:

Be it known that I, JOHN PEARSON, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Door Mechanism, of which the following is a description.

My invention belongs to that class of devices known as door operating and controlling mechanism, and more particularly a dump car door mechanism, and has for its objects the production of a simple, efficient and satisfactory device of the kind described.

While in the drawings the device is shown as applied to car construction, it is obvious that it may be used wherever it may be found applicable.

To this end my invention consists in the novel construction, arrangement and combination of parts herein shown and described and more particularly pointed out in the claims.

In the drawings wherein like reference characters indicate like or corresponding parts, Figure 1 is a cross sectional view of a portion of a car with my preferred mechanism applied thereon, one door closed and one door opened. Fig. 2 is a top elevation of a portion of the car showing several doors, Fig. 3 is a front elevation of one of the preferred forms of door locking and supporting members, Fig. 4 is an enlarged side elevation of the same, Fig. 5 is an enlarged side elevation of the same with the parts in different positions, and Fig. 6 is a view showing simple means for operating winding shaft.

Referring to the drawings the car is not shown complete in all its details as this forms no part of my invention, it being understood that my construction may be used on any form of car to which it is applicable. As shown the car is provided with a plurality of dump doors 5—5 on each side thereof, the same being hinged longitudinally the car and arranged to form the bottom of the car when closed.

Referring particularly to Fig. 1, beams 1—1 and 4—4 are preferably provided and arranged lengthwise at the center and sides of the car forming a part of the car body which is supported upon the car trucks (not shown) in any suitable way. The doors 5 as shown in this figure are arranged on each side of the center beams 1 and pivotally sup-

ported by means of brackets carried by the beam 2. A floor 3 of any suitable material may be arranged as shown if desired. The doors 5 may be secured to the body of the car in any suitable way, straps 7 and pins 6 giving a simple and convenient construction. The outer or free edges of the doors are supported by suitable locking and supporting means carried by the car, preferably by the beams 4—4. Referring to Fig. 1 the left hand door 5 is closed while the right hand door is open or in a dumping position.

In the preferred construction as mentioned the door is supported and controlled by a suitable member and controlling and locking means provided for said member. The supporting means comprises a locking and supporting member 13 which is pivotally secured by a pin 15 or its equivalent to a suitable bracket 16 carried by the beam 4. There are preferably a plurality of locking members for each door, two being shown in the drawings, a description of one and its operation sufficing for both it being understood that they operate at the same time. The supporting or locking member 13 is provided with a hooked end 14 or its equivalent at which is preferably pivotally secured a link 17 on each side thereof, the links being connected by a pin 20 or the equivalent. On each side of the beams 1—1 is arranged what may be termed a winding shaft 8 the same being suitably supported from the car body and provided with drums 9 or the equivalent. A chain 10 or an equivalent flexible member connects the links 17 with the drum 9, the chain being suitably secured to the drum or winding shaft and to the links 17 by means of the link 19 or the equivalent.

The door 5 is preferably provided with a roll 11 or its equivalent upon the free edge at each of the locking members 13, the same being supported or secured to the door by the brackets 12—12 or equivalent means for the purpose. A locking pawl 22 may be provided on the supporting member 13 at 23 if desired, the purpose of the same being more fully explained hereafter.

Referring to Fig. 4 in which the door is shown in its closed position the chain 10 is under a strain, that is, wound on the drum 9 so that the links 17 and supporting member 13 are in substantially the position shown, the roll 11 resting on the hooked end 14 of the supporting member 13 so that the weight

of the door is carried by the members 13 and the beam 4, the links 17 and chains 10 acting as controlling means and preventing the supporting member 13 from swinging out. It might be noted that the center of the roll 11 is slightly outside the center of the pin 18. When it is desired to open the doors the locking pawls 22 are turned up into the position shown in Fig. 5 and the shaft 8 then turned so as to slack or unwind the chain 10. The weight of the door then causes the supporting member 13 to swing out the chain being slackened so that the parts assume positions as shown in Fig. 5. It might be noted that a very slight movement of the link would tend to assist in disengaging the member 13 and the roll 11. As the shaft 8 is further rotated and the chain 10 unwound from the drum 9 the doors drop into the positions shown on the right in Fig. 1, there being sliding or roll contact between the roll 11 on the free edge of the door and the chain 10 which supports the door when not supported by the members 13. To close the doors the shaft 8 is rotated in a direction to strain or wind the chain 10 upon the drum 9 so that the doors are lifted thereby the links 17 substantially lifting the rolls 11 upon the hooked end 14 of the members 13 when it reaches that point so that the parts assume their positions to support the doors as shown in Fig. 4. It might be mentioned that the links may be proportioned to give any desired leverage in lifting the rolls upon the supporting members or that is throwing them into operative positions. The locking pawls 22 pivotally secured to the members 13 by means of a pin 23 or the equivalent are arranged to lock the links 17 into the position shown in Fig. 4, the shoulder 26 (see Fig. 3) cooperating with the link should the chain break and so prevent the doors from opening. The supporting member 13 is preferably provided with an extended portion 21 which is adapted to throw the locking pawl 22 down during the operation of lowering the door after it has been turned up as heretofore mentioned so that the locking pawls are automatically reset and are always in operative position when the doors are closed. If desired the doors may be provided with auxiliary rolls 24 carried by the brackets 25 which are adapted to cooperate with chain 10. Any suitable means may be employed to operate or rotate the shaft 8 a very simple arrangement being shown in Fig. 6. Referring to this figure a ratchet 27 is arranged on the end of the shaft and operated by means of a lever 28 and pawl 29, a pawl 30 preventing the shaft from slipping back when a new engagement is made between pawl 29 and the ratchet 27.

It is thus seen that in the construction shown there is substantially no weight of the door on the chains or straining of the chains

except while the door is being opened or closed, nor is the door in its closed position supported by the chain or winding shaft but directly from the frame of the car. It is obvious that there may be any number of doors and that they may be arranged on the car body in any suitable way, that is transversely or longitudinally or that the construction of the car body and doors may be such as is desired.

Having thus described my invention it is obvious that various immaterial modifications may be made in the construction and combination of parts herein shown and described without departing from the spirit of my invention, hence I do not wish to be understood as limiting myself to the exact construction shown and described.

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

1. In a device of the kind described and in combination, a door, locking means for said door, a flexible member having one end secured to said locking means and having a sliding connection with said door, and means for straining said flexible member as desired.

2. In a device of the kind described and in combination, a door pivotally supported at one edge thereof, locking and supporting means arranged at the opposite edge thereof and adapted to cooperate therewith, comprising a supporting member pivotally secured to the door supporting means, flexible means having one end secured to said supporting member, and means for straining said flexible means, said flexible means having sliding contact with the free edge of said door.

3. In a device of the kind described and in combination, a car door pivotally secured at one edge thereof to the car, a locking member for said door arranged at the free edge thereof and pivotally secured to the car, a link arranged on said locking member, a winding shaft and flexible means connecting said shaft and said link.

4. In a device of the kind described and in combination a car door pivotally hinged at one edge to the car and provided with a roll at the opposite edge, a locking and supporting member therefor arranged at the free edge thereof and pivotally carried by the car, said member provided with a hooked end, a link pivotally secured to said lock at said hooked end thereof, a locking pawl for said link, a winding shaft, and a flexible member having one end secured to said shaft and the other end to said link and arranged to cooperate with said roll.

5. In a device of the kind described and in combination, a door pivotally supported at one edge thereof, locking means arranged at the opposite edge thereof and adapted to cooperate therewith when closed, comprising a

plurality of supporting members pivotally carried by the door supporting means, a flexible member for each of said supporting members having one end secured thereto and the other end provided with means for straining the same.

6. In a device of the kind described and in combination, a car door pivotally secured at one edge to the car, a plurality of locking members arranged at the free edge of said door and pivotally carried by the car, a link arranged on each of said locking members on each side thereof and pivotally secured thereto at a point inside the edge of the door, a winding shaft and means connecting said shaft and said links.

7. In a device of the kind described and in combination, a plurality of car doors each pivotally supported at one of the edges thereof, a plurality of locking supporting members for each of said doors when closed arranged at the free edge thereof and pivotally carried by the car, each of said members provided with a hooked part adapted to engage the free edge of the door, a winding shaft, a chain for each of said supporting members secured to said shaft and means for connecting the other end of said chains with said supporting members.

8. In a device of the kind described and in combination, a door, and locking means for said door normally engaging the same when closed but arranged to be disengaged therefrom by the weight of the door, and means for raising the door and controlling said locking means when the door is closed.

9. In a device of the kind described and in combination, a door supporting means therefor engaging therewith and arranged to be disengaged by the weight thereof, and means for normally retaining said door and supporting means in engagement, said retaining means arranged to support the door when disengaged from said supporting means.

10. In a device of the kind described and in combination, a door, supporting means therefor arranged to engage the door when closed and means for normally drawing and maintaining the supporting member in operative position comprising flexible means for raising the door to its closed position and means for straining said flexible means.

11. In a device of the kind described and

in combination, a car door pivotally secured at one edge thereof to the car, one or more door locking supporting members carried by the car at the free edge of said door and arranged to normally support the door when closed, means for controlling said supporting members arranged to support the door when open and automatic auxiliary locking means carried by said supporting members.

12. In a device of the kind described and in combination, a door hinged at one edge thereof, means for engaging and supporting the free edge of the door when closed and locking the same in its closed position and flexible controlling means for said supporting means arranged to support the door in its open position.

13. In a device of the kind described and in combination, a plurality of car doors, each of said doors hinged to the car and provided with rolls at the free edge thereof, a plurality of hooks pivotally carried by the car and arranged to engage the free edge of each of said doors when closed at said rolls, and means for raising said doors and drawing the hooks in the operative positions when the doors reach their closed positions.

14. In a device of the kind described and in combination, a plurality of car doors, each hinged on one edge thereof to the car, a plurality of members for each of said doors carried by the car arranged to substantially engage the free edges of said doors opposite the hinged edges thereof and support and lock the door in its closed position, each of said members provided with substantially a lifting link thereon, a winding shaft and flexible means for supporting the door when open and controlling said supporting members.

15. In a device of the kind described and in combination, a door pivotally supported at one edge thereof, a plurality of hooks at the opposite side of the door arranged to engage the same, and means for drawing said hooks into operative position.

In testimony whereof, I have hereunto signed my name in the presence of two subscribing witnesses.

JOHN PEARSON.

Witnesses:

ROY W. HILL,
CHARLES I. COBB.