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DOOR LATCH OPERATING MECHANISM FOR RAILWAY CARS

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2 Sheets-Sheet 2

Fig. 2.

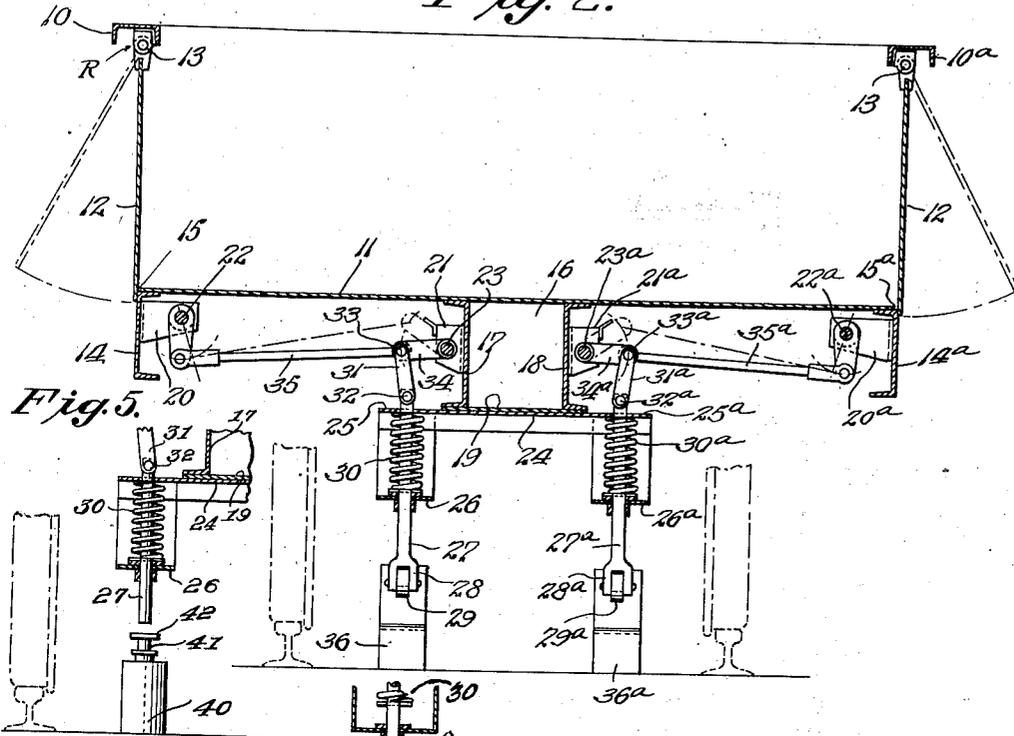


Fig. 5.

Fig. 3.

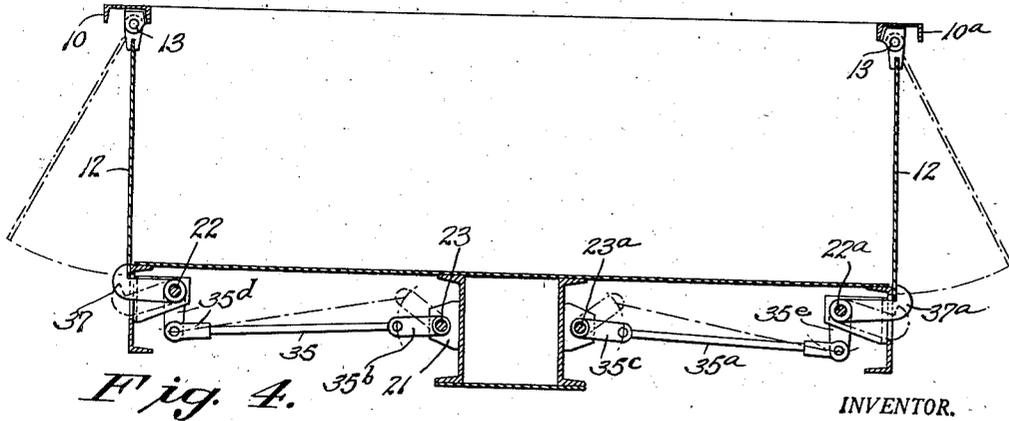
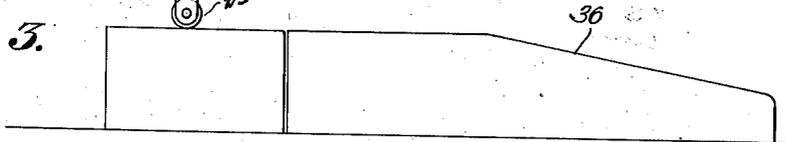


Fig. 4.

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DOOR LATCH OPERATING MECHANISM FOR RAILWAY CARS

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3 Claims. (Cl. 105—308)

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The instant invention relates to railway dump cars and more particularly to means for actuating a latch mechanism normally holding the hinge doors of the car in closed condition.

One of the primary objects of the invention is the provision of a mechanism for automatically releasing the latch means holding top hinged doors on a railway car as when the car enters or leaves a designated discharge point or station.

A further object of the invention is the provision of mechanism for selectively releasing the latch means associated with one or the other of opposed hinged doors on a railway car.

Yet another purpose is the construction of an automatically actuated latch releasing mechanism for top hinged doors of railway cars which is simple in construction, efficient in use and which requires but few simple parts.

The above and other aims and objects will be apparent from the detailed description hereinafter appearing when taken in conjunction with the appended drawings forming a part hereof to which attention is now directed and in which

Figure 1 is a plan view of the latch mechanism in position on the bottom of a railway car.

Figure 2 is a sectional view taken on line 2—2 of Figure 1.

Figure 3 is a fragmentary view of the fixed cams for actuating the latch mechanism.

Figure 4 is a sectional view taken on line 4—4 of Figure 1.

Figure 5 is a fragmental sectional view corresponding to a portion of Figure 2 and disclosing a preferred form of latch actuating mechanism.

Referring now to the drawings and particularly to Figures 2 and 3 thereof, the reference character R designates a railway dump car for holding cargo, freight or the like having spaced longitudinally extending upper angle members 10, 10a, a bottom or floor 11, and a plurality of spaced doors 12 constituting the side walls of the car R. As will be apparent from an inspection of Figures 2 and 3, each of the doors 12 is hingedly connected at its upper edge 13 to an upper angle member 10 or 10a, whereby the doors may swing outwardly as represented by the dot and dash lines.

A second pair of spaced longitudinally extending angle members or sills 14, 14a are secured to the bottom or floor 11 of the car R as by welding or the like adjacent the outer edges 15, 15a of said floor or bottom. A hollow hous-

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ing or sill 16 is secured to the under surface of the bottom or floor 11, said housing extending centrally of the bottom and along the longitudinal axis of the car R. As shown, the housing 16 has as its upper wall a portion of the bottom 11, as its side walls spaced angle members 17 and 18, and a plate 19 secured to the lowermost edges of the angle members 17 and 18 constituting the bottom wall of the hollow housing 16.

A plurality of bearing plates 20, 20a are secured to the inner faces of angle members 14, 14a, said bearing plates 20, 20a being arranged in spaced relationship along said angle members. Similar bearing plates 21, 21a are secured to the outer wall of angle members 17 and 18, each of said bearing plates 21, 21a being in opposed relationship to a bearing plate 20, 20a in a manner to be described more in detail hereinafter.

Bearing plates 20 and 20a each have journaled therein a plurality of spaced shafts 22, 22a. Similarly, bearing plate 21, 21a have journaled therein a pair of shafts 23, 23a.

A supporting frame 24 is fastened to the under surface of the bottom plate 19 of the housing 16. The frame 24 embodies right hand and left hand wings 25, 25a having lower bearing seats 26, 26a. Actuating arms 27, 27a are mounted for vertical movement in the right hand and left hand wings 25, 25a and lower bearing seats 26, 26a, respectively. Each actuating arm 27, 27a terminates in a lower fork portion 28, 28a rotatably supporting a roller 29, 29a. The upper portion of each of actuating arms 27, 27a is encircled by a coil spring 30, 30a tending to force the arm to a downward position. A link member 31, 31a is pivotally secured as at 32, 32a to the upper end of an arm 27, 27a. The upper end of each link member 31, 31a is pivotally secured as at 33, 33a to a further link 34, 34a rigidly attached at its other end to rods 23, 23a. Spaced connecting rods 35, 35a are each pivotally secured at one end to links 35b, 35c fastened to shafts 23, 23a and pivotally secured at the other end to links 35d, 35e fastened to rods 22, 22a. The connecting rods 35, 35a for the door opposing the rollers 29, 29a are secured at their inner ends to the pivotal connections between links 31, 34 and 31a, 34a. The rollers 29, 29a are adapted to ride on inclined cams 36, 36a positioned at a discharge point adjacent a station or the like. A plurality of spaced hooked latch members 37, 37a are secured to the shafts 22, 22a for movement therewith, said latch members normally holding the doors 12 in vertical or locked position. However, upon movement of the shafts 35, 35a by

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 contact of the roller 29, 29a with the inclined cam surfaces 36, 36a, the latch members are swung downwardly as illustrated by the dot and dash line positions shown in Figure 4 of the drawing. In the latter position, the contents of the dump car R will force the doors 12 outwardly and will be discharged laterally of the car. After the contents have been unloaded the car R is moved to a position where the rollers 29, 29a no longer contact inclined cam surfaces 36, 36a so that springs 30, 30a move the rods 35, 35a to the full line position shown in Figures 3 and 4, and the latch members 37 now engage and hold the lower edges of the swingable doors 12 whereby the latter are locked against outward movement.

While the latch releasing mechanism disclosed in Figures 2 and 3 is satisfactory and in fact desirable in instances where it is desired to open opposed doors 12 simultaneously, there are, however, instances in which it is desirable to selectively unlatch one of the other of the opposed doors. Such latter instances are where cars are unloaded in rotary dumpers, or wherein it is desirable that the release of the latches be retarded until a predetermined dumping angle has been reached. To provide for independent or selective release of the door latches, a pneumatic or hydraulic cylinder 40 is positioned for axial alignment with each of the laterally opposed actuating arms 27 (only one of which is illustrated in Fig. 5) and each of such cylinders is provided with a piston 41 having an arm engaging head 42. Fluid may in a well known manner be selectively admitted to the cylinders 40 whereby the doors may be selectively and independently opened and may of course be opened simultaneously as with the form of Figures 2 and 3.

From the above it will be apparent that there has been produced a latch operating mechanism for railway dump cars well adapted to perform its intended functions. While the invention has been described in detail, it will be apparent that numerous changes may be made in the specific construction shown and it is contemplated to cover all such and to be limited in this respect only as may be necessary by the scope of the claims hereto appended.

What I claim and desire to secure by Letters Patent is:

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 1. Door latching mechanism for a railway car having opposite side and intermediate floor engaging sills and a side door pivotally supported at its upper end for swinging outwardly from the floor; comprising a shaft parallel with and rotatably supported by a side sill, a shaft parallel with and rotatably supported by the intermediate sill, door engaging latches rigidly connected with the first shaft, a connecting rod intermediate the shafts and having link connections therewith for unitary rotation of the shafts, and cam actuatable means connected to the second shaft for imparting rotation thereto.

2. Door latching mechanism for a railway car having opposite side and intermediate floor engaging sills and opposite side doors pivotally supported at their upper ends for outward swinging of their lower ends, comprising a shaft rotatably supported by the intermediate sill at each side thereof, a plurality of shafts rotatably supported by each side sill with each such shaft disposed beneath a door, operative connections between the first-named and the last named shafts for unison rotation thereof, door engaging latches carried by the last named shafts and cam actuatable means operatively connected with the first named shafts for imparting rotation thereto.

3. The structure according to claim 2 wherein said cam actuatable means comprises an arm supported by the intermediate sill for vertical movement adjacent each of said first named shafts, a cam engaging roller carried by the lower end of each of said arms, spring means biasing the arms downwardly, and link connections between the upper ends of the arms and the first-named shafts.

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