No. 806,862. PATENTED DEC. 12, 1905.

J. McE. AMES.

TRANSPORTATION CAR AND THE LIKE.

APPLICATION FILED MAY 1, 1905.

2 SHEETS—SHEET 1.

Fig. 1.

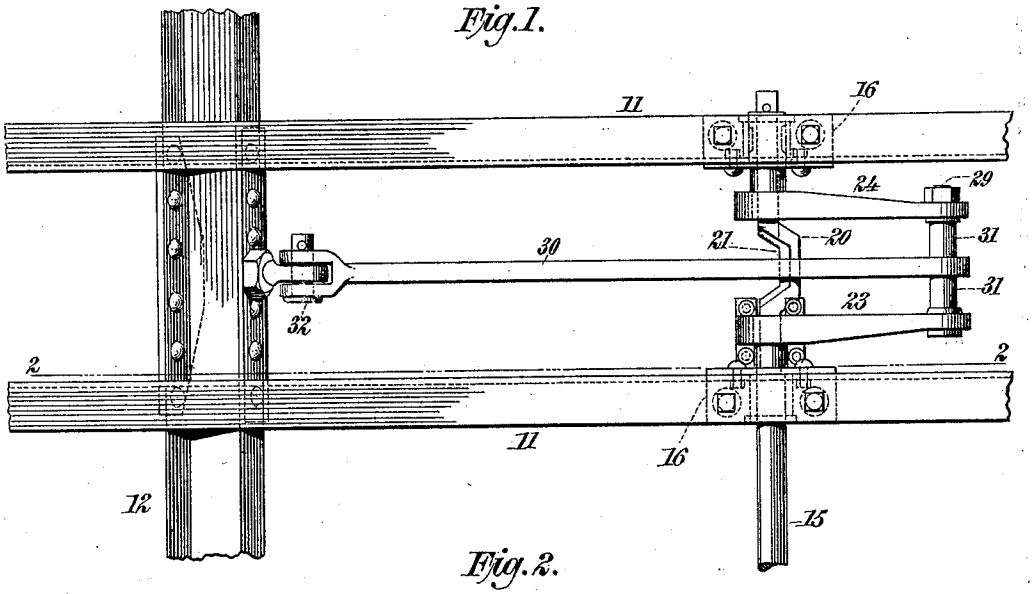
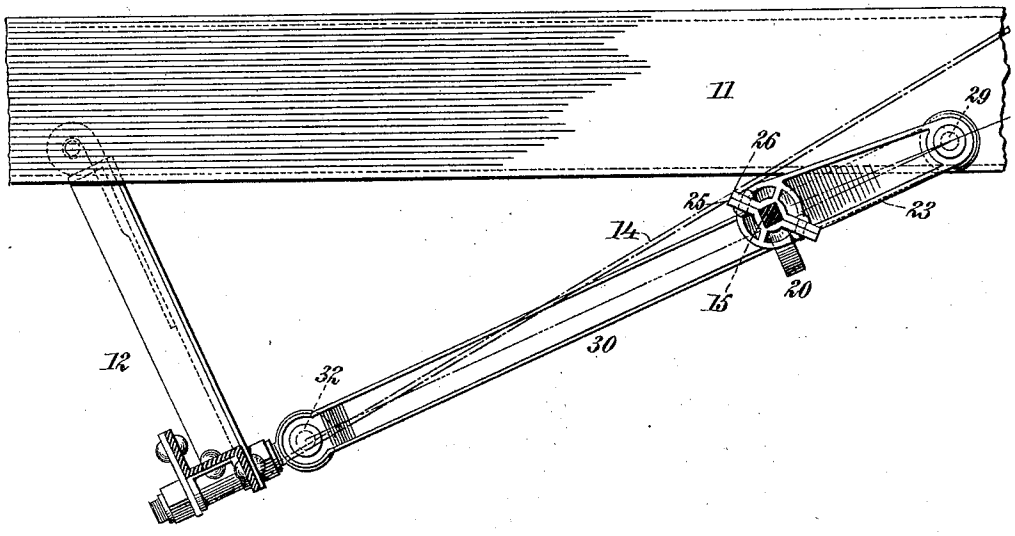


Fig. 2.



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2 SHEETS—SHEET 2.

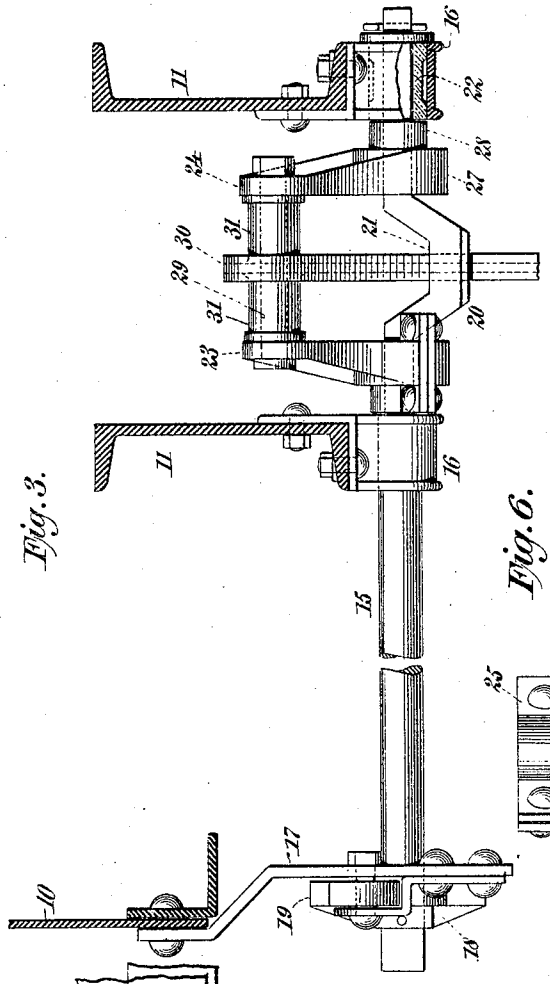


Fig. 3.

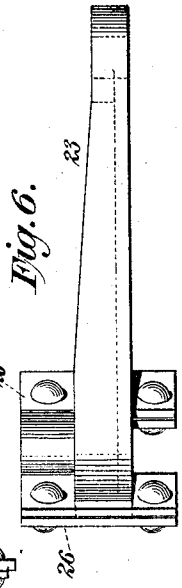


Fig. 6.

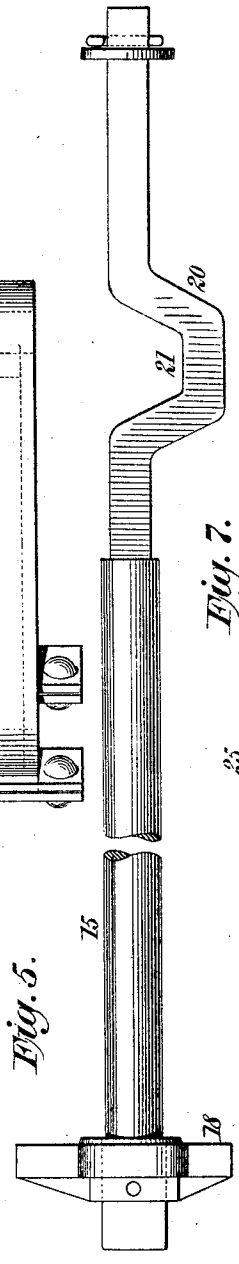


Fig. 5.

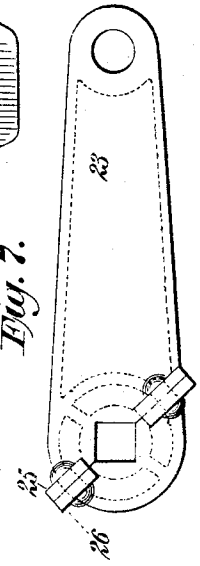


Fig. 7.

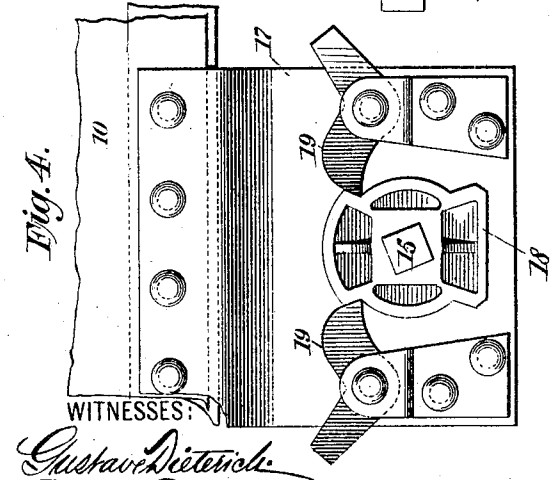


Fig. 4.

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TRANSPORTATION-CAR AND THE LIKE.

No. 806,862. Specification of Letters Patent. Patented Dec. 12, 1905.

Application filed May 1, 1905. Serial No. 258,212.

To all whom it may concern:

Be it known that I, JOHN McE. AMES, a citizen of the United States, and a resident of New Brighton, in the county of Richmond and State of New York, have invented certain new and useful Improvements in Transportation-Cars and the Like, of which the following is a specification.

The invention relates to improvements in transportation-cars and the like, and pertains more particularly to novel mechanism for opening, closing, and locking the discharge door or doors located at the bottom of the car compartment or compartments.

The invention will be fully understood from the detailed description hereinafter presented, reference being had to the accompanying drawings, in which—

Figure 1 is a top view of a portion of the center or draft sills of a hopper-car with door-operating mechanism embodying my invention supported thereby, the Z-bar at the lower edge of the door being the only part of the latter illustrated. Fig. 2 is a longitudinal section through same on the dotted line 2 2 of Fig. 1 and illustrates the door-operating mechanism as securing a hopper-car door in closed position. Fig. 3 is a transverse section through a portion of a usual car having applied thereto door-operating mechanism embodying my invention. Fig. 4 is a side elevation of a portion of the car and illustrates the means located at the outer side of the car for locking the door-operating shaft. Fig. 5 is a detached side elevation, partly broken away, of the door-operating shaft. Fig. 6 is an edge view of one of the crank-arms on the operating-shaft, and Fig. 7 is a side elevation of same.

In the drawings, 10 designates a portion of the side of a hopper-car of usual construction; 11, the draft or center sills of same; 12, a usual type of hinged discharge door or gate at the lower end of the customary inclined floor-section 14, (denoted by dotted lines in Fig. 2,) and 15 a transverse operating-shaft from which, through intermediate mechanism, the door or gate may be operated. The shaft 15 extends transversely of the car below the inclined floor-section 14 and is journaled at its inner end in hanger-bearings 16, secured to the center-sills 11, while at its outer end said shaft is mounted in a plate 17, at the outer side of which the said shaft has a polygonal end carrying a locking-plate 18 and adapted beyond said plate to receive a wrench or other suitable tool for rotating said shaft to effect the closing of the door 12. The locking-plate 18 is of known form and construction and coöperates with pivoted dogs 19 for locking at its outer end the shaft 15.

The novel features of the present invention are those located at the inner portion of the shaft 15 or between the center sills 11.

The inner portion of the shaft 15 is polygonal in cross-section and is formed with the offset portion or bend 20, which is of special importance in its coöperation with the other elements of the door-operating mechanism, the recess 21, created by said offset portion 20, being extended beyond the longitudinal center of the shaft. The shaft 15 has a rotary motion within the bearings 16, and since the inner end of the said shaft is polygonal in cross-section I provide within the inner bearing 16 a bushing 22, Fig. 3, which fits upon the end of said shaft and presents a circular exterior surface adapted to the circular interior walls of the inner hanger 16. That portion of the shaft 15 which is in the other hanger-bearing 16 is circular in cross-section, and hence no bushing is required for said bearing.

Upon the inner portion of the shaft 15, and located at opposite sides of the offset or bend 20 thereof, are secured the crank-arms 23 24, one of which (23) is illustrated in detail in Figs. 6 and 7. The crank-arm 23 is at its lower end provided with an integral bearing-flange 25 to fit upon one side of the shaft 15 and with an applied corresponding bearing-flange 25 to fit upon the opposite side of said shaft, the two bearing-flanges 25 26 matching each other and being secured together by suitable rivets, as shown, and forming within them a polygonal bore, Fig. 7, corresponding with the polygonal form in cross-section of the inner portion of the shaft 15, it being my purpose that the crank-arms shall be rigid with and operated from said shaft. The crank-arm 24 differs from the crank-arm 23 only in the formation of its lower end, which engages the shaft 15, at which end said crank-arm 24 is formed with a hub 27, having a sleeve extension 28, and which hub and sleeve have a polygonal bore to fit upon the polygonal portion of the shaft 15. The crank-arm 24 is slipped upon the end of the shaft 15 before the latter has its inner extremity inserted within its bearing; but due to the offset

20 in the shaft the crank-arm 23 cannot be thus slipped upon the end of said shaft and is therefore formed with the bearing-flanges 25 26.

Between the free ends of the crank-arms 23 24 is mounted upon a pin 29 the upper end of the connecting-rod 30, whose lower end is pivotally connected by a suitable pin 32 to the lower edge of the door or gate 12 in the customary manner and as clearly illustrated in Fig. 1. The rod 30 is a plain straight rod or bar and preferably is formed integrally at its upper end with the sleeve portions 31, which center the rod 30 between the crank-arms 23 24 and receive the pin 29.

When the door or gate 12 is in its closed position, the crank-arms 23 24 and rod 30 are in the alined relation illustrated in Fig. 2, with the center line through the crank-pin 29, lower pivot-pin 32, and rod 30 below the center of the shaft 15, this relation of the parts serving to lock the door or gate 12 in its closed position and being permitted by the offset or bend 20 in said shaft, the rod 30 being at such time within the recess 21 of the said offset. An important feature of my invention resides in the fact that the shaft 15 is formed with the offset or bend 20 and that the rod 30 is straight and passes within the recess of said offset upon the closing of the door or gate 12 and enables the crank-pin 29 to pass below a center line through the said shaft and lower pivot-pin 32.

When it is desired to open the door or gate 12, the locking-dogs 19 will be released from the plate 18 and the attendant will turn the shaft 15 upwardly and toward the left, looking at Figs. 2 and 4, to lift the upper ends of the crank-arms 23 24 above the center line through the shaft 15 and lower pivot 32, thereby releasing the door mechanism and permitting the pressure against the door or gate 12 to drive the latter open, whence the door may be pushed to its most open position by the direct leverage of the crank-arms and rod. When it is desired to close the door or gate 12, the attendant will reverse the motion of the operating-shaft 15 or rotate the same upwardly and toward the right, looking at Figs. 2 and 4, until the said door or gate has reached its closed position (shown in Fig. 2) and the upper crank-pin 29 has passed below the center line through the said shaft 15 and lower pivot-point 32, when, due to the relation of the crank-arms, shaft, and rod 30, the door or gate 12 will be held in its closed position. The door or gate 12 may be further locked in closed position by the engagement of the dogs 19 with the plate 18, as usual, or by any other suitable means.

I direct attention to the fact that the door 12 extends downwardly both when open and closed and is hinged at and hangs from its upper edge and that the rod 30 and cranks 23 24 extend downwardly on an inclined line substantially along the line of the inclined floor-section 14, the rod 30 forming a direct connection from the said cranks to the lower edge of the door. The transverse shaft 15 is located directly below the longitudinal car-sills and below the inclined floor-section 14, in which position it is conveniently removed some distance from the door 12, but through the cranks 23 24 and rod 30 has a direct connection with the lower edge of the hanging door.

In the construction presented in this application the operating-shaft 15 extends across the space between the center-sills 11 and is offset in line with said space and has the crank-arms applied upon it at opposite sides of its offset portion. In my copending application, Serial No. 258,213, filed May 1, 1905, I present a construction comprising an integral crank-frame which substantially spans the space between the center sills and an operating-shaft which extends to and engages said frame, but does not cross said space.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a car having an inclined floor-section and a downwardly-hanging discharge-door at the lower end thereof, the door mechanism comprising the transverse operating-shaft extending below said floor-section and having the offset portion between the draft-sills of the car, crank-arms on said shaft at opposite sides of said offset, and the rod pivotally mounted between said crank-arms and pivotally connected to the door and adapted to enter said offset when the door is closed, for locking the door, said crank-arms and rod when the door is closed standing substantially in line with each other and with said floor-section; substantially as set forth.

2. In a car having an inclined floor-section and a downwardly-hanging discharge-door at the lower end thereof, the door mechanism comprising the transverse operating-shaft extending below said floor-section and having the offset between the draft-sills and the polygonal portions at opposite sides of said offset, the crank-arms on said polygonal portions, and the rod pivotally mounted between said crank-arms and pivotally connected with the door and adapted to enter said offset when the door is closed, for locking the door, one of said crank-arms having a hub to be slipped upon the end of said shaft and the other crank-arm having a hub made up of parts to be secured together around said shaft, and said crank-arms and rod when the door is closed standing substantially in line with each other and with said floor-section; substantially as set forth.

Signed at New York city, in the county and State of New York, this 28th day of April, A. D. 1905.

JOHN McE. AMES.

Witnesses:
B. A. HEGEMAN, Jr.,
CHARLES C. GILL.