

H. T. ANDERSON.
 RATCHET DEVICE.
 APPLICATION FILED JULY 15, 1921.

1,428,824.

Patented Sept. 12, 1922.

2 SHEETS—SHEET 1.

FIG. 1

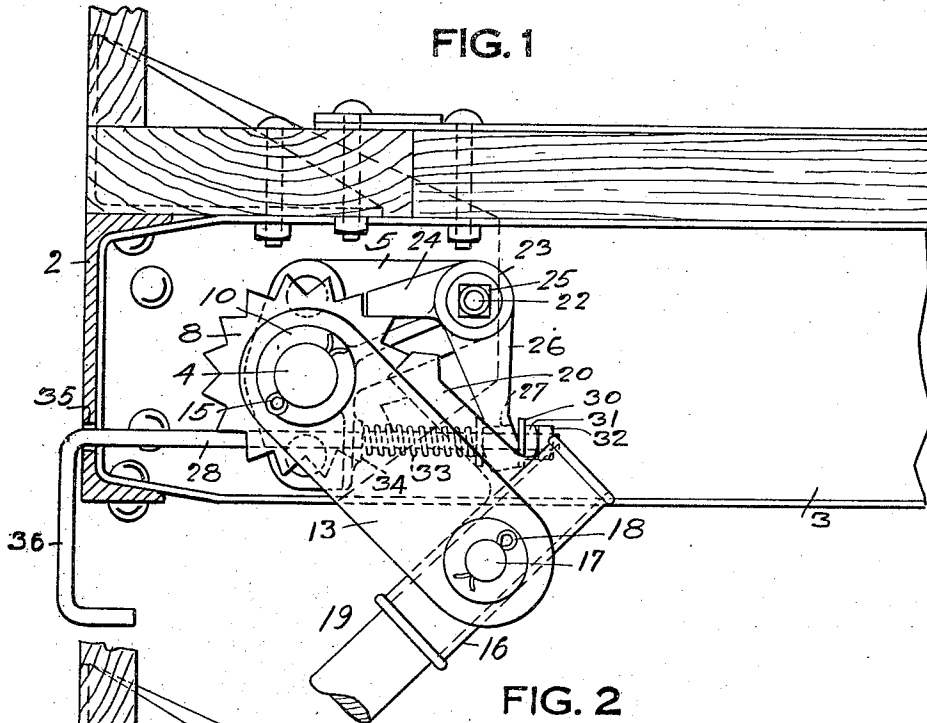
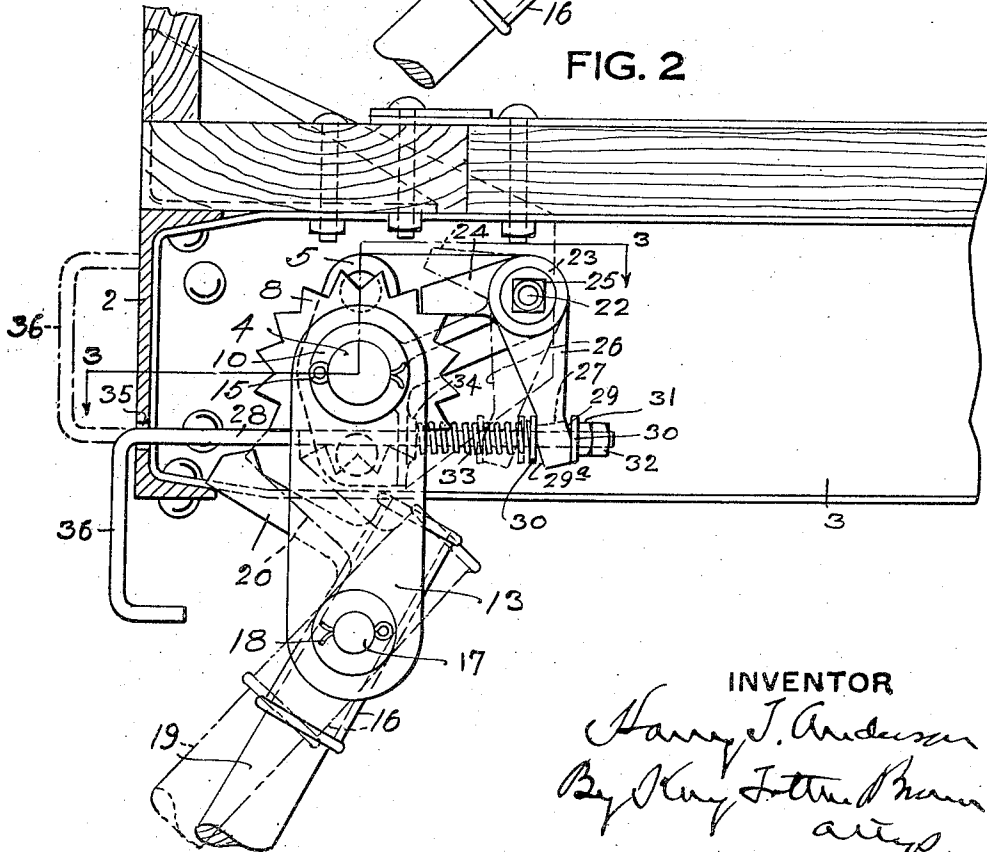


FIG. 2

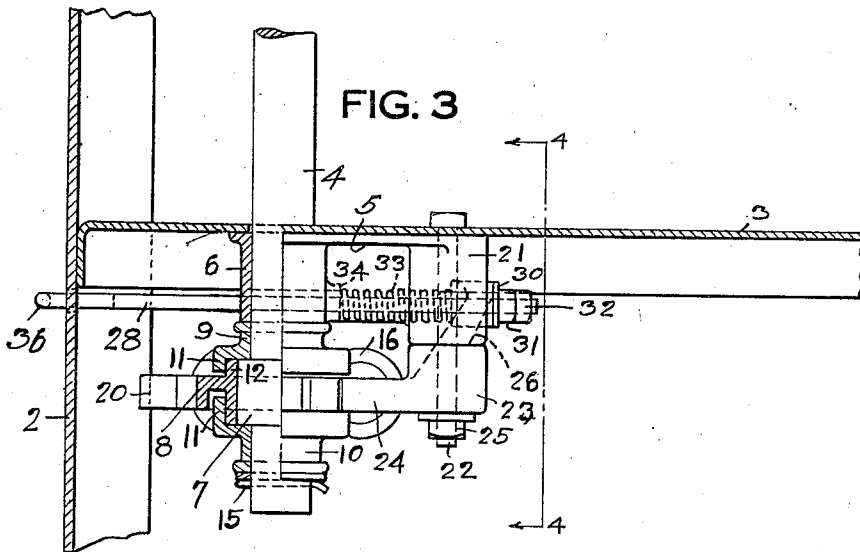
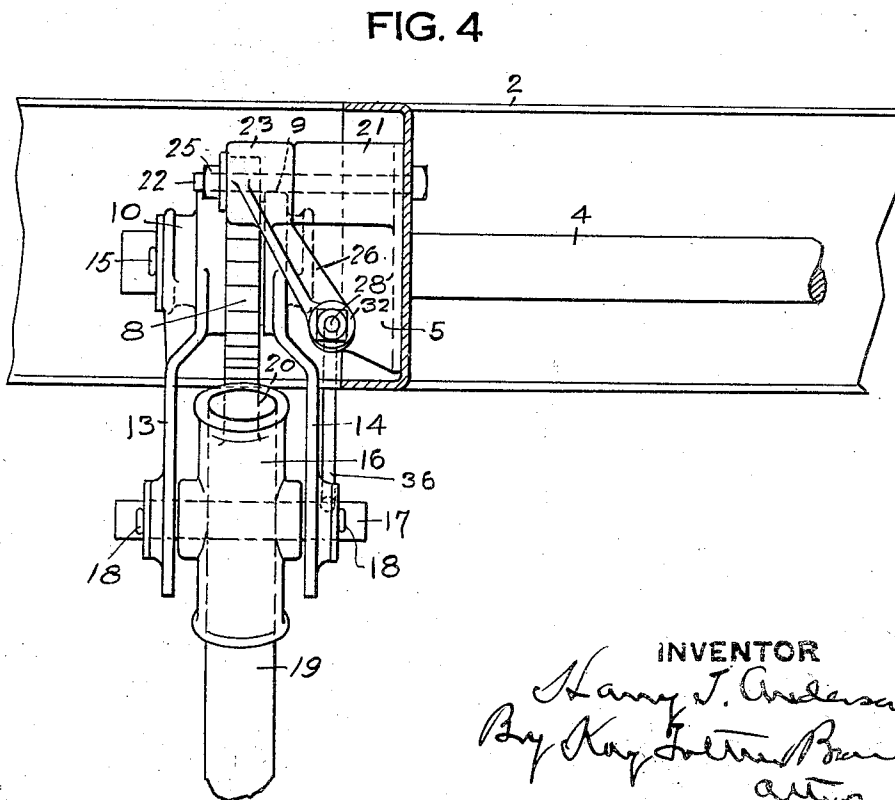


INVENTOR

Harry J. Anderson
 By *Henry J. Anderson*
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1,428,824.

Patented Sept. 12, 1922.
2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

HARRY T. ANDERSON, OF BUTLER, PENNSYLVANIA, ASSIGNOR TO STANDARD STEEL CAR COMPANY, OF PITTSBURGH, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

RATCHET DEVICE.

Application filed July 15, 1921. Serial No. 485,139.

To all whom it may concern:

Be it known that I, HARRY T. ANDERSON, a citizen of the United States, and resident of Butler, in the county of Butler and State of Pennsylvania, have invented a new and useful Improvement in Ratchet Devices; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to a ratchet device, and while not limited to such application, is especially adapted for use in connection with the operation of drop-doors of gondola-cars, general service cars, and other cars of like type.

The object of my invention is to provide a simple and efficient form of ratchet device which may be operated by one hand, and in which danger or shock to the operator is obviated, due to the fact that the operating ratchet dog is automatically thrown out of mesh with the ratchet-wheel.

In the accompanying drawings, Fig. 1 is an end view of my improved ratchet device showing a portion of a car in section to which the ratchet device is applied; Fig. 2 is a like view showing a different position of the parts; Fig. 3 is a plan view partly in section; and Fig. 4 is a front view.

As stated above, my invention is particularly applicable for use in connection with raising and lowering drop-doors in gondola-cars, general service cars, and other cars of that type, and I have accordingly illustrated my invention in connection with the operation of a car, although it has not been deemed necessary to illustrate the details of the car.

In the drawings the numeral 2 designates the side-sill of a suitable car, and 3 the transom. Extending longitudinally of the car is the winding-shaft 4, said winding-shaft passing through the transom 3, and secured to said transom is the casting 5 with the boss 6 forming a bearing for the shaft 4. The shaft 4 has the enlargement 7 to which is secured the ratchet-wheel 8.

Mounted on the shaft 4 on each side of the ratchet-wheel 8 are the hub-members 9 and 10, said hub-members having the inwardly extending flanges 11 which overlap the hub-portion 12 of the ratchet wheel 8.

Extending down from the hub-members 9 and 10 are the links 13 and 14, and as the hub-members 9 and 10 are loosely mounted on the shaft 4 the links 13 and 14 are free to

swing thereon. At the outer end of the shaft 4 is the split-pin 15.

The lever or handle-socket 16 is pivotally mounted in the links 13 and 14 by the pin 17, through which a cotter pin 18 passes. The socket 16 is accordingly free to rotate freely within said links. The socket 16 is adapted to receive the removable handle 19.

The ratchet 20 is rigidly connected with the socket 16, and said ratchet is preferably formed integral therewith, although it might be secured thereto if desired.

A boss 21 is formed on the casting 5, and a bolt 22 passes through the transom 3, through said boss, and through the hub-portion 23 of the pawl 24, a nut 25 being applied to the outer end of said bolt.

Extending out from the hub 23 diagonally thereto is the arm 26 with the opening 27 formed therein, through which the rod 28 passes. The outer end of the arm 26 is formed with the parallel faces 29, 29^a and said end portion is held between the washers 30 on said rod 28. On the outer end of the rod is the nut 31 and the jam-nut 32. A spring 33 is interposed between one of the washers 30 and the pad 34 on the casting 5.

The rod 28 passes through an opening in the casting 5 and the opening 35 in the side-sill 2, and said rod is bent to form the L-shaped portion 36.

Where my improved ratchet device is used in connection with the raising and lowering of car-doors, and where the shaft 4 has been wound up to bring the doors into closed position, and it is desired to lower the doors, the first step in the operation is to withdraw the pawl 24 from engagement with the ratchet-wheel 8, which is done by the operator pulling out the rod 28 and swinging the L-shaped portion 36 around into the position shown in dotted lines, Fig. 2, so that it will engage the side-sill 2 and draw the arm 26 over into the position indicated in dotted lines, Fig. 2, when the parallel faces 29 will engage the washers 30. This movement of the rod 28 will act to throw the pawl 24 out of engagement with the ratchet-wheel 8, and said wheel is then free to be turned to the right. With the handle-socket in the position shown in full lines, Fig. 2, the operator inserts the handle-bar 19, and then by swinging the links 13 and 14, and moving the socket 16 on its pivot, the ratchet 20 is brought into engagement with

the teeth of the ratchet-wheel 8, and by moving the lever back and forth the ratchet-wheel is turned sufficiently to release the door retaining apparatus, whereupon the doors open by gravity and the shaft 4 is turned at high speed. However, just as soon as the ratchet-wheel has been rotated sufficiently to release the doors, the operating ratchet 20 is automatically thrown out of mesh, whereby the jar and shock to the operator is obviated, and the injury which sometimes results from his having hold of the operating lever when the doors drop suddenly. Moreover, by having the ratchet 20 rigid with the handle-socket, the device can be operated by one hand, whereas in the old construction one hand was used on the lever and the other hand was used to properly place the ratchet in position on the ratchet-wheel. The lever-socket is free to move in an arc controlled by the links 13 and 14, the lever-socket being fulcrumed to this detail and having independent movement in said links.

25 To wind up the doors, the above operations are reversed, that is, the rod 28 is released by swinging the L-shaped portion 36 down into the position shown in Fig. 2, whereupon the pawl 24 is again brought into engagement with the ratchet-wheel. The handle-socket 16 is rotated until the ratchet 20 is brought around to the right hand side of the ratchet-wheel, as shown in Fig. 1, whereupon by operating the lever the ratchet-wheel is turned to wind up the shaft, and the pawl 24 acts automatically to retain the ratchet-wheel in position in which it is moved by the ratchet 20.

What I claim is:

40 1. In a ratchet device, the combination of a shaft, a ratchet-wheel mounted thereon, a swinging member carried by said shaft, a lever-socket mounted to rotate in said member and a ratchet rigidly connected to said socket, whereby the position of said ratchet with reference to said ratchet-wheel may be reversed.

50 2. In a ratchet-device, the combination of a shaft, a ratchet-wheel mounted thereon, a swinging member carried by said shaft, a lever-socket mounted to rotate in said member, a ratchet rigidly connected to said socket, and a spring actuated pawl engaging said ratchet-wheel, whereby the position

of said ratchet with reference to said ratchet-wheel may be reversed.

3. In a ratchet-device, the combination of a shaft, a ratchet-wheel mounted thereon, a swinging member carried by said shaft, a lever socket mounted to rotate in said member, a ratchet rigidly connected to said socket, a spring actuated pawl to engage said ratchet-wheel, and means for holding said pawl out of engagement with said ratchet-wheel, whereby the position of said ratchet with reference to said ratchet-wheel may be reversed.

4. In a ratchet-device, the combination of a shaft, a ratchet-wheel mounted thereon, a swinging member carried by said shaft comprising a pair of links, a lever-socket mounted to rotate between said links, and a ratchet rigidly connected to said socket, whereby the position of said ratchet with reference to said ratchet-wheel may be reversed.

5. In a ratchet device, the combination of a shaft, a ratchet-wheel mounted thereon, a rotatable lever-socket supported from said shaft, and a ratchet rigidly connected to said socket.

6. In a ratchet device, the combination of a shaft, a ratchet-wheel mounted thereon, a ratchet adapted to engage said ratchet-wheel, a pawl adapted to engage said ratchet-wheel, an arm on said pawl, a rod passing through said arm, a spring interposed between said arm and a fixed abutment on a frame through which said rod passes, said rod having an inwardly projecting portion adapted to engage said frame.

7. In a ratchet device, the combination of a shaft, a ratchet-wheel mounted thereon, a ratchet adapted to engage said ratchet-wheel, a pawl adapted to engage said ratchet-wheel, an arm on said pawl, a rod passing through said arm, a spring interposed between said arm and a fixed abutment on a frame through which said rod passes, said rod being bent at its outer end to form an L-shaped portion.

In testimony whereof, I, the said HARRY T. ANDERSON, have hereunto set my hand.

HARRY T. ANDERSON.

Witnesses:

ROBT. D. TOTTEN,
JOHN F. WILL.