No. 648,884. Patented May 1, 1900.

C. T. SCHOEN & J. M. HANSEN.

DOOR OPERATING DEVICE FOR HOPPER BOTTOM CARS.

(Application filed Nov. 9, 1899.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

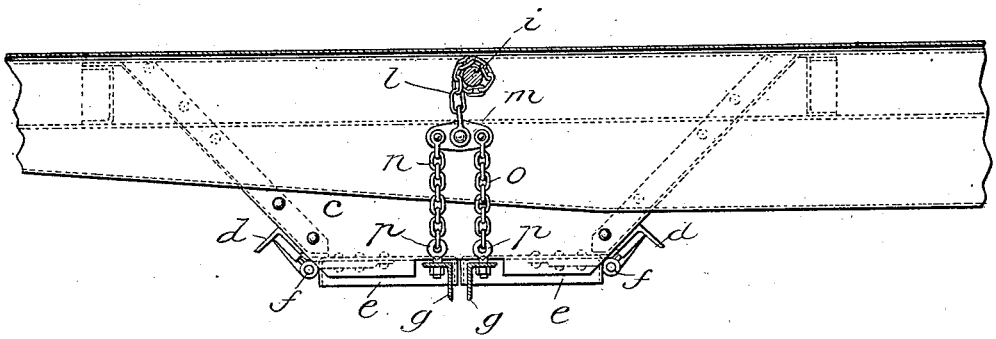
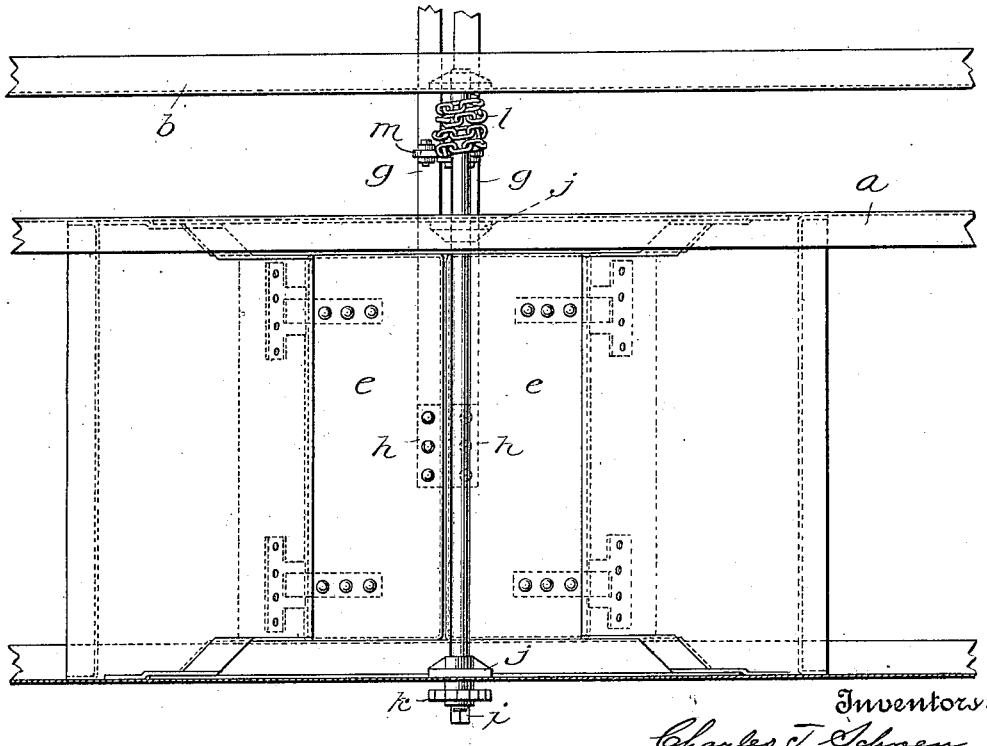


Fig. 2.



Witnesses

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Fig. 3.

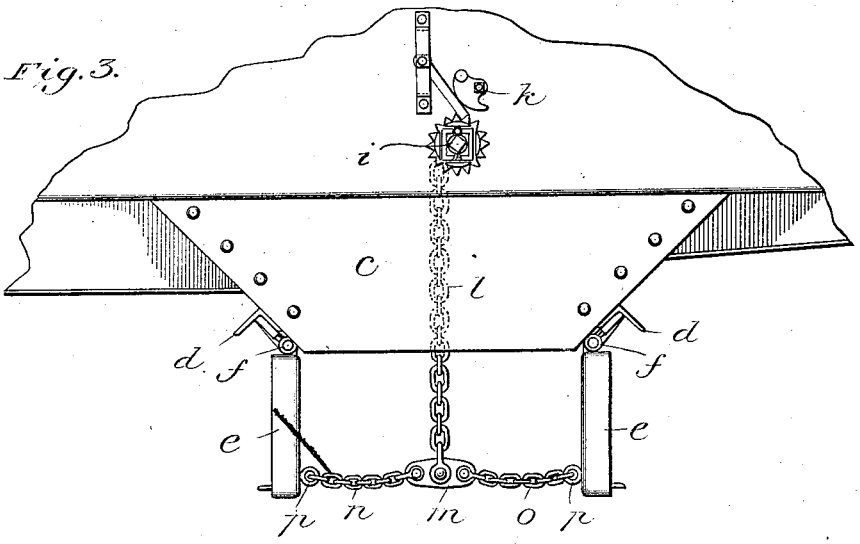


Fig. 4.

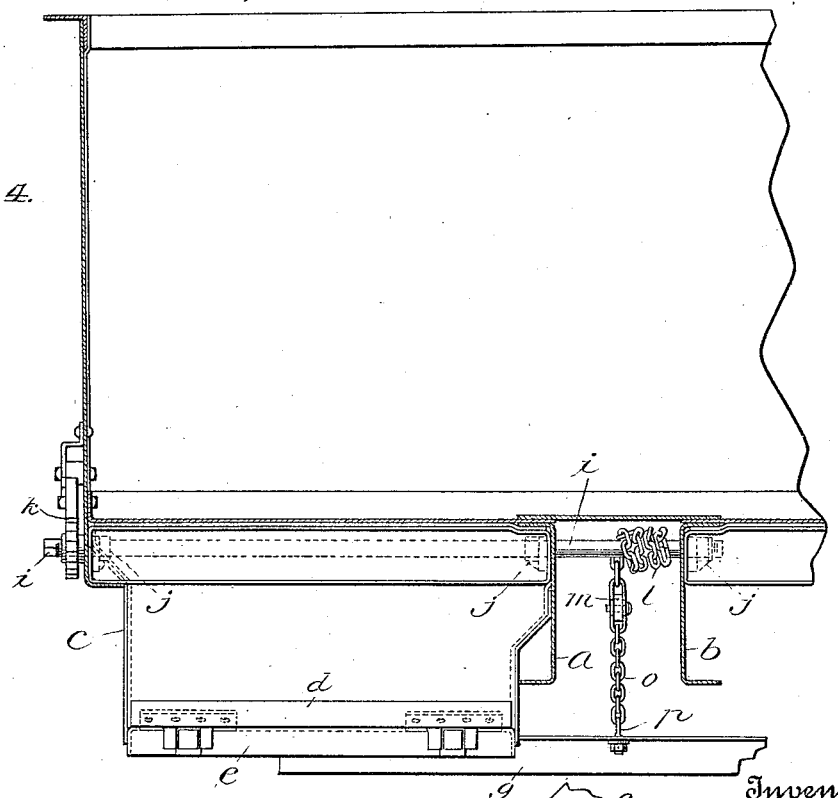
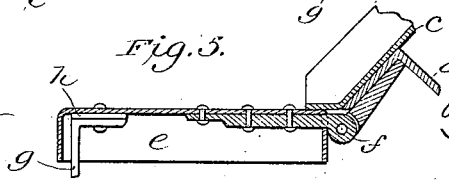


Fig. 5.



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UNITED STATES PATENT OFFICE.

CHARLES T. SCHOEN, OF PHILADELPHIA, AND JOHN M. HANSEN, OF BELLEVUE, PENNSYLVANIA, ASSIGNORS TO THE PRESSED STEEL CAR COMPANY, OF PITTSBURG, PENNSYLVANIA.

DOOR-OPERATING DEVICE FOR HOPPER-BOTTOM CARS.

SPECIFICATION forming part of Letters Patent No. 648,884, dated May 1, 1900.

Application filed November 8, 1899. Serial No. 736,361. (No model.)

To all whom it may concern:

Be it known that we, CHARLES T. SCHOEN, residing at Philadelphia, in the county of Philadelphia, and JOHN M. HANSEN, residing at Bellevue, in the county of Allegheny, State of Pennsylvania, citizens of the United States, have invented a certain new and useful Improvement in Door-Operating Mechanism for Hopper-Bottom Cars, of which the following is a full, clear, and exact description.

This invention relates, primarily, to operating mechanism for doors which close in a horizontal plane at the bottom of a flat-bottom gondola car, although the invention is capable of use in connection with doors of a different kind.

In illustration of the invention we show four pressed-steel doors arranged in twos on opposite sides of the center sills and connected in pairs transversely of the car and hinged at their outer ends, so as to close toward each other, the pairs of doors being connected by chains with a winding-shaft and an equalizer being interposed between the two door-chains and the single chain which is wound about the winding-shaft, so that a positive closing of both pairs of doors may be depended upon at all times.

Having thus stated the principle of our invention, we will proceed to describe the best mode in which we have contemplated applying that principle and then will particularly point out and distinctly claim the part, improvement, or combination which we claim as our invention.

In the accompanying drawings, illustrating our invention, in the several figures of which like parts are similarly designated, Figure 1 is a central longitudinal section, and Fig. 2 a top plan view, of sufficient of a flat-bottom steel car to show our invention in place, the doors being closed. Fig. 3 is a side elevation with the doors open, and Fig. 4 a cross-section with the doors closed. Fig. 5 is a cross-section of one of the doors on a larger scale, the plane of section being through the outer hinge.

The underframe and body of the car may be of any approved construction. The center sills *a b*, preferably of pressed-steel channeled beams, (see Fig. 4,) serve to divide the car longitudinally with relation to the doors, and between these sills and the sides of the car are disposed the hoppers or chutes *c*, the lower edges of which are provided with the transverse reinforcing angle-beams *d*.

The doors *e* may be of pressed steel, of inverted-cup shape, as shown in Fig. 5—that is to say, their upper surface is solid and flat next the bottom of the body and a continuous depending flange extends about the perimeter. Preferably two doors are used for each hopper or chute, and they are hinged to the beams *d* by any suitable hinges, such as *f*, so as to open or swing away from each other and to close toward each other. Similarly-moving doors of the hoppers or chutes on opposite sides of the center sills are connected in pairs by means of tie-beams *g*, which, as shown in Figs. 1 and 5, may be of L-shaped metal. These tie-beams are riveted to the doors at *h*, Fig. 2, or otherwise rigidly connected therewith.

A winding-shaft *i* is supported in bearings *j* in the center and side sills or otherwise transversely of the car, and at its outer end it is adapted to receive a crank or other operating device and has a locking mechanism *k*, such as a pawl and ratchet, to hold it against rotation. From this shaft and between the center sills depends a chain or other band *l*, from the lower end of which is suspended a pivotal bar *m*, and from the outer ends of this bar depend the chains or bands *n* and *o*, which are connected by eyebolts *p* or other means to the respective tie-beams *g* of the pairs of doors, so that when the chain *l* is wound upon the shaft *i* both doors are positively and fully closed, the bar *m* acting as an equalizer to take up or compensate for any differences or inequalities in the chains *n* and *o* or the movements of the doors.

While we have thus described in detail the construction and arrangement of doors which we prefer to use, we wish to be understood as not limiting our invention thereto, especially in so far as that invention pertains to the equalizing device.

What we claim is—

In a hopper-bottom gondola car, hoppers ar-

ranged on opposite sides of the center sills, doors applied to such hoppers, tie-beams connecting the doors of opposite hoppers in pairs, and means to close the pairs of doors comprising a winding-shaft, chains connecting the pairs of doors with said shaft and an equalizing device interposed in said chains, substantially as described.

In testimony whereof we have hereunto set our hands this 1st day of November, A. D. 1899.

CHARLES T. SCHOEN.
JOHN M. HANSEN.

Witnesses:
C. E. POSTLETHWAITE,
W. D. GEORGE.