No. 702,701. Patented June 17, 1902.

H. C. BUHOUP.

CAR BOLSTER.

(Application filed Mar. 14, 1902.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

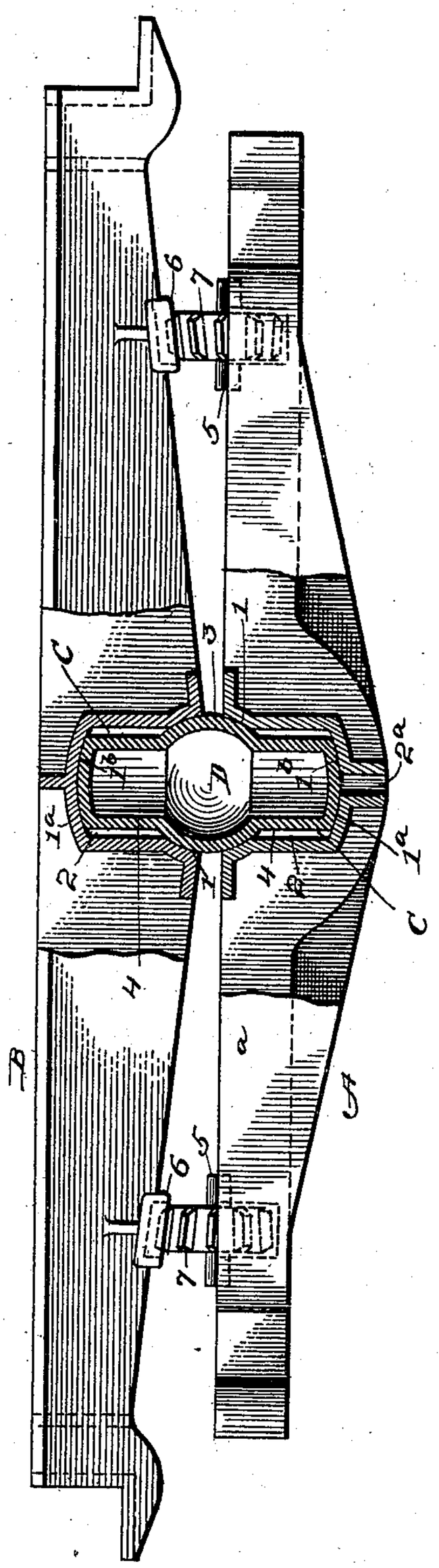


Fig. 2.

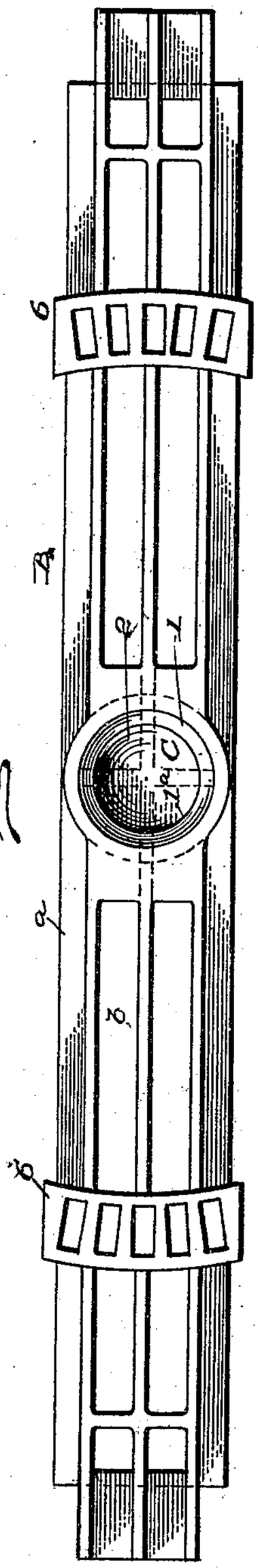
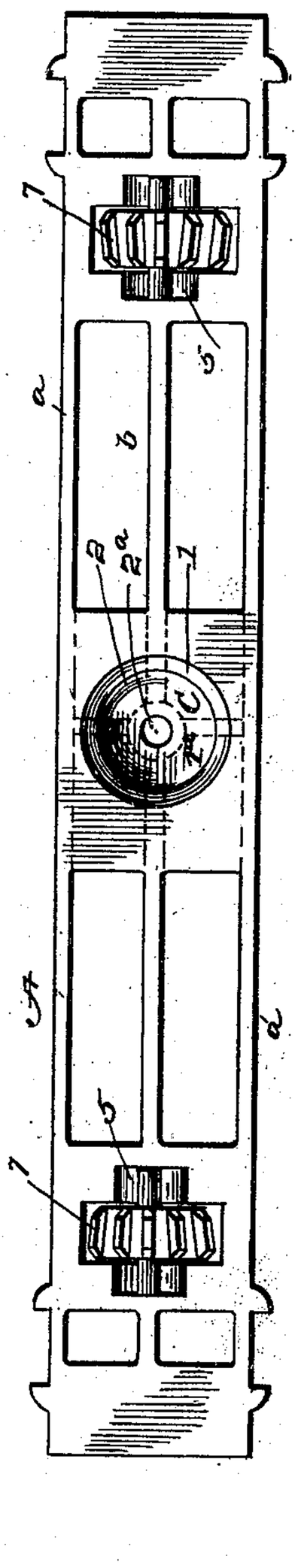


Fig. 3.



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Inventor
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Fig. 6.

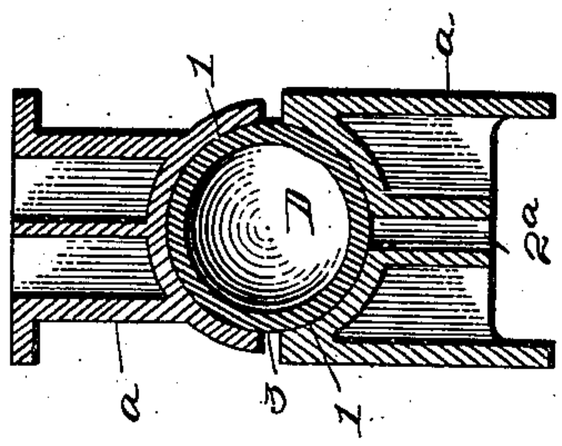


Fig. 4.

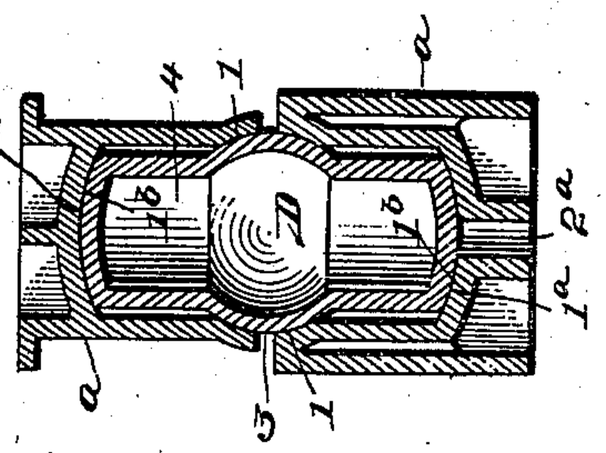
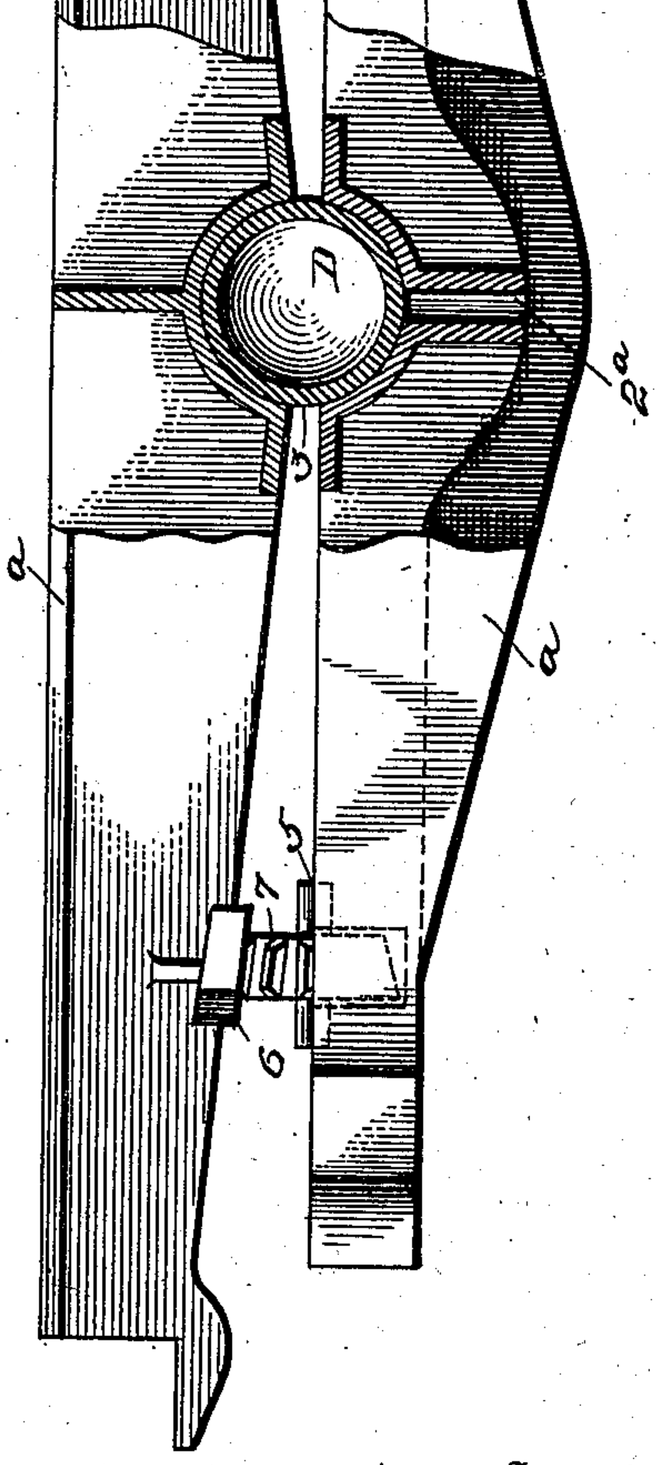


Fig. 5.



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UNITED STATES PATENT OFFICE.

HARRY C. BUHOUP, OF CHICAGO, ILLINOIS.

CAR-BOLSTER.

SPECIFICATION forming part of Letters Patent No. 702,701, dated June 17, 1902.

Application filed March 14, 1902. Serial No. 98,220. (No model.)

To all whom it may concern:

Be it known that I, HARRY C. BUHOUP, a citizen of the United States, residing at Chicago, in the county of Cook, State of Illinois, have invented certain new and useful Improvements in Car-Bolsters; and I hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation, partly in section, of companion bolsters embodying my invention. Fig. 2 is an under side plan view of the body-bolster. Fig. 3 is a top plan view of the truck-bolster. Fig. 4 is a transverse vertical central section of both bolsters. Fig. 5 is a side elevation, partly in section, of a modification of the companion bolsters shown in Fig. 1. Fig. 6 is a vertical transverse central section of the modified bolsters shown in Fig. 5.

Like symbols refer to like parts wherever they occur.

My invention relates to the construction of bolsters for railway-cars, and is especially directed to the center-bearings thereof, having for its objects to eliminate all lost motion and obtain uniform bearing-supports for the bolsters and to materially increase the depth of the bolsters and the central supports thereof, whereby increased rigidity or stiffness of the bolsters singly and jointly is obtained and torsional strains resisted.

The present swivel connections between truck-bolster and body-bolster may be briefly stated as comprising center-plates and king-bolts or shallow cups and king-bolts, the former serving to center the bolsters and the latter to preserve their relation. In all such connections the bearing is unequal and limited by the tendency of the bolsters to rock on each other, and the integrity of the connection is dependent entirely on the king-bolt. The tendency of the bolsters to rock on each other is the result of the draft and buffing forces and in curving, and the lack of a uniform bearing, which results from the rocking of the car, subjects the bolsters to eccentric or torsional strains. Owing to the character of the present center-plate and king-bolt connections there exists more or less space between the bolsters in excess of what is necessary for the proper movement of the parts, and said lost space materally reduces the depth of the body-bolster, and consequently its stiffness. As a result of this, while satisfactory truck-bolsters may be obtained on the present lines satisfactory body-bolsters have not been heretofore designed. In order to overcome these several objections, I form each of the bolsters with a centrally-disposed pot or cavity having spherical bearing-surfaces, said cavity being of a depth substantially equal to the radius of curvature of the lowest part of said bearing-surfaces, whereby the central depth of the bolster proper is increased, and as a result its strength and stiffness are augmented and combine the bolsters by means of an interposed third element, whose vertical length approximates the combined depths of the central cavities of the combining bolsters, whereby the support is rendered uniform at all times and the load is carried over the center of support, and such a combination embodies the main feature of my invention. In order to secure an extended depth to the interposed third-element connection and support, I compound the spherical bearing-surfaces thereof of different radii, (concentric surfaces,) whereby a connection of great depth may be obtained with a minimum of space between bolsters, and the load is virtually carried between the points of load and points of support of the bolsters rather than between the adjacent faces of the bolsters, with increased rigidity of the bolsters resulting therefrom, and such a construction embodies a second feature of my invention.

There are other minor features of invention, all as will hereinafter more fully appear.

I will now proceed to describe my invention more fully, so that others skilled in the art to which it appertains may apply the same.

In the drawings, A and B represent companion truck and body bolsters, which may be of any approved general design and any desired material—as, for instance, plate or angle iron, pressed steel plate, T or I beams—but are preferably of cast-steel, because the central connections are more readily so formed and the individual structures may be thus formed integral, if so desired. The bolsters may be each composed of the parallel side walls *a a*, intermediate longitudinal ribs *b*, and the center pot

or cavity C for the reception of the intermediate connecting element D. The central cavity or pot C of each bolster is provided at or near the normal adjacent surfaces of the bolsters with a curved bearing 1, which if continued would form a hemispherical cavity, (see Figs. 5 and 6;) but by preference said curved bearing-surfaces are intersected by an extension 2 or hollow cylinder having its end closed by a second bearing-surface 1^a, concentric with the bearing-surfaces 1 1, the whole constituting a hemispherical bearing of greater depth than if confined to a single radius, and in case of the truck-bolster a clearance-opening 2^a for the escape of dirt is provided. The center pot or cavity C can thus be given any depth desired, while the combined depth of the bolsters can be equal to all the depth between the truck and car-sills, less the absolute distance between bolsters required for oscillation, and said depth can be divided between the bolsters according to the stiffness required in each bolster.

D indicates the intermediate or interposed connecting element, the preferred form of which is that of a central sphere 3, whose surface conforms to the bearing-surfaces 1, said sphere intersected by an extension, preferably a cylinder 4, the ends of which may be curved surfaces 1^b, concentric with those of the sphere and adapted to move on the deep bearings 1^a of the cavity C. This projection or cylinder 4 may be omitted, if desired, or so shortened as not to bear on the seats 1^a; but in such case the value of the increased depth of the support will be lost, though the advantage of the increased depth of the bolster will be preserved.

At equal distances from the cavity C or pot and on the opposed faces of the bolsters A B are cast or formed integral therewith on the one roller-bearings 5 and on the other a curved sprocket-plate 6, having radially-disposed openings (or bars) for the reception of a bevel or sprocket wheel 7, journaled in the bearings 5 on the counterpart bearing. This construction assists in maintaining the centering of the bolsters. In lieu of the sprocket wheel and plate a plain bevel wheel and plate may be employed, if desired.

Among the advantages resulting from my construction it will be noted that, first, the maximum central depth is obtained for the conjoint bolsters, and this can be divided between the body-bolster and truck-bolster according to the relative stiffness desired in each; second, that at all times the bearing is uniform and the load carried on the center, so that torsional strains are minimized, if not eliminated; third, that the security of the connections is insured by the depth of the connection; fourth, the load may be distributed between the load-points of the body-bolster and the support-points of the truck-bolster by reason of the end bearings of the projections or cylinder extension 4, and, fifth, by reason of the element D in its preferred form having bearings at or adjacent to the top of the body-bolster and at or adjacent to the bottom of the truck-bolster in addition to the bearings at the adjacent faces of the bolster the draft, buffing, and curving forces are distributed the entire depth of both bolsters instead of being exerted on the contiguous faces of the bolster, as heretofore, and the parallelism of the bolsters is always maintained. By the preferred construction a maximum stiffness for the combined bolsters is obtained.

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

1. The combination of companion bolsters each having a central pot or cavity substantially within the normal lines of said bolsters, and an intermediate bearing element having a seat or bearing in each of said pots or cavities; substantially as and for the purposes specified.

2. The combination of companion bolsters each provided with a central cavity having spherical bearing-surfaces substantially within the normal lines of said bolsters, and an interposed spherical bearing element, substantially as and for the purposes specified.

3. The combination of companion bolsters having cavities whose bearing-faces are compounded of concentric spheres, and an interposed bearing element having corresponding surfaces, substantially as and for the purposes specified.

4. The combination with companion bolsters having cavities whose bearing-faces are spherical, of an interposed bearing element having the form of a sphere with radial projections therefrom, substantially as and for the purposes specified.

5. The combination with companion bolsters having cavities whose bearing-faces are spherical, of an interposed bearing element having the form of a sphere and intersecting cylinder, substantially as and for the purposes specified.

6. A cast-metal bolster having a centrally-disposed cavity or pot substantially within its normal lines and provided with spherical bearing-surfaces, the depth of said pot or cavity being substantially equal to the radius of curvature of the lowest part of said spherical bearing-surfaces, substantially as and for the purposes specified.

7. A cast-metal bolster having a centrally-disposed pot or cavity provided with spherical bearing-surfaces, the depth of said pot or cavity being substantially equal to the radius of curvature of the lowest part of said spherical bearing-surfaces, and also provided with a clearance-opening, substantially as and for the purposes specified.

8. A cast-metal bolster having a centrally-disposed pot or cavity provided with spherical bearing-surfaces, the depth of said pot or cavity being substantially equal to the radius of curvature of the lowest part of said bear-

ing-surfaces, and also provided with sprocket side bearing-plates concentric with said pot or cavity, substantially as and for the purposes specified.

9. A cast-metal bolster having a centrally-disposed bearing-cavity compounded of concentric spherical surfaces, substantially as and for the purposes specified.

10. A cast-metal bolster having a centrally-disposed bearing-cavity with spherical bearing-faces adjacent to the face of the bolster and a radially and inwardly extending pocket; substantially as and for the purposes specified.

In testimony whereof I affix my signature, in presence of two witnesses, this 14th day of March, 1902.

HARRY C. BUHOUP.

Witnesses:
G. P. RITTER,
WM. E. DYRE.