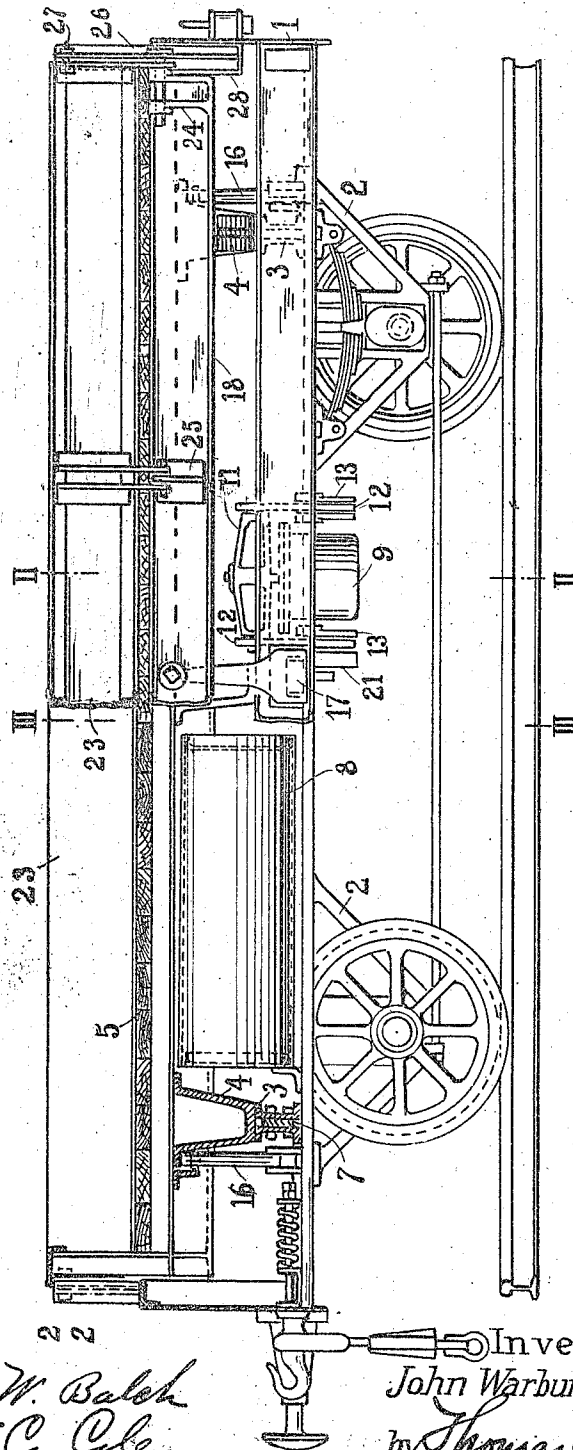


1,062,477.

Patented May 20, 1913

3 SHEETS-SHEET 1.

Fig. 1.



Witnesses:

Samuel W. Balch
Frank C. Cole

Inventor,

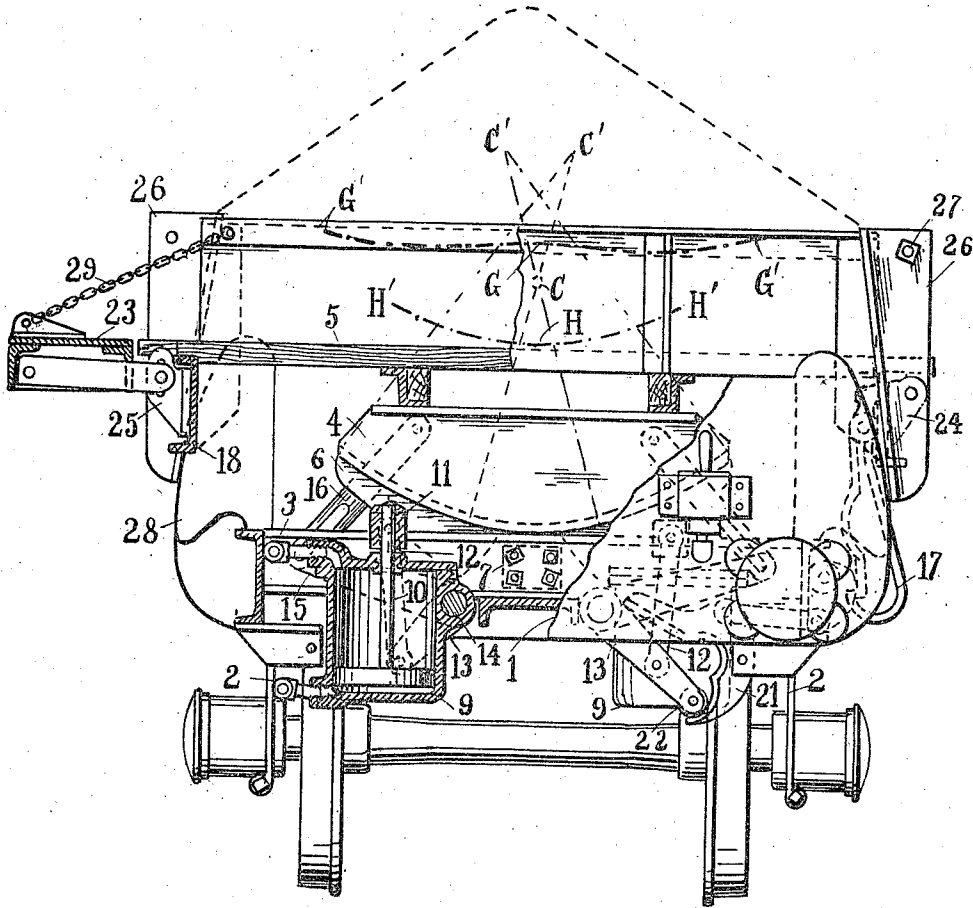
John Warburton King,
by *Thomas Ewing, Jr.*
Attorney

J. W. KING.
DUMPING VEHICLE.
APPLICATION FILED AUG. 8, 1910.

1,062,477.

Patented May 20, 1913
3 SHEETS—SHEET 2.

Fig. 2.



Witnesses:

Samuel W. Balch
Frank C. Cole

Inventor,
John Warburton King,
by *Thomas A. Wing, Jr.,*
Attorney

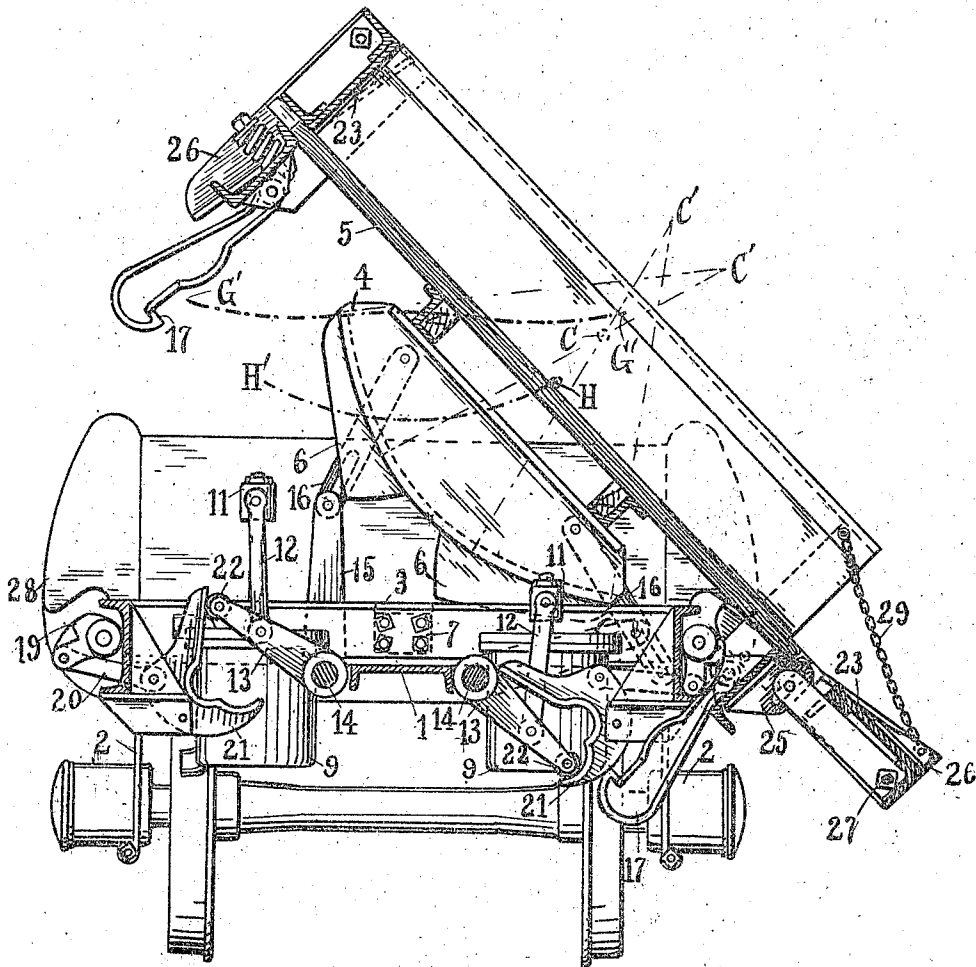
J. W. KING.
DUMPING VEHICLE.
APPLICATION FILED AUG. 8, 1910.

1,062,477.

Patented May 20, 1913

3 SHEETS-SHEET 3.

Fig. 3.



Witnesses:

Samuel W. Balch
Frank C. Cole

Inventor:

John Warburton King
by *Thomas Ewing, Jr.*
Attorney.

UNITED STATES PATENT OFFICE.

JOHN WARBURTON KING, OF NEW YORK, N. Y., ASSIGNOR TO KING MECHANISM & ENGINEERING COMPANY, A CORPORATION OF NEW YORK.

DUMPING-VEHICLE.

1,062,477.

Specification of Letters Patent.

Patented May 20, 1913.

Application filed August 8, 1910. Serial No. 576,114.

To all whom it may concern:

Be it known that I, JOHN WARBURTON KING, a citizen of the United States of America, and a resident of the borough of Bronx, in the city of New York, county of New York, and State of New York, have invented certain new and useful Improvements in Dumping-Vehicles, of which the following is a specification.

10 My invention relates to improvements in receptacles which may or may not be mounted on vehicle wheels and constitute vehicle bodies. However, the particular application is to dumping-cars.

15 It has for an object the provision of rocker connection between the body and its supporting underframe such that the body when loaded will be in substantially unstable equilibrium so that as soon as the tilting of the body for dumping is initiated the center 20 of gravity of the combined body and its load will have a substantially downwardly inclined path, and the path of the center of gravity of the body without its burden from the dumping position back to its normal 25 position will also be downwardly inclined whereby substantially the entire cycle of movement is automatic and independent of the means by which it is initiated.

30 A further object is to provide a horizontal movement of the body concurrently with the tilting for dumping toward the side to which it dumps whereby the load will be discharged at a greater distance from the tracks 35 on which the car travels.

A further object is to provide for a slight upward movement of the center of gravity of the combined body and its burden at the limit of the tilting movement, thereby checking the tilting movement without shock, contributing to the stability of the car on its tracks, and throwing the load away from the body so that it will slide along the floor of the tilted body without pressing against 45 it sufficiently to cause abrasion.

A further object is to provide side gates for the car body arranged to automatically open with the tilting of the body so hinged that when unfolded they form substantially 50 a continuation and extension of the floor of the car body, and in which the hinges will not be strained by any distortion of the car body arising either from its load or from un-

evenness of the track on which the car may be resting. 55

A further object is to provide positive means for the closing and holding closed of the gates with the restoration of the car body to its normal position, and to provide means for detaching the gates from this 60 mechanism whereby the gates may be unfolded when the car body is in its normal position.

A further object is to make the several means provided of a character embodying 65 advantages in positive operation, simplicity, and inexpensiveness.

In the accompanying three sheets of drawings which form a part of this application.— Figure 1 is a side elevation showing a dump- 70 ing car embodying my invention, the portion at the left being in section. Fig. 2 is an end elevation with the portion at the left in section on the line II—II of Fig. 1, showing the top of the load in dotted lines. 75 Fig. 3 is a cross section on the line III—III of Fig. 1 showing the car body in full dumping position.

An underframe 1 which is carried by the trucks 2 2 of the car has three pairs of 80 transverse beams 3 3 which form laterally extending tracks for the support of rockers 4 4 attached to the dumping body 5. The rockers have a curvature at the middle which is centered at C slightly below the 85 center of gravity G of the combined body and its load. This curvature extends for an arc of fifteen degrees to each side of the center and is continued as a flatter curve at each end which is centered at a higher point 90 C'. This curvature of the rockers results in the center of gravity of the combined body and its burden traveling along the line G' G G' when the body is tilted for dumping. The path is first curved downward as 95 shown, from which it will be seen that the loaded body will tilt automatically after it has been started. Toward either end of its travel the path turns upwardly and the momentum is thereby absorbed. After the 100 burden has been discharged the center of gravity will be at H close to the floor owing to the weight of the rockers about balancing the weight of the gates and ends of the body. The path of this center of gravity on the re- 105 turn lies along the line H' H H' and is

downward as shown from either dumping position to the middle position so that the body will be self restoring. Teeth 6 6 project from the rockers between the beams and engage blocks 7 7 which are bolted between the beams thereby preventing the rockers from sliding on the beams and insuring the centering of the body when in loading position with respect to the underframe.

Independent pneumatic mechanisms which may be supplied with air from a tank 8 or the air-brake train-pipe are provided for dumping the car on the two sides. Each comprises a vertical cylinder 9 and a piston 10. A cross bar 11 at the top of the piston rod connects at its ends through links 12 12 with cranks 13 13 to a rock shaft 14. Levers 15 15 through slotted links 16 16 which are pivoted to the rockers of the body effect the rocking and dumping as shown. The dumping is effected by operating the mechanism which is on the opposite side of the car from the side from which it is desired to discharge the burden. The slots in the links permit the piston to rise a short distance before commencing to tilt the body. They also permit the body to tilt beyond the point to which it is positively carried by the pneumatic mechanism and allow sufficient freedom of connection between the body and the idle pneumatic mechanism on the side from which the load is discharged. The body carries hooks 17 17, one on each side of the car, pivoted to the longitudinal beams 18 18 of the car body, which engage rocking pieces 19 19 which are hook engaging members pivoted to the underframe. Each rocking piece connects through a link 20 with a fork locking cam 21 which is engaged by a roller 22 on the end of one of the cranks of the pneumatically operated rock shaft. The first movement of the piston operates to throw this cam and to push back and release the hook, thereby releasing the body for dumping before commencing to tilt the body. The hook on the dumping side does not need to be pushed out of engagement as it moves out of engagement with the tilting of the body.

The body is provided on either side with unfolding gates 23 23 hinged adjacent to the floor of the body through end brackets 24 24 and intermediate brackets 25 25 to the longitudinal beams of the car body. The intermediate brackets are vertically slotted and the hinge pins play in these slots and aline with the end hinges without straining when the body is bent by the weight of its burden or otherwise.

The gates are bolted at their ends to levers 26 26 by easily removable bolts 27 27. The levers project below the gates and bear against cams 28 28 at the sides of the end boards of the underframe. These cams are so shaped that the gate on the dumping side

will be permitted to unfold by gravity as the body tilts and assume a position making it a continuation of the floor of the tilted body. When the body is righted the levers are brought to a perpendicular position and locked by the cams, thereby closing the gate which is bolted to the levers. If it is desired to let down the gate while the body is in its level position it is released from these levers by removing the bolts and can then be dropped as shown at the left of Fig. 2. When the gates are unfolded even with the floor of the car body they are supported by chains 29 29.

It is obvious that the apparatus for carrying out my invention need not be made with the lateral tracks in a straight line and the rockers curved as specifically shown, as the same result will be attained where either line deviates from the course shown, provided that the mating part of the other line is constructed to correspond, and my invention is not limited to the specific form shown but embraces all such modifications, and the terms "rockers" and "tracks" occurring in the claims are used in this sense unless otherwise qualified. Likewise the constructor is free to vary the shapes of the cams and levers so as to make the gates open and shut during such portion of the tilting of the body as he may wish and otherwise adjust the law of the relative movements of the body in tilting and the gates in unfolding and folding.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a vehicle, the combination of an underframe with laterally extending tracks, and a dumping body provided with rockers bearing upon the tracks, the alinements of the tracks and of the rockers being such that the center of gravity of the body and its load will have an initial downward movement on tilting and an upward movement on approaching the limit of its tilting movement, substantially as described.

2. In a vehicle, the combination of an underframe with laterally extending tracks, and a dumping body provided with rockers bearing upon the tracks, the alinements of the tracks and of the rockers being such that the center of gravity of the body and its load will have an initial downward movement on tilting and an upward movement on approaching the limit of its tilting movement, and the center of gravity of the body will have a downward movement on the return from the limit of its tilting movement, substantially as described.

3. In a vehicle, the combination of an underframe with laterally extending tracks, and a dumping body provided with rockers bearing upon the tracks, the curvature of the rockers at their middle points being centered below the center of gravity of the

body and its load, and the alinement of the tracks and curvature of the rockers being such that the center of gravity of the body and its load will have an initial downward movement on tilting and an upward movement on approaching the limit of its tilting movement substantially as described.

4. In a vehicle, the combination of an underframe with laterally extending tracks, and a dumping body provided with rockers bearing upon the tracks, the curvature of the rockers at their middle points being centered below the center of gravity of the body and its load, and the alinement of the tracks and curvature of the rockers being such that the center of gravity of the body and its load will have an initial downward movement on tilting and an upward movement on approaching the limit of its tilting movement, and the center of gravity of the body will have a downward movement on the return from the limit of its tilting movement, substantially as described.

5. In a vehicle, the combination of an underframe with horizontal laterally extending tracks, and a dumping body provided with rockers bearing upon the tracks, the alinement of the rockers being such that the center of gravity of the body and its load will have an initial downward movement on tilting and an upward movement on approaching the limit of its tilting movement, substantially as described.

6. In a vehicle, the combination of an underframe with horizontal laterally extending tracks, and a dumping body provided with rockers bearing upon the tracks, the curvature of the rockers at their middle points being centered below the center of gravity of the body and its load, and the curvature of the rockers being such that the center of gravity of the body and its load will have an initial downward movement on tilting and an upward movement on approaching the limit of its tilting movement, substantially as described.

7. In a vehicle, the combination of an underframe with laterally extending tracks, a body capable of being tilted to dump in either direction provided with rockers bearing upon the tracks, and oppositely disposed gates either of which will open downward contemporaneously with the tilting of the body, the opening movement being controlled thereby, and the opened gate being positively closed by returning the body to its normal position, substantially as described.

8. In a vehicle, the combination of an underframe with laterally extending tracks, a body capable of being tilted to dump in either direction provided with rockers bearing upon the tracks, and oppositely disposed gates either of which will open downward to form an apron for the further discharge

of the load carried by the body when the body is tilted for dumping, and means for positively closing the opened gate during the restoration of the body to its normal position, substantially as described.

9. In a vehicle, the combination of an underframe with laterally extending tracks, a dumping body provided with rockers bearing upon the tracks, a gate pivoted on the body to open with the tilting of the body, a cam for controlling the opening movement of the gate and for positively closing the gate, substantially as described.

10. In a vehicle, the combination of an underframe with laterally extending tracks, a dumping body provided with rockers bearing upon the tracks, a gate pivoted on the body, a cam, and a lever attached to the gate cooperating with the cam to positively close the gate upward as the body is restored to normal position after being tilted for dumping, substantially as described.

11. In a vehicle, the combination of an underframe with laterally extending tracks, a dumping body provided with rockers bearing upon the tracks, a gate pivoted on the body, levers attached to the gate and means by which the levers are controlled to close the gate and lock the body against lateral displacement without tilting, substantially as described.

12. In a vehicle, the combination of an underframe with laterally extended tracks, a dumping body provided with rockers bearing upon the tracks, a gate pivoted on the body, levers attached to the gate, and cams about which the ends of the levers are guided by the tilting of the body, substantially as described.

13. In a vehicle, the combination of an underframe with laterally extending tracks, a dumping body provided with rockers bearing upon the tracks, a gate pivoted on the body, levers controlling the position of the gate, and cams fixed in relation to the dumping movement of the body, the levers having sliding movement on the cams to control the opening and closing of the gate, substantially as described.

14. In a vehicle, the combination of an underframe with laterally extending tracks, a dumping body provided with rockers bearing upon the tracks, a gate which will open downward to form an apron for the further discharge of the load, and connections between the gate and underframe for effecting the opening of the gate when the body is rocked for dumping, substantially as described.

15. In a vehicle, the combination of an underframe with laterally extending tracks, a dumping body provided with rockers bearing upon the tracks, a gate which will open downward to form an apron for the further discharge of the load, connections between

the gate and underframe for effecting the opening of the gate when the body is rocked for dumping, and means for locking the body in normal position, substantially as described.

16. In a vehicle, the combination with a dumping body, of an unfolding gate with a line of hinges adjacent to the floor of the body, the hinge pins of the intermediate hinges engaging vertical slots in the members of the hinges which are attached to the body, substantially as described.

17. In a vehicle, the combination with a dumping body, of an unfolding gate hinged adjacent to the floor of the body and a lever detachably connected to the gate, an underframe, and a cam supported from the underframe and engaging the lever to positively close the gate when the body is

brought to its level position, substantially as described.

18. In a vehicle, the combination of an underframe, pairs of transverse beams forming laterally extending tracks, blocks secured to the pairs of beams, a dumping body provided with rockers bearing upon the tracks, and teeth projecting between the pairs of beams and engaging the blocks for centering the body and underframe in loading position against lateral and longitudinal displacement, substantially as described.

Signed by me at New York, N. Y., this 6th day of August, 1910.

JOHN WARBURTON KING.

Witnesses:

SAMUEL W. BALCH,
FRANK C. COLE.