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CAR DOOR OPENER

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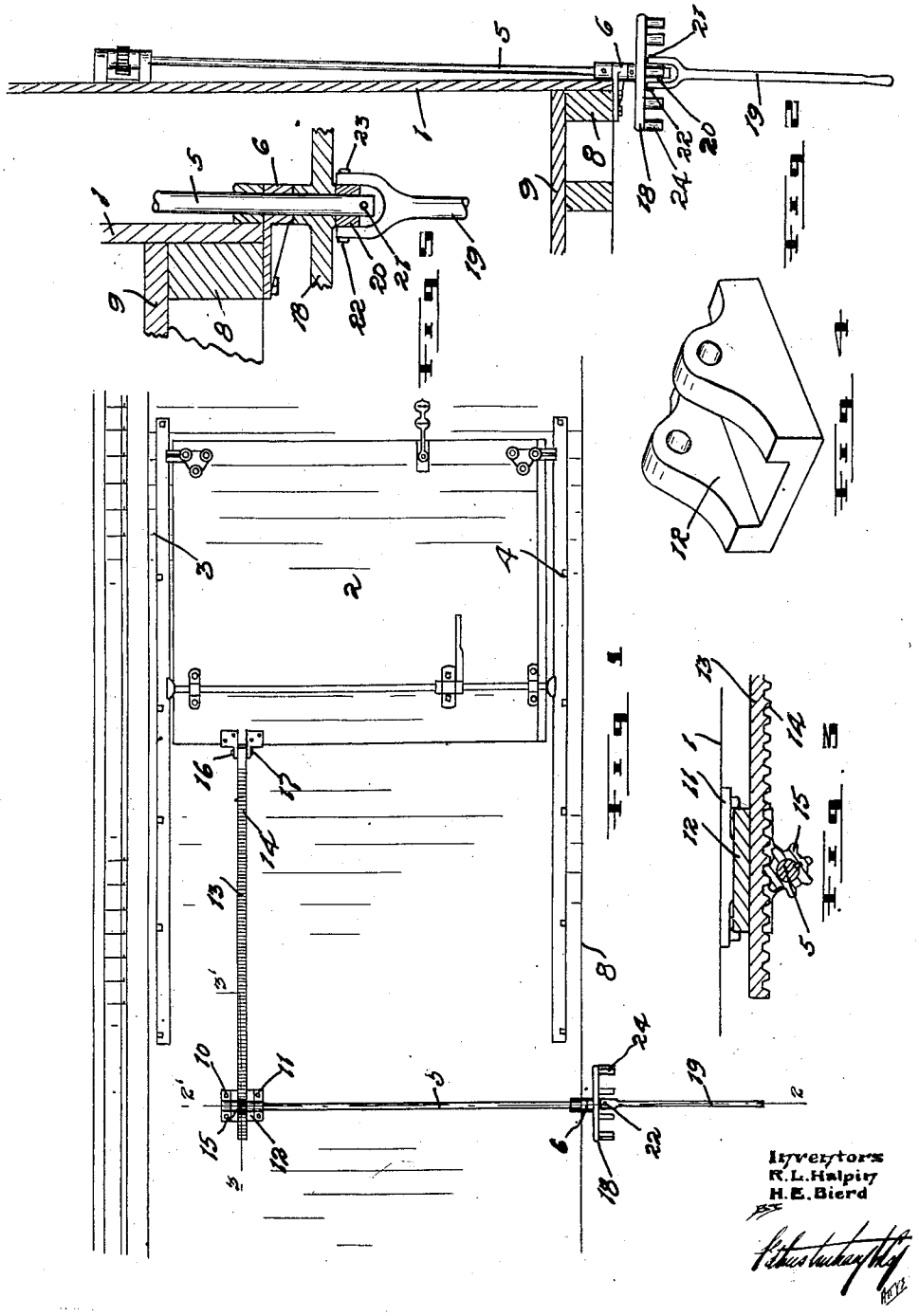

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UNITED STATES PATENT OFFICE

ROBERT L. HALPIN AND HARRY E. BIERD, OF WINNIPEG, MANITOBA, CANADA

CAR DOOR OPENER

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The invention relates to improvements in car door openers and an object of the invention is to provide a device which can be readily applied on the well known type of box car and which will permit an attendant to easily and quickly open the outer sliding door of the car without having to resort to utilizing the customary tools employed and without in any way mutilating or otherwise damaging the door.

With the above more important object in view the invention consists essentially in the arrangement and construction of parts hereinafter more particularly described, reference being had to the accompanying drawings in which:—

Fig. 1 is a side view of a car door equipped with our invention.

Fig. 2 is an enlarged detailed vertical sectional view at 2—2′ Figure 1.

Fig. 3 is an enlarged detailed horizontal sectional view at 3—3′ Figure 1.

Fig. 4 is a perspective view of the guide shoe employed.

Fig. 5 is an enlarged detailed vertical sectional view through the hand wheel and associated parts, the shaft and lever being shown in side elevation.

In the drawings like characters of reference indicate corresponding parts in the several figures.

Difficulty is experienced at the present time in opening the outer door of box cars and according to present practice, crow bars and other tools are used to do the work and very often both the door and the side of the car are mutilated or damaged. According to our invention we equip the car with a manually operated device embodying a hand wheel which when turned in the proper direction, will open the door easily and quickly and without any possibility of damaging either the car or the door.

The box car 1 is provided with the customary outer door 2 which is slidably guided for opening and closing movement between the tracks 3 and 4. It is quite often found that after a car has been in use for a period of time the outer door does not slide freely and in such cases, crow bars or pinch bars have been resorted to to force the door open.

These are usually applied at the lower right hand corner of the door and they have a natural tendency to cant the door so that it binds. This brings a heavy strain on the wooden parts of the door when it is being opened and the crow bar is apt to puncture the car which allows a commodity such as grain to escape or it is apt to damage either the car or the door.

In carrying out our invention we provide a shaft 5 placed at some distance from the door as shown, the shaft having its lower end rotatably mounted in a sleeve like bearing 6 securely bolted to the under side of the outer sill 8 of the car floor 9 and the upper end thereof rotatably mounted in similar bearings 10 and 11 suitably bolted to the wall of the car. On the shaft between the bearings 10 and 11, we mount a shoe 12, the base of which is spaced from the wall of the car to permit the shoe to rotate a limited amount on the shaft. This shoe receives slidably one end of a rack bar 13 which has the teeth 14 thereof extending away from the face of the car and continuously in mesh with the pinion 15 permanently secured to the shaft. The other end of the rack bar is connected by a pivot bolt 16 to opposing lugs 17 suitably and firmly attached to the adjacent side of the door 2.

To the lower end of the shaft we secure permanently a hand wheel 18 which permits the shaft to be readily rotated by an attendant and if the door will open readily one simply turns the hand wheel in the proper direction and the rack bar pulls the door open. However, in practice, it is found that some doors are heavier to open than others and in order to open such a door we have provided a lever 19 which has the upper end thereof forked and spanning a collar 20 rotatably mounted on the lower end of the shaft, the collar being supported by a pin 21 passing through the shaft and being connected to the forked ends of the lever by side pins 22 and 23.

The lever normally hangs down in the vertical position so that it will not be in the road

when the car is in transit. One can readily swing the lever upwardly to the horizontal position and in such position, it is adapted to pass between adjacent spaced stop pins 24 extending downwardly from the under side of the hand wheel. By utilizing the lever, one can easily open a tight door and according to the arrangement, the lever can be used like a ratchet as the upper end thereof can freely turn on the shaft and the lever can be dropped down when desired to escape from one set of pins and then raised to enter between another set of pins.

The various parts have all been designed so that they do not project very far from the side wall of the car and consequently there is no possibility of them being in the road when the car is in transit.

What we claim as our invention is:—

The combination with the outer laterally slidable door of a box car, of a vertically extending shaft rotatably carried by the side wall of the car and located a distance away from the door opening greater than the width of the door, a pinion permanently secured to the upper end of the shaft, a shoe pivotally mounted on the shaft and spanning the pinion, a horizontally disposed rack bar having one end entered between the shoe and the pinion and slidably carried by the shoe with the teeth thereof engaged with the pinion and the other end pivotally fastened by a vertical pivot pin to the adjacent end of the door in a location towards the upper end of the door and means carried by the lower end of the shaft in a location beneath the car sill for manually turning the same.

Signed at Winnipeg, this 14th day of February 1929.

ROBERT L. HALPIN.
HARRY E. BIERD.