

No. 780,834.

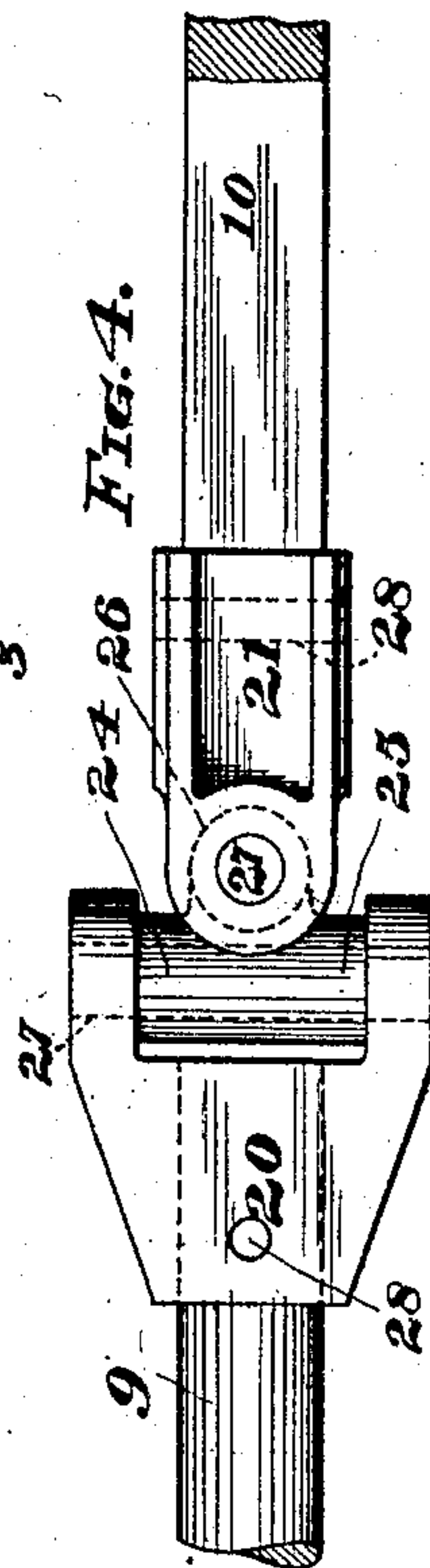
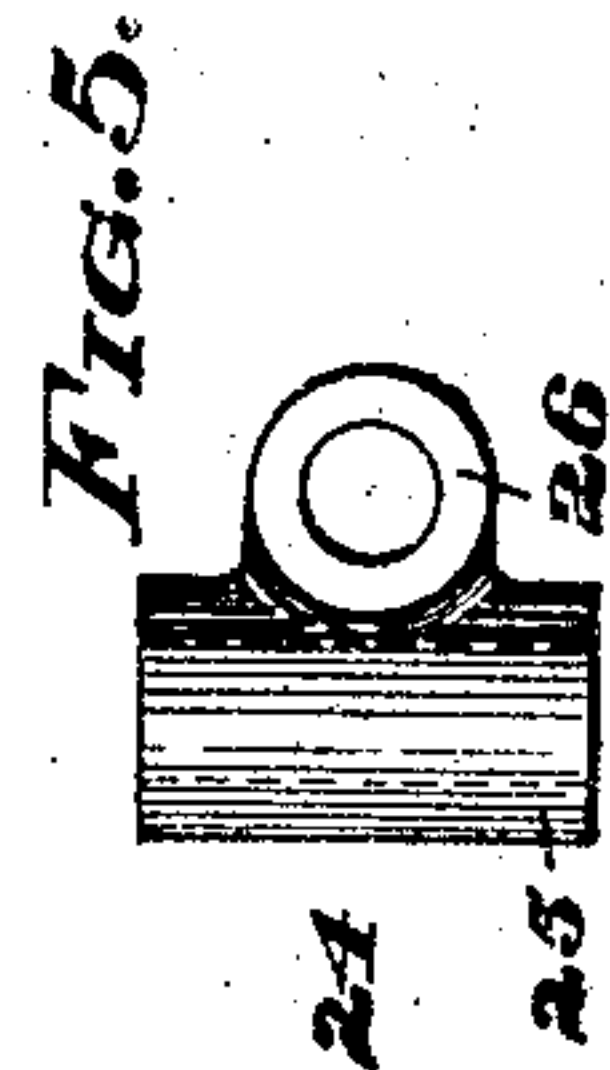
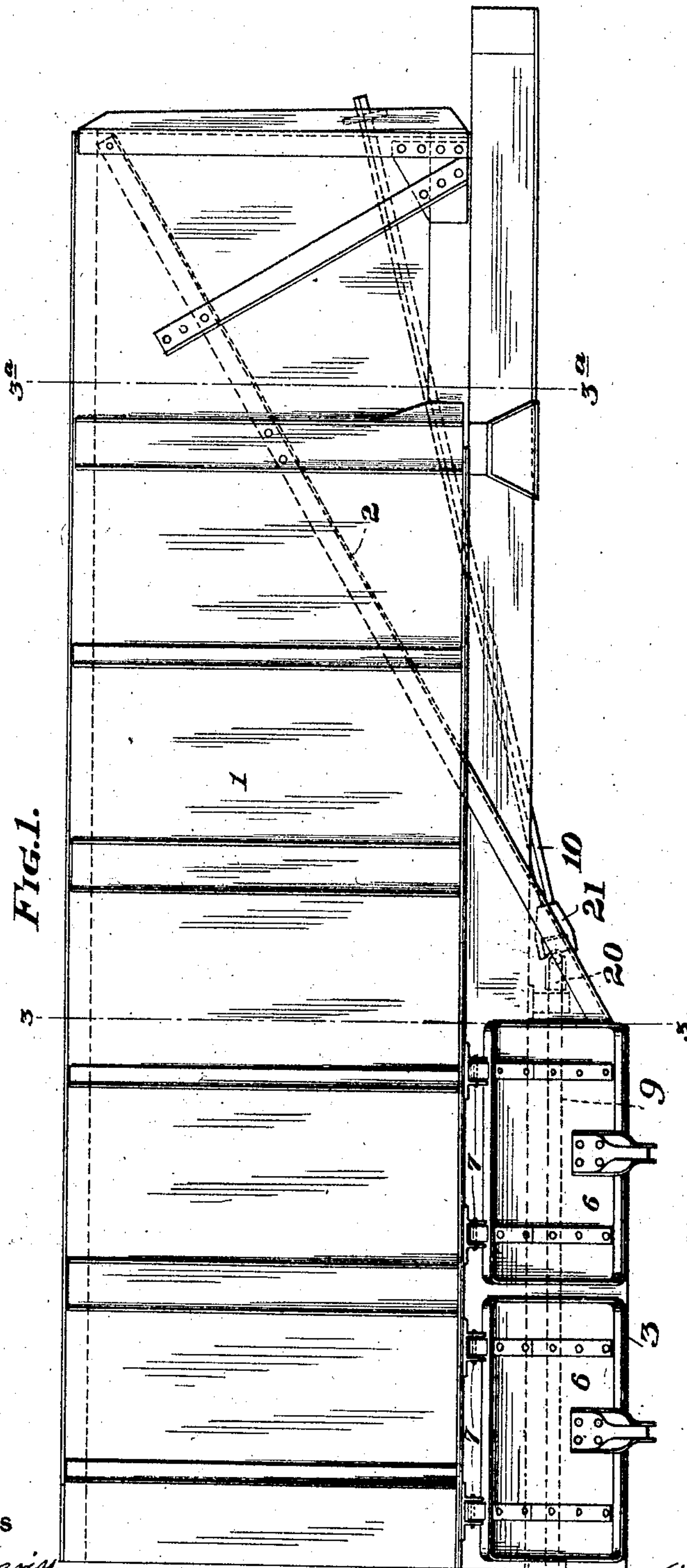
PATENTED JAN. 24, 1905.

A. STUCKI.

CAR DOOR OPERATING MECHANISM.

APPLICATION FILED OCT. 22, 1904.

2 SHEETS—SHEET 1.



WITNESSES

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2 SHEETS—SHEET 2.

FIG. 2.

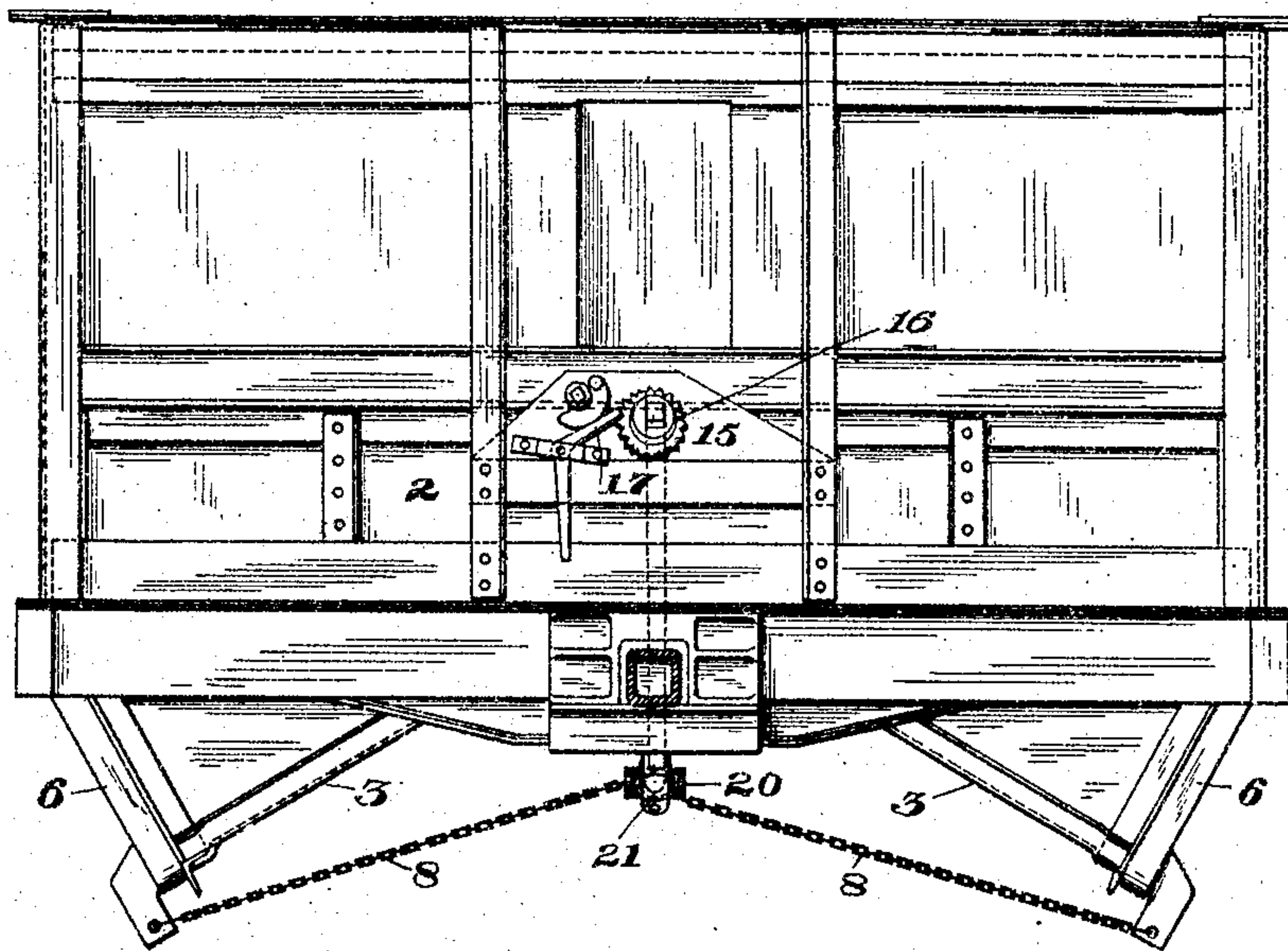
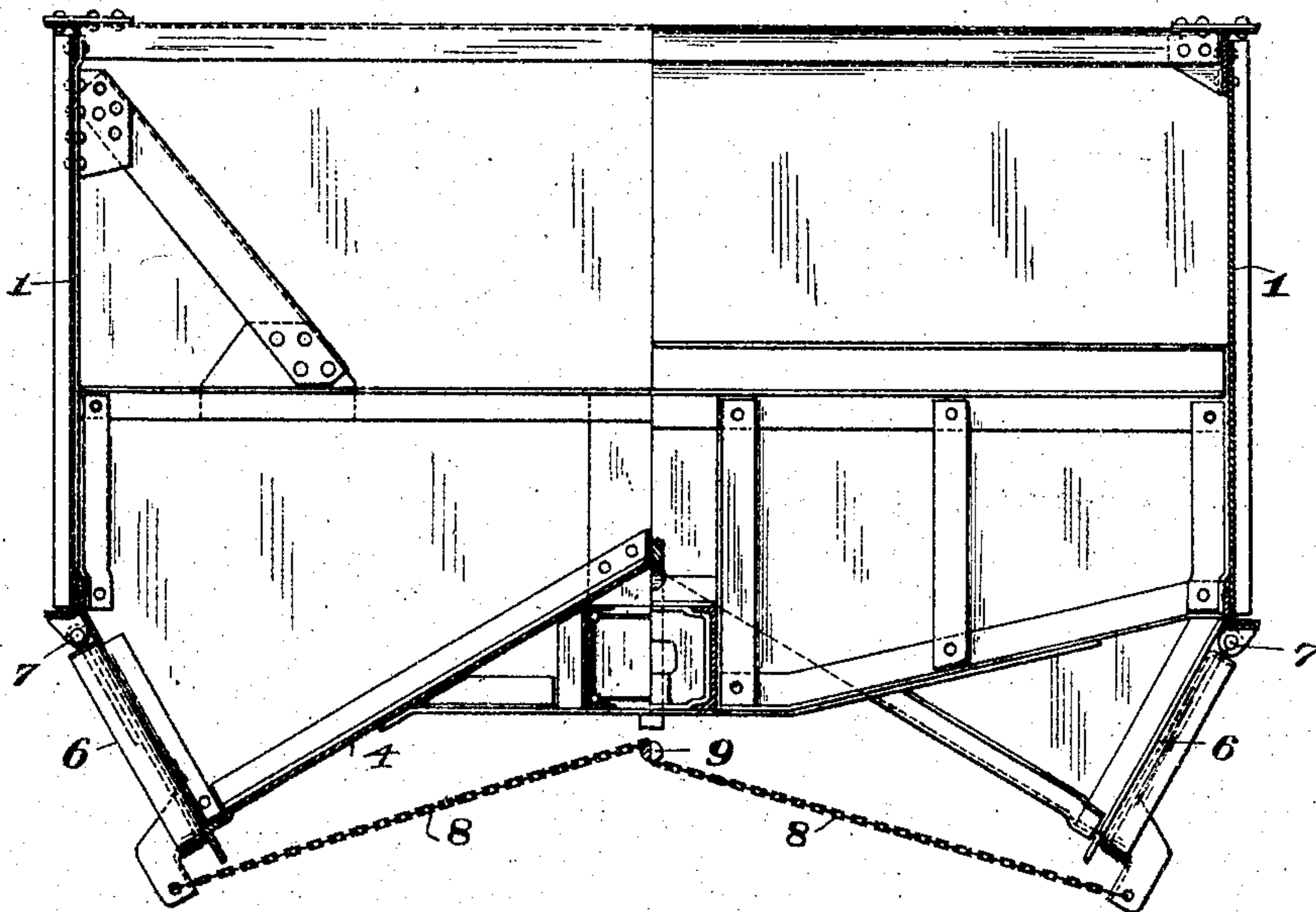


FIG. 3.



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UNITED STATES PATENT OFFICE.

ARNOLD STUCKI, OF ALLEGHENY, PENNSYLVANIA, ASSIGNOR TO STANDARD STEEL CAR COMPANY, OF PITTSBURG, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

CAR-DOOR-OPERATING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 780,834, dated January 24, 1905.

Application filed October 22, 1904. Serial No. 229,642.

To all whom it may concern:

Be it known that I, ARNOLD STUCKI, a resident of Allegheny, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Car-Door-Operating Mechanism; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to door-operating mechanism for hopper and similar railway-cars.

The object of my invention is to provide operating means for the car-doors which is so arranged that it is easy of access, which can be easily applied to the cars, which is inexpensive, which is free from friction in transmitting the motion, and which has less wear and a longer life than devices heretofore used.

The invention consists, generally stated, in providing an operating-shaft for the hopper and similar doors, together with a power-transmitting shaft having its end located in such position that it is easy of access for actuation and which is connected to the operating-shaft by a universal or similar flexible connection.

In the accompanying drawings, Figure 1 is a side view of one-half of a hopper-bottom car, showing my invention applied thereto. Fig. 2 is an end view of the same. Fig. 3 is a transverse section, the left half being taken on the line 3-3 and the right half being taken on the line 3^a-3^a, Fig. 1; and Figs. 4 and 5 are detail views of the flexible connecting member.

My invention may be applied to railway-cars of any kind or description having load-discharging doors mounted on horizontal pivots, whether bottom or side doors and irrespective of whether the doors extend longitudinally or transversely of the car.

In the accompanying drawings my invention has been shown applied to a side-discharging hopper-bottom car in which the doors are arranged longitudinally of the car; but it will be understood that this is for purposes of illustration only and that the invention is not limited to this type of car, but is equally applicable to a car having either horizontal, vertical, or inclined doors or doors extending transversely of the car.

The car-body has the usual sides 1, ends 2, and bottom or floor 3. These may be of any preferred type or form. The drawings show these parts constructed of metal; but this obviously is not necessary. In the particular car shown the floor slopes from the ends toward the transverse center of the car and also slopes from the longitudinal center downwardly toward the sides thereof. The door-openings in this case are located between the lower edge of the car sides and the outer edges of the sloping floor-plates 4, as shown clearly in Fig. 3. These door-openings are closed by means of doors 6, hinged on horizontal pivots 7, secured to the lower edges of the car sides. The lower edges of these doors are connected by suitable means, such as chains 8 or links or other connecting means, to an operating-shaft 9. The latter is mounted in suitable bearings and extends horizontally, and in the particular type of car shown this shaft extends longitudinally of the car and is mounted underneath the center sills. With transversely-arranged doors this operating-shaft would be mounted transversely of the car. Connected to this operating-shaft is the actuating-shaft 10, which is practically an extension of the operating-shaft 9, being in tandem therewith, and which extends at an angle thereto in order that its outer end may be brought to a point of easy access. In the car shown this extension projects diagonally upwardly through the body-bolster and has its end located slightly above the end sill of the car, at which point it is easy of access for operation, as the operator can stand on the projecting end sill and apply the power to said shaft. Suitable bearings are provided for this actuating-shaft, the outer end being supported in a plate 15, secured to the end sill. This actuating-shaft will be provided with suitable operating means. In the drawings said shaft is shown provided with a squared outer end for

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receiving a hand-wheel, crank, or the like. The usual ratchet-wheel 16 and detent 17 are applied for holding said shaft against rotation.

The extension 10 is coupled to the operating-shaft 9 by a suitable flexible connector, which will permit said extension to be disposed in tandem with and at an angle with reference to the operating-shaft in order that the operating end of the extension-shaft may be brought to a convenient place for actuation. This flexible connector may consist of an interposed flexible coil, rubber disk with washers, spherical joints with radial stops, or other forms. That shown in the drawings is a well-known form of universal coupling. This comprises a member 20, connected to the operating-shaft 9, and a similar member 21, connected to the extension 10. These members are forked, as shown, and between the forked ends and pivoted to both is the intermediate connecting member 24, having members 25 and 26 at right angles to each other and hinged, respectively, to the forks of the two members 20 and 21. This hinging is conveniently secured by providing the various members with holes through which pass suitable pivot-pins 27. This manner of connection permits the shafts 9 and 10 to assume an angular relation to each other and still to rotate freely. The members 20 and 21 can be connected to their respective shafts by any suitable means. As shown in the drawings, these members are shown as castings provided with holes into which the ends of the shafts project and in which they are secured by suitable transverse pins 28. As shown in the drawings, the shaft 9 is round, as it acts merely as a winding-shaft; but, if desired, it may be square, and it may be connected to the doors by means of cranks and links or other suitable means.

It is obvious that when the shaft 10 is rotated its movements will be communicated to the winding-shaft 9, thus pulling on the chains or other connecting means and closing the car-doors. The connection between the actuating-shaft 10 and winding or operating shaft 9 is very simple of construction, has practically no friction, so that the motion is transmitted with a minimum loss, and the life of the device is long. The device can be easily applied to a car, and the actuating end of the shaft is of easy access. Prior to this time it has been the custom to make the actuating-shaft separate from the winding or operating shaft and to connect the two together by trains of gears, sprocket wheels and chains, or winding-drums and chains, which is not only cumbersome, but results in a large amount of friction in transmitting the power. All of this is overcome by my invention.

What I claim is—

1. Door-operating mechanism for railway-

cars in which the doors are mounted on horizontal pivots, comprising a horizontal operating-shaft connected to the door, an extension-shaft in tandem therewith and extending outwardly therefrom with its end located so as to be of easy access, and a flexible connection between said operating and extension shafts.

2. Door-operating mechanism for railway-cars provided with doors mounted on horizontal pivots, comprising a horizontal operating-shaft connected to the door, an extension-shaft in tandem therewith and extending outwardly therefrom and at an angle to the operating-shaft, and a flexible connection between said extension and operating shafts.

3. Door-operating mechanism for railway-cars provided with doors mounted on horizontal pivots, comprising a horizontal operating-shaft connected to the door, an extension-shaft in tandem therewith and extending outwardly and upwardly therefrom, and flexible connecting means uniting said operating and extension shafts.

4. Door-operating mechanism for railway-cars provided with doors hinged on horizontal pivots, comprising a horizontal operating-shaft connected to the doors and extending longitudinally of the car, an extension-shaft in tandem therewith and projecting at an angle therefrom and toward the end of the car, and flexible connecting means joining said operating and extension shafts.

5. Door-operating mechanism for railway-cars provided with doors hinged on horizontal pivots and longitudinally of the car, comprising an operating-shaft connected to the doors and extending longitudinally of the car, an extension-shaft in tandem therewith and extending upwardly therefrom with its ends located above the end sill of the car, and flexible connecting means connecting said operating and extension shafts.

6. Door-operating mechanism for railway-cars provided with doors hinged on horizontal pivots, comprising a horizontal operating-shaft connected to the doors, an extension-shaft extending outwardly therefrom and at an angle thereto, and a universal joint connecting said operating and extension shafts.

7. Door-operating mechanism for railway-cars provided with doors hinged on horizontal pivots, comprising a horizontal operating-shaft connected to the doors, an extension-shaft in tandem therewith and extending outwardly therefrom and at an angle thereto, and a universal connecting member connecting said operating and extension shafts and comprising two sections united by an intermediate section hinged to both of said sections by pivots arranged at right angles to each other.

8. Door-operating mechanism for railway-cars provided with longitudinally-arranged

doors mounted on horizontal pivots, comprising an operating-shaft connected to the doors and extending longitudinally of the car, of an extension-shaft projecting upwardly toward
5 the end of the car with its end located above the end sill, and a universal joint connecting said operating and extension shafts.

In testimony whereof I, the said ARNOLD STUCKI, have hereunto set my hand.

ARNOLD STUCKI.

Witnesses:

ROBERT C. TOTTEN,
G. KREMER.