V. M. SUMMA.

DUMPING CAR DOOR.

APPLICATION FILED JUNE 15, 1910.

1,109,603.

Patented Sept. 1, 1914.

3 SHEETS—SHEET 1.

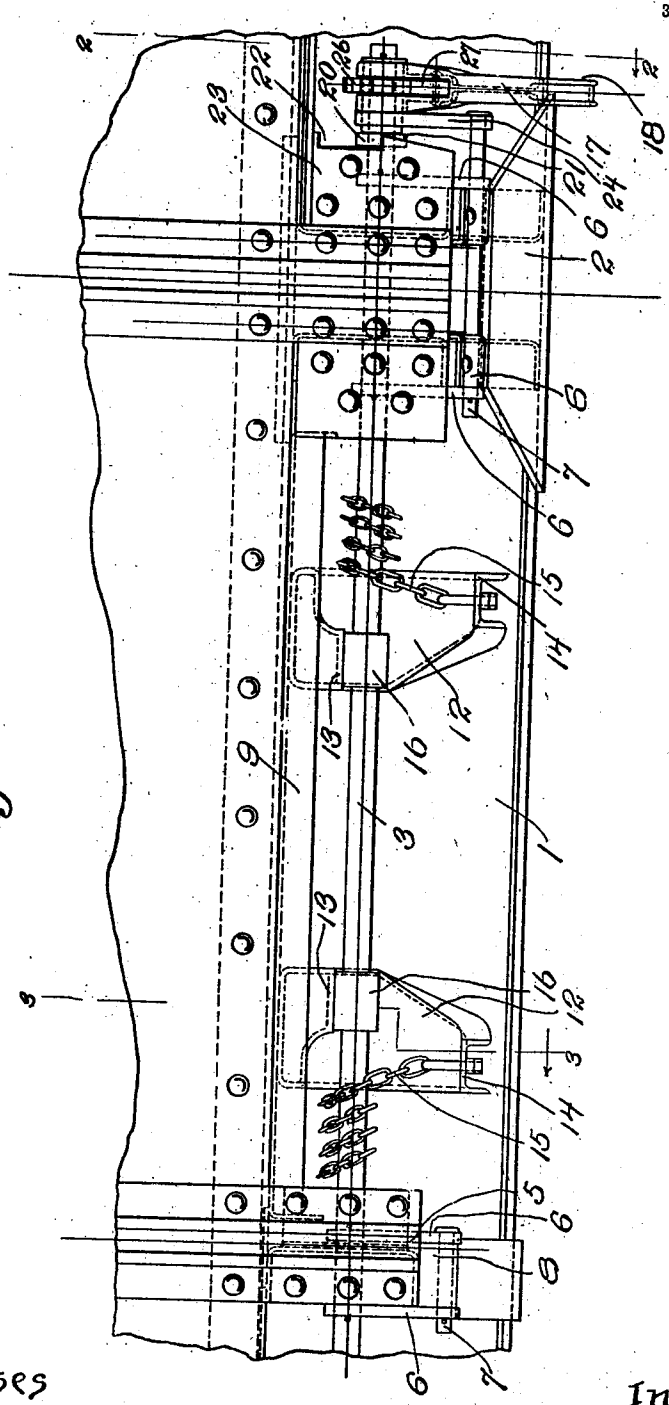


Fig. 1.

Witnesses
P. A. Kolb
Edgar M. Kitchin

Inventor
Victor M. Summa
By F. H. Gibbs
Attorney

V. M. SUMMA.

DUMPING CAR DOOR.

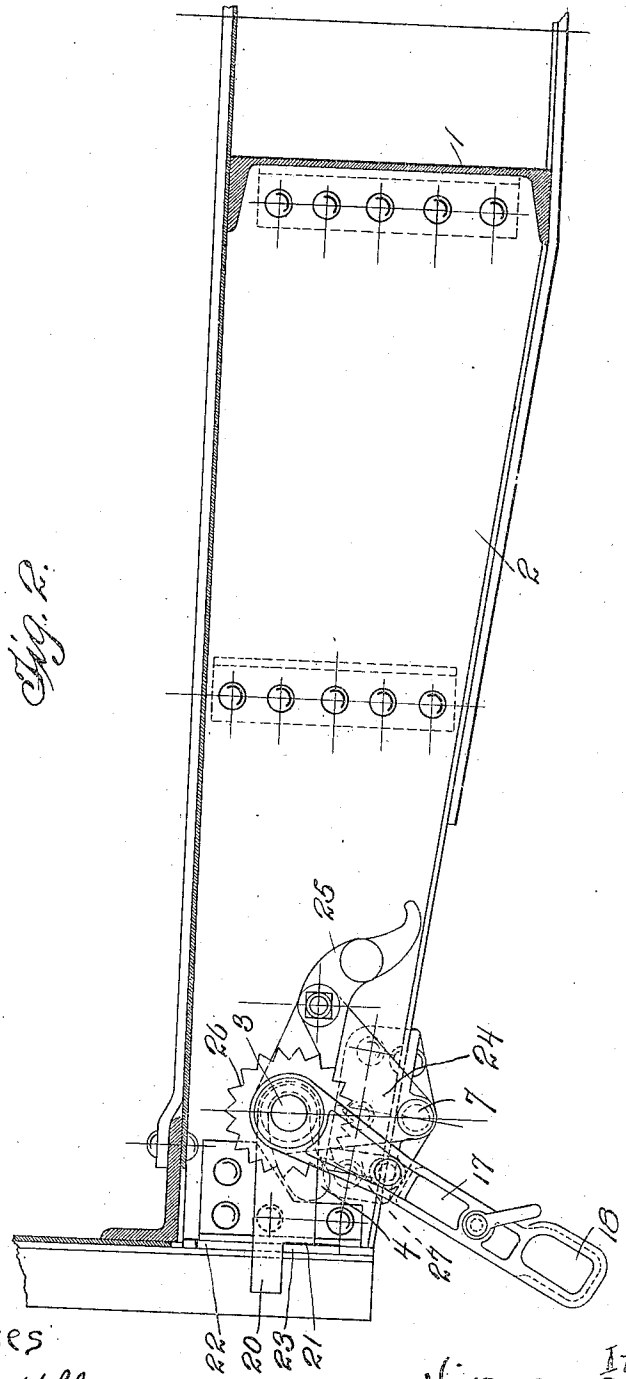
APPLICATION FILED JUNE 15, 1910.

1,109,603.

Patented Sept. 1, 1914.

3 SHEETS—SHEET 2.

Fig. 2.



Witnesses

F. A. Kolle

Edgar M. Fitchin

Inventor

Victor M. Summa

By F. H. Gibbs

Attorney

V. M. SUMMA.

DUMPING CAR DOOR.

APPLICATION FILED JUNE 15, 1910.

1,109,603.

Patented Sept. 1, 1914.

3 SHEETS—SHEET 3.

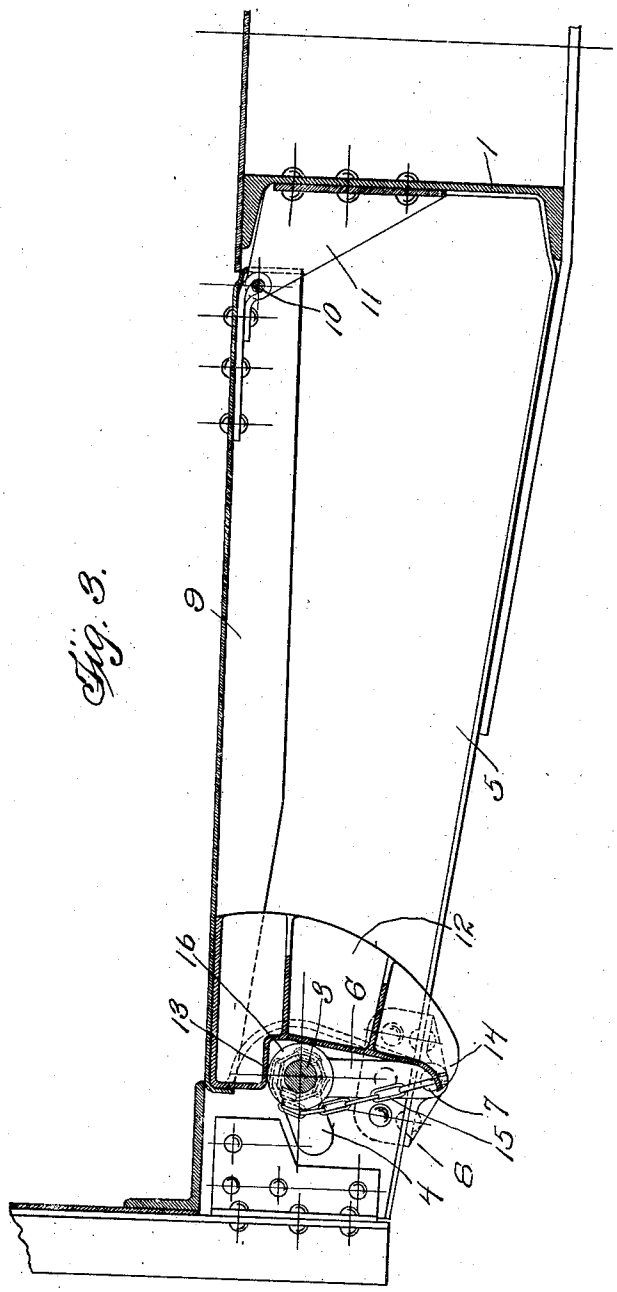


Fig. 3.

Witnesses

F. A. Kolb

Edgar M. Kitchin

Inventor

Victor M. Summa

By F. H. Gibbs

Attorney

UNITED STATES PATENT OFFICE.

VICTOR M. SUMMA, OF ST. LOUIS, MISSOURI, ASSIGNOR TO AMERICAN CAR AND FOUNDRY COMPANY, OF ST. LOUIS, MISSOURI, A CORPORATION OF NEW JERSEY.

DUMPING-CAR DOOR.

1,109,603. Specification of Letters Patent. Patented Sept. 1, 1914.

Application filed June 15, 1910. Serial No. 567,105.

To all whom it may concern:

Be it known that I, VICTOR M. SUMMA, residing at St. Louis, Missouri, and being a citizen of the United States, have invented certain new and useful Improvements in Dumping-Car Doors, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and to use the same, reference being had to the accompanying drawings, which illustrate the preferred form of the invention, though it is to be understood that the invention is not limited to the exact details of construction shown and described, as it is obvious that various modifications thereof will occur to persons skilled in the art.

In said drawings: Fig. 1 is a view in side elevation of a fragment of a car illustrating an embodiment of the present invention. Figs. 2 and 3 are transverse, vertical sections therethrough taken respectively on the planes indicated by lines 2—2 and 3—3 of Fig. 1.

Referring to the drawings by numerals, 1 indicates one of the center sills of a car, 2 a bolster, and 5 a floor beam or other cross bearer. The outer ends of the diaphragms of the bolster and the web of each floor beam are each formed with an arcuate slot 4, and a shaft 3 extends longitudinally of the car and through said slots and is bodily movable therein, said shaft being supported by links 6, 6, being journaled in the upper ends thereof. The lower ends of links 6 are journaled on pins 7, 7 extending through bearings in castings 8 riveted to the lower edges of the respective diaphragms of the bolster and the lower edge of the floor beam. Between the bolster and the next contiguous floor beam and between the floor beams are arranged bottom doors 9, each hinged at its inner edge, as at 10, to a bracket 11 fixed to and outstanding from the respective center sill 1. Obviously, as many doors 9 may be provided as desired and a series of such doors is preferably provided at the opposite sides of the center sills, the door operating mechanism being duplicated on the opposite sides of the car.

Each door 9 is provided with a pair of spaced, depending, cast brackets 12 each having an overhanging shoulder 13 and an outwardly turned lower terminus 14, said terminus not extending beyond the edge of the door, but lying substantially in the longitudinal vertical plane of the car occupied by the outer or free edge of the door. A chain 15 is fixed to the outstanding lower terminus of each bracket 12 and extends upwardly and is fixed at its upper end to shaft 3 at a point spaced longitudinally of the shaft from the transverse vertical planes of the car occupied by the respective bracket 12, said chain in operation being adapted to be wrapped about the shaft by rotation of the shaft for raising the door, as hereinafter specified. A sleeve 16 is mounted on shaft 3 for each bracket 12 in the transverse vertical planes of the car occupied by the respective shoulder 13, each of said sleeves being either fixed to or left loose upon the shaft 3 according to whether or not it is desired to have the same serve as a roller according to the load to be carried and the resultant frictional engagement of the overhanging shoulder 13 when the door is in the closed position.

Shaft 3 is engaged preferably at each end, by a link 24 mounted to swing in the same arc with links 6, and may be mounted on some of pins 7. Each link 24 has an inwardly extending portion pivotally carrying a locking pawl 25 which is disposed for engaging a ratchet wheel 26 fixed to the respective end of shaft 3. Each ratchet wheel 26 is engaged by an operating pawl 27 carried by a lever 17, loosely engaging shaft 3 which lever is bifurcated to receive its respective ratchet. Each lever 17 is adapted to oscillate about shaft 3 for rotating the same with a step-by-step movement through the action of the operating pawl and ratchet and the locking pawl. The outer end of each lever 17 is provided with an operating handle 18 adapted to be grasped for manually pulling or thrusting the lever longitudinally. Each link 24 of course swings with the shaft 3 in the bodily shifting of the shaft, and thus the pawl and ratchet mechanism is always maintained in operative relation to the shaft.

In operation, when the doors 9 are closed, and are sustaining the load, to dump the

same, it is only necessary to grasp the handles of levers 17 and draw the same outwardly causing the shaft 3 to travel bodily outwardly throughout the length of arcuate slots 4, the shaft swinging outwardly with its supporting links 6, and the sleeves 16 being thus moved from beneath the overhanging shoulders 13, thus releasing the doors 9 and allowing the same to drop downwardly, swinging on their hinges 10. As the doors 9 swing downwardly, the chains 15 are freely paid out by the shaft 3, the said shaft being left free to revolve. After the dumping of the car and when it is desired to close the doors 9, it is only necessary to oscillate levers 17, the pawls thereof being positioned to engage the ratchets for revolving shaft 3 and taking up chains 15. As the said chains are taken up, the depending brackets 12 are elevated and the doors 9 swung upwardly to the closed position. As soon as the doors have arrived in their closed position, the shaft 3 being still out at the outer terminus of the slots 4, the shaft is caused to continue to revolve, thus taking up a little more of the chains 15, which effects an inward travel of the shaft bodily longitudinally of the slots, and its movement is continued until the sleeves 16 are positioned beneath the shoulders 13 and disposed for taking directly the load from the outer edge of the door, the downward component being taken up through the shaft, its links and their journals and journal bearings. The inward bodily shifting of shaft 3 is accompanied by but a relatively small amount of rotary movement of the shaft, such movement being accommodated by each chain 15 swinging inwardly on the upper end of the lowermost link as a pivot, such lowermost link having a fixed, rigid connection with the respective bracket 12. Obviously, if such final or closing rotation is found to shift shaft 3 laterally with difficulty, an inward, longitudinal thrust of levers 17 may accompany the final rotation of shaft 3 for seating the shaft beneath the shoulders of brackets 12.

As a positive lock for retaining shaft 3 against accidental release in transit, said shaft is engaged, near each end thereof, by a locking key 20. Each key 20 consists of a plate having its inner end formed with a semi-circular notch receiving shaft 3, and its outer end provided with a shoulder 21, the portion of the key above the shoulder extending through aperture 22 formed in the bolster and stake gusset plate 23. When shaft 3 is in its inner or closed position, the engagement of keys 20 prevents any outward or bodily movement thereof, and when it is desired to release the shaft, the outer ends of keys 20 are elevated until shoulders 21 are alined with apertures 22: whereupon the shaft 3 is free to be drawn outwardly, each aperture 22 being of sufficient size to allow the free passage of the shoulder of the respective key.

What I claim is:—

1. In a flat bottom car, the combination with cross bearers and a dumping door, of a shaft bodily movably sustained by said cross bearers, a bracket fixed to and depending from the door below said shaft and having an outstanding shoulder, the shaft being adapted to be moved to and from a position beneath said shoulder, and a flexible connection between the shaft and the lower portion of the bracket.

2. In a car, the combination with a hinged door, of a rotatably mounted shaft, movably mounted means for supporting the same, said supporting means being designed for adapting the shaft to move bodily to and from a position beneath the door, a bracket depending from the door a distance greater than the distance between the lower surface of the door and the lowermost point of the shaft when beneath the door, and a flexible connection between the shaft and bracket.

3. In a car, the combination with a hinged bottom door, of a rotatably mounted shaft, movably mounted means for supporting the same, said supporting means being designed for adapting the shaft to move bodily to and from a position beneath the door, a shouldered bracket fixed to and depending from the door below said shaft and adapted when the door is closed to extend past the shaft with the shoulder overhanging the shaft, means for moving the shaft to and from a position beneath said shoulder, and flexible connection between the shaft and bracket.

4. In a car, the combination with a hinged bottom door, of a rotatably mounted shaft, movably mounted means for supporting the same, said supporting means being designed for adapting the shaft to move bodily to and from a position beneath the door, a shouldered bracket, fixed to and depending from the door below said shaft and adapted when the door is closed to extend past the shaft with the shoulder overhanging the shaft, means for moving the shaft to and from a position beneath said shoulder, a sleeve on said shaft adapted to be engaged by said shoulder, and a flexible connection between the shaft and bracket.

5. In a car, the combination of a hinged door, a bodily, laterally shiftable, rotatably mounted shaft movable beyond the free edge of the door, a rockable support for said shaft, rockably supported on an independent support below the shaft a bracket depending from the door and lying substantially within the longitudinal vertical plane of said free edge, and a flexible connection between the bracket and shaft.

6. In a car, the combination of a hinged door, a bodily, laterally shiftable, rotatably

mounted shaft movable to and from a position beneath the door, a rockable support for said shaft rockably supported on an independent support below the shaft the door being adapted in opening to swing past the shaft, and a flexible connection between the shaft and door.

7. In a car, the combination of a door, a bodily shiftable shaft adapted to support the door when in one of its positions, a rockable support for said shaft rockably supported on an independent support below the shaft and means for locking the shaft against bodily movement when in the door supporting position.

8. In a car, the combination with a support, of a door, a bodily shiftable shaft adapted to support the door in one of its positions, a rockable support for said shaft, and a key engaging the support and adapted to engage and lock the shaft in its door supporting position.

9. In a car, the combination with a frame having an apertured plate, of a door, a bodily shiftable shaft adapted to support the door in one of its positions, and a key having one end engaging the shaft and the other end extending through the aperture of said plate and formed with a shoulder engaging the plate.

10. In a car, the combination of a door, a bodily shiftable, rotary mounted shaft adapted to actuate the door, a rockable support for said shaft and pawl and ratchet mechanism shiftable with the shaft for rotating and governing rotation of the shaft.

11. In a car, the combination of a door, a shaft for actuating the same, a swinging link rotatably supporting the shaft, a link swinging on the same pivot as the first mentioned link, a ratchet wheel fixed to the shaft, and pawl mechanism carried by the second mentioned link and engaging the ratchet wheel.

12. In a door operating means, rockable means, a shaft movable therewith and rotatably mounted near one end of said rockable means, fixed members supporting the opposite end of said rockable means with slots in said fixed members limiting the movement of said shaft.

13. In a door operating means, the combination comprising a door, slotted transverse members extending below the door, rockable links pivotally mounted on said transverse members, a shaft carried by said rockable links and movable in the slots of said transverse members and means for lifting the door and moving said shaft under the door when in closed position.

14. In a door operating means, the combination comprising a door, slotted transverse members extending below the door, rockable links pivotally mounted on said transverse members, a shaft carried by said rockable links and movable in the slots of said transverse members and a chain connected with said door and said shaft.

15. In a door operating means, the combination comprising a door, slotted transverse members extending below the door, rockable links pivotally mounted on said transverse members, a shaft carried by said rockable links and movable in the slots of said transverse members and means for causing said door to close and to lock it in closed position.

16. In a door operating means for railway cars, an underframe, a door, links pivotally supported by said underframe and adapted to swing to relatively vertical position under the free edge of said door, a shaft supported by the upper part of said links and flexible means connecting said shaft and said door.

17. In a dumping car, a dumping door, a shaft and door lifting means connecting the door and shaft, and rockable means supporting said shaft.

18. In a dumping car, a combination comprising a slotted member, a door, and rockable links supporting a shaft in said slotted member, the shaft being movable in said slotted member under said door.

19. In a dumping car a door operating shaft, rockable links supporting said shaft and the shaft being movable transversely of the car in guide slots both under and away from a door.

20. In a dumping car, a door, a slotted underframe member, a rockable member supported by said slotted member entirely below said door, and a door operating shaft carried by the rockable member and guided in the slot of the slotted member, the shaft being movable under and away from the door.

21. In a dumping car, slotted underframe members, a door, a door operating shaft movable in slots of said underframe members, supporting means on said underframe members, and rockable shaft-supporting links pivotally connected with said supporting members.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

VICTOR M. SUMMA.

Witnesses:
CHARLOTTE MITZE,
J. H. BRUEGGEMAN.