

June 7, 1927.

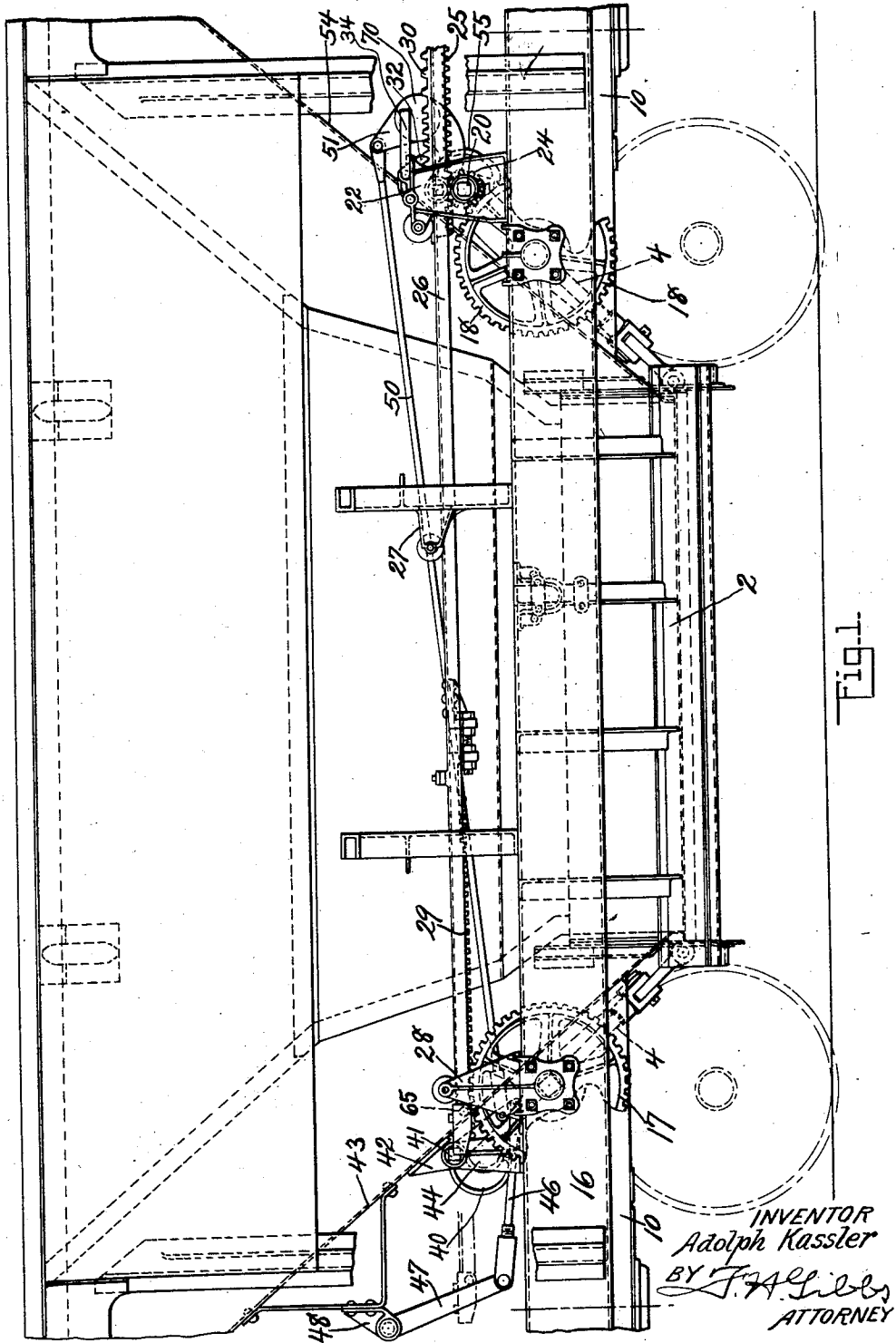
1,631,321

A. KASSLER

LOCK FOR CAR DOOR OPERATING MECHANISM

Filed Dec. 17, 1925

4 Sheets-Sheet 1



June 7, 1927.

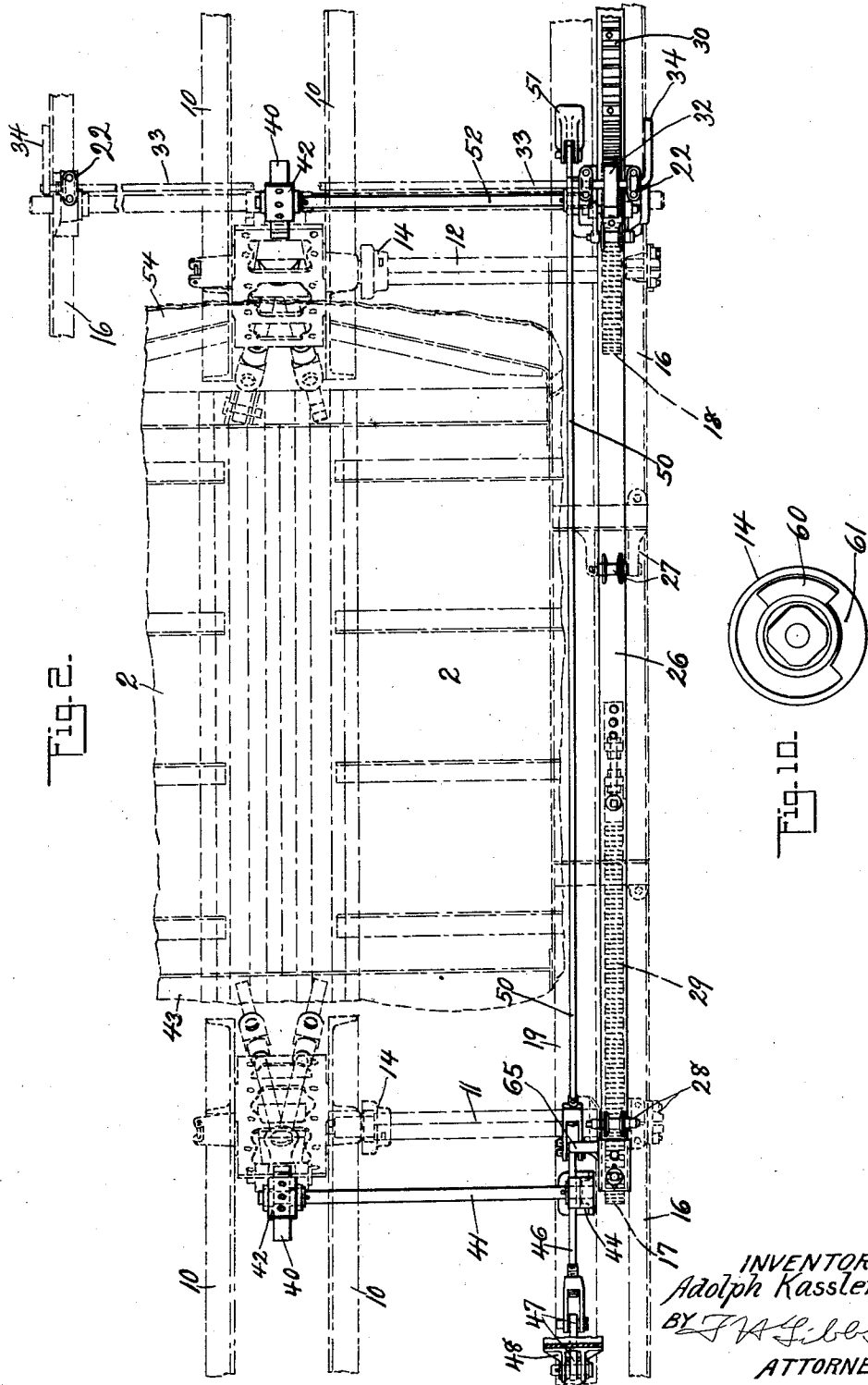
1,631,321

A. KASSLER

LOCK FOR CAR DOOR OPERATING MECHANISM

Filed Dec. 17, 1925

4 Sheets-Sheet 2



INVENTOR
Adolph Kassler
BY J. A. Gibbs
ATTORNEY

June 7, 1927.

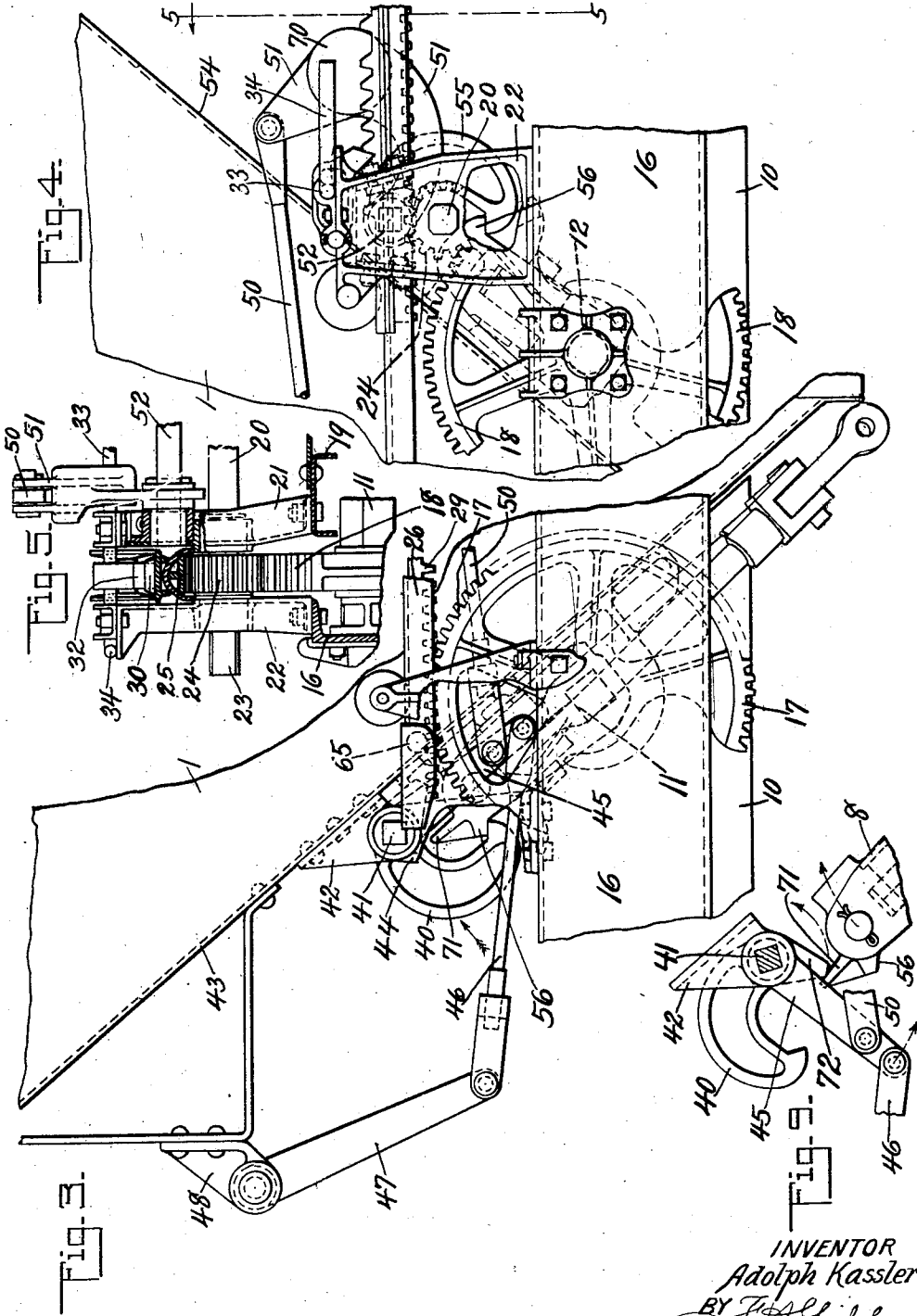
1,631,321

A. KASSLER

LOCK FOR CAR DOOR OPERATING MECHANISM

Filed Dec. 17, 1925

4 Sheets-Sheet 3



INVENTOR
Adolph Kassler
BY J. A. Gibbs
ATTORNEY

June 7, 1927.

1,631,321

A. KASSLER

LOCK FOR CAR DOOR OPERATING MECHANISM

Filed Dec. 17, 1925

4 Sheets-Sheet 4

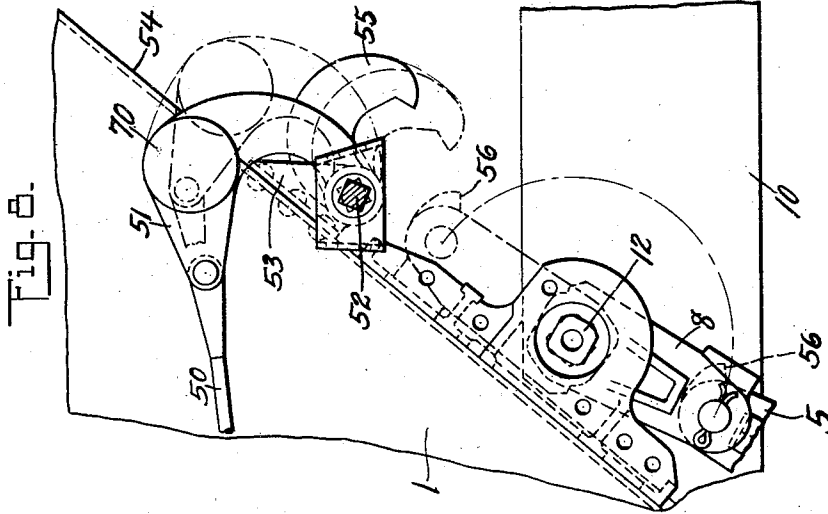


Fig. 6.

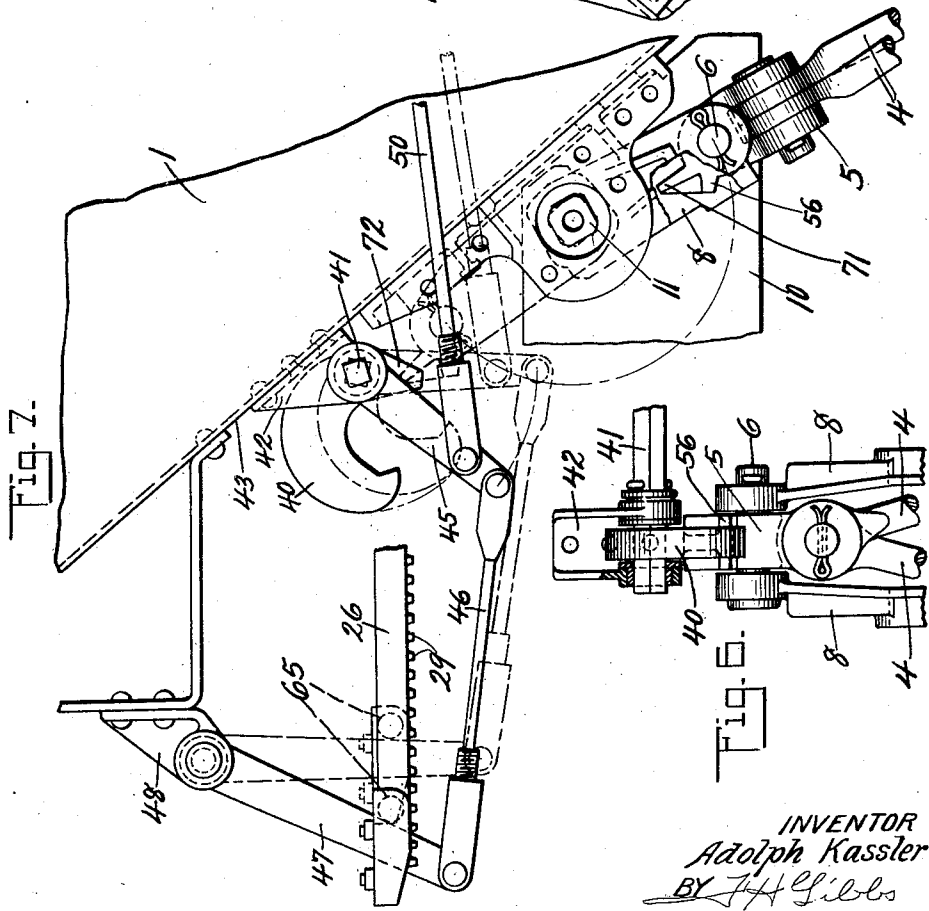


Fig. 7.

Fig. 8.

INVENTOR
Adolph Kassler
BY *H. H. Gibbs*
ATTORNEY

UNITED STATES PATENT OFFICE.

ADOLPH KASSLER, OF NEW YORK, N. Y., ASSIGNOR TO AMERICAN CAR AND FOUNDRY COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

LOCK FOR CAR-DOOR-OPERATING MECHANISM.

Application filed December 17, 1925. Serial No. 76,080.

In the drawings:

Fig. 1 is a partial side elevation of a dump car body showing a locking means constructed in accordance with this invention applied to the door operating mechanism thereof;

Fig. 2 is a top plan view of the locking means shown in Fig. 1, parts of the car body and door operating means being shown in broken lines in order to show the relation of the locking means thereto;

Fig. 3 is a partial side elevation of one end of the structure shown in Fig. 1, parts being broken away to show other parts more clearly and the doors being shown locked in closed position;

Fig. 4 is a view similar to Fig. 3 of the other end of the structure;

Fig. 5 is a partial vertical section taken on the line 5-5 of Fig. 4;

Fig. 6 is a fragmentary view, partly in elevation and partly in section showing the manner in which the locking pawl engages the door operating mechanism;

Fig. 7 is a fragmentary view in elevation of the end of the structure shown in Fig. 3 with parts broken away to more clearly show the relative positions of the locking pawl and door operation mechanism when the locking pawl is in released position and the doors are in the dropped or opened position;

Fig. 8 is a view similar to Fig. 7 of the other end of the structure;

Fig. 9 is a fragmentary view showing the relative positions of the locking pawl and door operating mechanism shown in Figs. 3 and 7 as the door operating mechanism is operated to move the doors to closed position and engages the locking pawl initiating the movement of the locking pawl to locking position; and

Fig. 10 is a view in elevation of the safety clutch or lost-motion device which is inserted in the door operating shaft at each end of the car body.

This invention relates to the door operating mechanism of dumping cars and it is an object of this invention to provide a locking means for the door operating mechanism of dumping cars which will be operated to release and locking positions by the movements of the door operating mechanism in opening

and closing the doors and without necessitating additional or special operations on the part of the operator.

In the drawings, the locking means forming the object of this invention is shown applied to a dump car having a body 1 and dumping doors 2. The means shown for operating the doors is the door operating mechanism shown in Patent No. 1,321,928, Lindstrom, et al., November 18, 1919, and comprises links 4 pivotally connected to the ends of the doors 2 and to yokes 5 which are pivotally supported on pins 6 carried by crank frames 8. The crank frames 8 are pivotally mounted on the center sills 10 and are operated by the shafts 11 and 12 which are connected to the crank frames 8 by means of the safety clutches 14 which permit of the doors dropping quickly without danger to the operator. The outer ends of the shafts 11 and 12 are journaled in a side sill 16 and the shafts have the segmental gears 17 and 18, respectively, keyed thereon adjacent the side sill 16. To operate the shafts 11 and 12 there is provided a shaft 20 journaled in brackets 22 mounted on the side sills 16 and in a bracket 21 mounted on the longitudinal member 19 and having squared ends 23 projecting beyond the brackets 22 to receive an operating wrench. Between bracket 21 and the adjacent bracket 22, the shaft 20 has keyed thereon a pinion 24 which meshes with the segmental gear 18 and a rack portion 25 of a longitudinally movable rack member 26 which is guided by the brackets 27 and 28 and is provided with a second rack portion 29 adjustably mounted thereon and meshing with the segmental gear 17. The rack member 26 is also provided with a notched portion 30 which can be engaged by a pawl 32 carried on a shaft 33 journaled on the brackets 22 and 21 and having operating handles 34 at its ends. In this construction in order to provide a mechanism which can be readily operated to drop the doors when the car is loaded it has been found necessary to reduce to a minimum the amount that the crank frames 8 move past their dead centers in order to lock the doors in the fully closed position. Reducing the distance the crank frames move past their dead centers reduces their tendency to remain in the locked position and renders

necessary some means in addition to the pawl 32 to prevent the crank frames 8 moving outwardly and dropping the doors.

To insure the doors being held in closed position there is provided at one end of the car body 1 a locking pawl 40 fixed on a shaft 41 which is journaled in a bearing bracket 42 secured to the end slope sheet 43 and in the bracket 44 mounted on the longitudinal member 19. Adjacent the bracket 44 the shaft 41 is provided with a lever arm 45 having its outer end pivotally connected to one end of a rod 46 which is adjustable as to its length and has its other end pivotally connected to the outer end of a lever 47 which is fulcrumed on a bracket 48 mounted on the slope sheet 43. The lever arm 45 is also pivotally connected to one end of a rod 50 which is adjustable as to its length and has its other end pivotally connected to the outer end of a curved weighted lever arm 51 fixed to a shaft 52 journaled in the bracket 21 and in a bracket 53 carried by the slope sheet 54. Fixed on the shaft 52 is a locking pawl 55, both the pawl 55 and the pawl 40 being provided with projections which, when the pawls are in locking position, engage beneath the lugs 56 formed on the yokes 5.

With the doors in the fully closed position, the operation of dropping the doors will be the same as described in Patent No. 1,321,928, the pinion 24 being operated by shaft 20 to rotate the shafts 11 and 12 through its engagement with the rack member 26 and segmental gear 18, respectively, the shafts being rotated until the lugs 60 and 61 of the safety clutches 14 engage to transmit motion to the crank frames 8 to drop the doors. With the locking means applied as shown in the drawing and considering it in the locking position when the doors are fully closed, the movement of the rack member 26 during the taking up of the lost motion in the safety clutches 14 will bring the inwardly projecting finger 65 on the rack member 26 into engagement with the lever 47 and shift the lever 47 to operate the locking pawls 40 and 55 and withdraw them from engagement with the lugs 56 on the yokes 5, the rod 46 being of such length that the pawls 40 and 55 are withdrawn before the crank frames 8 are operated to drop the doors and the weighted lever 51 being of such shape that the weighted portion 70 tends to hold the locking pawls in the release position when the rack member 26 has made its full movement.

When the pinion 24 is operated to raise the doors the segmental gear 18 and rack member 26 are operated, withdrawing the finger 65 from the lever 47 and rotating the shafts 11 and 12 until the lost motion in the safety clutches 14 is taken up and the crank frames 8 are operated to raise the

doors. As the shaft 11 is rotated, raising the crank frame 8 and the yoke 5 connected thereto, a projection 71 on the yoke 5 engages with a projection 72 on the locking pawl 40 operating the pawls 40 and 55 and bringing the weighted lever 51 to a position such that the weighted portions 70 thereof will bring the locking pawls to the full locking position with the locking pawls engaging beneath the lugs 56 on the yokes 5 as the doors are moved to the fully closed position.

What is claimed is:

1. In a dumping car, dumping doors, an operating mechanism for said dumping doors comprising a door operating shaft at each end of said doors operatively connected to said doors and means operatively connecting said shafts and locking means for said operating mechanism operated by said connecting means.

2. In a dumping car, dumping doors, door operating means at each end of said doors, means operatively connecting said door operating means and locking means for said door operating means operated by said connecting means.

3. In a dumping car, dumping doors, an operating mechanism for said doors comprising a door operating shaft at each end of said doors, means operatively connecting said shafts comprising a longitudinally movable means and locking means for said operating mechanism operated by said longitudinally movable means.

4. In a dumping car, dumping doors, an operating mechanism for said doors comprising a door operating shaft at each end of said doors, means for operating one of said shafts from a point adjacent the other shaft and locking means for said operating mechanism operated by said shaft operating means.

5. In a dump car, dumping doors, a shaft operatively connected to said door, operating means for said shaft comprising a longitudinally movable rack, shaft locking means comprising a locking pawl, means operated by said shaft adapted to be engaged by said pawl to hold said doors in closed position and means operatively connecting said rack and pawl.

6. In a dump car, dumping doors, an operating mechanism for said doors comprising shafts operatively connected to said doors, means operatively connecting said shafts comprising a longitudinally movable rack, a lever operated by said rack and locking pawls for holding said doors in closed position connected to said lever.

7. In a dumping car, dumping doors, an operating mechanism comprising operating shafts for said doors having lost motion connections therein, means operatively connecting said shafts having an idle move-

ment while taking up the lost motion in said shafts and locking means for said operating mechanism operated to release position by the idle movement of said connecting means.

8. In a dumping car, dumping doors, an operating mechanism comprising operating shafts for said doors having lost motion connections therein, means comprising a longitudinally movable rack operatively connecting said shafts, said rack having an idle movement during the taking up of the lost motion in said shafts, a lever operated by said rack during said idle movement and locking means for said operating mechanism operated by said lever.

9. In a dump car, dumping doors, an operating mechanism for said doors comprising shafts operatively connected to said doors, means comprising a longitudinally movable member operatively connecting said shafts, locking means for said operating mechanism operated to release position by said longitudinally movable member and shaft operated means initiating the locking movement of said locking means.

10. In a dump car, dumping doors, an operating mechanism for said doors comprising shafts operatively connected to said doors, means comprising a longitudinally movable member operatively connecting said shafts, locking means for said operating mechanism operated to release position by said longitudinally movable member, shaft operated means initiating the locking movement of said locking means and means for completing the locking movement of said locking means.

11. In a dump car, dumping doors, an operating mechanism for said doors comprising shafts operatively connected to said doors, means comprising a longitudinally movable member operatively connecting said shafts, locking means for said operating mechanism operatively connected together, operating means for said locking means, said operating means being operated by said longitudinally movable member to shift said locking means to release position, shaft operated means engaging one of said locking means to initiate the locking movement of said locking means and means operating to complete the locking movement of said locking means.

12. In a dump car, dumping doors, an operating mechanism for said doors comprising shafts operatively connected to said doors, means comprising a longitudinally movable rack operatively connecting said shafts, locking pawls for said operating mechanism operatively connected together, a lever for operating said locking pawls, said rack operating said lever to shift said locking pawls to release position, shaft operated means engaging one of said locking

pawls to initiate the locking movement of said locking pawls and gravity operated means operating to complete the locking movement of said locking pawls.

13. In a dump car, dumping doors, an operating mechanism for said doors comprising shafts operatively connected to said doors and having a lost motion connection therein, means comprising a longitudinally movable member operatively connecting said shafts, said longitudinally movable member having an idle movement during the taking up of the lost motion in said shafts, locking pawls for said operating mechanism operatively connected together and a lever for operating said locking pawls, said member operating said lever to shift said locking pawls to release position during the idle movement of said member.

14. In a dump car, dumping doors, an operating mechanism for said doors comprising shafts operatively connected to said doors and having a lost motion connection therein, means comprising a longitudinally movable member operatively connecting said shafts, said longitudinally movable member having an idle movement during the taking up of the lost motion in said shafts, locking pawls for said operating mechanism operatively connected together, a lever for operating said locking pawls, said member operating said lever to shift said locking pawls to release position during the idle movement of said member and shaft operated means for initiating the movement of said locking pawls to locking position during the operation of said doors to closed position.

15. In a dump car, dumping doors, an operating mechanism for said doors comprising shafts operatively connected to said doors and having a lost motion connection therein, means comprising a longitudinally movable member operatively connecting said shafts, said longitudinally movable member having an idle movement during the taking up of the lost motion in said shafts, locking pawls for said operating mechanism operatively connected together, a lever for operating said locking pawls, said member operating said lever to shift said locking pawls to release position during the idle movement of said member, shaft operated means for initiating the movement of said locking pawls to locking position during the operation of said doors to closed position and gravity operated means for completing the locking movement of said locking pawls.

16. In a dump car, dumping doors, an operating mechanism for said doors comprising shafts operatively connected to said doors and having a lost motion connection therein, means comprising a longitudinally movable member operatively connecting said shafts, said longitudinally movable member having an idle movement during the taking

up of the lost motion in said shafts, locking
 pawls for said operating mechanism operative-
 ly connected together, a lever for oper-
 ating said locking pawls, said member oper-
 ating said lever to shift said locking pawls
 to release position during the idle movement
 of said member and shaft operated means
 engaging one of said locking pawls for
 initiating the locking movement of said lock-
 ing pawls.

17. In a dump car, dumping doors, an
 operating mechanism for said doors com-
 prising shafts operatively connected to said
 doors and having a lost motion connection
 therein, means comprising a longitudinally
 movable member operatively connecting said
 shafts, said longitudinally movable member
 having an idle movement during the taking
 up of the lost motion in said shafts, locking
 pawls for said operating mechanism operative-
 ly connected together, a lever for operat-
 ing said locking pawls, said member operat-
 ing said lever to shift said locking pawls to
 release position during the idle movement of
 said member, shaft operated means engag-
 ing one of said locking pawls for initiating
 the locking movement of said locking pawls
 and gravity operated means for completing
 the locking movement of said locking pawls.

18. In a dump car, dumping doors, an
 operating mechanism for said doors com-
 prising shafts operatively connected to said
 doors and having a lost motion connection
 therein, means comprising a longitudinally
 movable member operatively connecting said
 shafts, said longitudinally movable member
 having an idle movement during the taking
 up of the lost motion in said shafts, locking
 pawls for said operating mechanism operative-
 ly connected together, a lever for operat-
 ing said locking pawls, said member operat-
 ing said lever to shift said locking pawls to
 release position during the idle movement of
 said member, shaft operated means engaging
 one of said locking pawls for initiating the
 locking movement of said locking pawls and
 a weighted lever in the connection between
 said locking pawls for completing the lock-
 ing movement of said locking pawls.

19. In a dump car, dumping doors, an
 operating mechanism comprising operating
 shafts for said doors, locking pawls for oper-
 ating mechanism, means operatively connect-
 ing said locking pawls and means operated
 by one of said shafts for initiating the lock-
 ing movement of said locking pawls.

20. In a dump car, dumping doors, an
 operating mechanism comprising operating
 shafts for said doors, locking pawls for
 said operating mechanism, means operative-
 ly connecting said locking pawls, means
 operated by one of said shafts for initiating
 the locking movement of said locking pawls
 and gravity operated means for completing
 the locking movement of said locking pawls.

21. In a dump car, dumping doors, an
 operating mechanism comprising operating
 shafts for said doors, locking pawls for said
 operating mechanism, means operatively
 connecting said locking pawls, means oper-
 ated by one of said shafts for initiating
 the locking movement of said locking pawls
 and a weighted lever in said connecting
 means for completing the locking movement
 of locking pawls.

22. In a dump car, dumping doors, an
 operating mechanism comprising operating
 shafts for said doors, locking pawls for said
 operating mechanism, means operatively
 connecting said locking pawls and shaft
 operated means engaging one of said pawls
 during the closing of said doors to initiate
 the locking movement of said locking pawls.

23. In a dump car, dumping doors, an
 operating mechanism comprising operating
 shafts for said doors, locking pawls for
 said operating mechanism, means operative-
 ly connecting said locking pawls, shaft oper-
 ated means engaging one of said pawls dur-
 ing the closing of said doors to initiate the
 locking movement of said locking pawls and
 gravity operated means in said connecting
 means to complete the locking movement of
 said locking pawls as said doors are fully
 closed.

In witness whereof I have hereunto set
 my hand.

ADOLPH KASSLER.