Oct. 4, 1966 J. J. HEINTZEL 3,276,395

RESILIENT ROLLER BEARING ADAPTER

Filed June 10, 1964

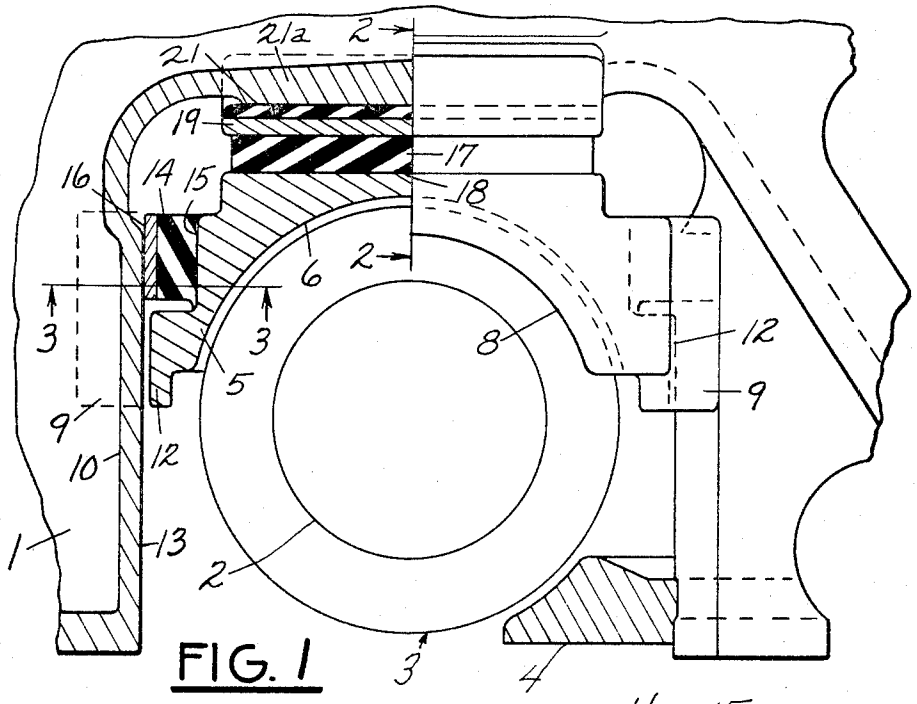


FIG. 1

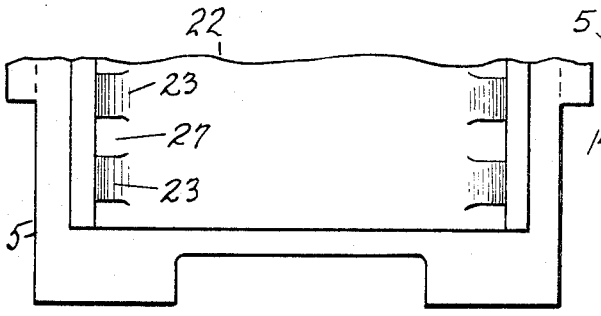


FIG. 5

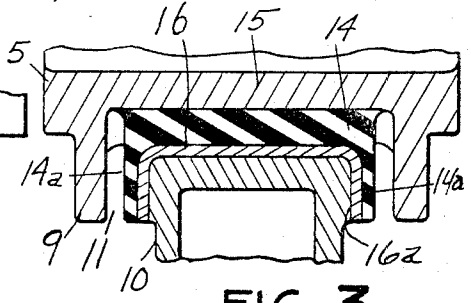


FIG. 3

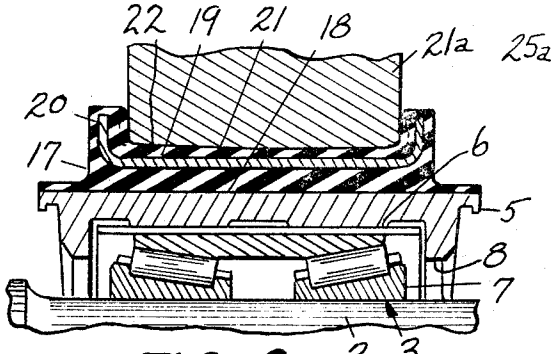


FIG. 2

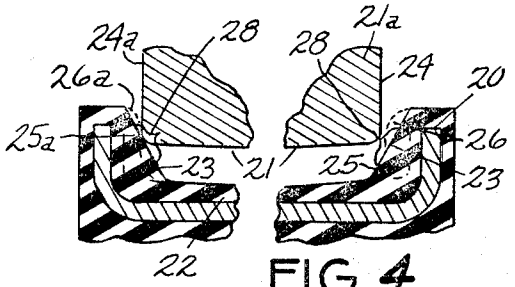


FIG. 4

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3,276,395

Patented Oct. 4, 1966

3,276,395

RESILIENT ROLLER BEARING ADAPTER

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Filed June 10, 1964, Ser. No. 373,957
3 Claims. (Cl. 105—224.1)

This invention is a roller bearing adapter for railway cars with pedestal type side frames which equalizes the bearing loads substantially independently of variations in dimensions of the frames.

In the drawing, FIG. 1 is a side elevation of a railway car side frame, partly in section, FIG. 2 is a section on line 2—2 of FIG. 1, FIG. 3 is a section on line 3—3 of FIG. 1, FIG. 4 is a diagrammatic view illustrating the manner in which the adapter accommodates variations in dimensions of the pedestal, and FIG. 5 is a fragmentary plan view of the adapter cap plate.

In the drawing, **1** indicates the pedestal of a railway truck side frame, **2** indicates the journal, **3** indicates a roller bearing, and **4** indicates the bearing retainer. These parts are of common construction.

The bearing is mounted in the pedestal by an adapter having a cap plate **5** with its under side provided with a semi-cylindrical recess **6** for the bearing cup **7**. The recess has end flanges **8** straddling the bearing cup.

At opposite sides of the cap plate **5** are flanges **9** straddling the pedestal jaws **10**. There is a substantial clearance **11** between the flanges and the pedestal jaws which allows end play between the bearing and frame. This is important in reducing bearing loads. At the lower end of the flanges **9**, the cap plate is formed with a guide surface **12** having a sliding clearance with the vertical surfaces **13** of the pedestal jaws. This positively restricts or limits movement of the bearing fore and aft of the car. Between the upper part of the flanges **9** is a body **14** of elastomer bonded to a surface **15** on the cap plate **5** and to a channel shaped plate **16** embracing the pedestal jaw **10** (FIG. 3). The space between the surface **15** and the associated pedestal jaw is less than the thickness of the body **14** so that upon installation, the elastomer **14** is compressed between the surface **15** and the plate **16**.

At the top of the cap plate **5** is a body **17** of elastomer bonded to a surface **18** on the cap plate and to a channel shaped plate **19** having longitudinally extending flanges **20** straddling the load carrying surface **21** of the roof **21***a* of the frame which extends longitudinally between the upper ends of the pedestal jaws **10**. The upper surface of the plate **19** is bonded to an elastomeric body **22** to permit distribution of the load from the surface **21**. The body **22** will conform to surface irregularities of the surface **21**.

The width of the roof **21***a* of the pedestal varies substantially. In order to accommodate this variation, the elastomer **22** has at its ends spaced inclined ribs **23**. In the narrowest side frame shown at the right in FIG. 4, the roof **21***a* has its outer side wall **24** spaced inward so that when the load is applied, the outer edge of the roof **21***a* strikes the ribs **23** at a point indicated at **25** and the gravity load compels the ribs to deform and assume the position indicated generally by dotted lines **26**. In addition to the deformation indicated by dotted lines **26**, there is also a sidewise deformation into the spaces **27** between the ribs. After the elastomer **22** has flowed to the dotted line position **26**, the roof of the pedestal is firmly seated so that it cannot slip and abrade the elastomer.

In the widest side frame indicated at the left in FIG. 4, the outer edge **24***a* of the roof strikes the ribs **23** initially at approximately the point indicated at **25***a* and as load is applied, compels deformation of the ribs to the position

indicated substantially by dotted lines **26***a*. By having the ribs **23** shaped so that the roof section **21***a* of the pedestal always strikes between the ends of the ribs, the pedestal is always centered and seated firmly in the elastomer **22** so that it cannot slip endwise under the service loads. Endwise movement is taken up by the body **17** which yields in shear under the endwise or axial motion of the journal relative to the side frame and also yields to allow for misalignment of the normally perpendicular relationship of the journal and side frame. The endwise motion is limited by the clearance **11** between the flanges **9** and the jaws **10**, but even when this motion is taken up, metal to metal contact is limited due to the extensions **14***a* over the flanges **16***a* of the plate **16**. The elimination of metal to metal contact prevents the extremely high shock forces. The elastomer also permits considerable rocking movement between the journal and frame, thereby reducing stress on both the side frame and the bearing.

In installation, the frame is jacked up to take the load off the journal and permit insertion of the adapter. As the frame is lowered after the adapter has been inserted, the roof of the pedestal makes initial contact with an intermediate section **28** of the tapered sides of the ribs **23** before the load carrying surface **21** bottoms on the central portion of the elastomer **22**. This initial contact crowds or wedges the roof **21***a* of the pedestal toward the center, thereby equalizing the clearances **11** and allowing shear motion of the elastomer **17** as the axle moves axially in either direction from its central position. As is apparent from FIG. 3, the adapter **5** has rigid flanges **9** which provide a solid stop limiting shear motion in the elastomer **17**. Because of this, the clearance **11** should be equalized at installation to assure proper functioning. Another advantage of the centering is to provide proper distribution of the car weight.

To insure centering, the space between the lower ends of the intermediate section **28** should be equal to or less than the minimum width of the roof **21***a* and the spacing between the upper ends of the intermediate section **28** should be equal to or greater than the maximum width of the roof **21***a*. This insures centering for both high and low limits of the roof dimensions.

Because rubber is incompressible, the bulge area such as that provided by the spaces **27** between the ribs is necessary to permit flow of the elastomer as the pedestal is lowered onto the adapter. Without the bulge area, a pedestal jaw with a wider roof **21***a* would ride higher on the elastomer than a pedestal jaw with a narrower roof. A provision for bulge area equivalent to the spaces **27** is important in maintaining the required uniform height of the frame.

What is claimed as new is:

1. In combination with a railway truck frame having spaced pedestal jaws with a roof extending longitudinally between the upper ends of the jaws, said roof having a downwardly presented load carrying surface, the width of the roof varying substantially from frame to frame, and a railway car journal having a roller bearing between the pedestal jaws, an adapter cap plate above and anchored to the roller bearing, said cap plate having an upwardly presented load receiving surface spaced below the load carrying surface, cooperating stops between the cap plate and the pedestal jaws providing for end play of the roller bearing relative to the pedestal jaws, a top plate spaced above the cap plate and below the roof, said top plate having an upper surface presented to said load carrying surface and a lower surface presented to said load receiving surface, a body of elastomer sandwiched between the lower surface of the top plate and the upwardly presented surface of the cap plate for transmitting

load from the roof to the cap plate and for accommodating end play of the roller bearing, said top plate having downwardly converging longitudinally extending ribs of elastomer straddling the roof with an intermediate portion thereof engaging the edges of the roof and wedging the roof toward the center of the top plate, the space between the lower ends of said intermediated portions of the ribs being equal to or less than the minimum width of the roof and the space between the upper ends of said intermediate portions of the ribs being equal to or greater than the maximum width of the roof.

2. The combination of claim 1 in which said ribs have a plurality of spaces into which the elastomer bulges under load received from the roof as the pedestal is lowered on the adapter.

3. The combination of claim 1 in which said top plate has the width of the roof varying substantially from frame to frame, and said ribs are part of another body of

elastomer bonded to said upwardly extending sections and to the upper surface of the top plate.

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