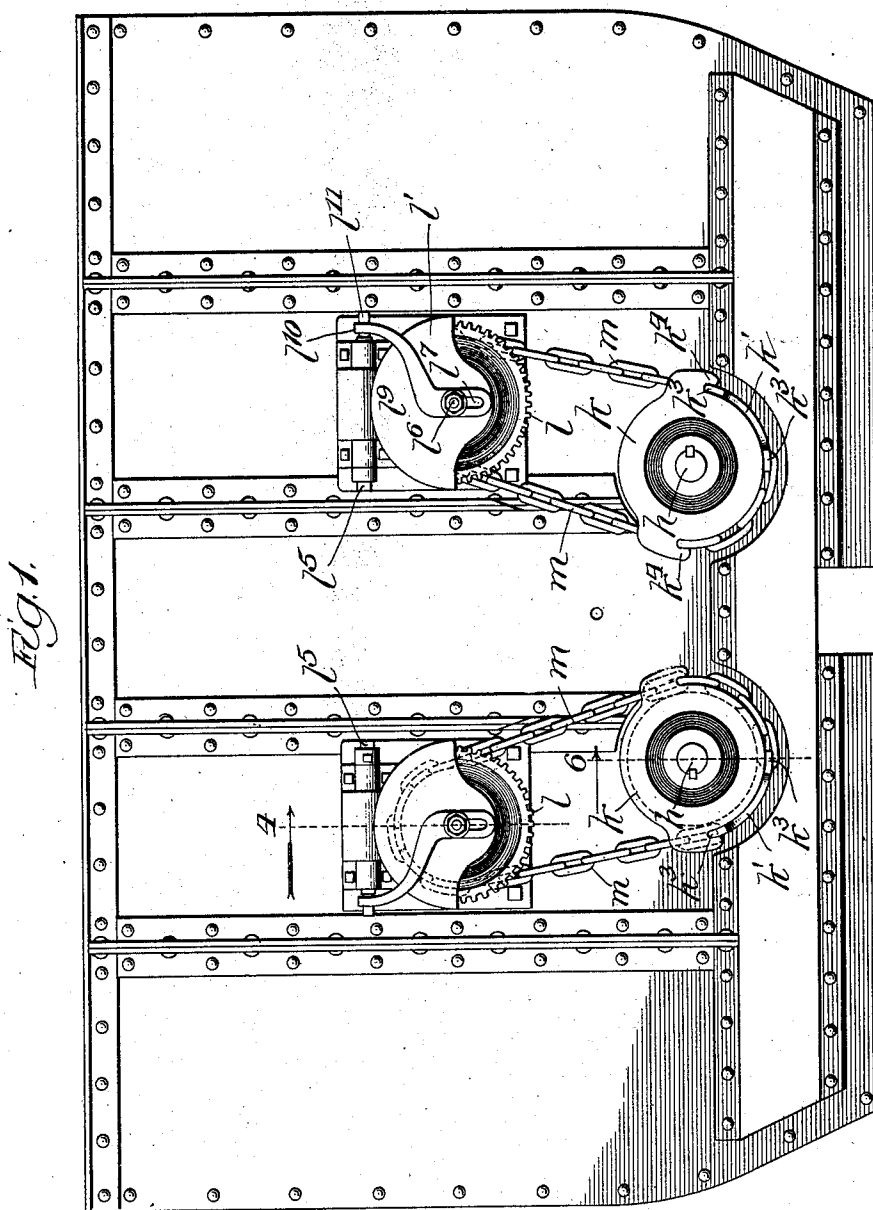


C. GABRIEL.
DUMPING CAR.
APPLICATION FILED FEB. 11, 1907.

992,555.

Patented May 16, 1911

5 SHEETS—SHEET 1.



Witnesses:
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John Enders.

Inventor:
Charles Gabriel,
By Thomas G. Sheridan,
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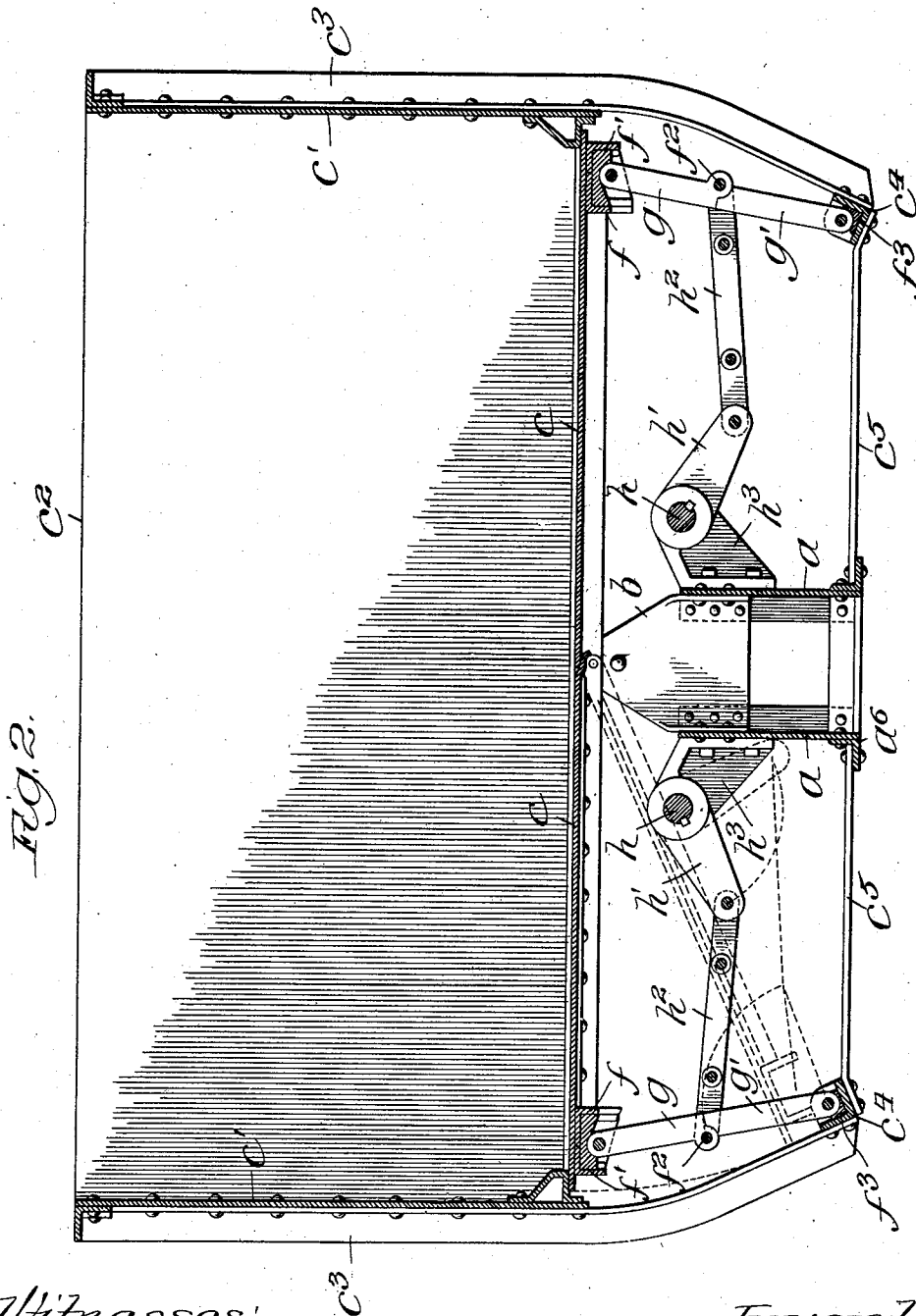
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5 SHEETS—SHEET 2.

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5 SHEETS-SHEET 3.

Fig. 3.

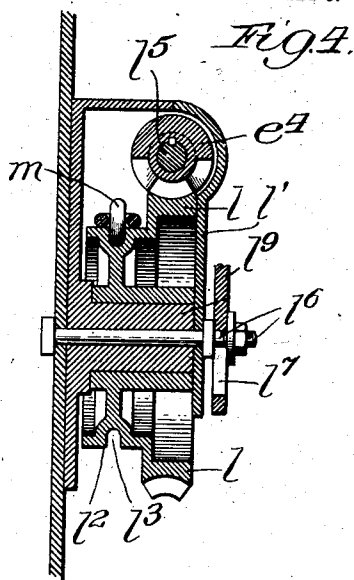
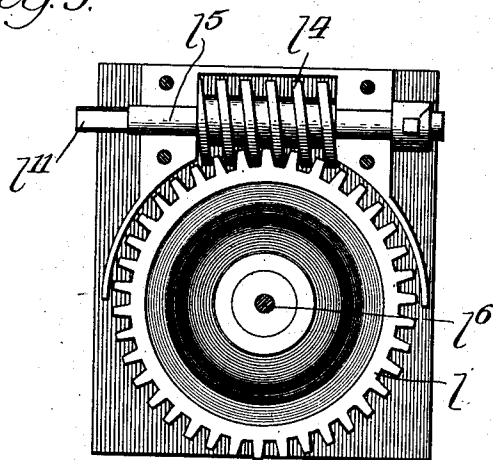


Fig. 5.

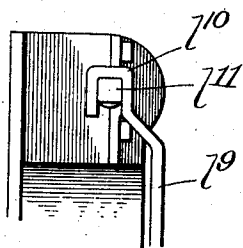
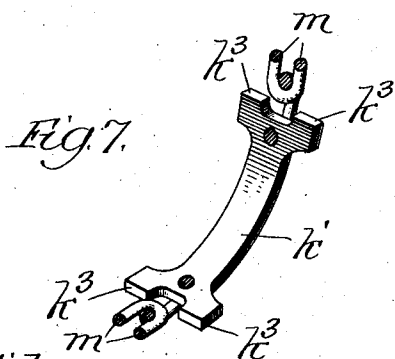
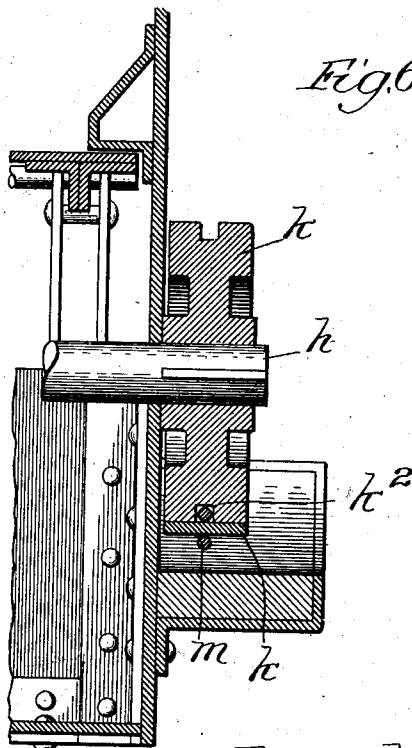


Fig. 6.



Witnesses:
Edw. J. Gaylord,
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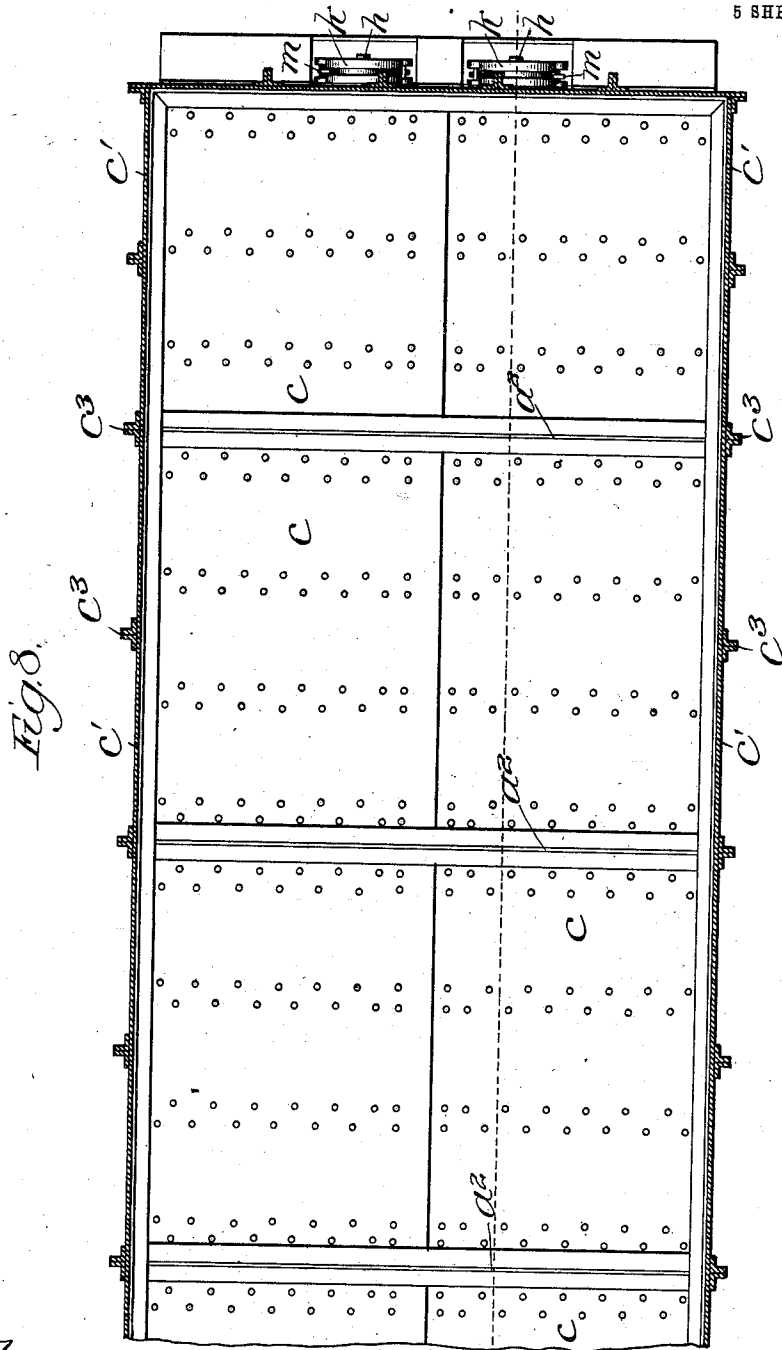
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APPLICATION FILED FEB. 11, 1907.

992,555.

Patented May 16, 1911.

5 SHEETS—SHEET 4.



Witnesses:
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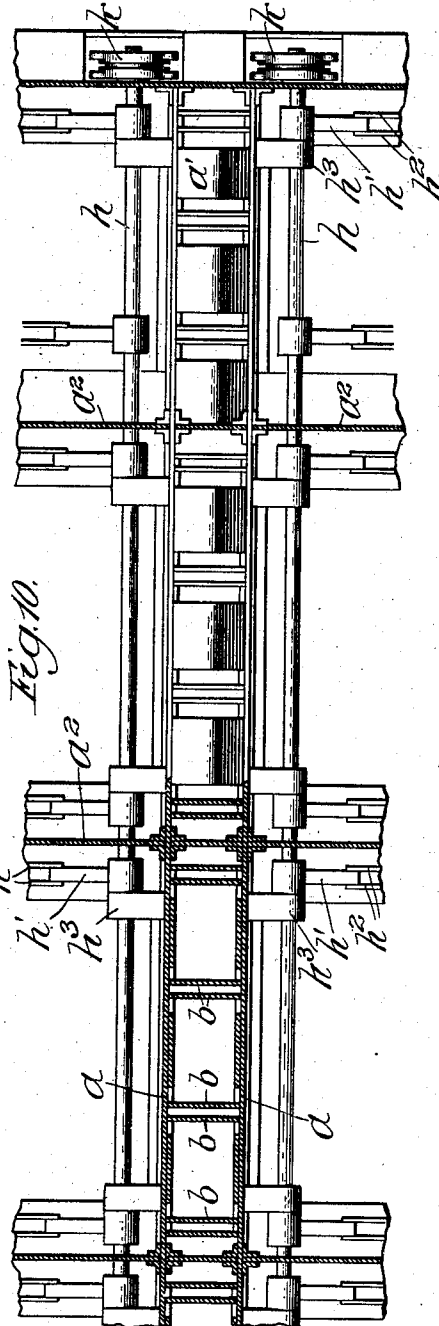
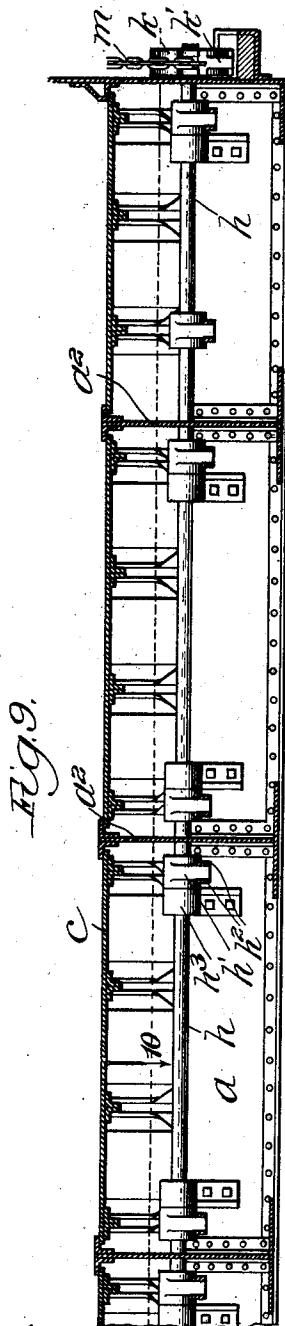
C. GABRIEL.
DUMPING CAR.

APPLICATION FILED FEB. 11, 1907.

Patented May 16, 1911.

5 SHEETS—SHEET 5.

992,555.



Witnesses:
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UNITED STATES PATENT OFFICE.

CHARLES GABRIEL, OF CHICAGO, ILLINOIS, ASSIGNOR TO NATIONAL DUMP CAR COMPANY, A CORPORATION OF MAINE.

DUMPING-CAR.

992,555.

Specification of Letters Patent.

Patented May 16, 1911.

Application filed February 11, 1907. Serial No. 356,865.

To all whom it may concern:

Be it known that I, CHARLES GABRIEL, 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 Dumping-Cars, of which the following is a specification.

My invention relates to improvements in dump cars having reference more particularly to that class of cars which are provided with drop bottoms for the discharge of the load.

One object of my invention is to provide an improved means for operating the dumping doors.

For the accomplishment of this, and other objects which will hereinafter appear, my invention consists in the structural features which will be hereinafter described in connection with the accompanying drawings and pointed out in the claims.

Referring to the drawings—Figure 1 is an end elevation of my improved car, certain parts being omitted. Fig. 2 is a transverse section of my car showing the means for operating the dumping doors. Figs. 3, 4, 5, 6 and 7 are detail views—Figs. 4 and 6, being in section—these views showing the door operating mechanism at the end of the car. Fig. 8 is a plan view of my improved car. Fig. 9 is a longitudinal section on the line 9 of Fig. 8. Fig. 10 is a sectional plan view of the part shown in Fig. 9.

My car comprises a frame having a longitudinal sill composed of plates *a* extending from end to end of the car. These plates are suitably braced and strengthened by angle braces *a'* placed at intervals along the lower sides of these plates. At their upper edges they are provided with hinge plates *b* securely riveted to the longitudinal sill members, these hinge plates extending above the sill members and formed by the triangular upper portion, as clearly shown in Fig. 2. The frame also comprises the usual transverse sills *a*² suitably secured to the longitudinal sill. The load-receiving portion of the car braces the dumping doors *c*, which form substantially the entire bottom of the car. These doors are hinged to the hinge plates along the longitudinal median line of the car, so that when the doors are in their lower position, the entire load of the car may be deposited at the desired point, there being practically no portion of

the car bottom upon which any part of the load may remain, with exception of the tops of the cross-sills, but these are narrow, and little, if any, of the load will be retained by them. The car is also provided with side plates *c'* and end plates *c*², the side plates being riveted or otherwise securely fastened to the side stakes *c*³. These side stakes, as shown in Fig. 2, extend downwardly and inwardly beneath the plane of the floor of the car and support at their lower ends longitudinal extending angle irons *c*⁴ disposed with open sides upwardly and in substantially trough-like form. These angle members are braced and strengthened by metallic straps *c*⁵ connected thereto at one end to angle members *c*⁶ riveted to the longitudinal sill members at the opposite end. Secured at intervals to the longitudinal sill members are upwardly extending brackets *h*³ in which is journaled an operating shaft *h*. Keyed to this shaft are crank portions *h'*. Pivoted to the dumping doors and to pivots which are mounted in the longitudinally extending angle members are the upper and lower supporting arms or members *g g'*, which are pivoted together at *f*², thus forming a toggle joint support.

f' represents the upper pivot block for the upper member which is secured to the lower face of the doors, and *f'* is a pivot block for the lower member secured to the angle iron members, and link *h*² connects the crank portion *h'* with the connecting pivot of the toggle members.

It will be readily understood when the operating shaft is turned so as to rotate the crank portion toward the longitudinal sill member, the toggle joint will be broken, thus permitting the dumping doors to drop to lowered or dumping position, as shown in dotted lines in Fig. 2. The reverse movement of the operating shaft and the crank portion will raise the dumping doors to load receiving position. When in this position the toggle links form a firm and positive support for the outer ends of the doors. By using these toggle links, I am enabled to dispense with chains or other flexible connections for operating the dumping doors, these connections being objectionable because of their liability to stretch in service, making it impossible to fully close the doors. The operating shafts *h* extend longitudinally from end to end of the car, their

ends passing through the end members of the car.

It is desirable to provide some means for operating the dumping doors, which will permit them to drop as soon as the toggle joint is broken without danger to the operator. The means which I provide will now be described.

At the end of the operating shaft is mounted a drum k , which is keyed to the shaft, as shown in Fig. 6. This drum is provided on its periphery with a groove k^2 , and a chain m loosely encircles the lower portion of the drum. This chain is provided with an elongated link or stop plate k' , which rests against the periphery of the drum and is bent to conform thereto. This link or stop plate is provided with laterally extending stop portions k^3 . The drum is provided with opposite ears or stop projections k^4 which are diametrically opposed to each other.

Mounted on the end of the car above the drums is a worm wheel l provided with a drum l^2 , grooved at l^3 , and around this drum the chain m passes. A worm l^4 is mounted to rotate in bearings l^5 above the worm wheel. The casing l' partially incloses the worm wheel and the worm.

When it is desired to open the dumping doors, the worm is turned by any suitable means, thus turning the worm wheel, causing the chain to ride around the periphery of the lower drum until the stops k^3 of the elongated link k' come in contact with one of the stop lugs k^4 on the drum, as indicated clearly in Fig. 1. When this contact occurs, a further turning of the worm will cause the chain to turn the drum and shaft. As soon as this begins to turn, the toggle joint is broken and the weight on the doors will cause them to fall, thus turning the operating shaft rapidly. Owing to the loose engagement of the lower drum and chain, this drum will ride around the chain without causing any further movement of the worm wheel and worm.

When it is desired to close the doors, the worm is turned in the opposite direction, causing the elongated stop link to ride around the drum until it comes in contact with the opposite ear on the drum. When this contact has occurred, further movement of the worm and worm wheel will cause the rotation of the drum and operating shaft to close the door. To prevent any accidental turning of the parts, I have provided the worm with a locking device, shown in Figs. 1, 4 and 5. This locking device comprises a bent arm l^6 , having a slotted portion l^7 at its lower end. This arm is mounted upon the bolt l^5 , which secures the axle of the worm wheel and upper drum to the end of the car at its upper end. At its upper end this bent arm is provided with a hook portion

l^{10} bent—as shown in Fig. 5—to approximately rectangular shape. The end of the worm shaft l^{11} is correspondingly shaped so that when the bent arm is swung into position to receive the end of the worm shaft, the latter cannot be turned. When it is desired to operate the worm shaft—as will be readily understood—this bent locking arm must first be swung away from its locking position.

It will be seen from the above description that I have provided a dumping car which is practically self-cleaning and one in which the dumping doors are rigidly supported in load sustaining position. Moreover, the toggle joint which supports the dumping doors when in closed position is practically self-supporting since its members are at that time in alinement. I have also provided positive means for operating the toggle and the doors. When the doors are to be opened a pull on the link k^2 is necessary and when they are to be closed a push on this same link is effective for the purpose.

I claim:

1. In a car of the class described, a center sill, cross sills, doors hinged longitudinally of the car and having their free edges adjacent the sides thereof, a support beneath the free edges of said doors, toggles extending from said support to said doors adjacent their free edges, the members of said toggles being in alinement when said doors are closed, and means engaging the center joint of said toggle for operating said toggle.

2. In a car of the class described, a center sill, cross sills, doors hinged longitudinally of the car and having their free edges adjacent the sides thereof, a support beneath the free edges of said doors, toggles extending from said support to said doors adjacent their free edges, the members of said toggles being in alinement when said doors are closed, a shaft mounted in the car structure inside of said toggles, crank arms on said shaft, and links connecting said crank arms and toggles.

3. In a car of the class described, a center sill, cross sills, doors hinged longitudinally of the car and having their free edges adjacent the sides thereof, a support suspended from the car side beneath the floor level, toggles extending from said support to said doors adjacent their free edges, the members of said toggles being in alinement when said doors are closed, and means engaging the center joint of said toggle for operating said toggle.

4. In a car of the class described, a center sill, cross sills, sides, hangers depending from said sides beneath the floor level, a longitudinal support secured to the lower ends of said hangers, tie rods extending from the center sill to said supports, toggles extending from said support to said

doors adjacent their free edges, the members of said toggles being in alinement when said doors are closed, and means for operating said toggle.

5 5. In a car of the class described, a center sill, cross sills, sides, hangers depending from said sides beneath the floor level, a longitudinal support secured to the lower ends of said hangers, tie rods extending
10 from the center sill to said supports, brackets secured to the sides of said center sill, a shaft mounted in said brackets, crank arms on said shaft, toggles extending from said support to said doors, and links con-
15 necting said toggles and cranks.

6. In a car of the class described, a dumping door, operating means therefor com-

prising an operating shaft, a drum thereon having opposite stop lugs, a chain having a stop link loosely engaging the drum, and 20 means for operating the chain.

7. In a dump car provided with swinging dumping doors, an operating shaft therefor, a worm and worm wheel for turning the shaft, an arm pivoted adjacent the worm 25 shaft, and having an end bent to conform to the shape of the worm shaft, whereby the worm shaft is locked when the arm is in engagement therewith.

CHARLES GABRIEL.

Witnesses:

T. J. GEIGER,
GEORGE THOMPSON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."
