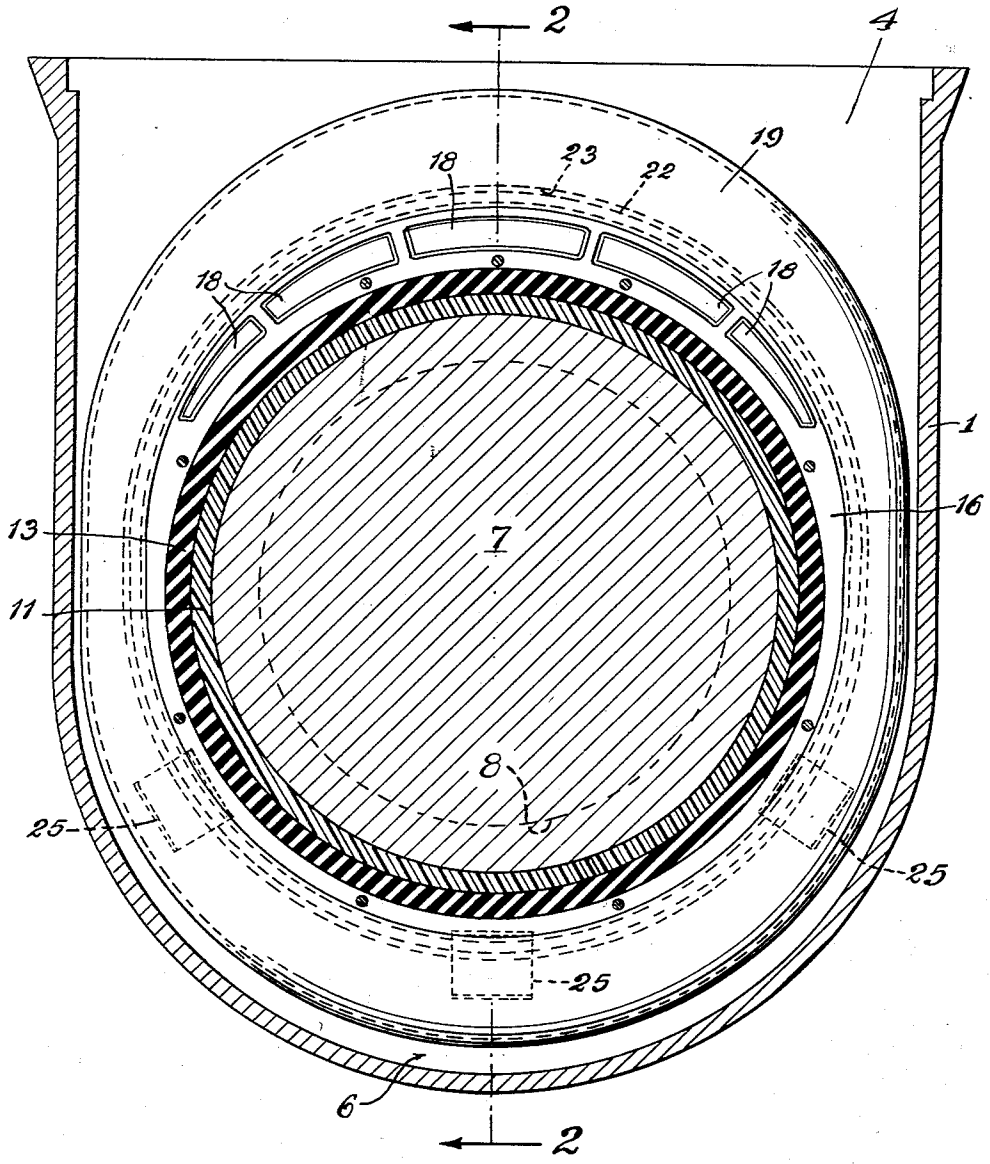
June 14, 1960 K. A. KLINGLER 2,940,780

PACKING MEANS FOR RAILROAD CAR AXLE JOURNAL BOXES

Filed Feb. 6, 1957 2 Sheets-Sheet 1

Fig. 1



Inventor
Karl A. Klingler

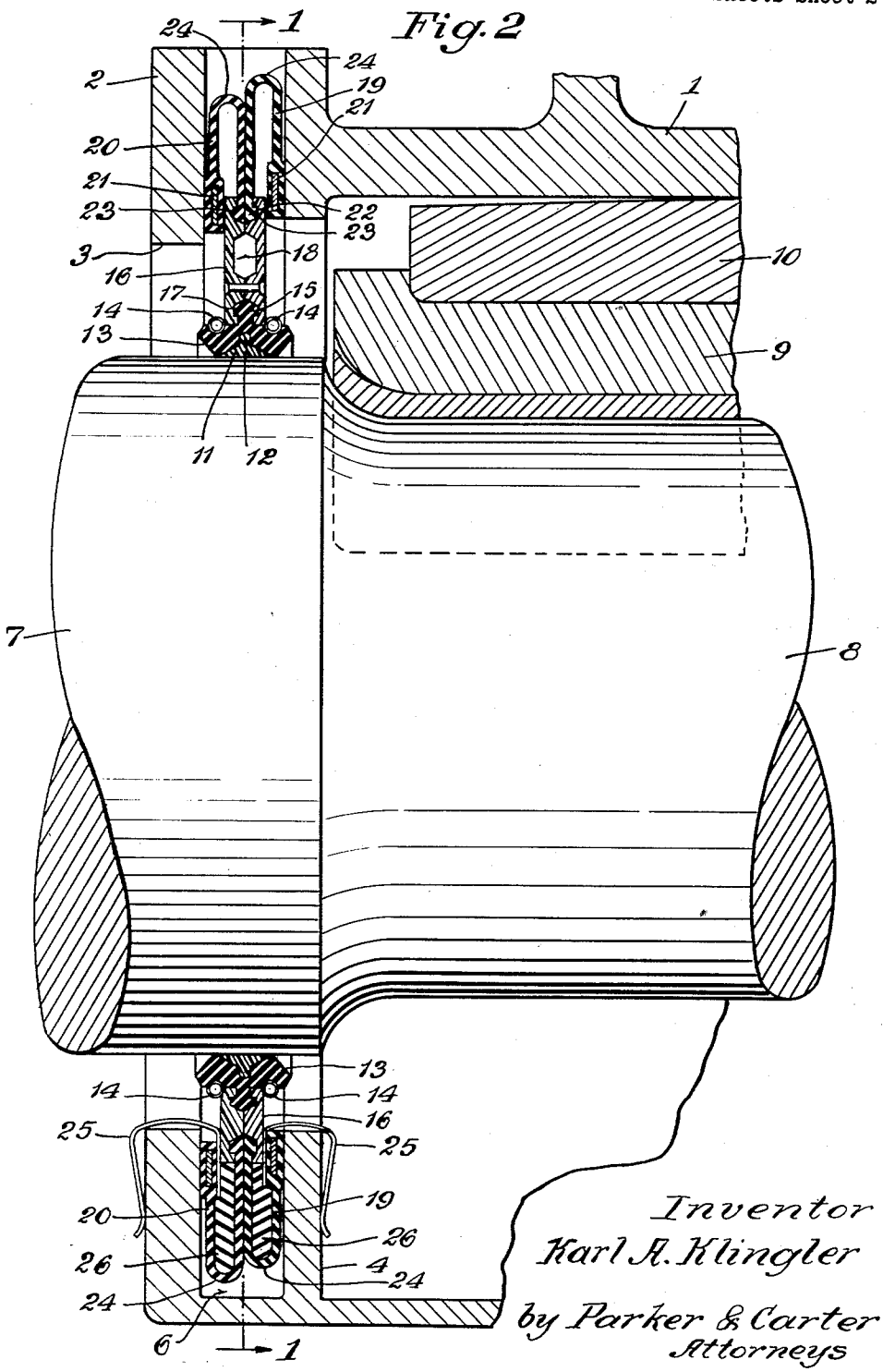
by Parker & Carter
Attorneys

June 14, 1960 K. A. KLINGLER 2,940,780

PACKING MEANS FOR RAILROAD CAR AXLE JOURNAL BOXES

Filed Feb. 6, 1957 2 Sheets-Sheet 2

Fig. 2



Inventor
Karl A. Klingler
by Parker & Carter
Attorneys

United States Patent Office 2,940,780 Patented June 14, 1960

2,940,780

PACKING MEANS FOR RAILROAD CAR AXLE JOURNAL BOXES

Karl A. Klingler, 111 S. Wright St., Naperville, Ill.

Filed Feb. 6, 1957, Ser. No. 638,543

6 Claims. (Cl. 286—6)

My invention relates to improvements in packing means for the inboard end of railroad car axle journal boxes and has for one object to provide a packing which is cheap, simple, effective and can be easily installed without making any change in the journal box itself.

The usual type of railroad journal box is apertured at the inboard end to receive the axle, the end of which is turned down to form the journal which is in contact with the brass. The outboard end of the box is closed with a hinged lid and when, as has been in the past the usual practice, the journal is lubricated by packing waste in the box and then saturating the waste with oil, all that was necessary was to prevent the entrance of dust and dirt into the box around the axle. This has heretofore been done by providing as part of the journal box, a pocket at the inboard end of the box having two parallel walls perpendicular to the axis of the journal adapted to receive a dust guard.

Since the lubricant was contained in the waste, no splashing could occur and a simple dust guard was sufficient. When, however, the journal is lubricated by liquid without waste or felt, it becomes necessary to provide for the inboard opening, an oil seal which will not only keep out dust and dirt but will prevent escape of the liquid as road shocks and vibration cause it to wash about in the box.

The seal must be easily installed by relatively unskilled help without any change in the conventional cast journal box.

My apparatus provides a seal which is firmly held in position in the pocket heretofore occupied by the dust guard and maintains constant oil sealing with the journal box and the axle independent of any change in the relative position.

Other objects will appear from time to time throughout the specification and claims.

My invention is illustrated more or less diagrammatically in the accompanying drawing, wherein:

Figure 1 is a section through the journal box along the line 1—1 of Figure 2;

Figure 2 is a section along the line 2—2 of Figure 1.

Like parts are indicated by like characters throughout the specification and drawings.

I have illustrated the inboard end of the journal box without the other elements since the latter are conventional and form no part of the present invention.

The journal box 1 has an end wall 2 apertured at 3. Parallel with the wall 2 and spaced inwardly therefrom is an apertured partition 4 to define a pocket 6 open at the top. For the purpose of my invention, it makes no difference whether the pocket is open at the top or not but that is the way journal boxes are found on freight cars and so I have illustrated it in that way to emphasize the fact that no change in the journal box is necessary to accommodate my packing.

The axle 7, the journal 8, the brass 9 and the wedge 10 are all conventional.

The packing comprises a stiff seat ring 11 of nylon or similar, generally stiff and rigid, though somewhat flexible material, the inner diameter of which makes a running working fit on the railroad car axle. The ring 11 tapers along both edges toward its contact with the journal and is reinforced by a central annular rib 12. Resting on and enclosing the ring 11 is an elastomeric packing or sealing ring 13 preferably of a rubber which will stand high heat without substantial deterioration. The ring 13 is T-shaped, is centrally grooved to fit the ring 11, contacts the axle on both sides of the ring 3 and is held about the axle by the two coil or garter springs 14 which apply pressure to the rubber packing ring, causing it to snugly hug the axle. The ring 11 being substantially incompressible carries a substantial part of the compression load of the springs 14 so that while the edges of the rubber packing snugly fit the axle on opposite sides of the compression ring 11 the pressure on the axle is supported in such wise that too great friction cannot occur.

The end of the stem of the T of the sealing ring 13 is enlarged about the entire periphery as at 15. A two-part holding or support ring is shown at 16. It is of some such relatively stiff and rigid material as nylon and the two parts are riveted together so that the annular recesses 17 engage the enlarged stem of the T and lock the sealing ring and the support ring 16 together. The lower half of the ring 16 is interiorly and exteriorly concentric with the journal. The upper half of the ring 16 is at its inner periphery concentric with the journal but is at its outer periphery oval as indicated in Figure 1, being recessed as at 18, in the interest of lightness.

All the parts above referred to remain in constant unchanged relationship with the journal independent of its movement up and down or sideways in planes perpendicular to its axis with respect to the box. It will frequently happen that the journal will move up and down in the box. Movement of these parts with respect to the box is permitted by virtue of the flexible adjustable means about to be described. Flexible elastomeric diaphragms 19 and 20 encircle the journal, are bent back upon themselves as indicated so that both peripheries are generally side by side and adjacent the journal and such that a radial cross section shows the diaphragm of U shape. Each diaphragm is rigidly attached at one periphery to the support ring and at the other periphery includes a metal reinforcing ring 21. The ring 21 is oval to conform to the contour of the box. The attachment to the support ring takes the form of flanges 22, the two diaphragms being back to back with their flanges socketed in channels 23 in the outer peripheries of the support ring 16, the two parts of the ring 16 being riveted together with the flanges enclosed. The opposite periphery of each diaphragm is thickened to enclose the reinforcing ring 21. Under these circumstances, if the ring 16 moves vertically or horizontally in a plane perpendicular to the axis of the journal, the curved portions 24 of the diaphragms 19, 20 permit such change in position without breaking the contact between the box and the flexible rings.

The reinforcing peripheries of diaphragms 19 and 20 held in position against the walls of the journal box by U-shaped clamps 25 spaced about the periphery of the diaphragms firmly holding the reinforced or thickened periphery of the diaphragm in oil sealing place on the box so that as above indicated radial displacement of the journal with the sealing ring may take place without breaking the oil seal afforded by the flexible diaphragm.

Oil is kept inside the box and dust and dirt kept out of the box by the sealing rings. If desired, to prevent deposit of oil and dirt in the lower portions of tubes 19, 20 they may be filled with a very soft rubber filler block

26 which can go all the way around or perhaps only fill the lower portion of the pockets defined by these tubes.

Since the resistance to movement caused by the bending or rolling of the curved surfaces 24 is very light, there is substantially no tendency to displace the rigid portion of the tubes and the spring clips are entirely adequate for the purpose of holding them in place.

The metal reinforcing rings 21, associated with the flexible rubber tubes 19 and 20, define anchor rings which, as shown, are held in position on the partition or flange 4 within the box or against the wall 2 at the end of the box, and those portions of the tubes 19 and 20, bent back upon themselves and interlocking as they do at their opposite ends with the ring 16, define an elastomeric diaphragm joining the anchor ring and the sealing ring.

The clips 25 may be permanently attached to the anchor ring or may be merely associated with it, as the case may be, but, in either case, they hold the anchor ring in position in the box without any machining or any change in the structure of the box.

I claim:

1. A seal for railroad car journal boxes including a flexible, yielding, elastomeric sealing ring adapted to encircle and make a close working fit with a railroad car journal, a relatively stiff, rigid, support ring out of contact with the journal, encircling and supporting the sealing ring, a flexible annular diaphragm encircling the journal bent back upon itself so that its two peripheries are generally side by side and adjacent the journal, one periphery being permanently attached to the support ring and means for holding the other periphery of the diaphragm in firm sealing contact with the journal box there being a pair of said diaphragms back to back, removable means for firmly holding the peripheries of each diaphragm in oil sealing contact with an opposite journal box surface.

2. A seal for railroad car journal boxes including a flexible, yielding, elastomeric sealing ring adapted to encircle and make a close working fit with a railroad car journal, a relatively stiff, rigid, support ring out of contact with the journal, encircling and supporting the sealing ring, a flexible, extensible, annular diaphragm encircling the journal, one periphery of the diaphragm permanently attached and surrounding the outer periphery of the support ring, and means for holding the other periphery of the diaphragm in firm sealing contact with the journal box, the diaphragm holding means comprising removable clips adapted to straddle the journal box wall and by exerting pressure on opposite sides of the wall with the diaphragm between them, hold the diaphragm in firm contact with the journal box wall.

3. A seal for railroad car journal boxes including a flexible, yielding, elastomeric sealing ring adapted to encircle and make a close working fit with a railroad car journal, a relatively stiff, rigid, support ring out of contact with the journal, encircling and supporting the sealing ring, a flexible annular diaphragm encircling the journal bent back upon itself so that its two peripheries are generally side by side and adjacent the journal, one periphery being permanently attached to the support ring and means for holding the other periphery of the diaphragm in firm sealing contact with the journal box, the diaphragm holding means comprising removable clips adapted to straddle the journal box wall and by exerting pressure on opposite sides of the wall, with the diaphragm between them, hold the diaphragm in firm contact with the journal box wall.

4. A seal for railroad car journal boxes including a flexible, yielding, elastomeric sealing ring adapted to encircle and make a close working fit with a railroad car journal, a relatively stiff, rigid, support ring out of contact with the journal, encircling and supporting the sealing ring, a flexible, extensible, annular diaphragm encircling the journal, one periphery of the diaphragm being permanently attached to and surrounding the outer periphery of the support ring, and means engaging one wall only of the journal box for holding the other periphery of the diaphragm in firm sealing contact with such wall.

5. A seal for railroad car journal boxes including a flexible, yielding, elastomeric sealing ring adapted to encircle and make a close working fit with a railroad car journal, a relatively stiff, rigid, support ring out of contact with the journal, encircling and supporting the sealing ring, a flexible annular diaphragm encircling the journal bent back upon itself so that its two peripheries are generally side by side and adjacent the journal, one periphery being permanently attached to the support ring and means engaging one wall only of the journal box for holding the other periphery of the diaphragm in firm sealing contact with such wall.

6. A seal for railroad car journal boxes including a flexible, yielding, elastomeric sealing ring adapted to encircle and make a close working fit with a railroad car journal, a relatively stiff, rigid, support ring out of contact with the journal, encircling and supporting the sealing ring, a flexible annular diaphragm encircling the journal bent back upon itself so that its two peripheries are generally side by side and adjacent the journal, one periphery being permanently attached to the support ring, means engaging one wall only of the journal box for holding the other periphery of the diaphragm in firm sealing contact with such wall, a rigid seat ring making a working running fit with the journal enclosed within the sealing ring, the sealing ring being adapted to contact the journal on opposite sides of the seat ring.

References Cited in the file of this patent

UNITED STATES PATENTS

270,262	Sweeney	Jan. 9, 1883
1,889,407	Grisbaum et al.	Nov. 29, 1932
2,736,585	Riesing	Feb. 28, 1956
2,798,746	Hoyer	July 9, 1957
2,823,051	Johnson et al.	Feb. 11, 1958