Aug. 27, 1968 A. F. BAKER 3,398,700

RAILWAY TRUCK WITH FLEXIBLY JOINTED AND RIGIDLY MOUNTED TRANSOMS

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Fig. 1.

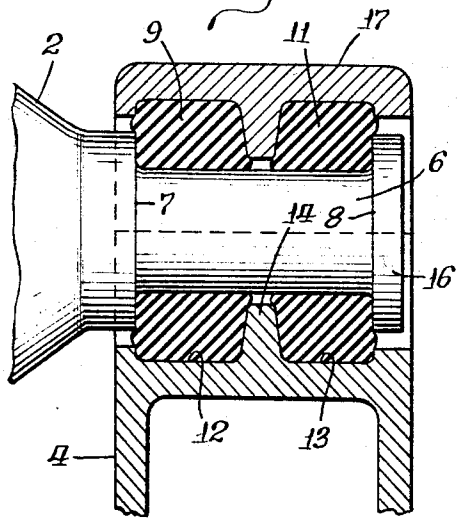


Fig. 2.

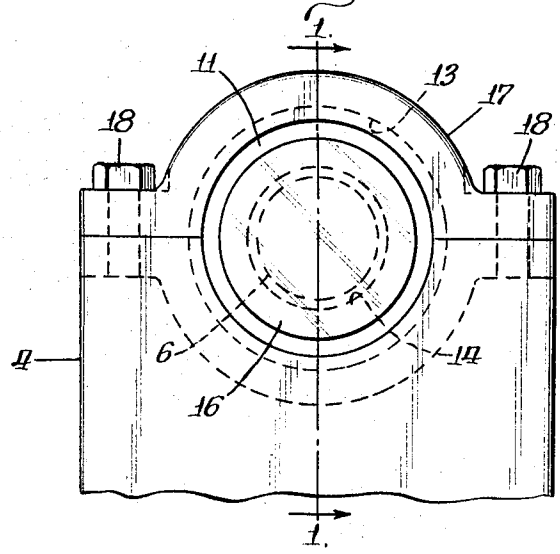


Fig. 3.

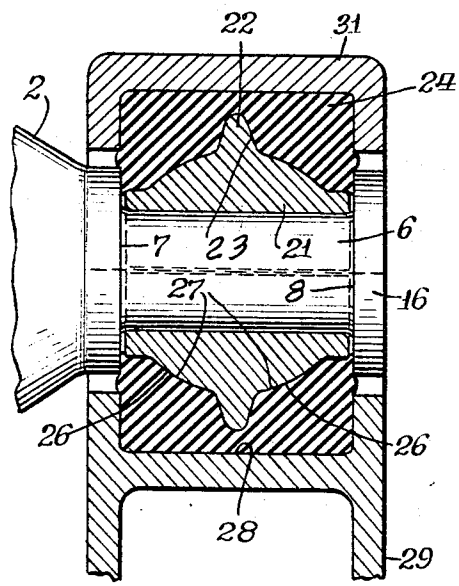
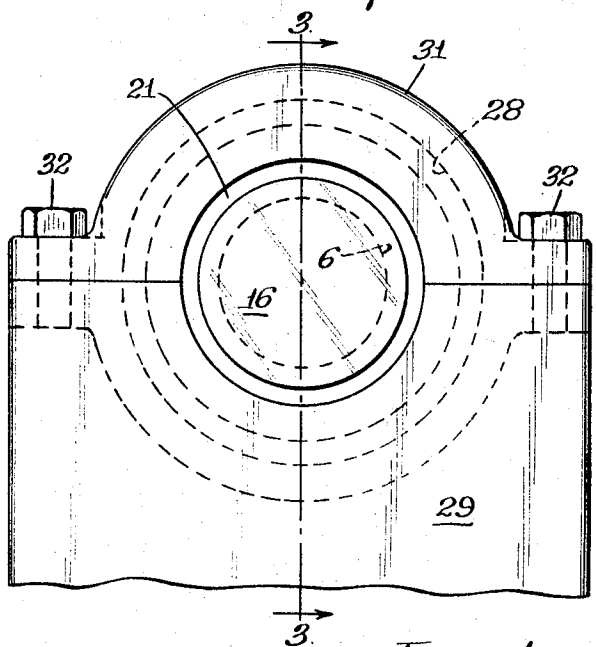


Fig. 4.



Witness:

C. Bassett

Inventor:

Arthur F. Baker

By: Walter L. Schlegel Jr. Atty.

Aug. 27, 1968 A. F. BAKER 3,398,700

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Fig. 5.

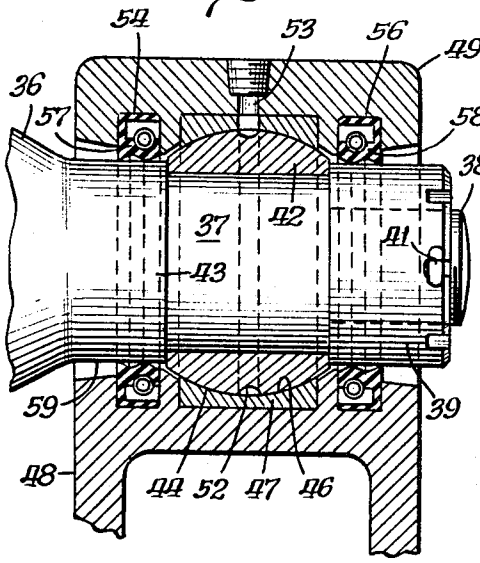


Fig. 6.

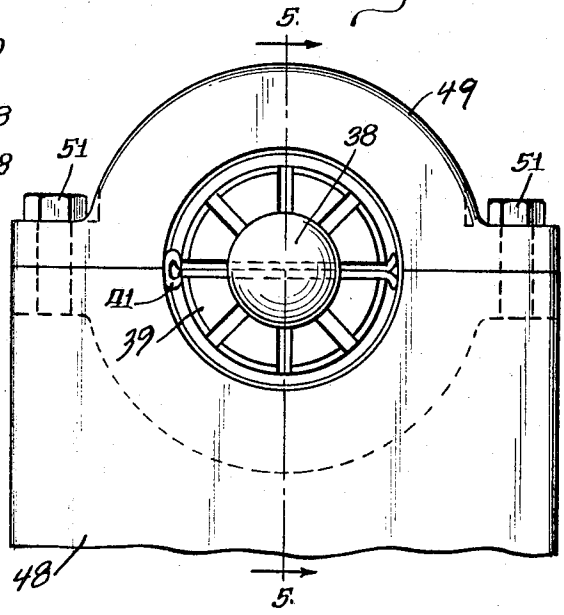


Fig. 7.

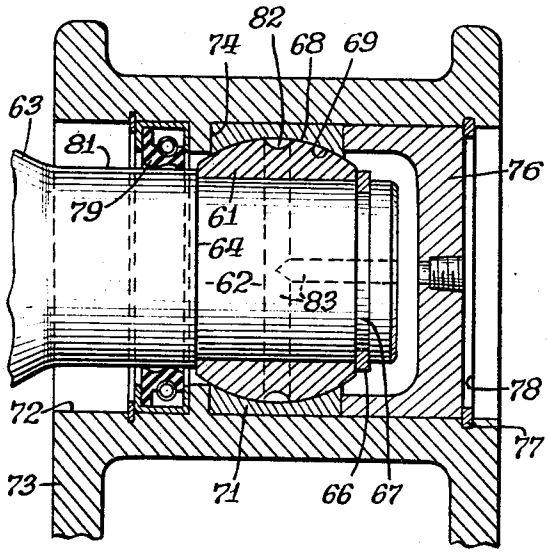
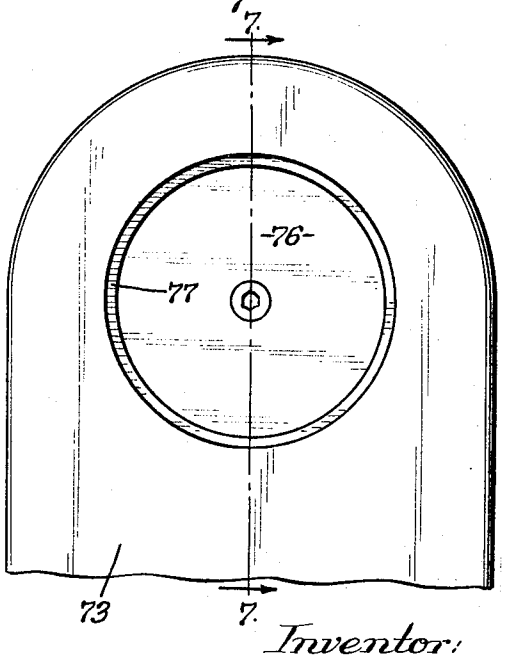


Fig. 8.



Witness:

C. Bassett

Inventor:
Arthur F. Baker

By: Walter L. Schlegel Jr
Atty.

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Fig. 9.

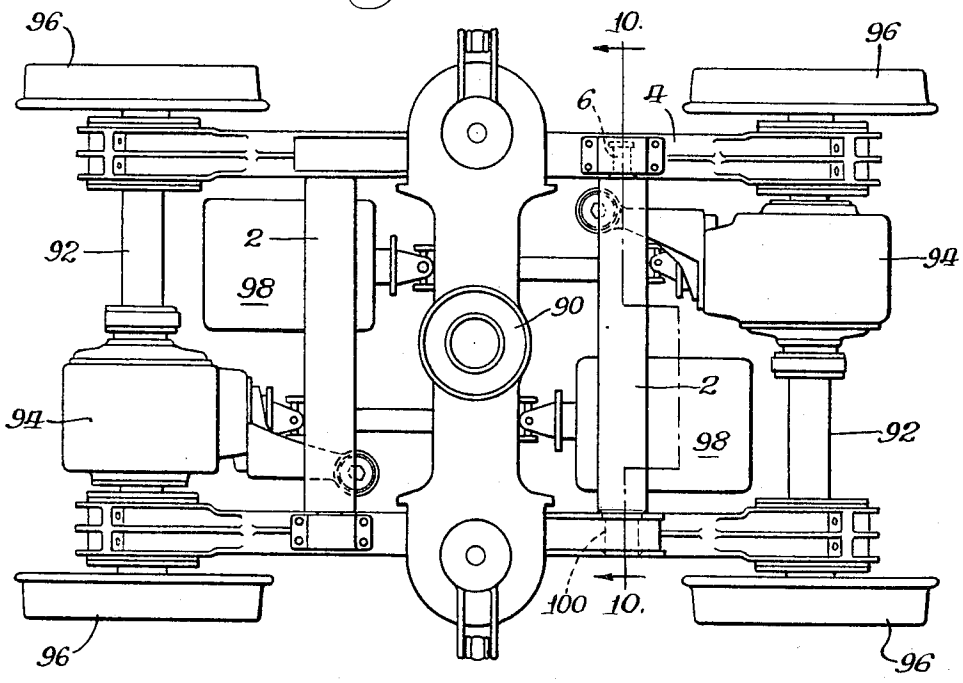
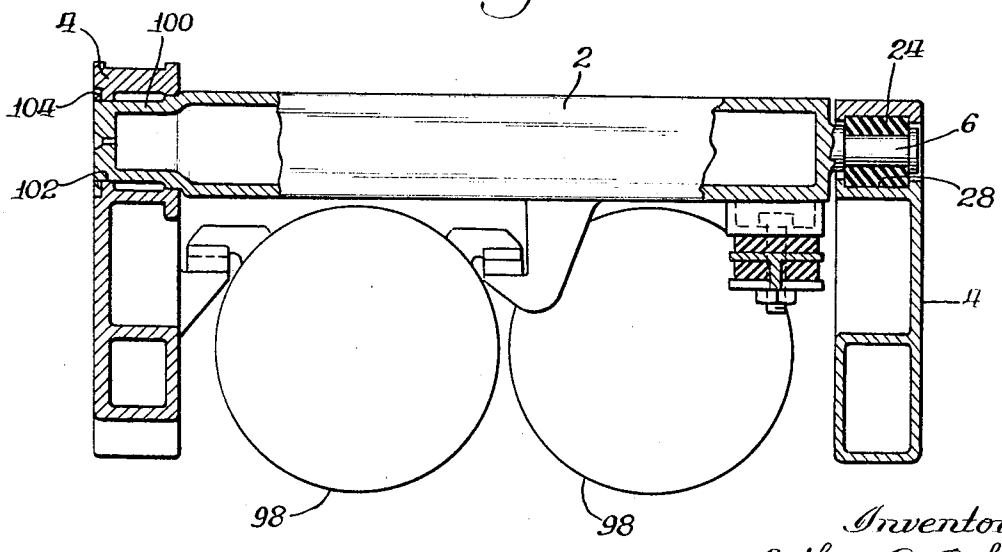


Fig. 10.



Inventor:
Arthur F. Baker
By: Walter J. Ashlagel Jr.
Spencer T. Blaylock Jr.
Atty

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3,398,700

RAILWAY TRUCK WITH FLEXIBLY JOINTED AND RIGIDLY MOUNTED TRANSOMS

Arthur F. Baker, Mountain Home, Ark., assignor to Amsted Industries Incorporated, Chicago, Ill., a corporation of New Jersey

Continuation-in-part of abandoned application Ser. No. 417,930, Dec. 14, 1964. This application Mar. 2, 1967, Ser. No. 656,605
3 Claims. (Cl. 105—182)

ABSTRACT OF THE DISCLOSURE

This invention embodies a flexible joint for a rapid transit truck transom, which transom is rigidly mounted to one side frame of the truck and flexibly mounted to the other side frame. The transom is provided with a cylindrical end portion. A metallic bushing is mounted on the cylindrical end portion and a ring of resilient material is engaged between the bushing and the side frame.

This application is a continuation-in-part of my copending application Ser. No. 417,930, filed Dec. 14, 1964, now abandoned.

This invention relates to flexible joints and more particularly to joints adapted to provide limited flexibility between the side frames and transoms of rapid transit type railway car trucks.

An object of the invention resides in the provision of a joint adapted to provide limited angular movement of the transom relative to the side frames.

Another object of the invention resides in the provision of a flexible joint embodying resilient means to yieldably resist angular and longitudinal movements of the transom relative to the side frames.

A further object of the invention resides in the provision of a joint embodying nonresilient means to provide limited angular and non-axial movement of the transom relative to the side frames.

Another object of the invention is to provide a flexible joint which is inexpensive in construction and reliable in operation of the truck.

The invention embodies other novel features, details of construction and arrangement of parts which are hereinafter set forth in the specification and claims and illustrated in the accompanying drawings forming part thereof, wherein:

FIGURE 1 is a section taken along line 1—1 of FIGURE 2 showing a flexible truck transom joint embodying features of the invention.

FIGURE 2 is an end elevation of the structure shown in FIGURE 1.

FIGURE 3 is a section taken along the line 3—3 of FIGURE 4 showing another embodiment of the invention.

FIGURE 4 is an end elevation of the structure shown in FIGURE 3.

FIGURE 5 is a section taken along the line 5—5 of FIGURE 6 showing another embodiment of the invention.

FIGURE 6 is an end elevation of the structure shown in FIGURE 5.

FIGURE 7 is a section taken along the line 7—7 of FIGURE 8 showing another embodiment of the invention.

FIGURE 8 is an end elevation of the structure shown in FIGURE 7.

FIGURE 9 is a top plane view of a rapid transit truck with the joint of this invention incorporated therein.

FIGURE 10 is a sectional view taken along the plane of line 10—10 of FIGURE 9.

Referring now to the drawings for a better understanding of the invention and more particularly to FIGURES 1 and 2 therein, the flexible joint is shown as employed on a rapid transit type truck of FIGURES 9 and 10 to provide limited angular and longitudinal movement of a transom 2 relative to a side frame 4. It will be understood that the other end of the transom is rigidly connected to the companion side frame 4 as shown in FIGURE 10.

The transom 2 is formed with a cylindrical end portion 6 extending between spaced abutment shoulders 7 and 8 to receive thereon two split rings 9 and 11 formed of a resilient material, such as natural or synthetic rubber.

The rings 9 and 11 are snugly received within axially spaced circular recesses 12 and 13, respectively, provided in the side frame, the recesses being spaced apart by an annular abutment rib 14. In this embodiment of the invention, it will be noted that the resilient rings 9 and 11 act to yieldably resist axial and angular movement of the transom 2 relative to the side frame 4.

To facilitate assembly and replacement of rings 9 and 11, the shoulder 8 is formed on a head portion 16 integral with the end portion 6, and the rings 9 and 11 are partially engaged by a cap 17 secured to the side frame 6 by cap screws 18.

FIGURES 3 and 4 illustrate a modified form of the invention in which a split metallic bushing 21 is mounted on the cylindrical portion 6 of the transom 2 between the shoulders 7 and 8 and formed with a central annular abutment rib 22 for engagement within an annular recess 23 formed in split ring 24 of resilient material, such as natural or synthetic rubber.

On opposite sides of the rib 22, the bushing is formed with convex arcuate surfaces 26 seated against complementary concave arcuate surfaces 27 formed in the ring 24. The ring 24 is mounted in an annular recess 28 formed in the side frame 29 and a cap 31 secured thereto by cap screws 32.

FIGURES 5 and 6 illustrate another embodiment of the invention in which a transom 36 is formed with a cylindrical portion 37 and a threaded end portion 38 to receive a circular nut 39 which is secured in fixed position on the end portion by a pin 41. A buhsing 42, secured on the cylindrical portion 37 between a shoulder 43 and the nut 39, is formed with a spherical outer surface 44 for pivotal engagement against a complementary surface 46 formed in a split bearing 47.

The bearing 47 is mounted in an annular recess formed in the side frame 48 and a cap 49 secured thereto by cap screws 51. An annular groove 52 is formed in the bushing 42 to receive lubricant supplied thereto through a passage 53 leading from a suitable lubricant fitting threaded into the passage. Annular recesses 54 and 56 are formed in the side frame 48 and cap 49 to receive resilient sealing rings 57 and 58, respectively, for sealing engagement around a cylindrical surface 59 on the transom and the nut 39, respectively.

FIGURES 7 and 8 illustrate another embodiment of the invention in which a bushing 61 is mounted on a cylindrical portion 62 of the transom 63 between a shoulder 64 and a split locking ring 66 detachably mounted in a groove 67 in the portion 62. The bushing is formed with a spherical surface 68 for engagement within a complementary surface 69 formed in a split bearing 71 mounted within an opening 72 in the side frame 73.

The bearing 71 is engaged between a shoulder 74 and a plug 76 secured against displacement from the opening 72 by a split locking ring 77 mounted in a groove 78. A resilient sealing ring 79 is mounted within the opening 72 to engage a circular surface 81 on the transom. Lubricant is supplied to an annular recess 82 in the bushing

61 through passages 83 from a lubricant fitting 84 threaded into the plug 76.

Referring now to FIGURES 9 and 10 wherein the relationship of the flexible joints of this application to the rapid transit truck are shown, reference numeral 90 denotes the truck bolster which is resiliently supported by the two side frames 4. The side frames 4 support the two axles 92 on which gear boxes 94 are mounted. Conventional journal bearings (not shown) provide the connection between the side frames 4 and the axles 92. Wheels 96 are mounted on both ends of the axles 92 and are driven by the motors 98 mounted on the transoms 2 in the conventional manner.

One end of each transom 2 is rigidly mounted on a side frame 4. Each side frame 4 has a transom 2 flexibly mounted thereon and another transom 2 rigidly mounted thereon. The transoms 2 are provided with a cylindrical end portion 6 for the flexible support and a cylindrical end portion 100 for the rigid support. The end portion 6 is surrounded by a split metallic bushing 21 (FIGURE 3) and a split flexible ring 24, which ring is received in an annular recess 28 formed in the side frame 4.

The end portion 100 is press fitted into an annular recess 102 in the other side frame 4. This end portion 100 is also welded as at 104 to the side frame 4.

It can be seen from the foregoing that the joints of this invention resist angular and longitudinal movements of the transoms relative to the side frames. It should be understood that various modifications may be resorted to without departing from the spirit and scope of the following claims.

I claim:

1. In a rapid transit railway car truck, spaced side frames, a pair of transoms extending between the side frames, and a flexible joint connecting one end of each transom to a side frame, the other end of each transom

being rigidly connected to the other side frame, each of said transoms having a cylindrical end portion, and resilient means mounted on the end portion engaging the side frame, said means comprising a metallic bushing mounted on the cylindrical portion, said bushing having an annular rib thereon and a ring of elastomeric material engaged between said bushing and the side frame to provide limited angular movement of the transoms relative to the side frames, whereby each side frame is flexibly connected to one transom and rigidly connected to the other transom.

2. In a rapid transit railway car truck according to claim 1 wherein the bushing and elastomeric ring are provided with complementary surfaces.

3. In a rapid transit railway car truck according to claim 2 wherein the bushing is provided with convex surfaces on opposite sides of the annular rib and the ring is provided with a central annular recess receiving said rib and concave surfaces on opposite sides of said recess.

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ARTHUR L. LA POINT, *Primary Examiner.*

H. BELTRAN, *Assistant Examiner.*