

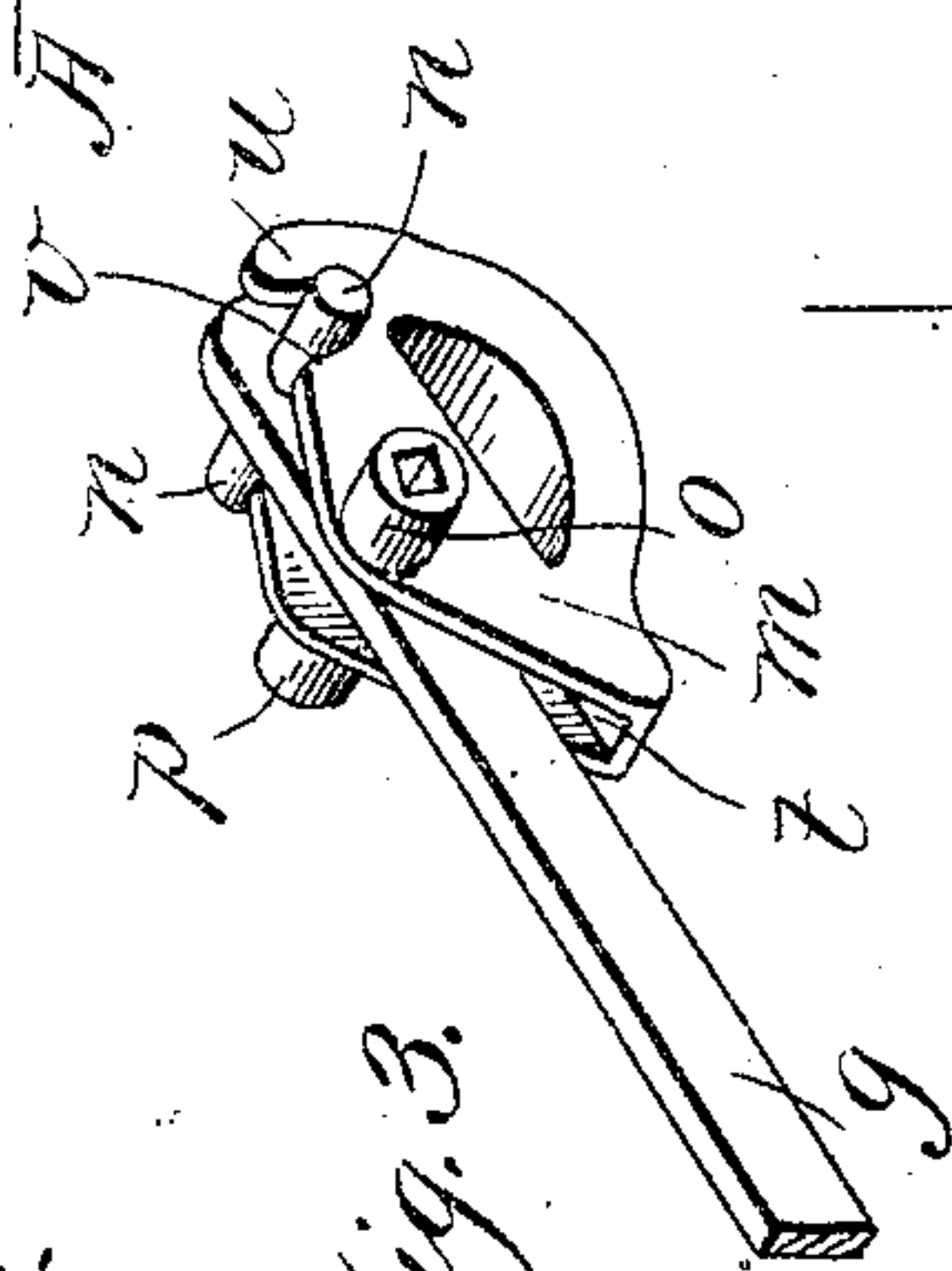
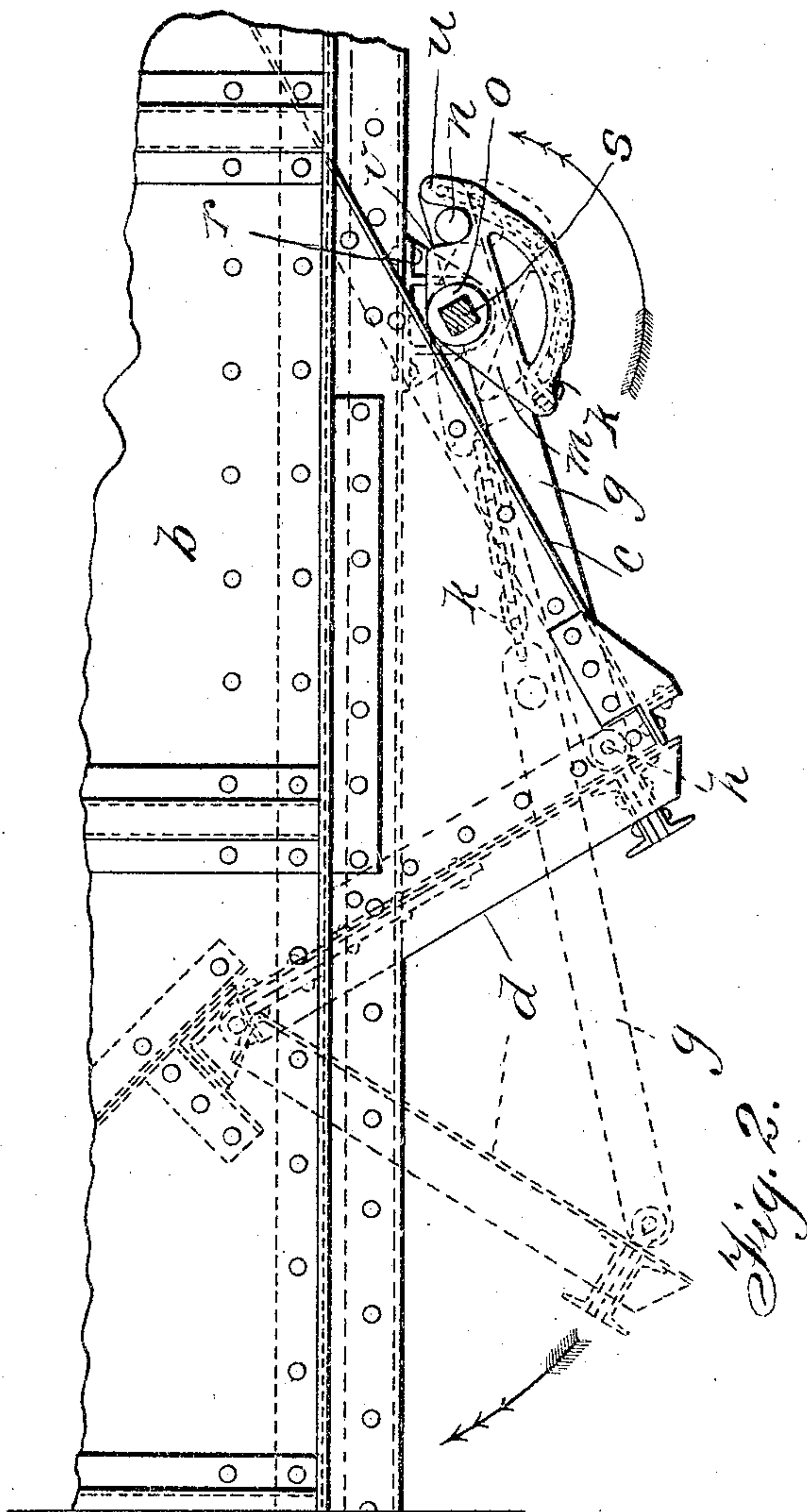
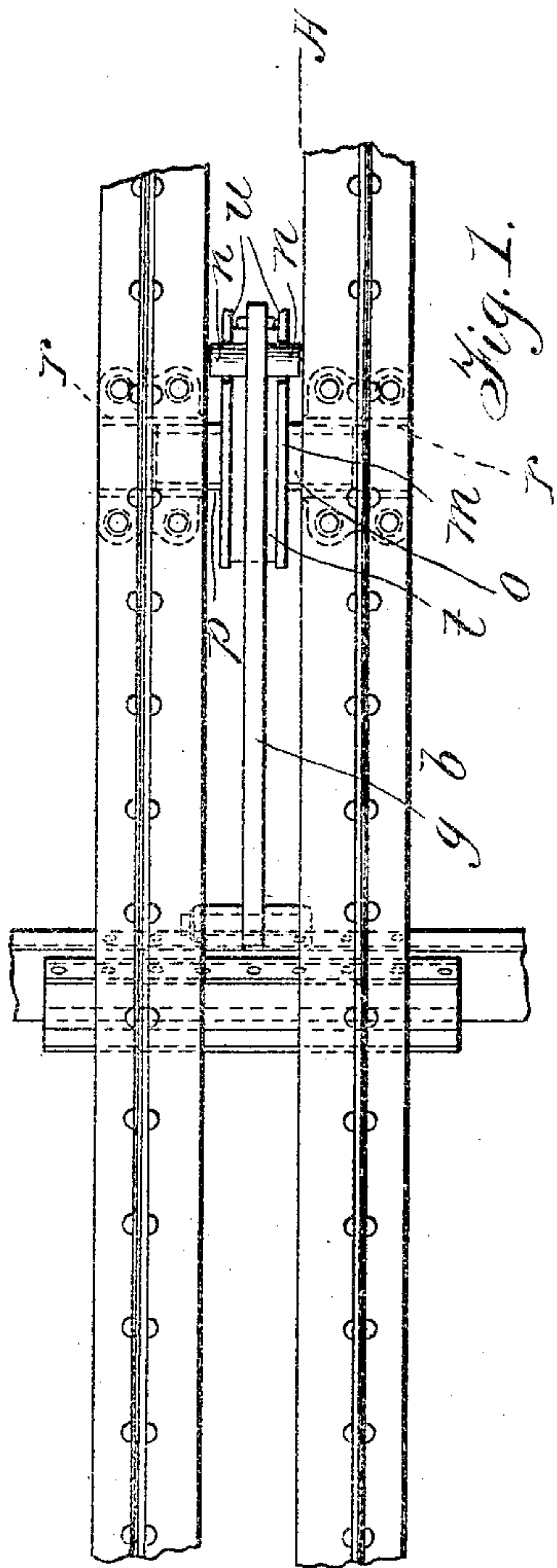
No. 897,049.

PATENTED AUG. 25, 1908.

W. S. ATWOOD & F. DITCHFIELD.

MEANS FOR OPERATING THE DOORS OF HOPPER BOTTOM CARS.

APPLICATION FILED FEB. 13, 1908.



Witnesses

J. Ed. Page
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Fig. 3.

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UNITED STATES PATENT OFFICE.

WILLIAM STEPHEN ATWOOD, OF WESTMOUNT, AND FRANK DITCHFIELD, OF MONTREAL,
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MEANS FOR OPERATING THE DOORS OF HOPPER-BOTTOM CARS.

No. 897,049.

Specification of Letters Patent.

Patented Aug. 25, 1908.

Application filed February 13, 1908. Serial No. 415,725.

To all whom it may concern:

Be it known that we, WILLIAM STEPHEN ATWOOD, of Westmount, Province of Quebec, Canada, and FRANK DITCHFIELD, of the city of Montreal, Province of Quebec, Canada, have invented certain new and useful Improvements in Means for Operating the Doors of Hopper-Bottom Cars; and we do hereby declare that the following is a full, clear, and exact description of the same.

Our invention has for its object to provide means whereby greater power can be exerted to open the door for the purpose of overcoming its resistance when held closed by frost or other extraneous causes.

The invention may be said, briefly, to consist of a compression link and a tension member flexibly connecting such link to a device adapted to, when manually operated for the purpose of closing the door, take up the tension member and bring the compression link into engagement with such device in order that upon the reverse action of the said device sufficient compression can be exerted through the link, outwardly upon the door, to loosen the latter from its seat even if it is stuck, the tension member then allowing it to fall to its full open position.

For full comprehension, however, of our invention reference must be had to the accompanying drawings, forming a part of this specification, in which similar reference characters indicate the same parts, and wherein

Figure 1 is a plan view of a portion of the underside of a car fitted with our invention; and Fig. 2 is a longitudinal vertical sectional view taken on line A A Fig. 1; Fig. 3 is a perspective view of the quadrant and compression link.

The body *b* of the car, the hopper bottom *c*, and door *d* are of well known construction and as they form no part of our invention we will not describe them.

Specifically stated our invention comprises a compression link *g* pivoted as at *h* to the door and having its free end connected by a chain *k* to a quadrant *m* and furnished with a pair of lateral pin projections or studs *n*.

The quadrant is formed on opposite sides, at its pivot point, with trunnions *o* and *p* journaled in bearings *r* mounted on the underside of the car body, the trunnion *p* having a square axial opening to allow of the con-

nection of the usual operating shaft, a portion whereof is indicated at *s*, while the body of this quadrant is slotted at right angles to and across the pivot point, as at *t*, to accommodate the link. Each side of one end of this slotted portion (which is also one end of the curved portion of the quadrant) has a hooked lug *u* and a shoulder *v* adapted to receive between them one of the pin projections or studs *n*, the chain being of just sufficient length to cause this engagement to take place and the link to assume a position within the slot *t* and below the pivot point of the quadrant, when such chain is wound on the quadrant.

When the operating shaft is rotated in the direction indicated in Fig. 2, the chain is wound on the curved portion of the quadrant, which is recessed to accommodate it, and the pins or studs *n* are drawn over the shoulders and seated in the recesses between the latter and the hooked lugs. When in this position the link lies within the quadrant and beneath the center of rotation thereof and consequently tends to retain the quadrant against rotation in the direction required to displace it to allow the door to open. When the door is either closed or open this link acts as a tension member through the medium of which the door is hung from the quadrant.

To open the door the quadrant is rotated in the reverse direction to that indicated, thereby causing the pin projections or studs *n* to be first lifted above the center of rotation and then borne upon by the hooked lugs, thus placing the link in compression, sufficient power being in this manner made available to start the door.

What we claim is as follows:—

1. The combination with a hopper door, of a compression link connected to the door, a tension member connected to such link and a manually operated device adapted to at different times take up and pay out the said tension member, and means within the said device for effecting a temporary direct engagement between the said device and link such engagement being tensional while the door is held closed and adapted to have compression exerted therethrough upon the door by the said manually operated device for the purpose of forcing the door open compressional when the door is being forced open.

2. The combination with a hopper door, of a compression link connected to the door,

a chain connected to the link, and a quadrant having the chain connected thereto and such quadrant presenting structural features adapted to engage and retain the link during
5 the time the chain is wound thereon, the said structural features being further adapted to exert compression through the link and upon the door.

3. The combination with a hopper door,
10 of a compression link having lateral pins or studs at one end and pivotally connected at its other end to the door, a chain connected to the free end of such link, a quadrant journaled in bearings upon the car body and

formed with a slot extending inwardly across 15 the pivot point to accommodate the link, one end of the slotted portion being formed at each side with a shoulder and hooked lug and the opposite end of the quadrant having the chain connected thereto. 20

In testimony whereof, we have signed our names to this specification, in the presence of the two subscribing witnesses.

WILLIAM STEPHEN ATWOOD
FRANK DITCHFIELD.

Witnesses:

WILLIAM P. McFEAT,
FRED J. SEARS.