L. ALMQUIST.

FLUSH CAR DOOR.

APPLICATION FILED JUNE 23, 1910.

1,109,607.

Patented Sept. 1, 1914.

3 SHEETS—SHEET 1.

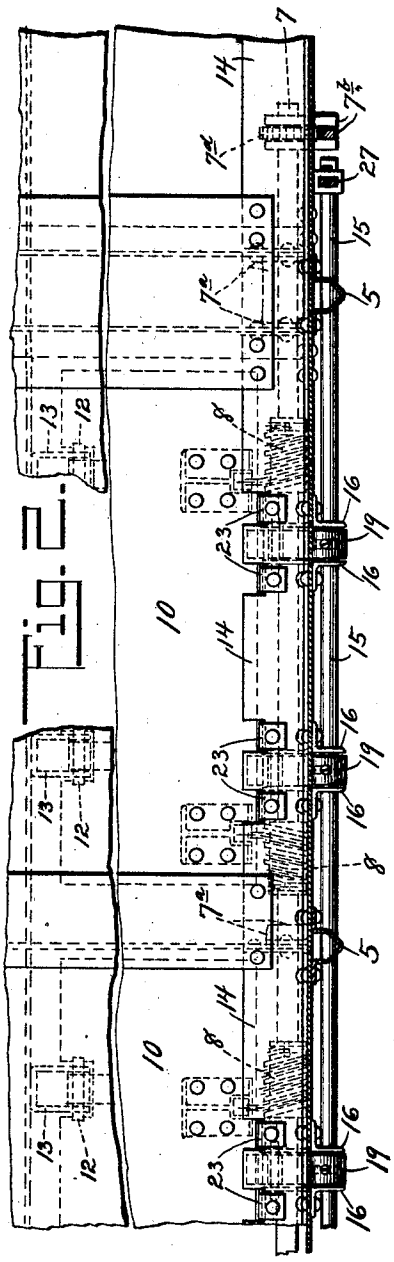


Fig. 2.

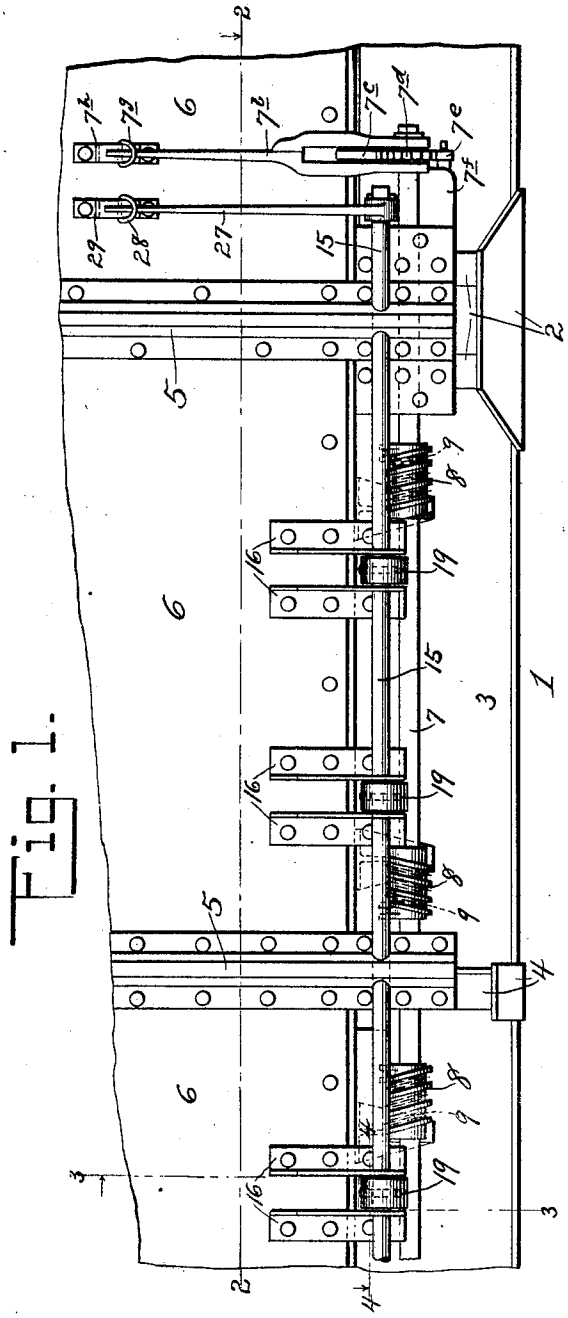


Fig. 1.

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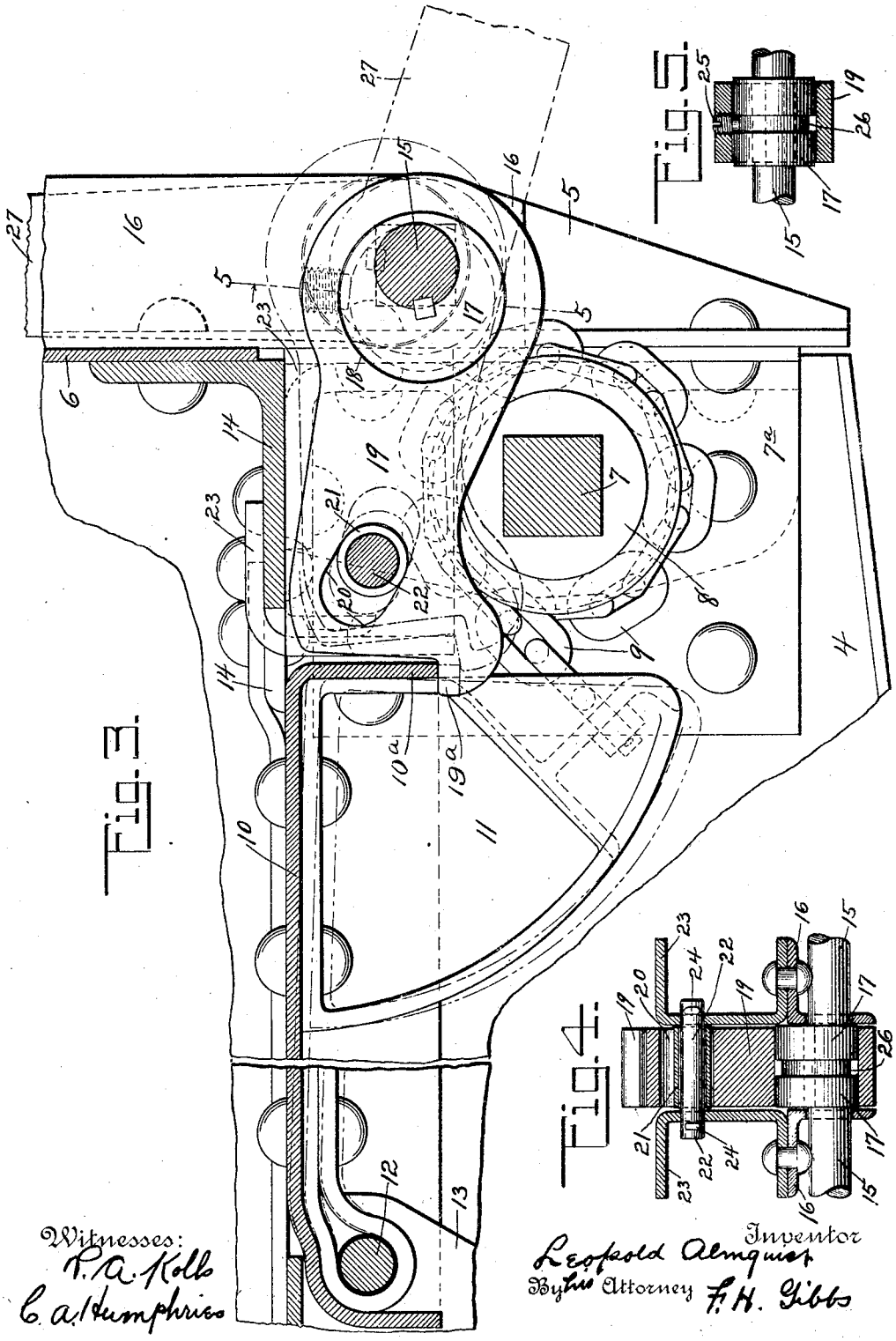


Fig. 3.

Fig. 5.

Fig. 4.

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3 SHEETS—SHEET 3.

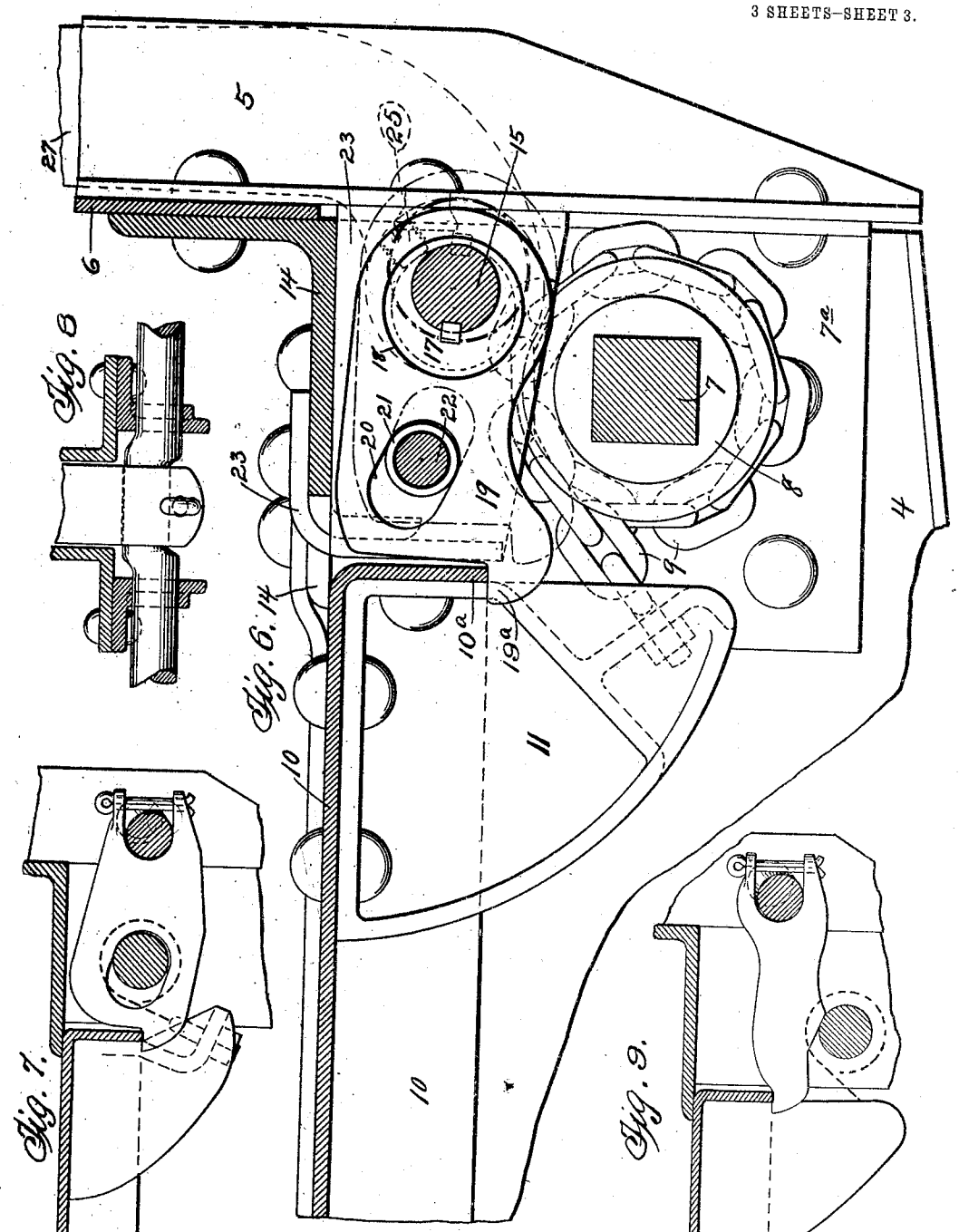


Fig. 6.

Fig. 6.1a

Fig. 7.

Fig. 9.

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UNITED STATES PATENT OFFICE.

LEOPOLD ALMQUIST, OF RIDGEWOOD, NEW JERSEY, ASSIGNOR, BY MESNE ASSIGNMENTS, TO AMERICAN CAR AND FOUNDRY COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

FLUSH CAR-DOOR.

1,109,607. Specification of Letters Patent. Patented Sept. 1, 1914.

Application filed June 23, 1910. Serial No. 568,555.

To all whom it may concern:

Be it known that I, LEOPOLD ALMQUIST, residing at Ridgewood, New Jersey, and being a citizen of the United States, have invented certain new and useful Improvements in Flush Car-Doors, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and to use the same, reference being had to the accompanying drawings, which illustrate the preferred form of the invention, though it is to be understood that the invention is not limited to the exact details of construction shown and described, as it is obvious that various modifications thereof will occur to persons skilled in the art.

In said drawings: Figure 1 is a side elevation of a portion of a car showing the invention applied thereto. Fig. 2 is a horizontal section of the same taken on the line 2—2 of Fig. 1, looking in the direction of the arrow. Fig. 3 is an enlarged transverse section taken approximately on the line 3—3 of Fig. 1, looking in the direction of the arrow, and showing the improved device holding the door in a closed position, and locked by the device. Fig. 4 is an enlarged detailed section taken on the line 4—4 of Fig. 1 and showing the principal parts of the invention. Fig. 5 is a detailed section taken on the line 5—5 of Fig. 3, but on the same scale as shown in Fig. 4. Fig. 6 shows the device somewhat modified so as to enable the operating shaft to be placed directly under the floor of the car, where necessary, instead of projecting beyond it, as it does in Fig. 3. Figs. 7, 8, and 9 show details of modified forms of the invention.

The object of this invention is to provide a simple, effective and an easily operated mechanism for locking and releasing dump-car doors of the drop bottom type.

The invention will be hereinafter fully described and claimed with reference to the accompanying three sheets of drawings.

Referring to the parts by numerals,—1 is an underframe of a gondola car, composed of the usual body bolsters 2, carrying center sills 3, to which are fastened cross-bearers 4. Supported on the underframe are posts 5, to which the side walls 6 are riveted. Winding-shafts 7, two in number, one located on each side of the car, are supported in brackets 7^a riveted to the body bolsters and cross-bearers, as shown in dotted lines in Figs. 2 and 3. The shafts 7 carry drums 8 for winding chains 9, which are fastened to doors 10 through brackets 11, depending therefrom for the purpose of operating the same. The doors 10 are hinged on pins 12 carried in brackets 13, as shown in Figs. 2 and 3, and the outer ends of the said doors when closed, impinge floor angles 14, which are riveted to the side walls 6.

It will be noted that the door-lifting and locking means positioned inwardly from the side wall 6 is protected by the bottom flange 14, or floor angle 14, which extends inwardly from the wall 6, said parts being thereby protected against accidental breakage incident to dumping the contents of the car.

Each winding-shaft 7 operates all the doors on one side of the car, and is operated by a lever 7^b, pivotally mounted thereon, and carrying a pawl 7^c, which engages a ratchet 7^d, fixed on the said shaft, and is locked by a pawl 7^e, carried on a bracket 7^f, which is fastened to the underframe in the ordinary way. Each lever 7^b is held in position by a ring 7^g, which encircles the upper end of the former, and is slidable in a vertical opening formed in a bracket 7^h, which is riveted to the side wall 6. On each side of the car is a shaft 15, which operates all of the latches thereon simultaneously, and turns in suitable openings formed in the posts 5 and angles 16, depending from the side walls 6. Keyed on the shaft 15, or otherwise suitably fastened thereto, are circular cams, or eccentrics 17, which are mounted to turn in corresponding openings 18, formed in latches or levers 19. Each of the latter has an inclined slot 20, formed therein, to receive a roller 21, which is carried on a pin 22. The latter is supported in brackets 23, firmly riveted to the floor angle 14 at one end, and to the depending angles 16 at the other. The

pin 22 is held in place by split pins 24, engaging into holes in the ends thereof. The ends of the cam 17 bear against the angles 16, as shown in Fig. 4, to regulate the end motion of the former, and the latch 19 is held centrally on the said cam, by a set-screw 25, passing through the latter, and the pivot point of said set screw engages into an annular groove 26, formed therein, as shown in Fig. 5, thereby preventing the sides of the latch 19 from rolling against the surfaces of the brackets 23 adjacent thereto, thus eliminating friction between the said latter parts. Each end of the shaft 15 is squared for the reception of a lever 27, for controlling the locking mechanism. The lever 27 is held in its upright or locked position against the side of the car, by a ring 28, encircling the upper end of the former and movable in a vertical opening formed by a strap 29, similar to 7^h, which is the common contrivance now in use on dump cars. The strap 29 is riveted to the side wall 6.

The operation for dumping the load is as follows:—The rings 7^g are raised, the levers 7^b swung out and the pawls 7^e and 7^c are successively moved out of engagement with the ratchets 7^d, leaving the winding-shaft 7 free to turn. The rings 28 are then lifted and the levers 27 moved out, giving the shaft 15 a fractional turn, causing the eccentrics 17 to partly revolve about the center of the said shaft and impart motion to the latches 19, which cause the latter to ride on the rollers 21, in the inclined slots 20, and recede from the doors 10, to the lowest dotted position shown in Fig. 3, thereby releasing the latter, which drop open under the weight of the load in the car and, in their descent, unwind the chains 9 from the drums 8 and dump the load.

After the car has been emptied, the winding-shaft 7 is rotated by the lever 7^b through the ratchet 7^d, and pawl 7^c, winding the chain 9 on the drums 8 and lifting the doors 10 to the dotted position shown in Fig. 3, where they are ready to be engaged by the latches 19. The levers 27 are then moved to their upright position, rotating the shaft 15 in the reverse direction to that just described, this causing the eccentrics or cams 17 to bear inward and down on the outer ends of the latches 19, forcing the inner ends of the latter to ride up on the rollers 21 in the inclined slots 20, giving a lifting motion to the said latches, in addition to that produced by the eccentricity of the cams 17, acting on the said latches or levers 19, which are fulcrumed on the pins 22. In this last movement of the latches 19 the shoulders 19^a thereof will strike the depending flanges 10^a of the doors and, as the inner ends of the latches rise, said doors will be carried on said shoulders to their final closed position. The latter operation brings the doors 10 to a closed and locked position, impinging the angle 14, as shown in full lines in Fig. 3, and the rings 28 are then lowered on the upper ends of the levers 27, as shown in Fig. 1, to prevent their being jarred loose.

There are manifest advantages in operating the locking means from an auxiliary shaft not used to receive the weight of the doors in the ordinary operation of closing, as such auxiliary shaft is less liable to distortion when used primarily for controlling the locking means.

In both forms of the invention, it is evident that if the shaft 15 is continued beyond the end wall of the car said shaft may be provided with any suitable means for rotating the same to actuate the latches 19 in which case such means may comprise the lever 27 or its equivalent with suitable holding means therefor.

Claims.

1. The combination of a door, an actuating shaft, a connection between said door and shaft, a latch having a slot therein and adapted to lock said door, means supporting said latch through said slot, a cam rotatably mounted in said latch and adapted to reciprocate the same.

2. The combination of a door, an actuating shaft, a connection between said door and shaft, a latch having a slot therein and adapted to lock said door, means supporting said latch through said slot, a cam rotatably mounted in said latch and adapted to reciprocate the same, and an actuating shaft keyed to said cam.

3. The combination of a door, an actuating shaft, a connection between said door and shaft, a latch having a slot therein and adapted to lock said door, means supporting said latch through said slot, a cam rotatably mounted in said latch and adapted to reciprocate the same, and a second shaft keyed to said cam, and means positioning said cam on said shaft.

4. The combination of a hinged door, an actuating shaft having a connection with said door, a sliding latch adapted to engage beneath the free edge of the door, and actuating means engaging said latch for reciprocating said latch inwardly and upwardly to lock said door firmly in position.

5. In a flush bottom car, a swinging door, closing means therefor, including a door operating shaft, a supplemental shaft and longitudinally slidable means, said means being adapted to be projected inwardly and upwardly to tighten said door in closed position.

6. In a door operating device, a swinging door, means for closing said door, and cam actuated rockable and slidable means adapted to impinge said door.

7. In a door operating device, the combination comprising a door, a support therefor, an eccentric in proximity to the free edge of said door, a longitudinally movable slide secured on said eccentric, and a fixed support in proximity to said door on which said slide is adapted to move in closing the door.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

LEOPOLD ALMQUIST.

Witnesses:
L. S. BACON,
FRANK V. COOPER.