

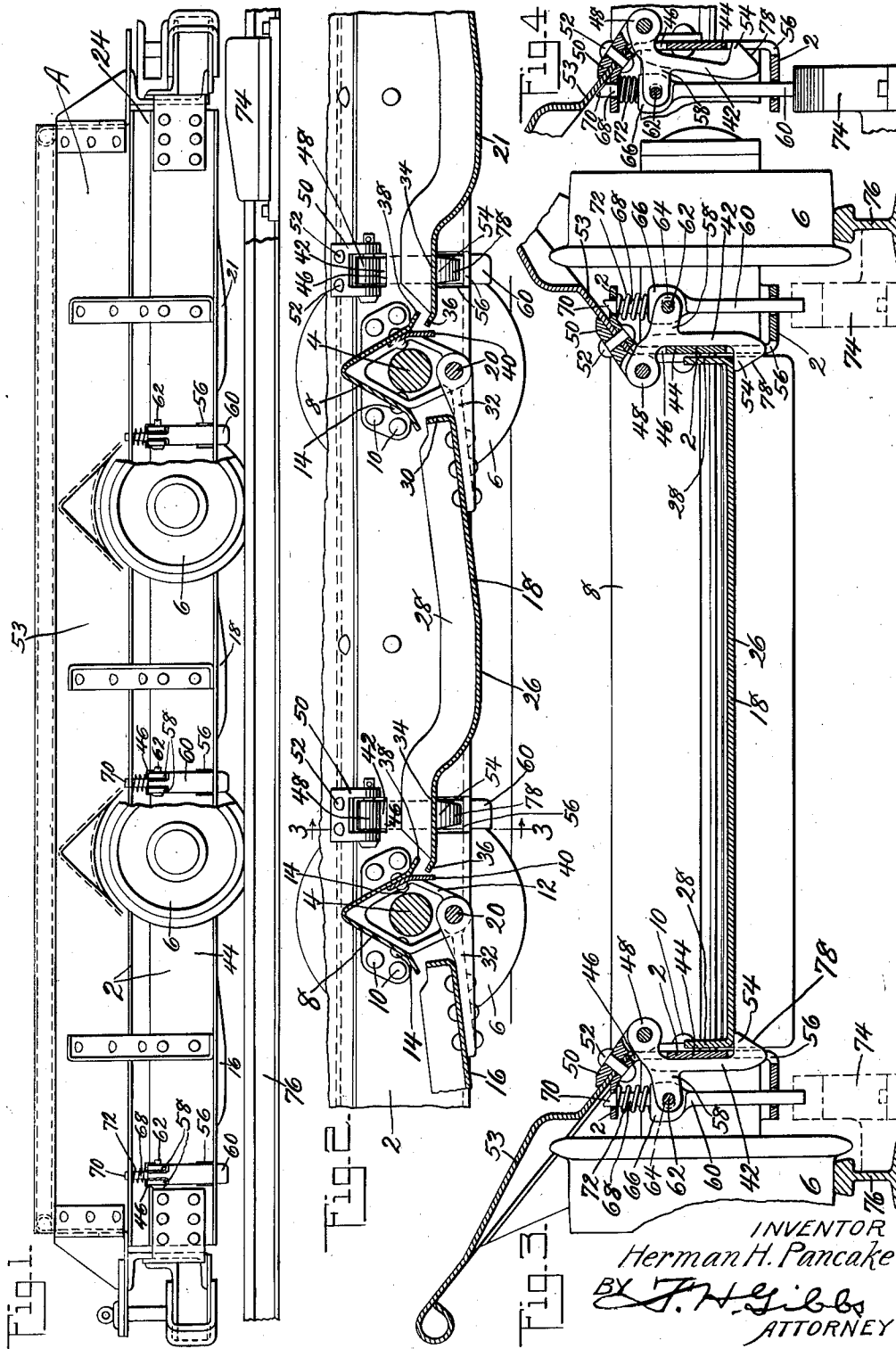
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H. H. PANCAKE

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DROP BOTTOM MINE CAR

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HERMAN HENRY PANCAKE, OF HUNTINGTON, WEST VIRGINIA, ASSIGNOR TO AMERICAN CAR AND FOUNDRY COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY

DROP BOTTOM MINE CAR

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This invention relates generally to mine cars of the drop bottom type wherein the bottom comprises a plurality of doors pivotally mounted on axes transverse to the longitudinal axis of the body for dumping movement, and has for one object the provision of latch means for supporting said doors in closed position.

Another object of this invention is the provision of a drop bottom mine car having a bottom formed of a plurality of doors adapted to swing to open position by gravity, said doors being pivotally mounted on axes transverse to the longitudinal axis of the car and having their free ends provided with offset portions defining supporting areas for engagement by latch mechanism.

Still another object of this invention is the provision of latch mechanism for supporting drop bottom doors of a mine car, which latch mechanism is pivotally connected to the car body within the lading zone thereof and extends through the body sills whereby the latter serve to position said latch elements in latching position and limit the shifting movement of said latch elements in one direction.

Other objects and advantages of this invention will be apparent from the following description taken in conjunction with the accompanying drawings in which:

Figure 1 is a side elevation of a drop bottom car equipped with the latch elements forming a part of this invention.

Fig. 2 is a fragmentary sectional view through the car shown in Figure 1.

Fig. 3 is a sectional view on the line 3—3, Fig. 2.

Fig. 4 is a sectional view through one of the longitudinal sills of the car, showing the latch element in retracted position.

Referring now more particularly to the drawings, the car shown therein includes a body indicated generally at A including side sills 2 substantially channel-shaped in the instance shown, and through which sills the axles 4 extend, carrying wheels 6. As shown more clearly in Fig. 2 the axles are covered by axle hoods 8 extending between and secured to side sills 2 by suitable fasteners 10. The

axle hoods 8 serve as supports for hangers 12 which are riveted thereto as at 14 and to which the drop bottom doors 16 and 18 are pivotally mounted for swinging movement to open position by gravity on hinge rods 20. The car shown is provided with another drop bottom door indicated at 21 which is supported for downward swinging at the end portion 24 of the car body.

The doors may be of any preferred or desired construction, but as shown herein they include a body portion 26 provided with side and rear end flanges 28 and 30 respectively; the rear ends of the doors being secured to hinge elements 32 supported on the before mentioned rods 20. Forward ends of the doors are upwardly offset as at 34 to provide supporting surfaces for engagement by latch elements hereinafter described, while the forward edges of the doors are upwardly flanged as at 36 to extend beneath the flanged side edges 38 of the axle hoods and into the angle defined by said flanges 38 and lip members 40 secured to the inner surfaces of said hood and depending therefrom; this construction providing against leakage of the lading from the body as will be apparent.

The car of the present invention is so designed that the doors are opened successively by retraction or disengagement of latch elements therefrom while the car is moving in one direction. The doors are normally retained in closed position by latch elements carried by the car body and having means arranged outside the body for actuating the same.

Vertically disposed laterally swinging latches 42 are arranged adjacent the webs 44 of the sills 2, and these latches have their upper ends extended through openings 46 formed in the sills adjacent the axle hoods and said upper ends of the latches are provided with apertured heads 48 connected to brackets 50 riveted as at 52 to the inner surfaces of the walls 53 of the car body whereby the latches depend from said brackets. The lower ends of the latches are provided with shoulders 54 which normally project through openings 56 formed in the sills to extend be-

neath and support the doors at the supporting portions of the latter.

As shown clearly in Fig. 3 the latches normally rest against the inner surfaces of the webs 44 of the sills; said webs serving as positioning elements for the latches and obviously serving as stops or abutments for limiting the pivotal movement of the latches in one direction.

The latches are provided intermediate their ends with laterally extending spaced arms 58 having actuators 60 secured therebetween by pins 62 which extend through said arms and through elongated horizontally arranged slots 64 in heads 66 of said actuators. The actuators are mounted for vertical movement relative to the car and their lower ends are extended through the lower flanges of the sills, while the upper ends of said actuators are provided with projections 68 extending through the upper flanges of the sills and provided with beveled ends 70 adapted to contact with the car side walls for limiting upward movement of said actuators. The heads 66 define seats for springs 72 mounted on the projections 68 between the upper flanges of the sills and said heads for normally retaining the actuators in the position shown in Fig. 3 and consequently for urging the latch elements to normal position against the webs of the sills.

In use the doors are adapted to be opened successively to permit bottom dumping of the lading in the car. To open the doors the latches are swung on their pivots or hinges to retract the shoulders 54 from engagement with the forward or supporting ends of the doors. To effect operation of the latches, cam tracks 74 are arranged between the rails 76 and in such position that when the car is moved in one direction the actuators will engage the tracks and be shifted vertically upward thereby swinging the latches on their pivots and retracting the shoulders 54 from door supporting position. Vertical shifting of the actuators as just described is against springs 72 therefore when the actuators leave tracks 74 the latches will be returned to normal position. The doors are adapted to be automatically and successively closed in a manner well understood in the art and when urged to closed position they will engage the bevelled surfaces 78 of the shoulders to cause retraction of the latches until the doors are fully closed and the latches returned to their normal position.

It is believed that the operation and construction of the present invention will be fully apparent to those skilled in the art, and the drawings disclose one embodiment of the invention, but inasmuch as they are for illustrative purposes only, it is to be understood that various changes in the forms and proportions of the construction may be made within the scope of the appended claims

without departing from the spirit of the invention.

What is claimed is:

1. In a drop bottom car, a plurality of doors adapted to swing to open position by gravity, and means for holding said doors in closed position comprising latch elements pivotally connected to the car and having portions engaged beneath the doors, lever arms extending laterally from said latches, vertically shiftable actuators supported by said lever arms for shifting the latter, means guiding said actuators during shifting thereof, and spring means for returning the actuators to normal position whereby to restore the latch elements to normal position.

2. In a drop bottom car, sills, drop bottom doors between the sills, latch elements hingedly connected to the sills and retained in normal position thereby, said elements having portions underlying the doors to support the latter, and vertically arranged shiftable actuators connected to said latch elements and guided by said sills during shifting movement.

3. In a drop bottom mine car, sills, drop bottom doors between the sills and means for supporting the doors comprising latch elements hingedly connected to the sills for swinging movement on axes parallel to the longitudinal axis of the car, said latch elements being adapted to engage the sills whereby swinging movement of said elements in one direction is limited by said sills, and actuators supported by said latches, said actuators being vertically shiftable whereby to swing said latch elements on their pivots to disengage said latch elements from door supporting position.

4. In a drop bottom mine car, a body having sills, drop bottom doors between the sills, and means for supporting the doors in closed position comprising latch elements hingedly connected to the body within the lading zone and having portions normally underlying the doors to support the latter, and means for shifting the latch elements on their hinges to free said elements from door supporting position.

5. In a drop bottom mine car, a body having sills, drop bottom doors between the sills, and means for supporting the doors in closed position comprising latch elements hingedly connected to the body within the lading zone thereof and having portions arranged against the outer surfaces of the sills and other portions normally extending below the doors for supporting the latter, and vertically shiftable means carried by the latch elements outside of the body for swinging said latch elements on their hinges whereby to disengage the latch elements from their supporting engagement with the doors.

6. In a drop bottom car, a body having sills, drop bottom doors hingedly connected

to the sills on axes transverse to the longitudinal axis of the body and means for supporting the doors in closed position comprising latch elements hingedly connected to the body within the lading zone thereof and resting against the outer surfaces of the sills and having projections underlying the doors, and actuators supported by the latch elements and vertically shiftable in the sills for swinging the latch elements on their hinges.

7. In a drop bottom mine car, a body, drop bottom doors, latch elements having portions normally underlying the doors to support the latter, sills to which the latch elements are pivoted and by which movement of said elements in one direction is limited, and actuators mounted for vertical shifting in the sills and connected to said latch elements.

8. In a drop bottom car, a body, drop bottom doors, longitudinal sills, latch elements extending through the sills and pivotally connected to the body within the lading zone thereof, actuators supported by the latch elements and capable of vertical shifting for actuating the latch elements, and spring means on the actuators for returning the latch elements to normal position.

9. In a drop bottom mine car, a body, channel-shaped sills, drop bottom doors hingedly connected to the body within the lading zone and having movement thereof in one direction limited by said sills, actuators supported by said latch elements and capable of vertical shifting whereby to swing the latch elements on their pivots, and spring means for returning the latch elements to normal position.

10. In a drop bottom mine car, a body, outwardly facing channel sills, drop bottom doors hingedly connected to the sills, latch elements pivotally connected to the body within the lading zone and extending through the sills and so arranged with respect to said sills that movement thereof in one direction is limited by said sills, actuators connected to and supported by said latch elements, said actuators extending through the flanges of said sills and being capable of vertical shifting relative to said sills whereby to swing the latch elements on their pivots, and spring means interposed between the sills and said actuators for normally urging the elements to door supporting position.

11. In a drop bottom mine car, a body having sills, drop bottom doors hingedly connected to the sills, latch elements normally engaging the outer surfaces of the sills to be positioned thereby and having their ends extended through the sills, pivot means connecting the upper ends of the latch elements to the body for supporting said elements, and shiftable means carried by the latch elements for swinging the latter, said means being adapted to contact with fixed abutments whereby to limit movement of the latch elements in one direction.

12. In a drop bottom mine car, a body having longitudinal sills, doors hingedly supported by said sills and provided with offset free end portions, latch elements normally engaging the outer surfaces of the sills having their upper and lower ends extended there-through, supporting shoulders at the lower ends of said elements upon which the offset ends of said doors are supported, means pivotally connected the upper ends of the latch elements to the body within the lading zone thereof, and vertically shiftable actuators carried by the latch elements and guided by the sills for shifting the latch elements to disengage the shoulders from the doors.

13. In a drop bottom mine car, a body having sills, drop bottom doors hingedly connected to the sills, latch elements normally engaging the outer surfaces of the sills to be positioned thereby and having their ends extended through the sills, pivot means connecting the upper ends of the latch elements to the body for supporting said elements, shiftable means carried by the latch elements and guided by the sills for swinging the latch elements in one direction, said shiftable means being adapted to contact with a car part to limit shifting movement in one direction, and resilient means for returning the shiftable means to normal position.

14. In a drop bottom mine car, a body having sills, drop bottom doors connected to the sills, latch elements hingedly connected to the body within the lading zone and normally engaging the outer surfaces of the sills to be normally positioned thereby, the lower ends of said latch elements underlying the doors to retain the latter in closed position, vertically shiftable elements carried by the latch elements and guided during shifting movement by said sills, said elements being adapted to shift the latches on their hinges, and being adapted to contact with fixed abutments whereby their movement in one direction is limited, and spring means for shifting said elements in the opposite direction to restore the latch elements to normal position.

In witness whereof I have hereunto set my hand.

HERMAN HENRY PANCAKE.