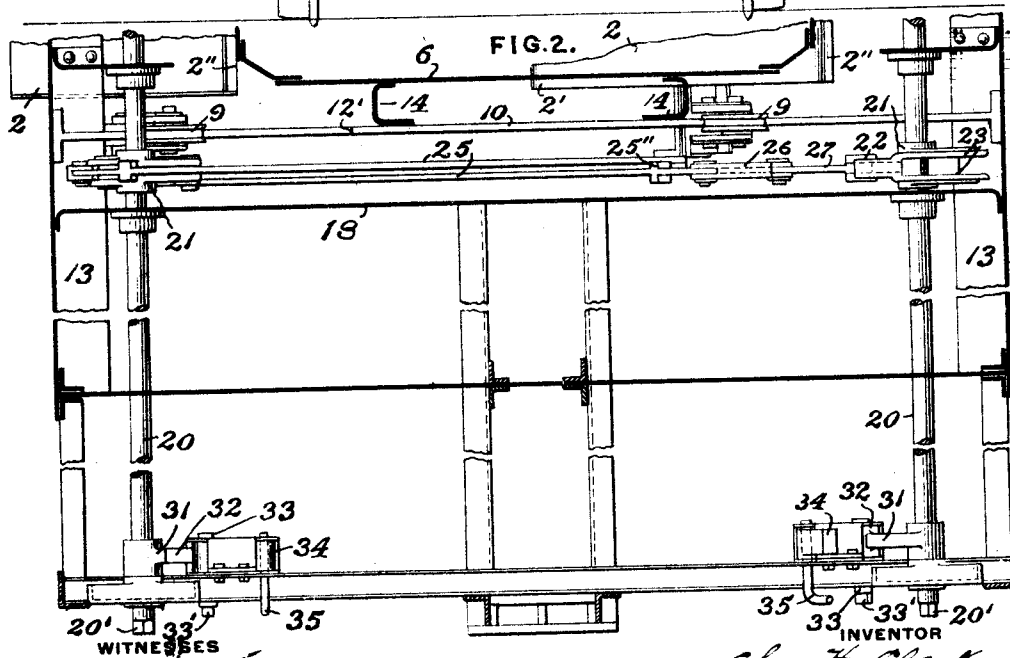
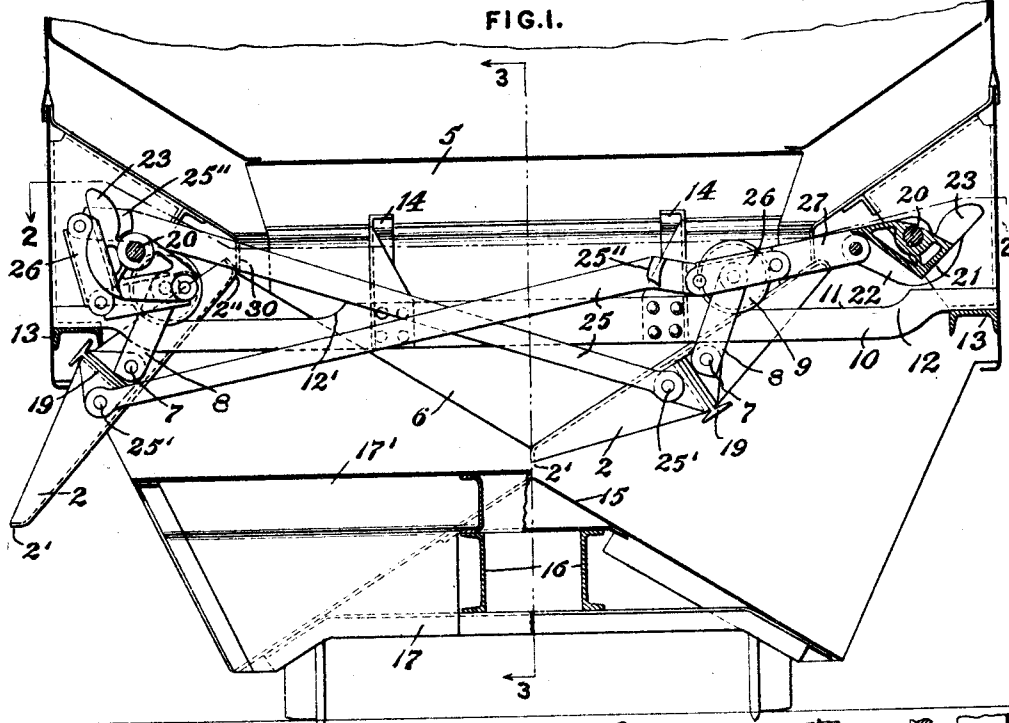


C. H. CLARK  
DUMP CAR.  
APPLICATION FILED APR. 26, 1912.

Patented June 17, 1913.

1,065,217.

2 SHEETS-SHEET 1.



F. E. Gaither  
Ellis McConnell

Char. H. Clark,  
By J. H. G. Smith  
att.

C. H. CLARK.

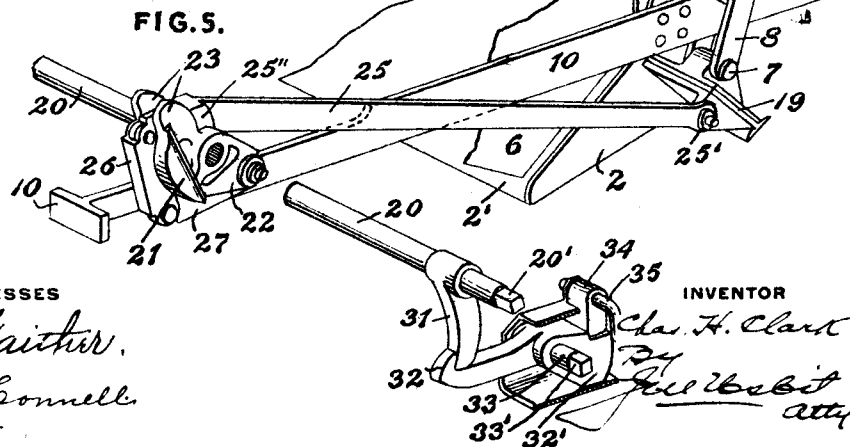
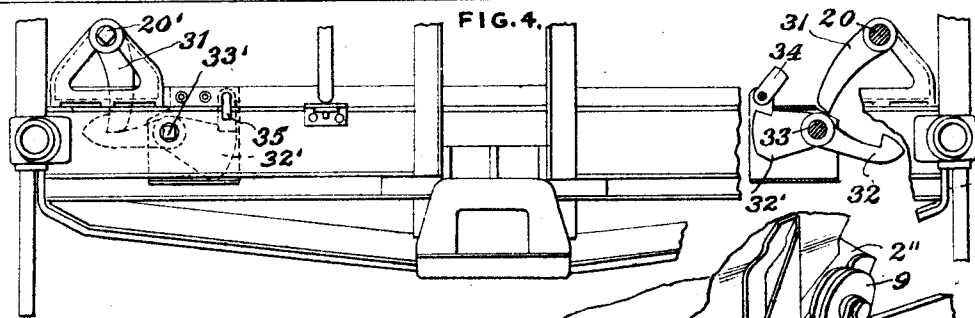
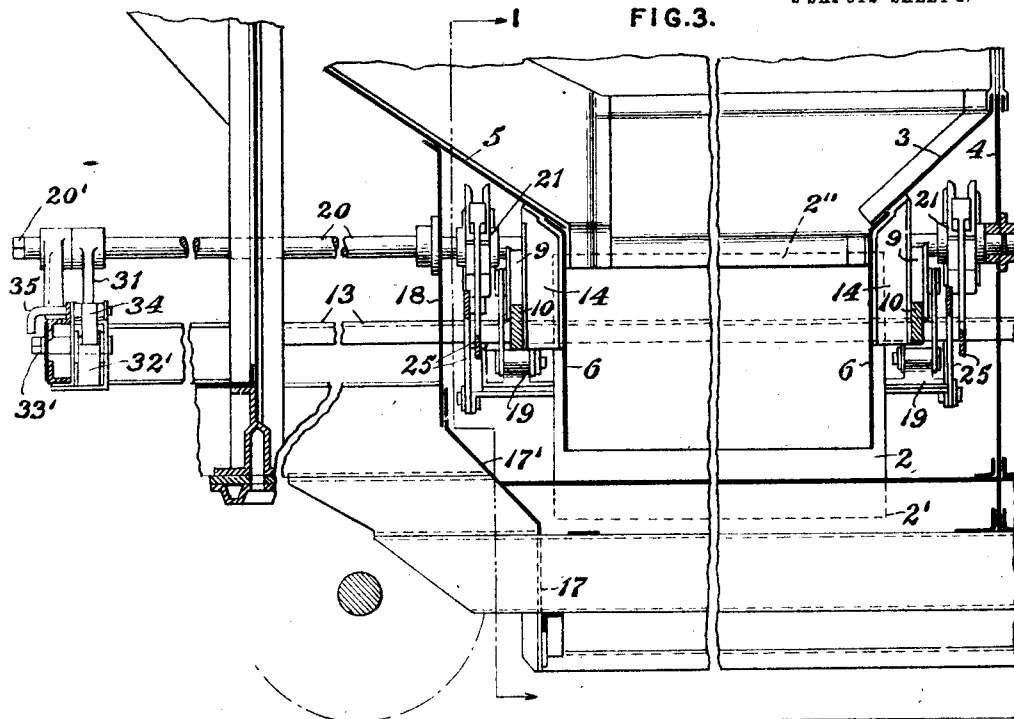
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2 SHEETS-SHEET 2.



WITNESSES

A. E. Gaither.  
Ella McConnell.

INVENTOR

Chas. H. Clark  
att'y

# UNITED STATES PATENT OFFICE.

CHARLES H. CLARK, OF CRAFTON, PENNSYLVANIA, ASSIGNOR TO CLARK CAR COMPANY, OF PITTSBURGH, PENNSYLVANIA, A CORPORATION OF NEW JERSEY.

## DUMP-CAR.

1,065,217.

Specification of Letters Patent.

Patented June 17, 1913.

Application filed April 26, 1912. Serial No. 693,378.

*To all whom it may concern:*

Be it known that I, CHARLES H. CLARK, a resident of Crafton, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Dump-Cars, of which the following is a specification.

The object of the invention is to provide new and efficient mechanism for operating dump car doors, and while designed primarily for doors of bodily movable type the invention is not necessarily restricted to such doors.

The improved mechanism is here shown applied to oppositely inclined doors that close together at the center line of the car and which coöperate with a deflector fixed beneath the doors for directing the lading to one side or the other of the track, the doors being opened and closed independently of each other so that one or the other of the doors may be opened for directing the lading to either side of the track, or both doors may be opened when the lading is to be discharged at both sides.

A further feature of the invention is the provision of means for controlling the opening movement of each door, such mechanism being adapted to move and positively hold the door in full open position so that it cannot interfere with the discharging load.

Still a further feature is embodied in simple and efficient means for securing the doors in closed position and for releasing them so that they may open.

In the accompanying drawings, Figure 1 is a vertical cross-section of a dump car equipped with the improved mechanism, said view being taken on line 1—1 of Fig. 3. Fig. 2 is a sectional plan of portion of the car taken on line 2—2 of Fig. 1. Fig. 3 is a vertical longitudinal section of one end of the car, taken on line 3—3 of Fig. 1. Fig. 4 is an elevation of the mechanism at one end of the car, the locking latch at the left-hand side of the view being shown in the normal position in which it is held by its counterweighted end, the corresponding latch at the righthand side of the view being shown turned out of locking position as by means of a wrench or crank applied to

the latch-carrying spindle. Fig. 5 is a perspective of a portion of one of the doors and its operating mechanism.

For the purpose of illustration I have shown the invention applied to a car body or hopper having two bottom discharge openings, with a pair of doors 2 for each opening, the doors being oppositely inclined and closing together at the center line of the car. Operating mechanism of like construction is provided for each end of each pair of doors. In the adaptation here shown the transverse bridge or shield 3 at the center of the car covers the mechanisms for the adjacent ends of the pairs of doors, such mechanism being arranged at opposite sides of the depending transverse center sheet 4. Bridge 3 constitutes the end slope sheets leading to the inner ends of the hopper bottom openings. 5 is the end slope sheet of the hopper that extends to the opposite or outer end of the opening, and depending from each of these slope sheets is a V-shaped plate 6 against the edges of which doors, 2 close, plates 6 forming the end walls of the door-closed space.

Doors 2 as here embodied are of bodily movable type, each door being pivoted at its opposite ends at 7 to hangers 8 depending from rollers 9 which travel on the transverse track bars 10, the upper edges of the latter formed with depressions 11 for defining the travel of the rollers, and with shoulders or abutments 12 at the outer ends of these depressions forming stops for limiting the outward movements of the rollers, and like shoulders or abutments 12' at the inner ends of the depressions limiting the inward travel. Each of track bars 10 extends preferably from side to side of the car, being supported by the side sills 13 and depending hangers 14, each bar thus providing a track for the corresponding ends of the doors of each pair.

Fixed to the car beneath the doors is the inverted V-shaped deflector or chute 15 which directs the discharging lading to one side or the other of the track, the apex of the deflector being immediately beneath the meeting line of the doors at the longitudinal center line of the car. Deflector 15 as here

shown is arranged above the downwardly offset center sills 16 and at the ends connects with the vertical transverse sheets or plates 17 which form the outer end walls of the chutes, each of said plates above deflector 15 being offset toward the end of the car, as indicated at 17', to provide space between its upper vertical portion 18 and the depending V-shaped plate 6 for accommodating the door actuating mechanism.

It is characteristic of the invention that each door is operated independently of the other by mechanism located at the side of the discharge opening, this arrangement affording room for the necessary connections and movements of the operating mechanism. At each side of the car is a longitudinal shaft 20 which extends to the end of the car with its extremity 20' shaped to receive a wrench. Secured to each shaft are two heads 21 of irregular shape, each head being formed with the opposite slotted portions or extensions 22 and 23.

Each of heads 21 is connected to an end of the door to be operated by a jointed or link-formed arm or bar which arm when straightened out forms rigid connectors acting in compression as the doors move from closed to open position, and which are adapted to fold around heads 21 and act in tension when closing the door. As here embodied, the greater portion of each connector consists of an elongated link 25 which is pivoted at 25' to the door, preferably between link pivot 7 and the lower edge 2' of the door, the pivotal connection 25' being with the door-end lug or casting 19 to which hanger links 8 are pivoted. Link 25 extends diagonally upward in direction transversely of the car and pivoted to its outer end is link 26, and pivotally connected to the latter is link 27 which, in turn, is pivotally connected to part 22 of head 21. Links 26 and 27 are adapted to fold about head 21 when the connected door is in closed position, as shown at the lefthand side of Fig. 1 and in Fig. 5, the head being flanged to embrace and hold the links, as shown. The forked or slotted extension 23 of head 21 embraces the extremity of link 25 back of lugs 25''. A sprocket-like winding action is thus secured, and part 23 embraces and secures a positive hold on the jointed door connector, preventing the latter from moving in either direction independently of the winding head. A positive connection is thus provided with each end of the door which insures unitary movement of the two ends. Neither end can move faster or slower than the other, and when the link-like parts are in the position shown in Fig. 5 the door is necessarily closed at each end. It is impossible for the door to be twisted or strained. The extremities of the connected links 26 and 27 and the portions of the head 21 and

link 25 with which they connect are of such form that when straightened out, as at the righthand of Fig. 1 with the lefthand door open, a longitudinally rigid connection is established between the operating head and the door so that the latter is positively moved to and held in full open position. During the opening movement head part 23 retains its positive hold on lugs 25'' of link 25 until link 26 straightens out and becomes rigid with link 25 for acting in compression therewith. The further turning of head 21 straightens out link 27 until it too acts in compression with the other links. Head part 23 is of such shape as to clear itself from link 25 and lugs 25'' as it turns forward and downward.

Before the door reaches full open position rollers 9 engage stops 12 which prevent them from moving farther outward, but the jointed straightened-out connector at each end of the door causes the door to swing the suspending links into the inclined position shown at the lefthand of Fig. 1, and the further movement causes the door to turn on the link-connecting pivots 7 for attaining and maintaining it in full open position. The upper edge 2' of the door rocks around depending ledge 30 which defines that side of the bottom discharge opening, this ledge directing the door into proper open position and when fully open preventing its upper edge from tilting forward or downward, as will be understood.

As before stated, shaft 20 extends longitudinally of the car and operates the mechanisms connected to opposite ends of the same door. The shaft may be held with the links folded therearound by a dog 31 which is adapted to engage the counterweighted latch 32 carried by the short shaft 33 mounted at one end of the car and provided with a wrench hold 33'. Latch 32 may be held from disengaging dog 31 by the weighted lock 34 pivoted over counterweight 32' which holds the counterweight from rising until the lock is turned outward by crank 35. When the latch is not to be locked the lock 34 may be turned back out of the way, as at the righthand of Fig. 4.

With lock 34 out of the way a wrench is applied to shaft 33 which is turned sufficiently to release latch 32 from dog 31, whereupon the linked door connectors are free to unwind in response to the pressure of the lading on door 2, the latter swinging downwardly, and outwardly and discharging the load onto deflector 15. The momentum of the door attained during its opening movement may be sufficient to move it to the full open position shown at the left of Fig. 1. For opening the doors when not under load, or at any other time when the momentum may not be sufficient to fully open them, a full opening movement may

be had by applying a wrench to shaft 20, thereby transmitting the necessary movement through the extended and rigid link-formed connectors, the last part of the movement turning the door on pivots 7 after rollers 9 have reached stops 12, and carrying the doors to and holding them in full open position. For closing the door, only partial rotation of shaft 20 is necessary, this being accomplished by the wrench applied to its end, and when the door is closed latch 32 automatically engages dog 31.

In the type of dump car here shown the oppositely inclined doors operate independently of each other so that either door may be opened, as desired. While oppositely opening doors are shown, it is obvious from their independent operation that the car may be equipped with a dumping door at only one side, thus making use of only one door instead of a pair. It will also be understood that the invention is not confined to a car hopper having two discharge openings, nor to locating the doors longitudinally of the car.

I claim:—

1. A dump car having a bottom discharge opening, two doors adapted respectively to open toward opposite sides of the discharge opening, two door operating mechanisms located at opposite sides of the discharge opening with a door adapted to open toward each of said mechanisms, and connections between each door actuating mechanism and the door at the side of the discharge opening opposite such mechanism.

2. A dump car having a bottom discharge opening, two doors adapted respectively to open toward opposite sides of the discharge opening, independently operating door actuating means at opposite sides of the opening, and connecting devices between the respective door operating means and doors, the door which opens toward one side of the discharge opening being connected to the operating mechanism located at the opposite side of the opening.

3. A dump car having a bottom discharge opening, depending V-shaped plates at opposite ends of the opening, opposite doors adapted to close against said plates and open toward opposite sides of the opening, door operating mechanisms located at opposite sides of the discharge opening, and connecting devices interposed between each mechanism and the door which opens toward that side of the discharge opening opposite such mechanism.

4. A dump car having a bottom discharge opening, a pair of doors for said opening adapted respectively to open toward opposite sides of the car, door operating mechanisms located at opposite sides of the car outwardly from the respective doors, and operative connections between each door op-

erating mechanism and the door which opens away from such mechanism.

5. A dump car having a bottom discharge opening, a pair of doors for said opening adapted to close together at the center line of the car and open respectively toward opposite sides thereof, door operating mechanisms located at opposite sides of the car outwardly from the respective doors, and operative connections between each door operating mechanism and the door which opens away from such mechanism.

6. A dump car having a bottom discharge opening, a pair of doors for said opening adapted respectively to open toward opposite sides of the car, two shafts extending longitudinally of the car, one at each side thereof, and flexible connections between each door and the shaft at the opposite side of the car with the connections adapted to wind on the shafts for closing the doors.

7. The combination of a dump car having a bottom discharge opening, two doors adapted, respectively, to open toward opposite sides of the opening, and two door operating mechanisms located, respectively, at the sides of the discharge opening toward which the doors open with each mechanism connected to the door that is distant therefrom.

8. A dump car having a bottom discharge opening, depending V-shaped plates at opposite ends of the opening, an inverted V-shaped deflector beneath the opening with the apex of each of the V-shaped plates and the apex of the deflector located at the center line of the car, a pair of doors for the opening operative above the deflector and adapted respectively to open toward opposite sides of the car and to close against the V-shaped plates, two door actuating mechanisms located at opposite sides of the car, and connectors between each actuating mechanism and the door which opens toward the opposite side of the car.

9. In a dump car, tracks, rollers adapted to move on the tracks, hangers depending from the rollers, a door pivoted to the hangers, and operating means connected to the door at one side of the connection between the door and hangers.

10. In a dump car having a discharge opening, doors adapted respectively to open toward opposite sides of the discharge opening, tracks for each door, rollers adapted to move on the tracks, hangers pivotally connected to each door and secured to the spindles of the appropriate rollers, and operating means connected to each door at one side of the pivotal connection between the door and its hangers.

11. Opposite bodily movable doors for a dump car adapted respectively to open toward opposite sides of the car, and a door operating means located at each side of the

car and connected to the door that opens toward the opposite side of the car.

12. A movable door for a dump car, an operating shaft, a crank-forming extension on the shaft, a jointed connector between said extension and the door and adapted to wind about the shaft with lugs on one member of the connector, and a forked extension carried by the shaft adapted to embrace the connector and engage the lug-formed member thereof when the connector is being wound about the shaft.

13. In a dump car, tracks, rollers adapted to move on the track, hangers depending from the rollers, a door pivoted to the hangers, and operating means pivotally connected to the door with said pivotal connection paralleling the pivotal connection between the door and hangers.

14. In a dump car, tracks, rollers adapted to move on the tracks, hangers depending from the rollers, an inclined door pivotally connected to the hangers, and operating means pivotally connected to the door below the pivoted connections of the hangers.

15. Opposite independently movable doors for a dump car adapted to open toward opposite sides of the car, and a door operating means located at each side of the car and connected to the door that opens toward the opposite side of the car.

16. Opposite bodily movable doors for a dump car movable independently of each other and adapted to open toward opposite sides of the car, and a door operating means located at each side of the car and connected to the door that opens toward the opposite side of the car.

17. Opposite inclined doors for a dump car adapted to open toward opposite sides of the car, and a door operating means located at each side of the car and connected to the lower portion of the door which opens toward the opposite side of the car.

18. Opposite inclined doors for a dump car movable independently of each other and adapted to open toward opposite sides of the car, and independently acting door operating means located at each side of the car with each of said means connected to the door which opens toward the opposite side of the car.

19. Opposite inclined doors for a dump car adapted to close together at the center of the car and to open in opposite directions, supporting means for each door having a single pivotal connection with each end of the door between its upper and lower edges, and a separate operating means for each door connected thereto intermediate its lower edge and the pivotal connection of the door support.

20. Opposite inclined doors for a dump car adapted to open toward opposite sides of the car, separate supporting means for each

door pivoted thereto between its upper and lower edges, a separate operating means for each door located at the opposite side of the car from that toward which the door opens and each operating means connected to its door intermediate the lower edge of such door and the pivotal connection of its support.

21. A dump car having a bottom discharge opening, a deflector beneath the opening and sloping downwardly toward opposite sides of the car, opposite doors closing the opening, and a door operating means located at each side of the car and connected to the door at the opposite side of the car for opening and closing the same.

22. In a dump car, tracks, a bodily movable door, rollers movable on the tracks, hangers depending from the rollers and pivotally connected to the door, means limiting the movement of the rollers, and means connected to the door for turning it on the pivots which connect the door and hangers.

23. A dump car having a bottom opening, a door, door supporting means to which the door is movably connected with the supporting means movable relatively to the bottom opening, means for limiting the movement of the supporting means, and means for moving the door on its supporting means when the latter is at a standstill.

24. A dump car having a bottom opening, a door, door supporting means to which the door is pivotally connected with the supporting means movable relatively to the bottom opening, means for limiting the movement of the supporting means, and means pivotally connected to the door independently of the pivotal connections between the door and the supporting means for moving the door on the supporting pivots when the supporting means is at a standstill.

25. A dump car having a bottom opening, a door, door supporting means to which the door is pivotally connected with the supporting means movable relatively to the bottom opening, means for limiting the movement of the supporting means, means for moving the door on its supporting pivots when the supporting means is at a standstill, and a guide on the car cooperating with the outer portion of the door as the latter moves.

26. A dump car having a bottom opening, opposite inclined bodily movable doors meeting at the center line of the car for closing the opening, supports for each door movable transversely of the opening with the supports pivotally connected to the doors, arms pivotally connected to each door and extending toward the opposite side of the car, and means at each side of the car to which the arms respectively are connected for moving them to effect the opening and closing movements of the door.

27. A dump car having a bottom discharge opening, an inverted V-shaped deflector fixed centrally beneath the bottom opening and sloping toward opposite sides  
5 of the car, opposite doors closing together centrally above the deflector, movable door supports to which the doors are pivoted for moving them bodily when opening and closing, and means for imparting pivotal move-

ment to the doors when their supports are 10 at a standstill.

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

CHARLES H. CLARK.

Witnesses:

J. M. NESBIT,

F. E. GAITHER.