(No Model.) 2 Sheets—Sheet 1.

W. B. SMITH.

AXLE BOX BEARING.

No. 589,625. Patented Sept. 7, 1897.

Fig. 1.

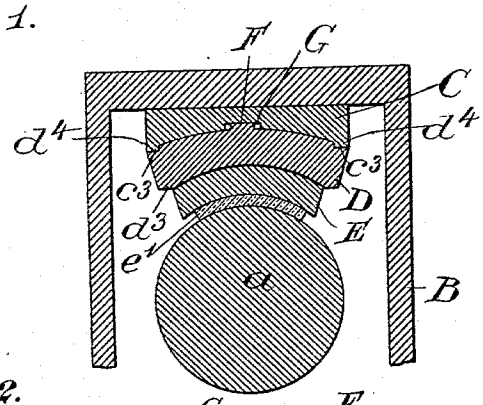
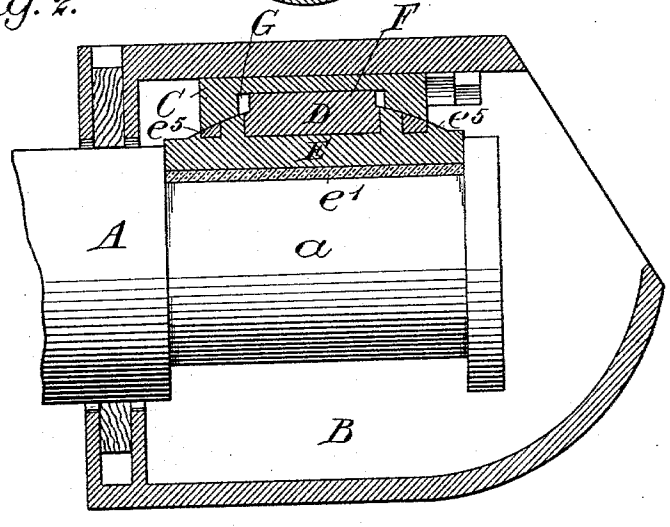


Fig. 2.



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(No Model.) 2 Sheets—Sheet 2.

W. B. SMITH.

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Fig. 3.

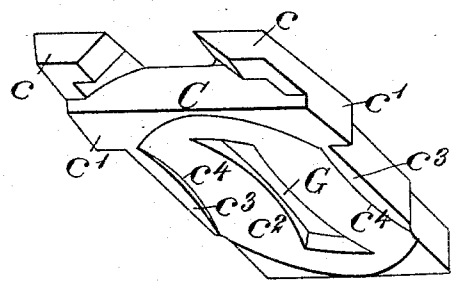


Fig. 4.

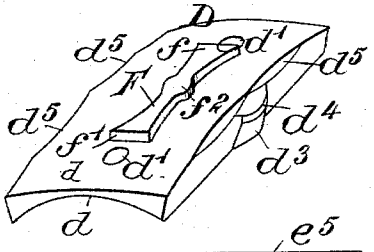
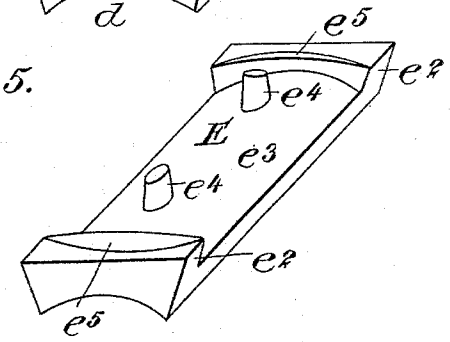


Fig. 5.



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UNITED STATES PATENT OFFICE.

WILLIAM B. SMITH, OF NEW YORK, N. Y.

AXLE-BOX BEARING.

SPECIFICATION forming part of Letters Patent No. 589,625, dated September 7, 1897.

Application filed March 10, 1897. Serial No. 626,702. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM B. SMITH, of New York, in the county and State of New York, have invented a new and useful Improvement in Axle-Box Bearings, of which the following is a specification.

My invention relates to an improvement in axle-box bearings, and more particularly to box-bearings for use in connection with railroad car axles.

The object is to provide, in addition to the various provisions shown, described, and claimed in Letters Patent granted to me on January 20, 1891, No. 444,943, a safety-stop to guard against any possible bodily shifting of the concave and convex faces of the bearing relative to one another under any sudden or unusual impulse while at the same time retaining all of the desirable features by which the bearing-sections are permitted a sufficient play to guard against the overlapping or injurious wear which results from the irregular rotary movement of the spindle or its tilting movement.

A practical embodiment of my invention is represented in the accompanying drawings, in which—

Figure 1 represents a vertical transverse section through the spindle, the box, and bearings. Fig. 2 is a longitudinal section through the same. Fig. 3 is a view in perspective of the upper section of the bearing. Fig. 4 is a view in perspective of the middle section of the bearing, and Fig. 5 is a view in perspective of the lower or brass section of the bearing.

In their general structure and arrangement the several sections of the bearing, which for convenience I designate the "outer," "middle," and "inner" or "brass" sections, are quite similar to the parts shown and described in my Letters Patent hereinabove referred to, the introduction of the safety-stop being preferably accomplished by casting an elongated raised surface centrally on the face of the middle bearing-section and provide the concave face of the upper bearing-section with a corresponding recess, the depression to receive the said elongated raised surface of the middle section.

The axle is denoted by A; its spindle by a; B, a box of any well-known or approved form, and C, D, and E, respectively, the upper, middle, and inner or brass sections of the bearing.

The inner or brass section is provided with a curved face e, extending longitudinally thereof and adapted to conform to the curve of the spindle or journal a. Its curved face is provided with a lead face e', as is usual, and at its opposite ends raised portions e^2 extend outwardly from its back to form retaining-shoulders for the middle section D. Intermediate of the raised portions e^2 there is a depression e^3, curved laterally, and from this depressed portion e^3 lugs e^4 project for retaining the middle section in position thereon.

The middle section D is formed of hard metal—cast-iron, for example—and is made of such length as to fit between the shoulders e^2, its lower face d being curved to fit the curve of the depressed portion e^3 of the brass, and it is provided with perforations d', so located as to receive the studs e^4 therethrough.

The section D may be secured in position on the section E by upsetting the ends of the studs e^4.

The upper surface d^2 of the section D is of curved form, the same being a portion of the surface of a sphere, and in order to make such curved surface as long as possible and in the direction of the length of the axle the upwardly-extended ends of the brass E are provided with curved faced projections e^5, which form a continuation of the surface d^2 of the section D.

The surface d^2 has the bearing-surface between the sections C and D of the bearing, and it is important that this should be extended as far as possible in order to distribute the weight as evenly as may be throughout the length of the brass E. The opposite sides of the section D lie in the extended planes of the sides of the brass and are centrally provided with rounded faced lugs d^3, which stop short of the upper face of the said section D, their upper ends d^4 forming stops to prevent the lateral displacement of the bearing-sections under the side impulse of the spindle—as, for example, when the brake is applied to the wheel or under the forward and backward jerking of the car. The opposite upper edges

of the section D are further cut away, as shown at d^5, upon opposite sides of the lugs d^3 to allow the play of the bearing-sections in a horizontal plane and to prevent cramping.

The section C is provided with a flat upper face which fits against the top of the box and with suitable recessed lugs c and shoulders c' for retaining the section securely in position when engaged with the lugs on the inside of a box—such, for example, as those in ordinary use. The under face of the said section C is provided with a curved faced recess c^2, which corresponds to and is adapted to rest upon the convex curved face d^2 of the middle section D. At the opposite sides of the concave face c^2 the section C is provided with downwardly-projecting ribs or lips c^3, the inner faces c^4 of which are curved convex toward the center of the curved faces c^4 of the ribs or lips c^3 and are adapted, when the parts are assembled, to overlap and engage the opposite sides of the section D with the lower faces of the ribs or lips c^3 in proximity to the upper ends d^4 of the lugs d^3.

As thus far described, the bearing is quite similar in its structure and functions to that shown, described, and claimed in my patent hereinabove referred to.

My present invention is directed to providing against any possible displacement of the bearing-surfaces c^2 and d^2 under a sudden and unusual jerking, and consists in providing the bearing-sections C and D the one with a projection and the other with an abutment, which will permit them to play or rock in a horizontal plane the one with respect to the other without permitting them to become bodily displaced the one with respect to the other.

The safety-stop, in its preferred form, is denoted by F and is cast integral with the section D. It rises a short distance from the face of the section D and is made to taper gradually from its extreme ends (denoted by f f') toward its center f^2, at which point its opposite sides are curved to form a central rounded bearing.

The stop F is adapted to be received, when the parts are assembled, in a recess G, formed in the concave face c^2 of the section C and of such dimensions as to permit the section C to rock to a limited extent in a horizontal plane with respect to the stop F.

The stop and its recess are both hidden when the parts are assembled, so that there is no liability of any clogging, and the elongation of the stop and its extended bearing against the walls of the recesses are sufficient to obviate any liability of the stop becoming broken or injured under any impulse to which the bearing may be subjected when in use.

It is obvious that slight changes might be resorted to in the form and arrangement of the parts without departing from the spirit and scope of my invention. Hence I do not wish to limit myself strictly to the structure herein shown and described; but

What I claim is—

1. The combination with the bearing-sections, the one provided with a convex surface and the other with a concave surface adapted to conform to and seat upon the said convex surface of the other, of a safety-stop fixed to and uprising from the convex surface of one of the sections, the other of said bearing-sections being provided with a recess in its concave surface to receive the stop on the other section, the said stop being sufficiently smaller than the recess in which it seats to permit the sections to rock relatively to each other in a horizontal plane, substantially as set forth.

2. The combination with the bearing-sections, the one provided with a convex surface and the other with a concave surface adapted to conform to and seat upon the said convex surface of the other, of a safety-stop uprising from the convex surface of the bearing-section, said stop being elongated and gradually narrowed in width from its opposite ends toward its central portion, the other of said bearing-sections being provided with a correspondingly-shaped recess in its curved face for the reception of said stop, the said recess being somewhat larger than the stop to permit a limited rocking of the sections relatively to each other in a horizontal plane, substantially as set forth.

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