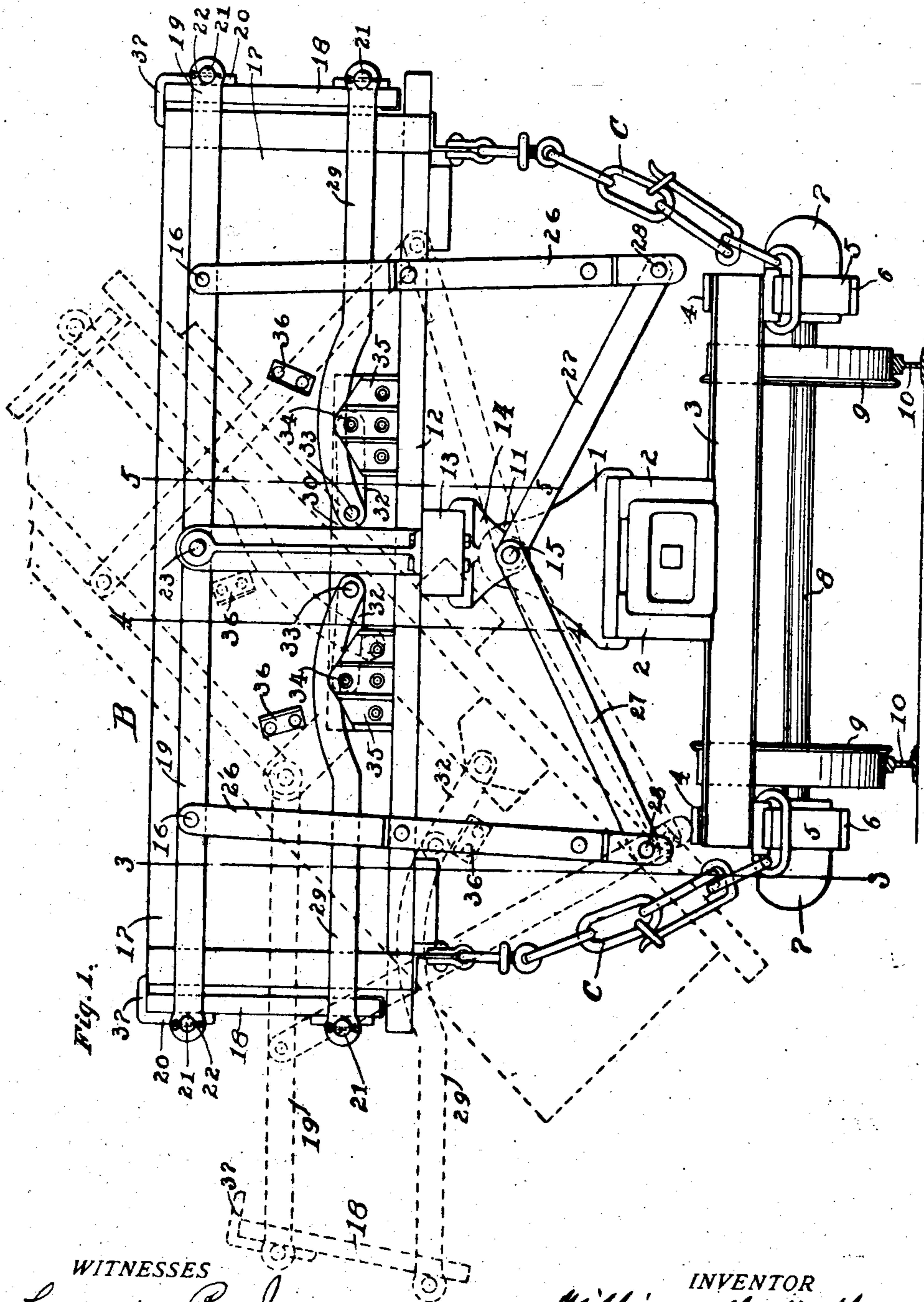


No. 834,090.

PATENTED OCT. 23, 1906.

W. W. WALLACE.
DUMPING CAR,
APPLICATION FILED FEB. 26, 1906.

3 SHEETS—SHEET 1.



WITNESSES
Carrie R. Ivy.
M. E. Parmelee

INVENTOR
William W. Wallace
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Attorney

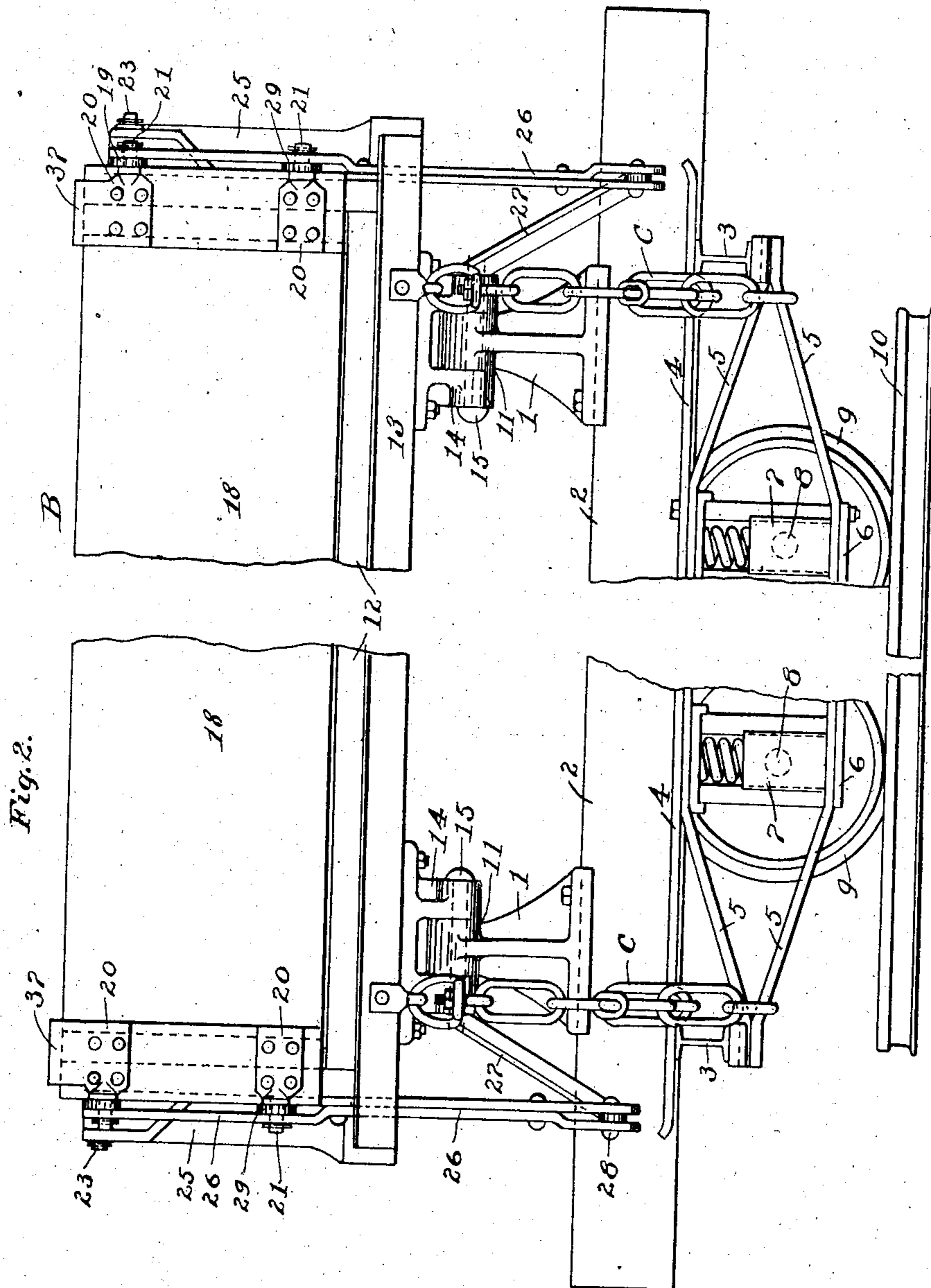
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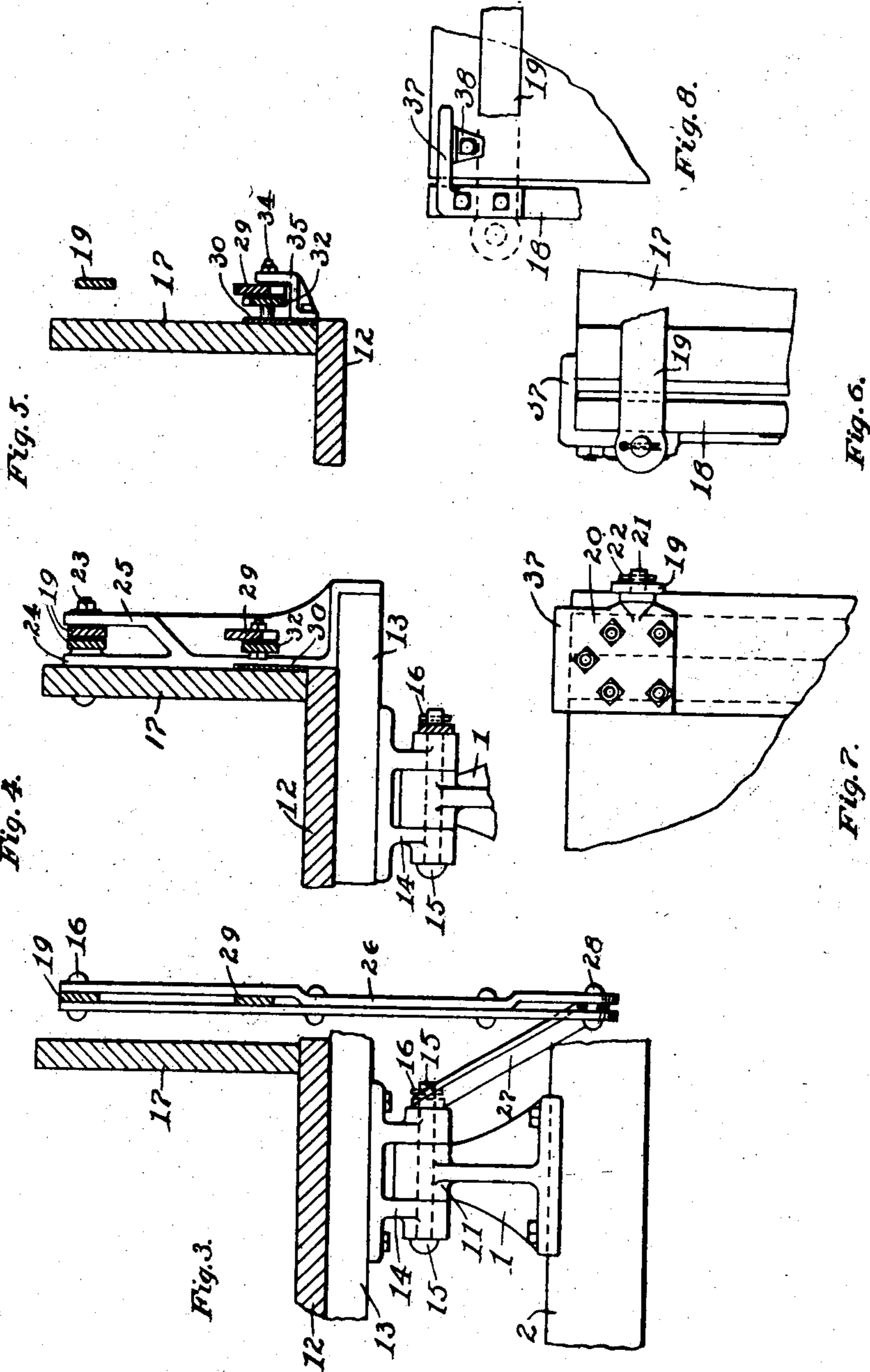
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UNITED STATES PATENT OFFICE.

WILLIAM W. WALLACE, OF KNOXVILLE, TENNESSEE.

DUMPING-CAR.

No. 834,090.

Specification of Letters Patent.

Patented Oct. 23, 1906.

Application filed February 26, 1906. Serial No. 302,917.

To all whom it may concern:

Be it known that I, WILLIAM W. WALLACE, a citizen of the United States, residing at Knoxville, in the county of Knox and State of Tennessee, have invented a new and useful Improvement in Dumping - Cars, of which the following is a specification, reference being had to the accompanying drawings.

My improvement relates particularly to dumping - cars comprising a body or box adapted to be tilted laterally and having a door at each side to be opened for the lateral discharge of the load.

The object of the invention is to produce mechanism for automatically shifting either of the doors into the open and closed positions.

The improvement is applicable to the dumping-car made the subject-matter of Letters Patent of the United States, No 781,577, granted to me January 31, 1905. In the car described by said patent the door at the lower side of the tilted car is relatively elevated and suspended at its upper corners from two bars, while the lower edge of the door is free to swing outward away from the car-body to permit the ready passage of the load of material from the car-body, a locking-bar being applied to each lower corner of said door and to the end of the car in proper relation to lock said door after the latter has been closed.

The object of the present improvement is to modify the means for lifting the door and to provide automatic means for positively swinging the lower portion of the door against the car-body while the door descends through the lower portion of its up and down range of movement, so that the entire action of the door during the return of the car-body into the horizontal position is positively automatic.

In the accompanying drawings, Figure 1 is an end elevation of a car embodying my improvement, the right-hand portion being broken away. Fig. 2 is a side elevation of the structure shown in Fig. 1. Fig. 3 is a section on the line 3 3 of Fig. 1 looking to the right. Fig. 4 is a section on the line 4 4 of Fig. 1 looking to the right. Fig. 5 is a section on the line 5 5 of Fig. 1 looking to the right. Figs. 6 and 7 are enlarged detail views of one of the upper cor-

ners of the car-body. Fig. 8 is a detail view of a modification, showing arm and shoulder for turning the door.

Referring to said drawings, 1 1 1 are upright bearing-blocks arranged in a horizontal line extending lengthwise over the middle longitudinal line of the truck. Said bearing-blocks rest upon longitudinal beams 2 2, and said beams are supported upon cross-beams 3 3. To the outer ends of said cross-beams are secured longitudinal plates, 4, 5, 5, and 6, and said plates support axle-boxes 7, which receive the ends of the axles 8, and said axles are surrounded by wheels 9, resting on the rails 10. Said bearing-blocks 1 have horizontal bearings 11, arranged in the same horizontal line. The car-body B is supported pivotally in said bearings, so that said body may tilt toward either side of the truck. Along the bottom 12 of the car-body is a sill 13, parallel to the length of the car and midway between its sides. Above each bearing block 1 a bearing-block 14 is applied to the lower face of said sill 13. Said block is recessed transversely to receive the upper portion of the adjacent bearing-block 1, and a bolt 15 extends horizontally through the bearings of said two bearing-blocks and is secured in any suitable manner, as by means of a key or cotter 16, extending through the free end of the bolt adjacent the bearing-block 14.

The body B comprises the relatively stationary floor or bottom 12, the relatively stationary end walls 17, and the shiftable walls or doors 18. As the doors are preferably duplicates, only one need be described in detail, and as the mechanism at one end of each door is a duplicate of the mechanism at the other end of the door the mechanism at only one end need be described in detail. Obviously the car may have only one door. Each door is supported by a bar 19, hinged to the door near the upper corner of the latter. To form said hinge, the drawings show ears 20, applied to the outer face of the door adjacent to said bar and having journals 21 extending through said bar and cotter-pins 22 extending through said journals outside of said bar. The bars 19 have their inner ends hinged to the car-body to permit movement in a plane parallel to the end wall of the car. For convenience and economy in construction I have shown in the drawings the ends of

said bars overlapping and secured by a single bolt 23, said bolt passing loosely through said bars and preferably immovably through the adjacent end wall 17, the filling-block 24 interposed between said bars and said wall, and the upright brace-plate 25 extending over said bars outside of the latter.

Between the ends of each bar 19 a lifting member 26 is hinged by its upper end to the bar 19 by a horizontal bolt 16 and extends thence downward to a point a little above the end of the horizontal plate 4, where it is hinged to one end of a link 27 by a horizontal bolt 28. The opposite end of said link 27 loosely surrounds the outer end of the adjacent bolt 15, which extends through the adjacent bearing-blocks 1 and 14. From the foregoing description it will be seen that said lifting member 26 controls the adjacent bar 19. When the car-body is in the horizontal position, the lower end of each lifting member is a little above the adjacent horizontal plate 4, and each such member is suspended from the adjacent bar 19, and the latter is supported by the hinge-bolt 23 and the adjacent door, the latter resting upon the car-body, as will be hereinafter described. When the car-body is moved from the horizontal into the tilted position, as shown by the dotted lines in Fig. 1 of the drawings, the lower end of the lifting member 26 at the side of the car-body which is lowered soon rests upon the adjacent plate 4 and is thereby prevented from descending farther. Hence as the side of the car descends farther the adjacent bar 19 and the adjacent door 18 are held against farther downward movement, excepting the limited downward movement due to the lowering of the upper end of said lifting member by the outward turning of said member upon its lower end in response to the lateral or outward movement of said bar 19 by the lateral movement of the hinge-bolt 23, to which the inner end of said bar is secured.

Chains C, attached to each side of the car-body and the adjacent portions of the car-truck, serve to hold the car-body in the horizontal position. When the load is to be dumped, the chains opposite the discharge side of the car are released.

To the lower corner of the door is secured another ear 20, also having a journal 21, and said journal extends through a bar 29, which is normally approximately parallel to the bar 19. The inner end of said bar is connected, as will be hereinafter described.

A horizontal reinforcing-plate 30 extends across the middle portion of the outer face of each end wall approximately in line with the outer ends of the bars 29. To the inner end of each bar 29 is hinged one end of a link 32 by a horizontal bolt 33, and the opposite end of each such link is hinged on a horizontal stud or bolt 34, extending outward from the plate 30 at a point between and a little above

the two hinges of the adjacent bar 29. To impart to said stud or bolt 34 greater stability, a bracket-plate 35 is applied by its outer edge to the reinforcing-plate 30 and extended thence outward and upward and around the outer end of said stud. To clear said stud, the inner half of said bar 29 is curved upward, as shown in Fig. 1. The space between the reinforcing-plate 30 and the bracket-plate 35 is sufficient to allow the bar 29 and the link 32 to rest side by side between said plates.

In the closed position, (indicated by solid lines in Fig. 1,) as already described, the outer hinge of the link 32 is above the two hinges of the bar 29. Hence any outward pressure exerted against the lower portion of the door is resisted by said link 32, for the strain imparted to said link through the bar 29 will be on a line below the stud 34, and there will be no tendency to lift the outer end of said link. On the contrary, the tendency is to draw the outer end of said link downward. Thus the lower portion of the door is very securely locked, so long as the car-body is in the horizontal position and the inner end of the bar 29 is not lifted by hand; but when that side of the car-body is lowered, as already described, the adjacent lifting member 26 relatively lifts the adjacent bar 19, whereby the adjacent door is lifted, and the outer end of the adjacent bar 29 is lifted until the line cutting the hinges of said bar is above the outer hinge of the link 32, or it might be said that said side of the car-body descends more rapidly than the adjacent bar 29, whereby the stud 34, to which the outer end of the adjacent link 32 is hinged, is carried downward below the line cutting the hinges of the bar 29. Thus the inner end of said link may rise and permit the bar 29 to move bodily outward. Such outward movement may continue until the inner hinge of the bar 29 is between the outer hinge of said bar and the stud 34 and in line with said outer hinge and said stud; but in order to facilitate the closing of the door when the car-body is again brought into the horizontal position it is preferable to limit the downward movement of the inner end of said bar 29, so that the hinge which joins said bar and said link will remain a little above a line cutting the outer hinge of the bar 29 and the stud 34, whereby said link is free to turn upward and inward on said stud. To thus limit the downward movement of the bar 29, any suitable stop may be applied to the car in such position as to engage said bar or said link when said bar has descended to the desired limit. For this purpose the drawings show a stop-block 36, applied to the outer face of the end wall of the car in proper position to meet the swinging end of the link 32 when the bar 29 has descended as far as desired.

The upper portion of the lifting member 26 is preferably forked, the arms of said fork standing at opposite sides of the bars 19 and 29. By being placed into said forksaid bar 29 is guided in its movements.

The bar 29 and the link 32 may be operated manually for releasing the lower portion of the door when the car-body is in the horizontal position.

When the car is in the tilted position and the door raised, as described, the lower portion of the door is free to swing in either direction. Inasmuch as the upper ears 20 are applied to the outer face of the door the door has a tendency to tilt, the lower edge going outward. When the car has returned to the horizontal position, the door descends by its weight. To cause such downward movement to force the lower portion of the door to swing inward, I extend an arm 37 inward from the upper portion of the door in proper position to bear downward upon a relatively fixed portion of the car. In the form shown in Figs. 1, 6, and 7 of the drawings said arm is integral with the upper ear 20 and extends over a portion of the upper edge of the adjacent end wall of the car-body, so that when the door descends said arm bears upon said end wall and forces the door to turn upon the upper journals 21. In Fig. 8 said arm 37 extends over a portion of the outer face of the adjacent end wall and normally bears downward upon a stud or stop 38, extending horizontally outward from said end wall. When this construction is used, the bar 19 must stand outward far enough to clear the stop 38.

It will be observed that said arms 37 will thus force the lower portion of the door into its normal position, and thereby push the bar 29 inward far enough to allow its inner end and the link 32 to fall by gravity into the locked position.

I claim as my invention—

1. The combination with a truck and a tiltable car-body mounted upon said truck and comprising a movable door, of bars, 19, hinged by their outer ends to the upper portion and by their inner ends to the car-body, mechanism for forcing the lower portion of the door toward the car-body while the door descends through the lower portion of its up and down range of movement, and locking mechanism applied to the lower portion of the door, substantially as described.

2. The combination with a truck and a tiltable car-body mounted upon said truck and comprising a movable door, of bars, 19, hinged by their outer ends to the upper portion of the door and by their inner ends to the car-body, mechanism for lifting said bars, mechanism for forcing the lower portion of the door toward the car-body while the door descends through the lower portion of its up and down range of movement, and

locking mechanism applied to the lower portion of the door, substantially as described.

3. The combination with a truck and a tiltable car-body mounted upon said truck and comprising a movable door, of bars, 19, hinged by their outer ends to the upper portion of the door and by their inner ends to the car-body, arms, 37, applied to the upper portion of the door and extending laterally in proper position to bear upon a relatively stationary portion of said body when the door is in its normal position, bars, 29, hinged to the lower portion of each end of the door and joined to the car-body by a laterally-shiftable connection, whereby they are made laterally shiftable with reference to said bars, 19, and thereby adapted to permit the lower edge of the door to move away from the car-body farther than the upper edge of the door moves, substantially as described.

4. The combination with a truck and a tiltable car-body mounted upon said truck and comprising a movable door, of bars, 19, hinged by their outer ends to the upper portion of the door and by their inner ends to the car-body, arms, 37, applied to the upper portion of the door and extending laterally in proper position to bear upon a relatively stationary portion of said body when the door is in its normal position, bars, 29, hinged to the lower portion of each end of the door and joined to the car by a laterally shiftable connection, whereby they are made laterally shiftable with reference to said bars, 19, and thereby adapted to permit the lower edge of the door to move away from the car-body farther than the upper edge of the door moves, and mechanism for lifting said bar, 19, substantially as described.

5. The combination with a truck and a tiltable car-body mounted upon said truck and comprising a movable door, of bars, 19, hinged by their outer ends to the upper portion of the door and by their inner ends to the car-body, arms, 37, applied to the upper portion of the door and extending laterally in proper position to bear upon a relatively stationary portion of said body when the door is in its normal position, bars, 29, hinged to the lower portion of each end of the door, and links, 32, each hinged by one end to the inner end of one of said bars and by its other end to the car-body, substantially as described.

6. The combination with a truck and a tiltable car-body mounted upon said truck and comprising a movable door, of bars, 19, hinged by their outer ends to the upper portion of the door and by their inner ends to the car-body, arms, 37, applied to the upper portion of the door and extending laterally in proper position to bear upon a relatively stationary portion of said body when the door is in its normal position, bars, 29, hinged to the lower portion of each end of the door, and links, 32, each hinged by one end to the

inner end of one of said bars and by its other end to the car-body, and mechanism for lifting said bar, 19, substantially as described.

7. The combination with a truck and a
5 tilttable car-body mounted upon said truck and comprising a movable door, of bars, 19, hinged by their outer ends to the upper portion of the door and by their inner ends to the car-body, arms, 37, applied to the upper
10 portion of the door and extending laterally in proper position to bear upon a relatively stationary portion of said body when the door is in its normal position, bars, 29, hinged to the lower portion of each end of the door
15 and joined to the car by a laterally-shiftable connection whereby they are made laterally shiftable with reference to said bars, 19, and thereby adapted to permit the lower edge of the door to move away from the car-body
20 farther than the upper edge of the door moves, and mechanism for lifting said bars, 19, and guiding the bars, 29, substantially as described.

8. The combination with a truck and a tilt-
25 able car-body mounted upon said truck and comprising a movable door, of bars, 19, hinged by their outer ends to the upper portion of the door and by their inner ends to the car-body, arms, 37, applied to the upper portion of the door and extending laterally in
30 proper position to bear upon a relatively stationary portion of said body when the door is in its normal position, bars, 29, hinged to the lower portion of each end of the door and
35 links, 32, each hinged by one end to the inner end of one of said bars and by its other end to the car-body, and mechanism for lifting said bars, 19, and guiding the bars, 29, substantially as described.

9. The combination with a truck and a tilt-
40 able car-body mounted upon said truck and comprising a movable door, of bars, 19, hinged by their outer ends to the upper portion of the door and by their inner ends to the car-body, arms, 37, applied to the upper
45 portion of the door and extending laterally in proper position to bear upon a relatively stationary portion of said body when the door is in its normal position, arms, 37, applied to the upper portion of the door and extending laterally in proper position to bear upon a relatively stationary portion of said body when the door is in its normal position, bars, 29, hinged to the lower portion of each
50 end of the door and joined to the car by a laterally-shiftable connection, whereby they are made laterally shiftable with reference to said bars, 19, and thereby adapted to permit the lower edge of the door to move away
55 from the car-body farther than the upper edge of the door moves, and mechanism for guiding the bars, 29, substantially as described.

10. The combination with a truck and a

shiftable car-body mounted upon said truck 65 and comprising a movable door, of bars, 19, hinged by their outer ends to the upper portion of the door and by their inner ends to the car-body, arms, 37, applied to the upper portion of the door and extending laterally 70 in proper position to bear upon a relatively stationary portion of said body when the door is in its normal position, bars, 29, hinged to the lower portion of each end of the door, links, 32, each hinged by one end to the inner 75 end of one of said bars and by its other end to the car-body, and mechanism for guiding the bars, 29, substantially as described.

11. The combination with a truck and a tilttable car-body mounted upon said truck 80 and comprising a movable door, of bars, 19, hinged by their outer ends to the upper portion of the door and by their inner ends to the car-body, arms, 37, applied to the upper portion of the door and extending laterally 85 in proper position to bear upon a relatively stationary portion of said body when the door is in its normal position, bars, 29, hinged to the lower portion of each end of the door, links, 32, each hinged by one end to the inner 90 end of one of said bars and by its other end to the car-body, and mechanism for limiting the movement of said links, substantially as described.

12. The combination with a truck and a 95 tilttable car-body comprising a movable door, said body being hinged upon said truck by a hinge comprising a bolt, 15, of a bar attached at one end to said door and hinged by its other end to the car-body, a lifting member 100 secured to said bar, a link joined to said lifting member and said bolt, and automatic mechanism for forcing the lower portion of the door toward the car-body while the door descends through the lower portion of its up 105 and down range of movement, substantially as described.

13. The combination with a truck and a tilttable car-body comprising a movable door, said body being hinged upon said truck by a 110 hinge comprising a bolt, 15, of a bar attached at one end to said door and hinged by its other end to the car-body, a lifting member secured to said bar, a link joined to said lifting member and said bolt, automatic mech- 115 anism for forcing the lower portion of the door toward the car-body while the door descends through the lower portion of its up and down range of movement, and locking mechanism applied to the lower portion of 120 the door, substantially as described.

In testimony whereof I have signed my name, in presence of two witnesses, this 23d day of February, in the year 1906.

WILLIAM W. WALLACE.

Witnesses:

B. R. STOUT,
CYRUS KEHR.