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L. B. JONES

2,356,246

CUSHIONING DEVICE FOR CAR TRUCK CENTER BEARINGS

Original Filed Sept. 27, 1941

FIG. 1

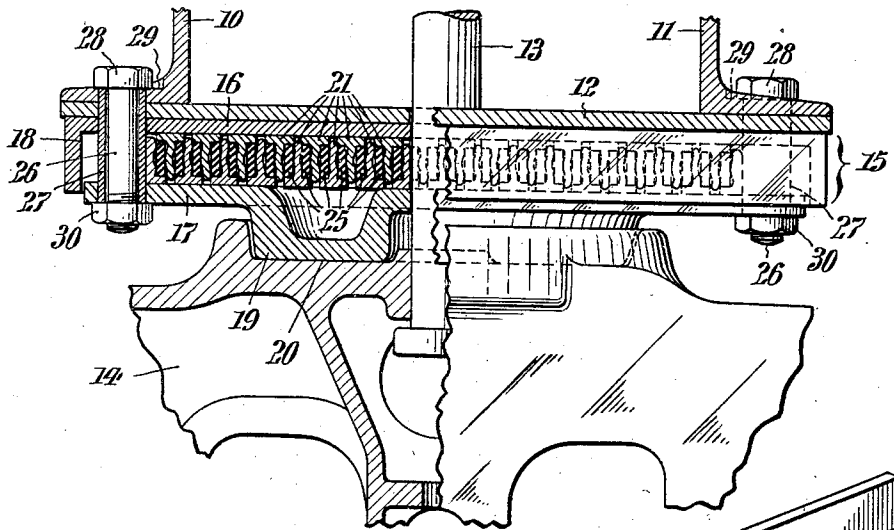


FIG. 3

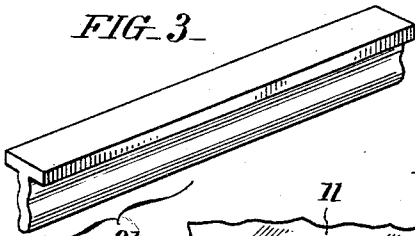


FIG. 4

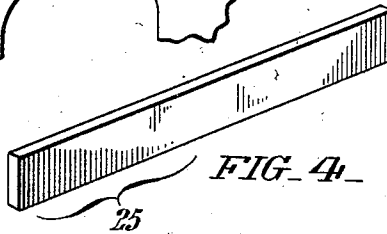


FIG. 2

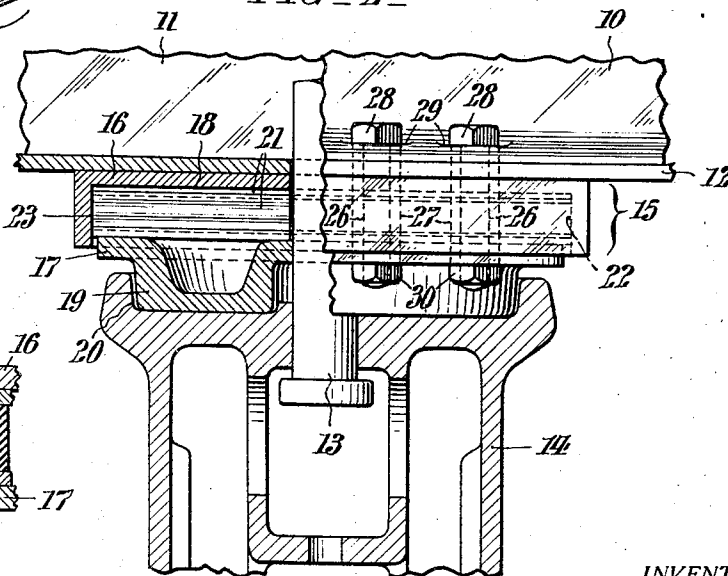
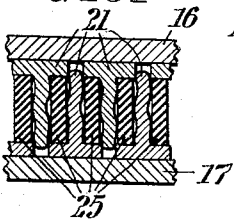


FIG. 5



BY

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UNITED STATES PATENT OFFICE

2,356,246

CUSHIONING DEVICE FOR CAR TRUCK
CENTER BEARINGS

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Original application September 27, 1941, Serial
No. 412,615, now Patent No. 2,322,642, dated
June 22, 1943. Divided and this application
March 4, 1943, Serial No. 477,947

5 Claims. (Cl. 267—63)

This invention relates to cushioning means for the center bearings of railway car trucks and the like, the present application being a division of a copending application, Serial No. 412,615, filed by me on September 27, 1941, which has since matured into Patent No. 2,322,642, under date of June 22, 1943.

The chief aim of my invention is to prevent, more effectively than possible with means heretofore designed for the purpose, the transmission of high frequency vibrations and noises which may originate in car trucks incident to rapid travel, to the car body through the connecting center bearings. The foregoing advantage I attain in practice, as hereinafter more fully set forth, through provision of a cushioning means which is simple and rugged, which is reliable in its operation, and in which laterally adjacent rigid elements confined to contrary vertical movement within a housing between the car body and the truck, cooperate with an interposed resilient element of rubber or the like in such a way that said element is placed in compression as well as in shear when the bearing is subjected to load, with the result that the attendant shocks are quickly and effectively absorbed. Thus, advantage is taken of the well known characteristics of rubber which has superior work absorption qualities in shear as compared to pure compression.

In connection with cushioning means having the above attributes, I further aim to make it possible, through provision of simple means such as also hereinafter described, to secure the cushioning means to the car body in such a way as will permit ready removal thereof when replacements are necessary by reason of disintegration or wear of the parts.

Other objects and advantages will appear from the following detailed description of the attached drawing, whereof

Fig. 1 is a fragmentary view in staggered cross section of the center bearing of a railway car with an incorporated cushioning means conveniently embodying my invention.

Fig. 2 is a view partly in side elevation and partly in longitudinal section through the axis of the center bearing.

Figs. 3 and 4 are perspective views of certain parts of the cushioning means; and

Fig. 5 is a detail sectional view corresponding to Fig. 1 and drawn to a larger scale to more clearly show the details of the cushioning means.

With more detailed reference first more particularly to Figs. 1 and 2 of these illustrations,

the usual laterally spaced side channels of the center sill of a railway car are indicated at 10 and 11, the usual plate which connects said channels at their bottoms at 12, and the center pin or king bolt at 13, while the bolster of one of the wheel trucks is partly shown at 14.

The cushioning means with which the present invention is more especially concerned includes a flat casing which comprehensively is designated by the numeral 15, and, as shown, consists of the two parts designated 16 and 17, respectively. The upper part or section 16 of the casing 15 is of rectangular box-like configuration with a relatively shallow hollow 18, and the lower part 17 is in the form of a plate which loosely fits into said upper part and which has a pendent center swivel boss 19 for engaging a corresponding central recess 20 in the track bolster 14. Housed within the casing 15 is a plurality of rigid metallic T-section elements or pressure bars 21 whereof one is separately illustrated in perspective in Fig. 3, and whereof the ends slidably bear against the front and rear end walls 22 and 23 of the upper part of the casing 15; and a plurality of resilient elements or bars 25 of rubber or the like, whereof one is in turn separately illustrated in Fig. 4. From Figs. 1 and 5 it will be noted that the pressure bars 21 are arranged in two horizontal rows with the bars of one row inverted relative to the bars of the other group, and with the vertical web of a bar of one group extending into a clearance interval between the head flanges of adjacent bars of the other group. As shown in Figs. 1 and 5, the vertical webs of the pressure bars 21 are roughened or corrugated, while, as shown in Figs. 1 and 4, the resilient bars 25 are smooth-surfaced throughout. When assembled as in Fig. 1, the upper and lower edges of the cushioning bars 25 bear against the crosswise head ledges of adjacent pressure bars 21 of the two groups. The casing 15 which houses the bar pack is removably secured by screw bolts 26 whereof the shanks, together with surrounding sleeves 27, pass through aligned apertures respectively in the bottom flanges of the sill channels 10 and 11, in the plate 12 and in the two casing members 16 and 17. As shown, the heads 28 of the bolts 26 engage machine-squared horizontal portions 29 of the upper surfaces of the bottom flanges of the channels 10 and 11, and the lower threaded ends of the bolt shanks are provided with nuts 30. The sleeves 27, it will be observed, act as spacers between the bolt heads 28 and the nuts 30, and thereby determine

the extent of initial compression of the resilient bars 25 of the cushioning means.

In the operation of the cushioning means, relative up and down movement will take place between the two groups of rigid bars 21 due to their being backed respectively by the casing members 16 and 17 which respectively engage the center sill of the car and the truck bolster 14. As further weight is imposed upon the bearing, the resilient bars 25 will be further compressed and incidentally expanded laterally, so as to be gripped by the contacting roughened side faces of the center webs of adjacent pressure bars 21 of the two opposing groups and placed in shear. Accordingly, the resistance offered by the cushioning means varies progressively with the load, so that high frequency vibrations and noises originating in the track are quickly and effectively absorbed, and thus not communicated to the car body as is ordinarily the case when direct metallic contact exists between the car body and the bolster of the truck.

When, after extensive service, it becomes necessary to replace the resilient bars 25 by reason of wear or disintegration, the cushioning means can be readily withdrawn after slight lifting of the car body and removal of the center pin 13 and the bolts 26, whereupon the upper part 16 of the casing can be lifted off for accessibility to said bars as well as to the associated rigid bars 21. Preferably the sleeves 27 are rigidly anchored at the lower ends in the bottom part 17 of the casing to retain the pack of the bars 21 and 25 between them.

While in the present instance the bar components of the cushioning means are arranged in the direction of the length of the car, they can of course, within the scope of the appended claims, be arranged transversely of the car if this should be found more desirable or convenient in practice.

Having thus described my invention, I claim:

1. Cushioning means for interposition between the body of a railway car and a truck including a flat housing casing with a hollow rectangularly recessed component, and a relatively movable cover component slidably fitting into the hollow component; two horizontal groups of reversely

arranged pressure elements of rigid material with roughened vertical side faces and with lateral ledges respectively at the tops and bottoms of the said side faces and backed respectively by the two housing components; resilient smooth-surfaced plain-section elements of rubber or the like disposed between the roughened side surfaces of contiguous pressure elements of the two groups, with their upper and lower edges overlapped respectively by and engaging the ledges of the contiguous pressure components and normally contacting laterally with the high spots only of said roughened surfaces, whereby incident to movement of the two groups toward each other under load, the resilient elements are compressed and through lateral expansion thereof gripped by the opposing roughened surfaces of said pressure elements and placed in shear; and means for securing the housing to the center sill of the car.

2. The invention according to claim 1, in which the pressure and resilient elements are in the form of straight bars; and in which said pressure elements are of T-shaped cross section and said resilient elements are of plain rectangular section.

3. The invention according to claim 1, in which the pressure and resilient elements are in the form of straight bars; and in which the ends of said pressure elements slidably engage opposite walls of the hollow component of the casing.

4. The invention according to claim 1, in which the pressure and resilient elements are in the form of straight bars, lying in the direction of the length of the car with the ends of said pressure elements slidably engaging opposite walls of the hollow component of the casing.

5. The invention according to claim 1, wherein the securing means comprises a plurality of screw bolts which pass through the housing and the cover; nuts associated with the screws; and means for limiting the distance to which the housing and its cover are forced toward each other when the nuts are drawn up to determine the degree of initial compression of the resilient elements.

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