

No. 654,755.

Patented July 31, 1900.

J. E. NORWOOD.  
SIDE BALL BEARING FOR CARS.

(Application filed Dec. 6, 1899.)

(No Model.)

Fig.1.

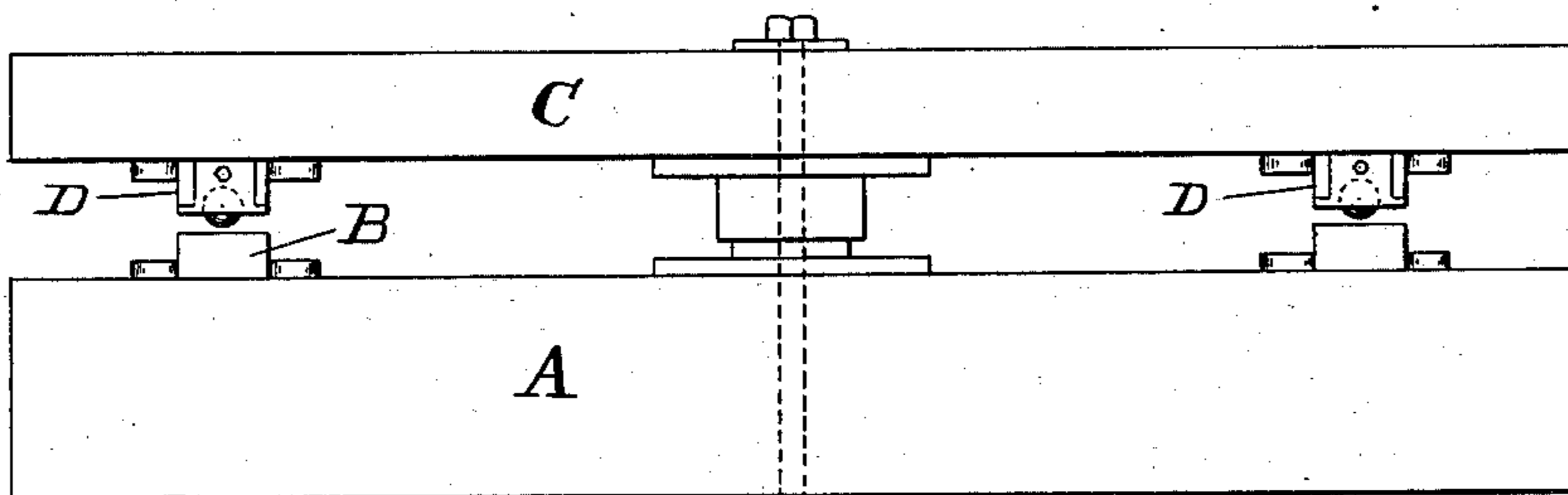


Fig.2.

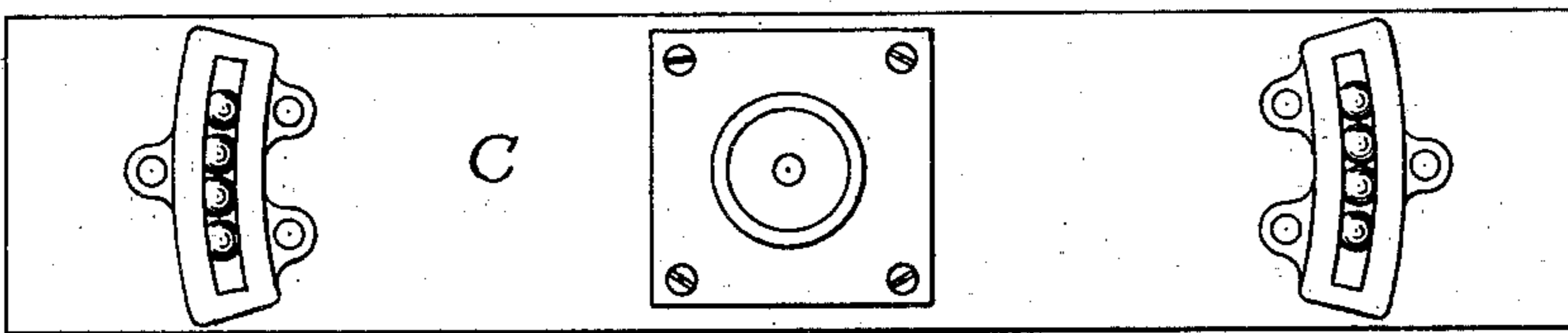


Fig.3.

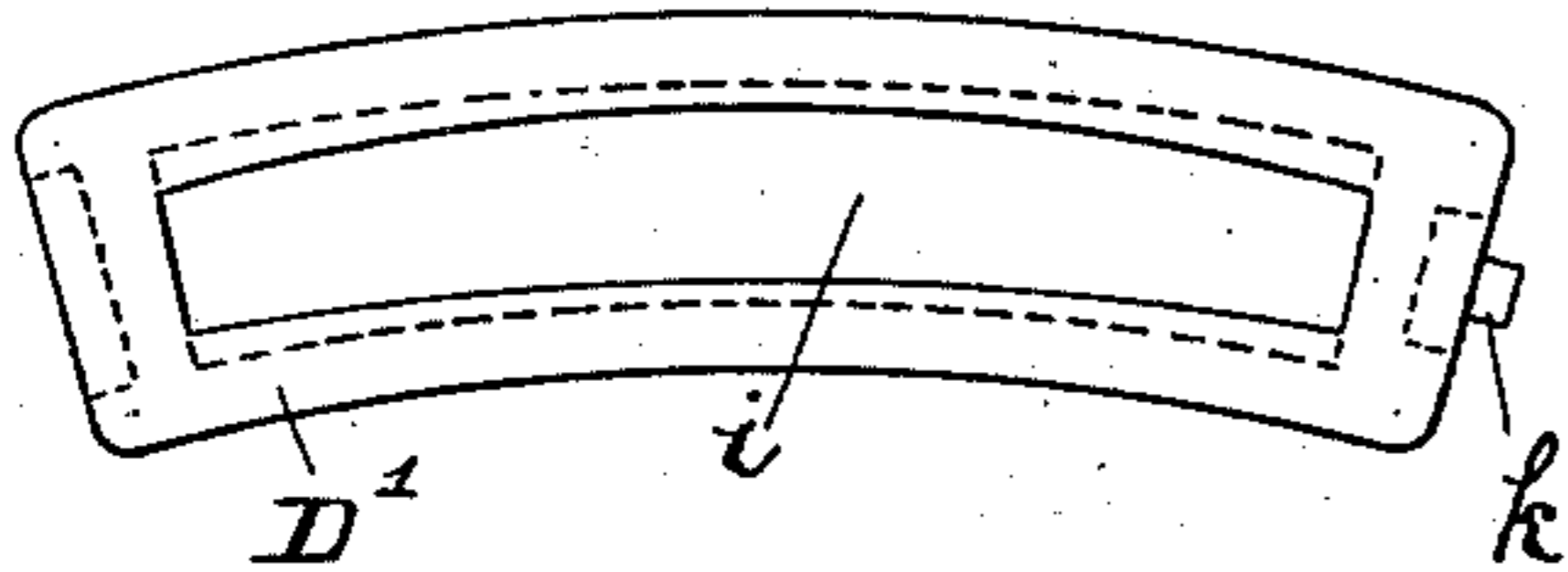


Fig.4.

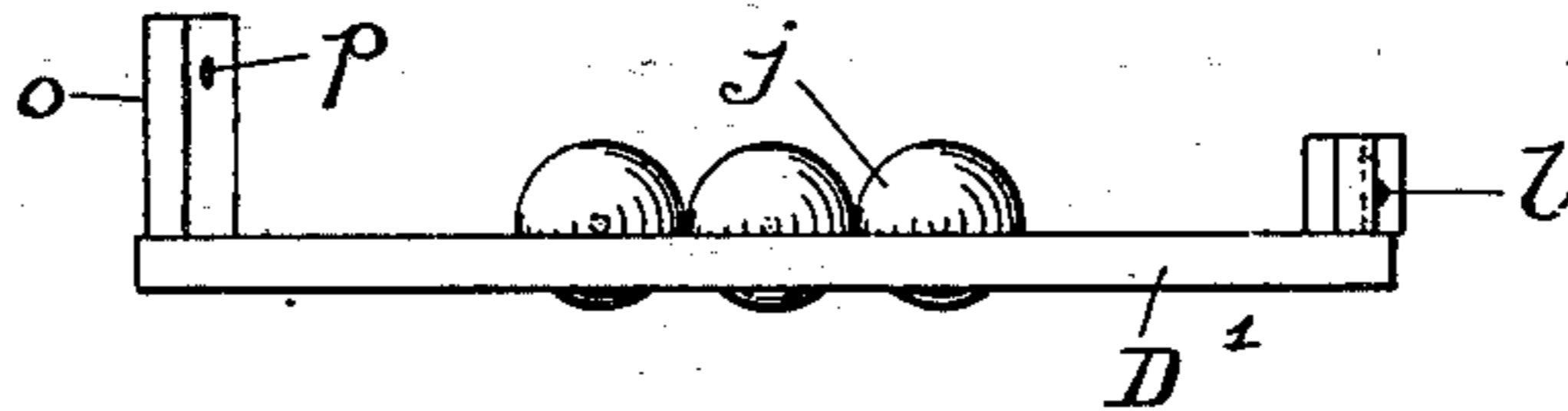


Fig.5.

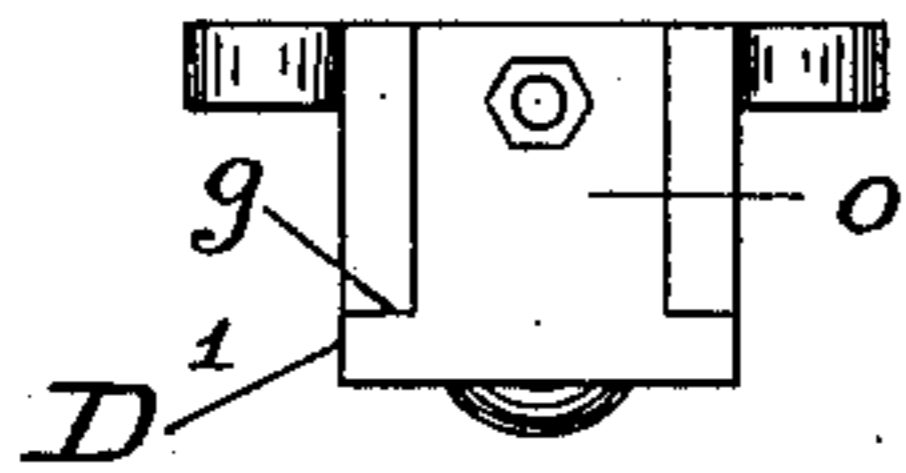


Fig.6.

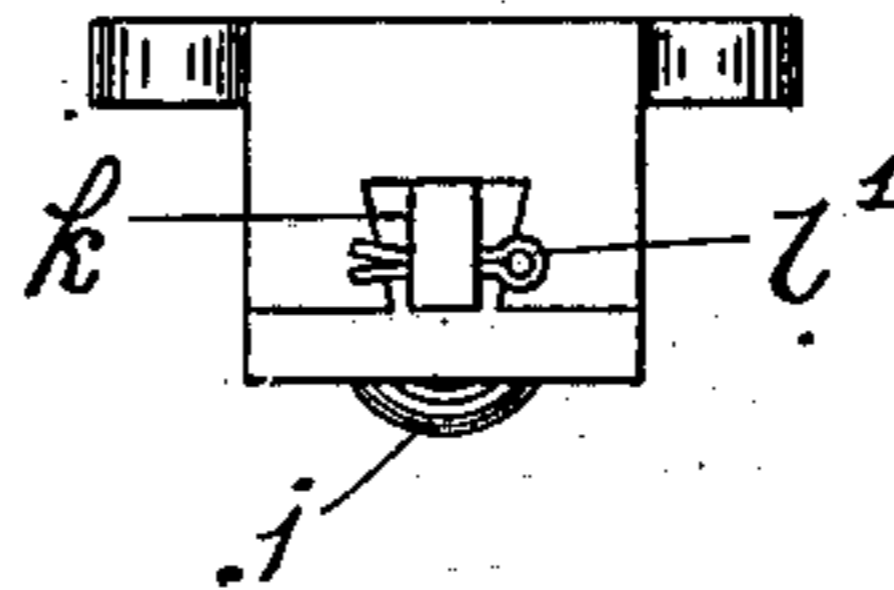


Fig.7.

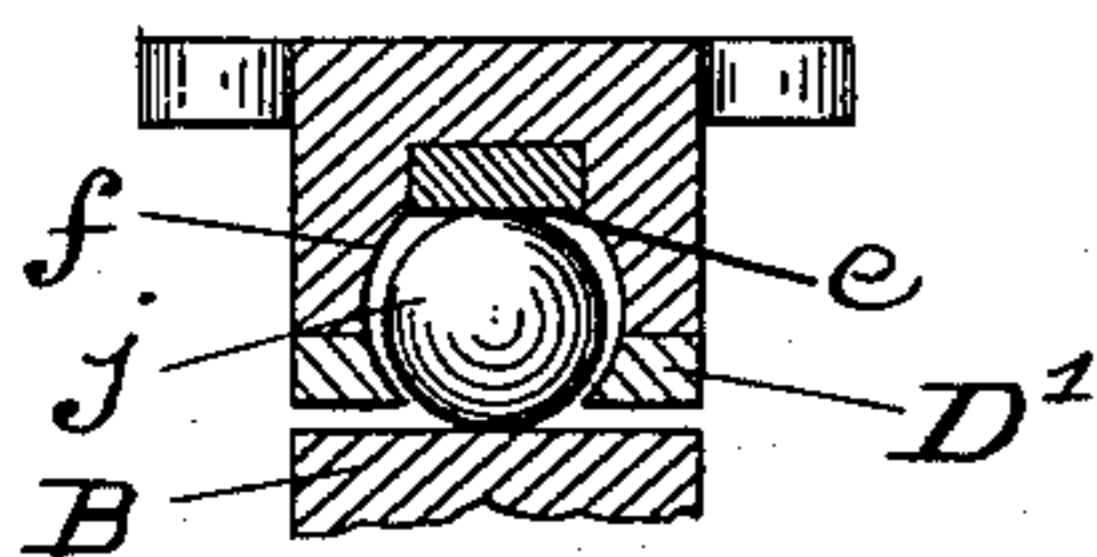


Fig.8.

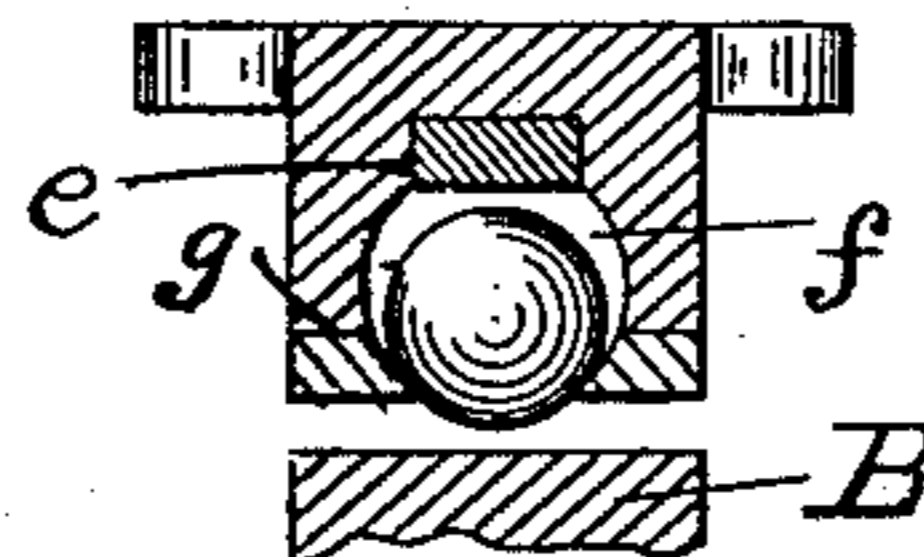
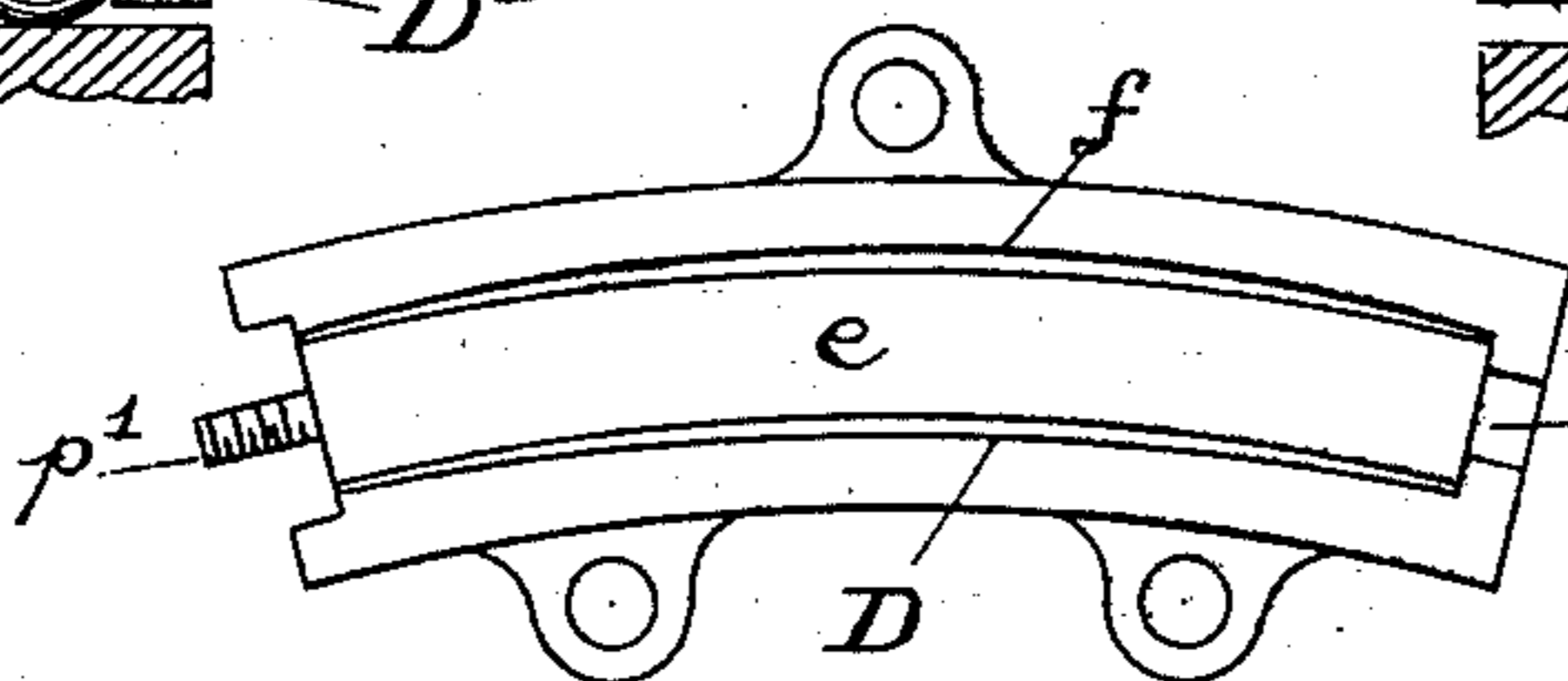


Fig.9.



Witnesses:

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# UNITED STATES PATENT OFFICE.

JOHN E. NORWOOD, OF BALTIMORE, MARYLAND, ASSIGNOR TO THE BALTIMORE BALL BEARING COMPANY OF BALTIMORE CITY, OF MARYLAND.

## SIDE BALL-BEARING FOR CARS.

SPECIFICATION forming part of Letters Patent No. 654,755, dated July 31, 1900.

Application filed December 6, 1899. Serial No. 739,347. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN E. NORWOOD, a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Side Ball-Bearings for Cars, of which the following is a specification.

This invention relates to improvements in the construction of side ball-bearings for the bolsters of railroad-cars.

The invention is illustrated in the accompanying drawings, wherein—

Figure 1 is an elevation of a truck-bolster and car-body bolster and shows the application of the ball-bearing device. Fig. 2 is an inverted plan view of the car-body bolster with the ball-bearing carrier attached. Fig. 3 is a bottom view of the bottom plate of the ball-carrier. Fig. 4 is a side view of the bottom plate. Figs. 5 and 6 are end views of the ball-carrier, each figure showing a different end. Fig. 7 is a cross-section view of the ball-carrier and lower plate and shows the position of the parts when pressure comes on the balls, as when the car is rounding a curve. Fig. 8 is also a cross-section view and shows the suspended position of the ball when the car is running on a straight track. Fig. 9 is a view of the ball-box as seen when the bottom plate is removed.

This invention is an improvement in that class of car-bolster ball-bearings wherein the balls are normally suspended with their lower portion protruding through a slot.

The bolster A of the truck is provided at each side of the center-bearing with a bearing-plate B, having a smooth level top surface. The bolster-beam C of the car-body has two ball-carriers D, one being secured directly over each of the said lower bearing-plates B. The construction of the ball-carrier D constitutes the subject of the present invention.

I provide a removable bottom plate D' for the ball-carrier, which may be renewed when worn, and otherwise improve the box that contains the balls. The body or upper part of the ball-carrier has a curved box for the balls, with a flat inside upper surface e, against which said balls are allowed to roll laterally as well as horizontally to prevent

any sliding friction that would wear or grind the surface of the balls and has inside concave walls f. The bottom of the side walls is flat, as at g. The balls are confined in the curved box by a bottom slotted plate D'. The curved slot i is wider at the center, midway between the ends, and narrowest at the ends. (See Fig. 3.) The edges of the slot are beveled to afford a better seat for the balls. This construction of slot insures that after use should the balls be near the end of the slot they will roll by gravity to the center wide part, where they will hang, as in Fig. 8, until they again come into use.

Instead of having the inside upper surface e perfectly flat, as shown in Figs. 7 and 8, this surface might be slightly concaved crosswise.

The relative size of the balls j and the interior diameter of the box at the center from one concave side f to the other is such as to allow the ball when seated against the upper inside surface e to move or roll laterally crosswise on the said upper surface. The interior of the curved box D is curved from end to end and is wider at the center than at the ends. (See Fig. 9.) By thus gradually narrowing the interior width of the box toward the ends I limit the side rolling movement of the balls when they are at the ends, and thereby prevent the balls from pressing and straining against the beveled edges of the bottom plate and forcing said plate off.

The bottom slotted plate D' fits in contact with the flat surfaces g of the side walls of the upper part and is secured by a dovetail-shaped boss or lug k on one end of the plate, fitting in a correspondingly-shaped slot k' at the end of the box or upper part. (See Fig. 6.) The other end of the bottom plate has an upward flange o, which entirely closes the end of the box, and said flange has a hole p, which takes onto a threaded bolt p', that projects from the end of the box. A nut on the bolt confines the parts. The boss or lug k on the bottom plate also has a straight flange provided with a hole l, and a split pin l' passes through this hole and serves to secure the parts in position in case the nut comes off the bolt p'.

The slotted plate D' is made removable in order that when it becomes worn, as it will

after considerable use, by the vibration of the balls which it carries, it may be replaced by a new plate. It will be seen that when the balls are in contact between the upper surface *e*, as in Fig. 7, and the bearing-plate B on the bolster there will be no wear or strain on the slotted plate.

The upper bearing on the inside of the box may be a hard chilled-iron face or may be an inserted steel plate, as shown at *e* in Figs. 7 and 8.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a side ball-bearing for railway-cars, a curved ball-box having a flat inside upper surface; balls in said box; and a removable bottom slotted plate, *D'*, secured to the lower surfaces of the walls of said box, whereby the balls when seated against said upper surface may protrude through the slotted bottom and have a side rolling movement, as set forth.

2. In a side ball-bearing for railway-cars, the combination of a curved ball-box for attachment to the car-body bolster and having a flat inside upper surface, and balls secured in the box whereby said balls when in contact with said upper surface may roll in any direction..

3. In a side ball-bearing for railway-cars, the combination of a ball-box having an inside upper surface and side concave walls, *f*, joining said upper surface—the interior of said box being curved and wider between the side walls at the center than at the ends; a removable bottom slotted plate secured to said box; and balls loose in the box, whereby the balls when at the center are free to have a side rolling movement but when at the ends this movement is more limited.

4. In a side ball-bearing for railway-cars, the combination of a ball-box curved from end to end and provided at one end with a dovetail-shaped slot and the other end open and provided with a threaded bolt; a removable slotted plate which confines the balls and has at one end a dovetail-shaped boss, and at the other end a flange which closes the open end of the box—said flange having a hole which takes onto the said threaded bolt, as shown and described.

In testimony whereof I affix my signature in the presence of two witnesses.

JOHN E. NORWOOD.

Witnesses:

CHARLES B. MANN, Jr.,  
CHARLES VIETSCH.