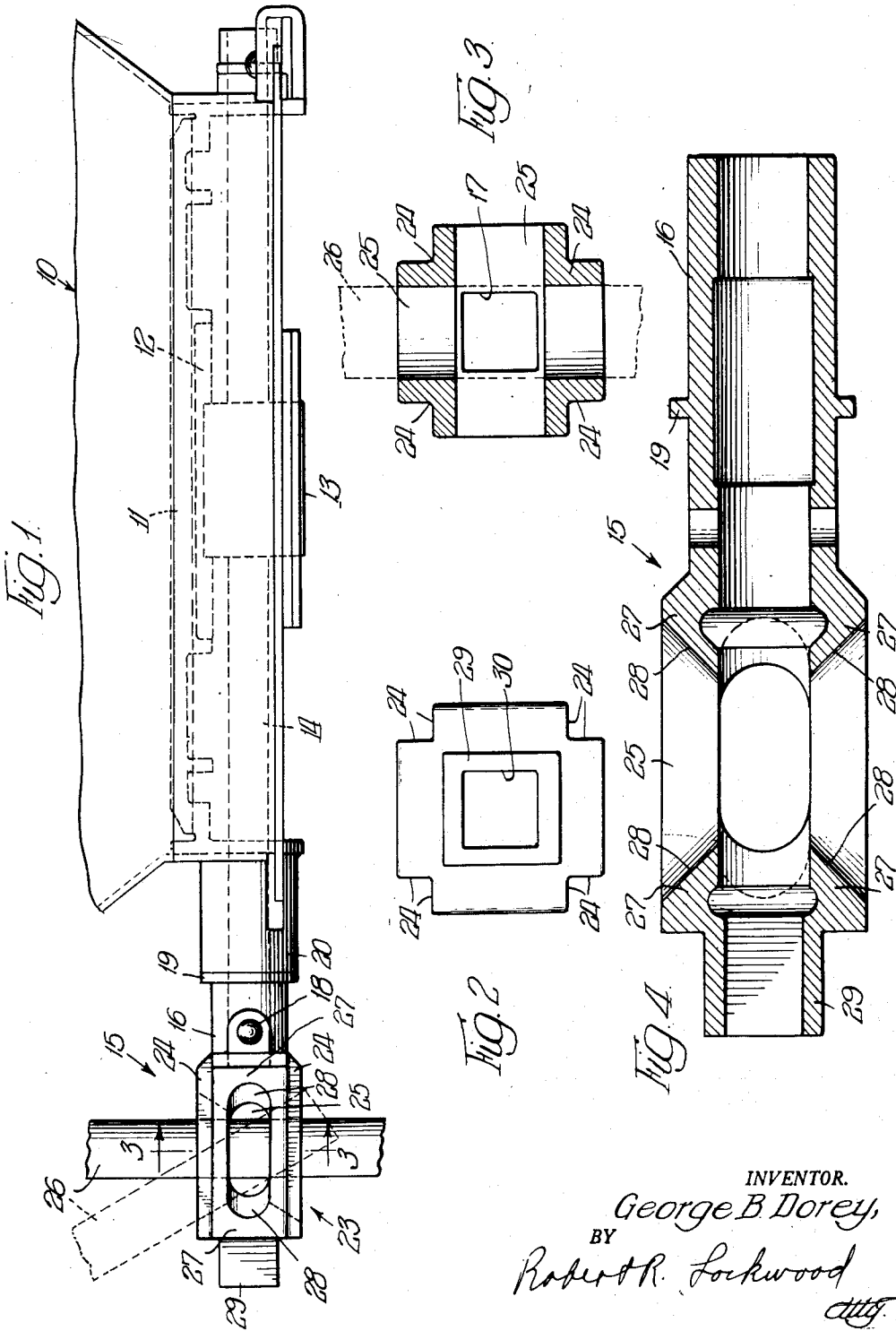


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OPERATING BAR RECEIVING HEAD FOR SHAFT OF GATE  
OPERATING MECHANISM FOR RAILWAY CARS  
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## OPERATING BAR RECEIVING HEAD FOR SHAFT OF GATE OPERATING MECH- ANISM FOR RAILWAY CARS

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This invention relates, generally, to gate operating mechanisms for railway car hoppers and it has particular relation to the head which is arranged to receive a removable operating bar.

It is conventional to provide a gate at the bottom of a railway car hopper and mount the same for horizontal movement. On the underside of the gate there is provided rack means which are arranged to cooperate with pinion means carried by a horizontally extending shaft. When the shaft is rotated the pinion drives the rack to move the gate to or from the closed position as the case may be. The shaft projects to one side of the gate operating mechanism for the attachment of a head that is arranged to receive an operating bar inserted from along one side of the car by an attendant for rotating the shaft to control the movement of the gate. It is to the construction of the head which is attached to the shaft for receiving the operating bar that the present invention is directed particularly.

Among the objects of this invention are: To provide slots in the head through which the operating bar can be inserted in such manner that it can project far enough through the head to permit the application of force at each end, such as provided by two attendants, to break the gate loose, the slots being shaped so as to permit the bar to be swung to an acute angle position with respect to the axis of rotation and to permit subsequent shaft rotation with the bar in such position as to clear the adjacent side of the car hopper; and to provide two such slots at right angles to each other in the head so that the bar can be inserted from any one of four sides.

Other objects of this invention will, in part, be obvious and in part appear hereinafter.

This invention is disclosed in the embodiment thereof shown in the accompanying drawing and it comprises the features of construction, combination of elements and arrangement of parts which will be exemplified in the construction hereinafter set forth and the scope of the application of which will be indicated in the appended claims.

For a more complete understanding of the nature and scope of this invention, reference can be had to the following detailed description, taken together with the accompanying drawing, in which:

Figure 1 is a view, in end elevation, of an outlet assembly for the hopper of a railway hopper car having an operating bar receiving head mounted on the shaft and constructed in accordance with this invention;

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Figure 2 is a view, in end elevation, of the operating head;

Figure 3 is a detail sectional view, taken along the line 3—3 of Figure 1; and

Figure 4 is a longitudinal sectional view through the operating head shown in Figure 1, the showing in Figure 4 being at an enlarged scale.

Referring now particularly to Figure 1 of the drawing, it will be noted that the reference character 10 designates, generally, an outlet assembly for the hopper (not shown) of a railway hopper type car which is provided with a gate 11 that is arranged to be moved horizontally. On the underside of the gate 11 is a rack 12 which is arranged to cooperate with a pinion 13 that is fast on a transversely extending operating shaft 14. The end of the shaft 14 which projects to the left of the outlet assembly 10 as viewed in Figure 1, has a square shank for receiving an operating head which is indicated, generally, at 15 and is constructed in accordance with this invention. The operating head 15 includes an integrally formed sleeve portion 16 which has a square opening 17, Figure 3, therethrough for receiving the square shank of the shaft 14. This construction provides for non-rotatably mounting the operating head 15 on the shaft 14. A pin or rivet 18 extends through the sleeve portion 16 and the shank of the shaft 14 to maintain these parts inseparable. A flange 19 is formed integrally with the sleeve portion 16 and it bears against the outer end of a collar 20 which extends horizontally from one side of the outlet assembly 10 so as to guide the operating head 15 in its rotation for rotating the shaft 14.

The operating head 15 also includes an integrally formed operating bar receiving portion that is indicated, generally, at 23. It will be understood that the shank of the operating shaft 14 extends only through the sleeve portion 16 but does not project a substantial distance therebeyond into the operating bar receiving portion 23.

The operating bar receiving portion 23 is formed, in part, by four angle shaped sections 24, Figure 3, which extend lengthwise of the shaft 14 and of the operating head 15 as shown. The four angle shaped sections 24 are positioned back to back so as to define two slots 25 which are spaced ninety degrees apart and intersect in the vicinity of the axis of rotation of the operating head 15 and shaft 14. The slots 25 are provided for receiving therethrough an operating bar 26.

As shown in Figure 1 by full lines, the operat-

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ing bar 26 can extend through either of the slots 25 and can be inserted from any one of four sides, whichever may be desirable. In this position as shown in Figure 1 the operating bar 26 extends perpendicular to the axis of rotation of the operating head 15 and shaft 14. This permits an attendant to grasp each end of the operating bar 26 and apply their combined force for the purpose of breaking the gate 11 loose from the position in which it is in. Only a limited movement of the operating bar 26 ordinarily is permitted when it extends in this right angle relationship to the axis of rotation since the adjacent wall of the car hopper slopes outwardly and upwardly and thus interferes with rotation of the bar 26 beyond a limited extent.

In order to permit continued rotation of the operating head 15 and shaft 14, it is withdrawn to the position shown by broken lines in Figure 1 and is inclined at an acute angle to the axis of rotation of the operating head 15. In this position the operating bar 26 can be swung through a considerably greater extent and the shaft 14 can be rotated to complete the movement of the gate 11 to either the closed or the open position.

Now it is important that the movement of the operating bar 26 to the inclined position be limited. For this purpose end walls 27 are formed integrally with the operating bar receiving portion 23 at the ends of the slots 25 and they define the ends of the same. It will be observed that the end walls 27 have inclined surfaces 28 which converge toward the axis of rotation of the operating head 15 and thus provide outflared ends for the slots 25 against which the operating bar 26 can rest and which limit the movement thereof in the manner described.

If desired, the operating bar receiving portion 23 can be provided with a rectangular end section 29 for the purpose of receiving a wrench for assisting in turning the shaft 14 if necessary. As shown in Figure 2, the end section 29 may have a rectangular opening 30 for receiving a correspondingly shaped stud to permit the application of additional torque to the shaft 14.

Since certain changes can be made in the foregoing construction and different embodiments of the invention can be made without departing from the spirit and scope thereof, it is intended that all matter shown in the accompanying drawing and described hereinbefore shall be interpreted as illustrative and not in a limiting sense.

What is claimed as new is:

1. For combination with a shaft carrying pinion means cooperating with rack means on a gate used for controlling the opening through a hopper of a railway hopper type car, means for rotating said shaft including an operating head having a sleeve portion at one end to telescope over and be operatively connected to one end of said shaft and a tubular operating bar receiving

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portion at the other end, said tubular operating bar receiving portion having two pairs of longitudinally extending slotted openings in aligned relation on opposite sides of its axis of rotation, each pair of openings being adapted to receive transversely of said axis a removable operating bar having a maximum cross-sectional dimension slightly less than the width of said slots, each pair of openings being shaped to receive said bar commonly therethrough perpendicular to said axis and each opening having its sides the projections of which are transverse to said axis defined by inclined surfaces whereby said bar can be moved away from the perpendicular position to one at an acute angle to said axis.

2. For combination with a shaft carrying pinion means cooperating with rack means on a gate used for controlling the opening through a hopper of a railway hopper type car, means for rotating said shaft comprising an operating head having a sleeve portion at one end to telescope over and be operatively connected to said shaft and a hollow operating bar receiving portion at the other end formed of four angle shape sections for extending lengthwise of said shaft in spaced relation to define slots spaced ninety degrees apart, and integrally formed side walls uniting said angle shaped sections and converging towards the axis of rotation of said head to provide out flared sides for said slots, said slots providing clear spaces at right angles to each other for loosely receiving an operating bar having a maximum cross-sectional dimension slightly less than the width of said slots in right angular relation to said axis and projecting from opposite sides of said head to break said gate loose, said out flared sides of said slots constituting stops for limiting tilting of said bar from said right angular relation in positions where it clears the car hopper during subsequent rotation of said shaft to move said gate.

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