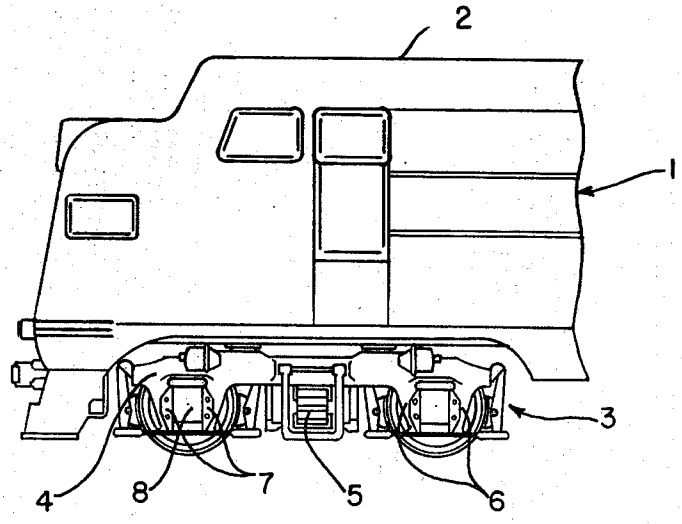
Jan. 12, 1971 J. A. DITZLER ET AL 3,554,618

RAILROAD TRUCKS

Filed Jan. 6, 1969

FIG. 1



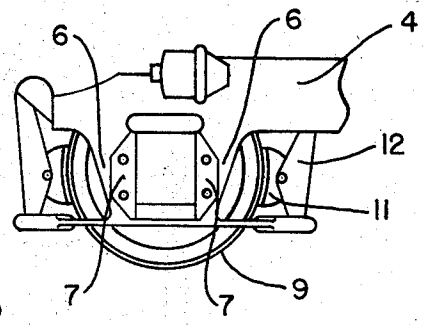


FIG. 2

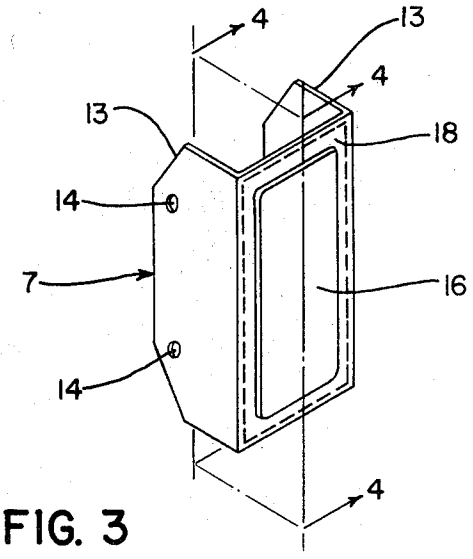
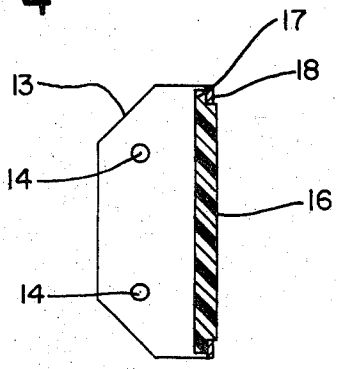


FIG. 3

FIG. 4



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United States Patent Office 3,554,618
Patented Jan. 12, 1971

3,554,618

RAILROAD TRUCKS

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Continuation of application Ser. No. 579,687, Sept. 15, 1966. This application Jan. 6, 1969, Ser. No. 791,868
Int. Cl. B61f 5/32; F16c 33/20
U.S. Cl. 308—3 4 Claims

ABSTRACT OF THE DISCLOSURE

In a railroad vehicle, a nylon wear plate or liner is used as a bearing surface in place of a conventional metallic wear liner. The bearing surface is positioned at the point where the truck wheels and the vehicle body move relative to each other in a generally vertical direction. A pedestal leg wear liner having a flat nylon wear plate is disclosed.

This is a continuation of application Ser. No. 579,687, filed Sept. 15, 1966, and now abandoned.

This invention relates to improvements in trucks for railroad locomotives and cars and, more particularly, to improved bearing surfaces for those portions of trucks that are slidably engaged to enable the wheels and the body of the locomotive or car to move relative to each other in a generally vertical direction.

The truck upon which a railroad locomotive or car body is supported is comprised essentially of two side frames tied together by a transverse piece called the bolster. One type of truck commonly used for locomotives is referred to as a pedestal truck. The pedestals are part of the side frames and are formed in inverted U-shaped sections that horizontally position and hold the journal box while permitting the journal box to move essentially vertically in relationship to the truck. The two projections that comprise the U of the pedestal are called the pedestal legs and the space between them the jaw. The jaw is closed at the bottom when the journal box is inserted by means of a pedestal tie bar. By this arrangement, the journal box is held positioned in vertical sliding relationship with the truck and, since the locomotive body is supported by the bolster and side frames, vertical movement between the locomotive body and the journal box, journal and wheels is permitted.

As considerable wear will take place at the engaging faces of the pedestal and the journal box, it is common practice to attach wear plates to both the pedestal legs and the journal boxes. The former are referred to as pedestal liners and the latter as journal box wear plates. Conventionally, the journal box wear plate is attached to the journal box by welding, whereas the pedestal liner is removably mounted as by bolting onto the pedestal legs. In both instances, the wear plates are usually manufactured of hardened high carbon spring steel or other alloy steel such as manganese steel.

In use, when the pedestal liner becomes excessively worn, the liners are unbolted from the pedestal leg and replaced with new ones. If the wear on the journal box wear plate becomes excessive, the weld must be broken to remove the old wear plate and a new one welded in its

place. This can be a time consuming operation, but it is made necessary to protect the journal box from damage due to wear.

As just mentioned, pedestal trucks find use primarily with railroad locomotives. In distinction to this, most passenger and freight cars use a different type truck in which the journal is integrally contained within the side frame of the truck. In this construction, relative motion between the wheels and the car body is accommodated by means of the bolster that can move relative to the side frames, journal and wheels. Here the bolster is supported in sliding relationship with the side frames of the truck and again a high strength alloy steel wear plate is utilized at the point of sliding contact. These wear plates are referred to as friction blocks when attached to the end of the bolster, and they engage friction shoes that are incorporated into the side frames of the truck. The friction shoes may be kept in contact with the friction block by means of control springs and, in this instance, the friction shoe may be a friction wedge (or snubber wedge). As is the case with pedestal type trucks, the wear plates must be renewed when sufficiently worn or, alternatively, the friction block at the end of the bolster rebuilt with welding rod.

Accordingly, it is an object of this invention to provide improved bearing surfaces for those portions of railroad trucks that are slidably engaged to permit relative vertical motion.

Another object of this invention is to provide improved materials for the fabrication of wear plates associated with those portions of journal boxes and pedestal legs and bolsters and side frames that are slidably engaged with each other.

A further object of this invention is to provide methods and means to protect the journal box of railroad locomotives from excessive wear.

Yet another object of this invention is to provide disposable wear plates for pedestal leg liners that may be easily replaced when they become worn.

Still a further object of this invention is to provide facing materials for pedestal legs that will allow the journal box to move in a vertical direction without causing excessive wear of the journal box.

A still further object of this invention is to provide improved wear surfaces for bolsters and friction shoes when they are slidably engaged with each other.

These and other objects of this invention are achieved by utilizing at least one bearing surface as between a journal box and a pedestal leg or as between the side frame (friction shoes) and bolster that is comprised of a long wearing synthetic resin, such as nylon. Specifically, with respect to the pedestal type truck, this invention contemplates the use of an insert of synthetic resinous material that readily may be positioned within and held by the pedestal liner. Surprisingly, it has been found that certain synthetic resinous materials such as nylon wear extremely well in such an application and will not cause substantial wear to the side of the journal box or the journal box wear plate. Further, these synthetic materials have a reduced coefficient of friction and are nongalling in action and, accordingly, enable the journal box to slide readily within the jaws of the pedestal. When the wear plates have worn unduly, they can be replaced simply by

by unbolting the pedestal liner, discarding the worn wear plates, inserting new wear plates, and rebolting the liner to the pedestal leg.

In order to describe the invention more completely, reference is made to the accompanying drawings in which:

FIG. 1 is a somewhat schematic representation of the side view of a portion of a railroad locomotive;

FIG. 2 is an enlarged view, partially broken away, of the side frame of a pedestal truck;

FIG. 3 is a side view of a pedestal liner having an insert of synthetic resinous material constructed in accordance with this invention; and

FIG. 4 is a section taken along lines IV—IV of FIG. 3.

In FIG. 1 there is generally shown the front end of a railroad locomotive **1**. Essentially, the locomotive is comprised of a car body or cab **2** supported on a truck generally shown at **3**. The mounting of the locomotive cab **1** on the truck **3** includes springs **5** mounted in the side frame **4** of the truck. As can best be seen with reference to FIG. 2, the truck **3** is of the pedestal type. That is, the side frame **4** carries a pedestal defined by the depending pedestal legs **6**. Mounted directly upon the pedestal legs **6** are pedestal liners **7**. The pedestal liners **7** define the inside surface of the jaws of the side frame **4**, which jaws are adapted to receive in vertical sliding relationship the journal box **8**. Also shown in FIG. 2 is a wheel **9**, a brake **11**, and a brake linkage **12**, but as these form no part of the instant invention, no further description will be given of them.

The details of a preferred pedestal liner manufactured in accordance with this invention are shown in FIGS. 3 and 4. Here the pedestal liner **7** is shown as being a channel section comprised of side members or mounting brackets **13** and a face portion **18**. The side members **13** are drilled as at **14** to receive bolts for removably attaching the pedestal liner onto the pedestal legs **6**. A plastic wear plate **16** is inserted into an open portion of the liner face **18**. It can be seen that a flange **17** is provided around the periphery of the rear of the plastic wear plate **16** to lock the wear plate **16** in position within the opening in the face portion **18** of the pedestal liner **7**.

In actual use, it can readily be understood that when the bearing surface of the plastic wear plate **16** becomes unduly worn, the pedestal liner **7** may be removed from the pedestal legs **6** by removing bolts (not shown) passing through bolt holes **14** of the mounting brackets **13**. After the pedestal **7** has been removed from the pedestal legs **6**, the worn plastic insert **16** is removed, another plastic insert is positioned within the opening of the face of the liner **18**, and the assembly is once more bolted onto the pedestal legs.

Not only does the above construction eliminate replacement of the entire pedestal liner when the bearing surface is worn, but also it provides several other advantages due to the fact that the plastic wear plate is comprised of a synthetic resinous material such as nylon. Since these materials are long wearing, have a low coefficient of friction and are nongalling, a smooth sliding vertical contact between the journal box and the pedestal legs is assured. Further, as the wear plate on the journal box may be made of hardened spring steel, most of the wear between the two surfaces takes place on the removable wear plate and, accordingly, the journal box will not be damaged. This, as previously mentioned, will avoid expensive repair or rebuilding of the journal box as by removing the welded wear plate and welding a new one in position.

The preferred synthetic resinous material from which this removable wear plate is constructed is nylon, although in some instances other materials such as polyacetals, polyurethanes, polyethylenes, and reinforced thermosetting resins such as phenolics may be used. The nylons are prefered, however, due to their high strength, low coefficient of friction, nongalling operation, and comparative freedom from corrosive attack in environments in which railroads are operated. Also, nylon wear plates can be

manufactured readily by utilizing low temperature anionic polymerization processes whereby the plates are cast simultaneously with the polymerization. (For a more complete description of these processes, see, for example, U.S. Pat. 3,017,391.)

These anionic polymerization processes for preparing cast parts of nylon are also sometimes quite useful in that during the polymerization and coating process certain variables may be changed that will influence or modify the physical properties of the cast nylon part. By this means, it is possible to prepare a cast nylon wear plate especially adapted for the intended use.

The above invention has been particularly described with respect to wear plates for pedestal liners. It is to be understood that it is equally within the scope of this invention to utilize these synthetic resinous materials, such as nylon, for fabricating bolster wear plates and journal box wear plates, and for fabricating, either in whole or in part, friction shoes, snubber wedges, and journal boxes. Thus, in its broadest aspect, this invention comprehends the use of nylon surfaces to accommodate relative movement that takes place between the various component parts of railroad trucks.

In the above description of this invention, the term nylon refers to the higher melting, fiber-forming polyamides. Of the more common of these useful in the practice of this invention may be mentioned polyhexamethylene adipamide, polyhexamethylene sebacamide, polymers prepared from 11-amino undecanoic acid, polymers prepared from higher lactams such as caprylactam and caprolactam, and copolymers, interpolymers and mixtures thereof. It is particularly desirable to use the higher lactams, i.e., those lactams containing at least 5 carbon atoms in the lactam ring, since by so doing, the aforementioned low temperature anionic polymerization processes can be utilized.

Although certain embodiments of the invention have been shown in the drawings and described in the specification, it is to be understood that the invention is not limited thereto, is capable of modification, and can be rearranged without departing from the spirit and scope of the invention.

What is claimed is:

1. A pedestal assembly for use in a railroad vehicle having a journal box and journal box wear plate which are moveable vertically with respect to said pedestal assembly, said assembly comprising:

(a) a pedestal leg;

(b) a pedestal wear plate comprising nylon; and

(c) means attaching said pedestal wear plate to said pedestal leg so that it faces said journal box wear plate.

2. A railroad vehicle pedestal wear liner for attachment to the pedestal leg of a truck of a railroad vehicle which includes a journal box having a journal box wear plate facing said pedestal leg, said pedestal wear liner comprising a flat nylon wear surface; first and second mounting brackets for mounting the pedestal wear liner on the pedestal leg; and means in each of said brackets for receiving fastening elements for securing said brackets to the sides of said pedestal leg, wherein said pedestal wear liner is U-shaped in cross section with each of said brackets forming a leg of said U and wherein said nylon wear surface faces said journal box wear plate when said pedestal wear liner is mounted on said pedestal leg.

3. In a supporting assembly for supporting the body of a railroad vehicle, said assembly including a railroad truck, truck wheels, means providing for the truck wheels and the railroad vehicle body to move relative to each other in a generally vertical direction and bearing surface means positioned at the points of relative movement, the improvement wherein at least one of said bearing surface means comprises a nylon wear plate.

4. In a supporting assembly according to claim **3** including a journal box, pedestal legs and a pedestal leg wear

plate wherein said journal box is vertically moveable with respect to said pedestal legs, the improvement wherein said pedestal leg wear plate comprises nylon.

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U.S. Cl. X.R.

105—225; 308—238

Disclaimer

3,554,618.—*James A. Ditzler, Donald D. Carswell, Jr.,* and *Kenneth E. Reisch,* Reading, Pa. RAILROAD TRUCKS. Patent dated Jan. 12, 1971. Disclaimer filed May 11, 1984, by the assignee, *The Polymer Corp.*

Hereby enters this disclaimer to claims 1, 2, 3, and 4 of said patent.

[*Official Gazette July 10, 1984.*]