Dec. 31, 1940. J. B. WOLF ET AL 2,226,683

LATCH FOR RAILWAY CAR HATCH COVERS

Filed July 2, 1940 2 Sheets-Sheet 1

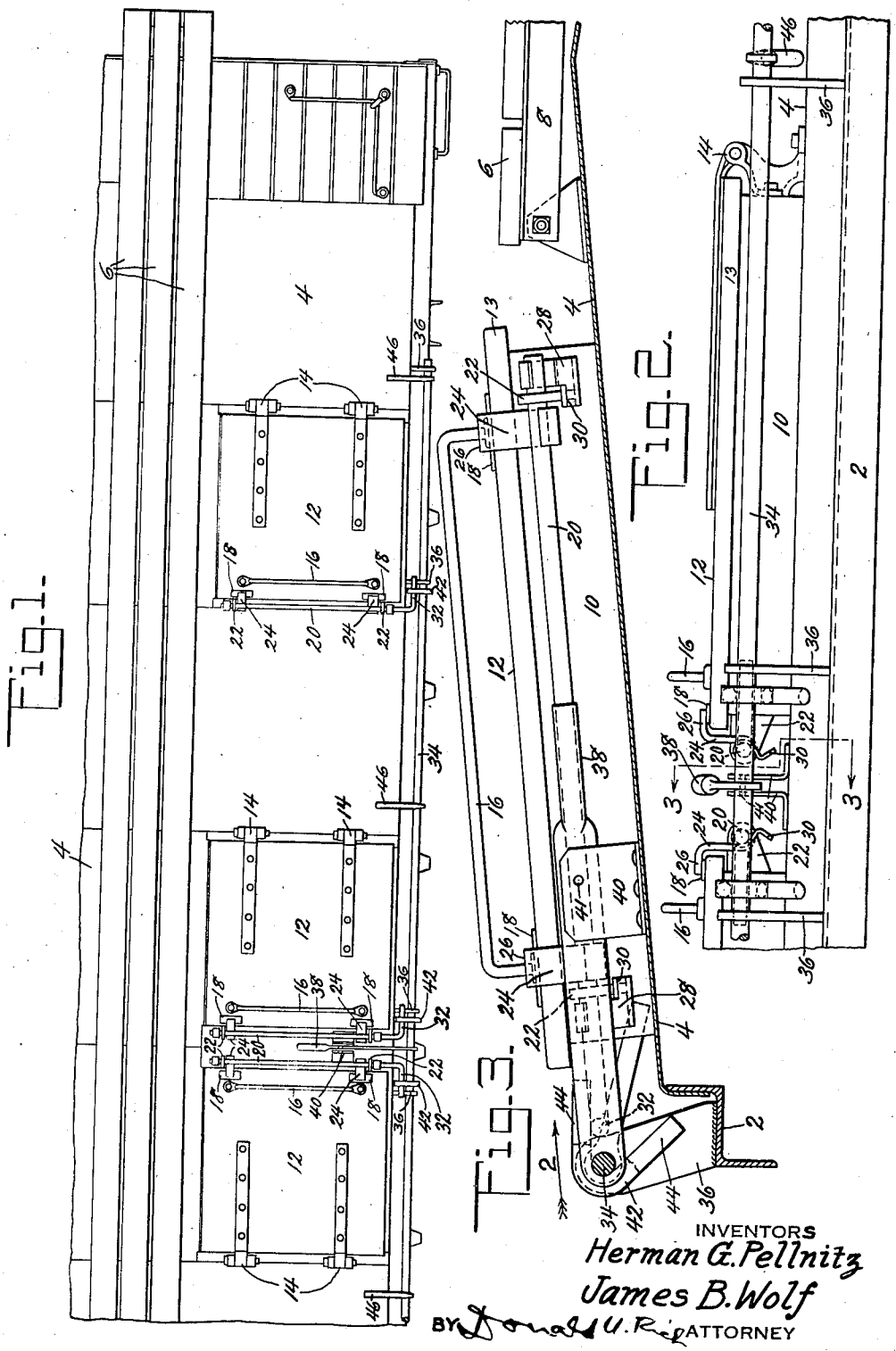


Fig. 1.

Fig. 2.

Fig. 3.

INVENTORS
Herman G. Pellnitz
James B. Wolf
BY Donald U. Rip ATTORNEY

Dec. 31, 1940. J. B. WOLF ET AL 2,226,683

LATCH FOR RAILWAY CAR HATCH COVERS

Filed July 2, 1940 2 Sheets-Sheet 2

Fig. 5.

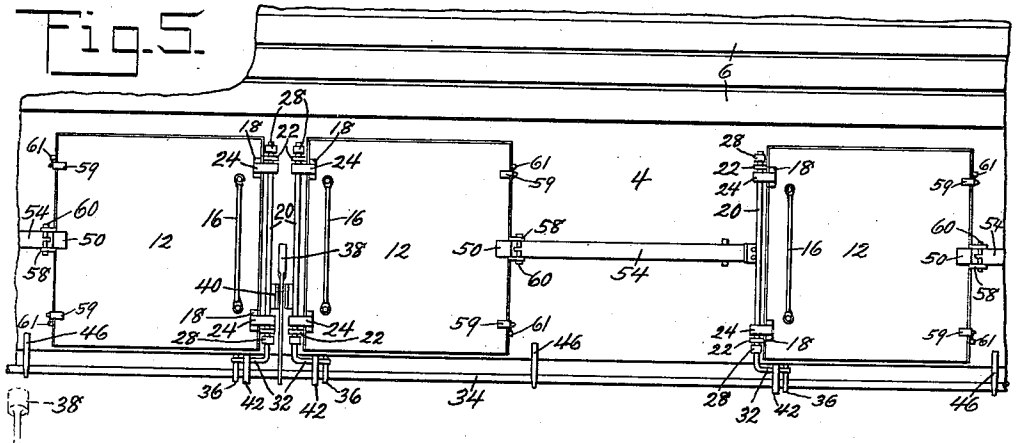


Fig. 6.

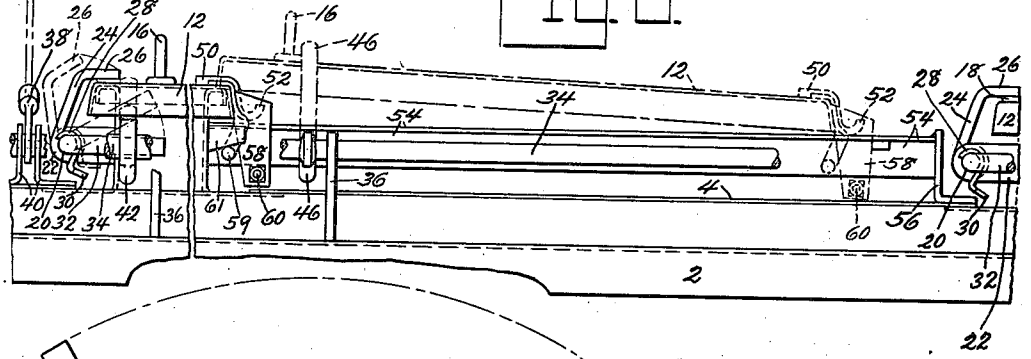
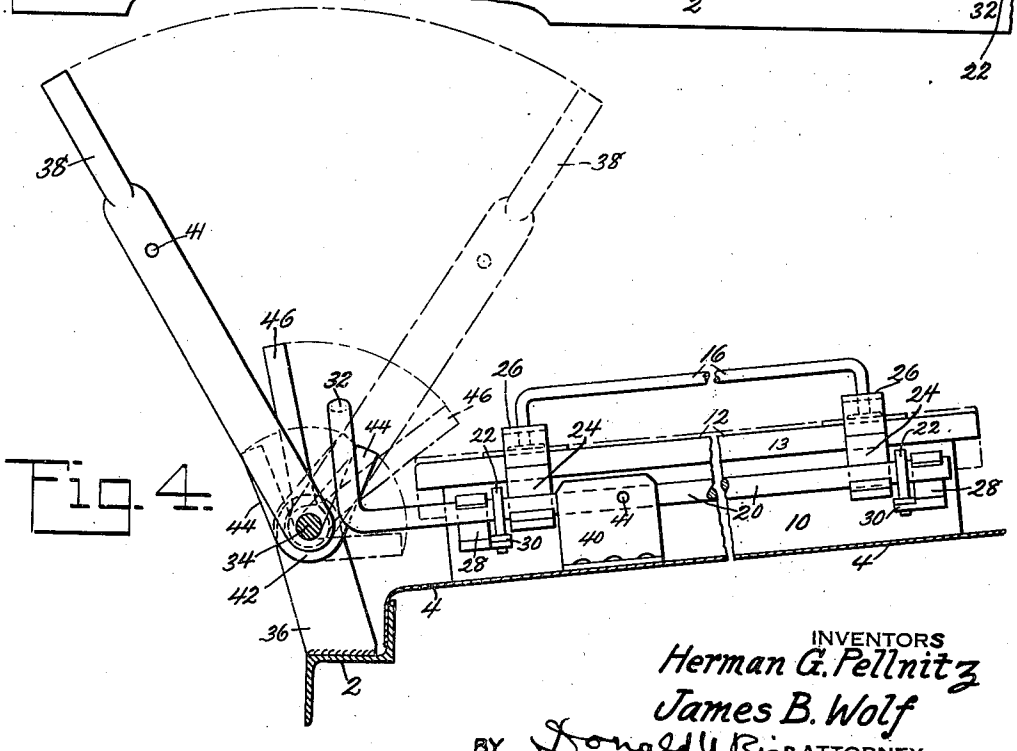


Fig. 4.



INVENTORS
Herman G. Pellnitz
James B. Wolf
BY Donald U. Rich ATTORNEY

Patented Dec. 31, 1940 2,226,683

UNITED STATES PATENT OFFICE

2,226,683

LATCH FOR RAILWAY CAR HATCH COVERS

James B. Wolf, Berwick, and Herman G. Pellnitz, Nescopeck, Pa., assignors to American Car and Foundry Company, New York, N. Y., a corporation of New Jersey

Application July 2, 1940, Serial No. 343,622

10 Claims. (Cl. 105—377)

This invention relates to latches for locks for hatch covers in general and in particular to locks or latches for the hatches of covered railway hopper cars.

In the past the majority of covered railway hopper cars have had their hatch covers hinged to swing toward the center of the car, thus permitting the use of a single locking means extending along the side of the car, but such constructions have the disadvantage that the hatch covers project far above the roof and beyond the clearance limits of the car when in open position and cannot, therefore, be used in interchange service. Other types of covered hopper cars have had the hatch covers hinged to swing longitudinally of the car but in all these cases individual latches were provided for each door, thus requiring considerable care in locking and sealing the car for transit. It is an object, therefore, of the present invention to provide a lock operated from a single point for locking all hatch covers on a railway car in which the hatch covers swing or move longitudinally of the car.

A further object of the invention is the provision of an improved single operating locking means for a plurality of hatch covers and which locking means is so arranged as to insure that all hatch covers are in a fully closed position.

A still further object of the invention is the provision of a locking means for a plurality of hatch covers and operable from a single point and which cannot be moved to a locked position until all hatch covers are in a fully closed position.

Yet another object of the invention is the provision of a plurality of swinging latches operable by a single operating rod extending parallel to the planes in which the swinging latches move.

These and other objects of the invention will be apparent to persons skilled in the art from a study of the following description and accompanying drawings, in which:

Figure 1 is a plan view of substantially one-quarter of the roof portion of a covered railway hopper car;

Fig. 2 is a side view of the central portion of the roof and looking in the direction of arrow 2 of Fig. 3;

Fig. 3 is a sectional view taken substantially on line 3—3 of Fig. 2;

Fig. 4 is a sectional view similar to Fig. 3, but showing the latch parts in partially and fully operated positions;

Fig. 5 is a plan view similar to Fig. 1 but showing the latch applied to a different form of door, and

Fig. 6 is a side view of the modification shown in Fig. 5 and also showing the latch parts in locked and unlocked positions.

Referring now to the drawings in detail, it will be seen that the improved latching arrangement has been applied to a hopper car which is of the general type shown by Dietrichson Patent 2,024,342, although it is obvious that it may be applied to other cars of a similar type. As shown the car is provided with a Z form side plate 2, to which is attached the edges of roof sheets 4, the latter supporting the customary running boards 6 through the medium of saddles 8. Portions of the roof sheets may be flanged upwardly to form hatch frames 10 or separate hatch frames may be fabricated and attached to the roof. In order to close the openings provided by the hatch frames lids 12 are provided having flanges 13 and, as clearly shown in Figs. 1 to 4, these lids are hinged as at 14 to the hatch frames on transversely extending axes so that the latch may be folded back and rest upon the roof. Lifting handles 16 are attached to the lid adjacent the free edge while bearing or wear pads 18 are attached to the lids for a purpose later to be described.

A plurality of independent latches are provided for each hatch cover or lid and these latches each comprise a transversely extending latch rod 20 carried by bearing straps 22 attached to the hatch frame and with the rod extending substantially parallel to the plane of the hatch cover or lid. Latches 24 formed of bent strap are welded or otherwise secured to the latch rod at spaced points and each is formed with an upper hooked portion 26 adapted to rest upon the bearing pad 18 previously referred to. The amount of swinging movement which the latches may have is limited, of course, in one direction, by the hatch frame and in the other direction by a limiting stop 28 welded to the latch rod and formed with a projecting ear 30 adapted to strike the supporting brackets for the latch rod (see Figs. 2, 3 and 4). The outer end of each latch rod is bent to form a crank portion 32 extending toward the hinge axis of its associated door.

In order to operate the latch rods and hence all the latches in unison, a longitudinally extending operating rod 34 is provided supported at spaced points by brackets 36 welded or otherwise secured to the side plate 2. This operating rod has attached thereto at any suitable point, but preferably adjacent the center of the car, an operating handle 38, the inner end of this handle being adapted to fit between upstanding angle members 40 secured to the roof and have a hole 41 formed therein to receive seal means

extending therethrough and through the operating handle to lock the operating rod against rotational movement. Latch rod operating yokes 42 are provided and attached to the longitudinal operating rod at points adjacent the cranked ends 32 of the latch rods and each of these yokes is formed by a U-shaped strap welded or otherwise secured to the operating rod and formed with spaced fingers 44. These fingers are adapted to receive therebetween the cranked end 32 of the adjacent latch rod and the spread between the fingers may be moved as desired in order to permit the necessary freedom of movement between the fingers and cranked end 32 and to insure the proper throw of the operating handle for latching and unlatching of the hatch covers. In order to prevent operation of the latching means toward a latched position until all hatch covers are closed, safety lugs or bars 46 are welded or otherwise secured to the longitudinal operating rod adjacent the edge of the lid or cover opposite from the latch or free edge. These safety lugs will strike the door if the door is opened and will prevent further rotation of the operating rod toward latching position. Furthermore, if the operating handle has for some reason been moved to a position such as shown in line and dash of Fig. 4 and in which the safety lug or stops 46 will strike the door, then lifting of the door from its open toward its closed position will automatically throw the operating handle toward unlatched position and prevent injury of the latches by dropping of the door on their inturned or hooked ends.

Referring now to Figs. 5 and 6 it will be seen that substantially the same car structure and latch has been used as has been previously described and accordingly the same reference numerals have been used wherever possible. In this form, however, the hatch lids or covers do not pivot but are slid longitudinally of the car after a slight lifting movement. To permit of this sliding the edge of the door remote from the latches is provided with a central shoe 50 welded or otherwise secured to the lid and having a curved portion 52, as shown in Fig. 6, adapted to slide upon the upper surface of a T-shaped track 54 secured at one end to the hatch frame and at the other end to the roof by an angle or other means 56. In order to secure the rear or sliding edge of the lid in position preventing its lifting at all times, straps 58 are secured to the rear edge of the door and extend downwardly on either side of the T-shaped track and receive at their lower ends a bolt or other means 60 extending across beneath the track. Also straps 59 are fastened to the door near the corners and are formed with hooked ends adapted to ride, when the cover is closed, under the bevel edge of plates 61 fastened to the hatch frame. In this manner lifting of the rear edge of the door is impossible, while a slight lifting of the front edge sufficient to clear the flanges is permitted. With this form of door the safety lugs or stops will again prevent throwing of the operating handle to latched position until all doors are closed and would also prevent opening of any door in cases where latches were broken until the operating handle had been thrown to released position.

The operation of the improved latch or lock means is as follows, assuming the hatch covers or lids, whether of the pivoted or sliding type, to be in closed position and with the latches in locked position: Removal of the seal will permit lifting of the operating handle 33 and lifting of this handle will cause rotation of the longitudinal operating rod 34. This rod may rotate freely until the lowermost fingers 44 of the latch rod operating yokes strike the lower surface of cranked end 32 of the transversely extending latch rods. Such a position of the operating handle is indicated by line and dash outline in Fig. 4. Further rotation of the longitudinal operating rod will cause finger 44 to lift cranked end 32 to a position such as indicated by line and dash in Fig. 6, causing he latches 24 to be swung longitudinally of the car into a position permitting opening of the hatch lid or cover. Excessive swinging of the latches is prevented due to the stops 28 striking the supporting brackets for the latch rods. In moving the latch mechanism from released to locked position the before-described operation is merely reversed with the top finger 44 in this case forcing the cranked arm 32 downwardly and swinging the latches 24 into position above the lid or cover. Under normal operation the stop or safety lugs 46 will have no function, but in case a hatch cover is in an open position, then these stops will function to prevent movement of the operating handle toward a locked position thereby giving a false impression that all hatches were closed and locked. Movement of the latches toward final position will, of course, be permitted by the stops 46 striking the open hatch cover. Also, as was previously pointed out in the form shown in Figs. 1 to 4, if the hatch covers are open and for any reason the operating handle were moved toward closed position, it could only assume the position substantially that shown by line and dash of Fig. 4 and would be moved from this position to the full line position through an operator lifting the door to move it toward closed position. In this way damage to the latches 24 will be prevented.

Although the invention has been described more or less in detail, it will be obvious that various modifications and rearrangements of parts other than those shown and described will suggest themselves to persons skilled in the art and all such modifications and rearrangements of parts are contemplated as will fall within the scope of the appended claims defining our invention.

What is claimed is:

1. In a railway car construction, roof sheets, hatch frames outlining openings in the roof, hatch covers normally covering said openings and movable longitudinally of the car to expose said openings, latch rods extending transversely of the car adjacent the free edges of said covers, latches secured to said rods and swingable toward and away from the cover to secure or release the same, an operating rod extending longitudinally of the car along a side of the hatch frames, an operating handle secured to said operating rod to cause rotational movement thereof, and means connecting said operating rod and latch rods whereby rotation of the operating rod will cause rotation of all of said latch rods and latches to lock or release the hatch covers.

2. In a railway car construction, roof sheets, hatch frames outling openings in the roof, hatch covers normally covering said openings and movable longitudinally of the car to expose said openings, latch rods extending transversely of the car adjacent the free edges of said covers, latches secured to said rods and swingable toward and away from the cover to secure or release the same, an operating rod extending longitudinally of the

car along a side of the hatch frames, an operating handle secured to said operating rod to cause rotational movement thereof, and means connecting said operating rod and latch rods whereby rotation of the operating rod will cause rotation of all of said rods and latches to lock or release the hatch covers, said means consisting of a projection on one of said rods and a yoke secured to the other of said rods and freely engaging said projection.

3. In a railway car construction, roof sheets, hatch frames outlining openings in the roof, hatch covers normally covering said openings and movable longitudinally of the car to expose said openings, latch rods extending transversely of the car and adjacent the free edges of said covers, latches secured to said rods and swingable toward and away from the cover to secure or release the same, an operating rod extending longitudinally of the car along a side of the hatch frames, an operating handle secured to said operating rod to cause rotational movement thereof, and means connecting said operating rod and latch rods whereby rotation of the operating rod will cause rotation of all of said latch rods and latches to lock or release the hatch covers, said means consisting of a cranked end on each of said latch rods, and a U-shaped yoke secured to said operating rod adjacent each cranked end and having the arms thereof located on either side of the cranked end.

4. In a railway car construction, roof sheets, hatch frames outlining openings in the roof, hatch covers normally covering said openings and movable longitudinally of the car to expose said openings, latch rods extending transversely of the car adjacent the free edges of said covers, latches secured to said rods and swingable toward and away from the cover to secure or release the same, an operating rod extending longitudinally of the car along a side of the hatch frames, an operating handle secured to said operating rod to cause rotational movement thereof, means connecting said operating rod and latch rods whereby rotation of the operating rod will cause rotation of all of said latch rods and latches to lock or release the hatch covers, and safety means secured to said operating rod to prevent full movement thereof before all hatch covers are in closed position.

5. In a railway car construction, roof sheets, hatch frames outlining openings in the roof, hatch covers normally covering said openings and movable longitudinally of the car to expose said openings, latch rods extending transversely of the car adjacent the free edges of said covers, latches secured to said rods and swingable toward and away from the cover to secure or release the same, an operating rod extending longitudinally of the car along a side of the hatch frames, an operating handle secured to said operating rod to cause rotational movement thereof, means connecting said operating rod and latch rods whereby rotation of the operating rod will cause rotation of all of said latch rods and latches to lock or release the hatch covers, and safety means secured to said operating rod to prevent full movement thereof before all hatch covers are in closed position, said safety means moving said operating rod and latch rods and latches from an intermediate position to a fully released position upon movement of a hatch cover from open to closed position.

6. In a railway car construction, roof sheets, hatch frames outlining openings in the roof, a plurality of hatch covers normally covering said openings, a latch rod carried by the roof adjacent the free edge of each cover, latches secured to each rod and swingable toward and away from the adjacent cover to secure or release the same, an operating rod extending across the ends of the latch rods, an operating handle secured to said operating rod to cause rotational movement thereof, and means connecting said operating rod and latch rods whereby rotation of the operating rod will cause rotation of all of said latch rods and swinging of the latches to lock or release the hatch covers.

7. In a railway car construction, roof sheets, hatch frames outlining openings in the roof, a plurality of hatch covers normally covering said openings, latches swingable in substantially vertical planes toward and away from the adjacent cover to secure or release the same, an operating rod for all of the latches located in a vertical plane substantially parallel to the vertical planes of the latches, and means connecting all of said latches and operating rod whereby rotation of the operating rod will cause swinging of all of said latches to lock or release the hatch covers.

8. Latch mechanism for a plurality of hatch covers and comprising, a plurality of swinging latches swingable toward and away from the free edges of the hatch covers to lock or release the same, a latch rod connected to the swinging latches of each cover, an operating rod extending across the ends of the latch rods, an operating handle connected to said operating rod to cause rotation thereof, and means connecting said operating rod and each latch rod whereby rotation of said operating rod will cause swinging of said latches toward locked or released position.

9. Latch mechanism for a plurality of hatch covers and comprising, a plurality of swinging latches swingable toward and away from the free edges of the hatch covers to lock or release the same, a latch rod connected to the swinging latches of each cover, an operating rod extending across the ends of the latch rods, an operating handle connected to said operating rod to cause rotation thereof, and means connecting said operating rod and each latch rod whereby rotation of said operating rod will cause swinging of said latches toward locked or released position, said means consisting of a projection on one of said rods and a yoke secured to the other of said rods and freely engaging said projection.

10. Latch mechanism for a plurality of hatch covers and comprising, a plurality of swinging latches swingable toward and away from the free edges of the hatch covers to lock or release the same, a latch rod connected to the swinging latches of each cover, an operating rod extending across the ends of the latch rods, an operating handle connected to said operating rod to cause rotation thereof, and means connecting said operating rod and each latch rod whereby rotation of said operating rod will cause swinging of said latches toward locked or released position, said means consisting of a cranked end on each of said latch rods, and a U-shaped yoke secured to said operating rod adjacent each cranked end and having the arms thereof located on either side of the cranked end.

JAMES B. WOLF.
HERMAN G. PELLNITZ.