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ANNULAR DISC LUBRICANT

Filed July 18, 1963

Fig. 1

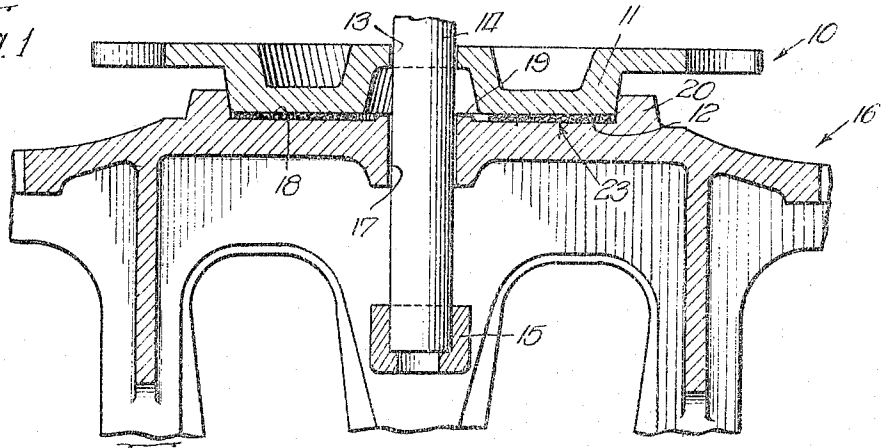


Fig. 2

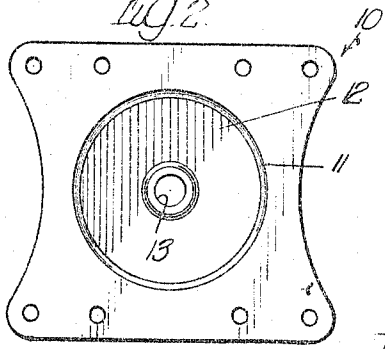


Fig. 3

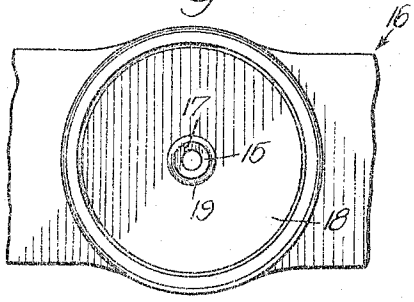
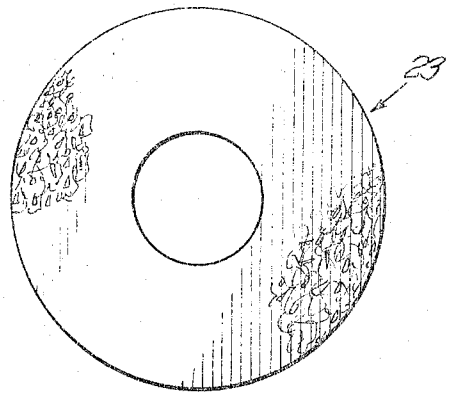


Fig. 4



LUBRICATING DISC COMPRISING DISINTEGRATABLE PLASTIC BINDER HAVING DISPERSED THERETHROUGH A MIXTURE OF METALLIC AND NONMETALLIC LUBRICATING MATERIALS

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ANNULAR DISC LUBRICANT

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This invention relates, generally, to the construction of railway cars and it has particular relation to devices for lubricating center plates at the ends of a railway car.

Among the objects of this invention are:

To provide in a new and improved manner for reducing the friction between juxtaposed surfaces of railway car center plates; and to provide for this purpose a lubricator in the form of an annular disc that is composed of a disintegrable carrier and a mixture of non-ferrous metal particles and a lubricant dispersed therethrough.

In the drawings:

FIG. 1 is a vertical sectional view taken through a car body center plate and a portion of a cooperating truck bolster, both devices being of conventional construction and the arrangement showing the application of the lubricator of this invention between the surfaces of the center plates.

FIG. 2 is a bottom plan view of the car body center plate.

FIG. 3 is a top plan view of the central portion of the truck bolster which shows the center plate.

FIG. 4 is a top plan view of the lubricator that is interposed between the surfaces of the center plates.

Referring now particularly to FIG. 1 of the drawing, it will be noted that the reference character 10 designates, generally, the car body center plate that usually is formed of cast steel. The center plate 10 has a depending central section 11 that is provided with a downwardly facing annular bearing surface 12 which is also shown in FIG. 2. A central opening 13 extends through the car body center plate 10 for receiving a center pin 14 that is supported at its lower end in a socket 15 which is formed integrally with a truck bolster, shown generally at 16, and formed in conventional manner of cast steel. The truck bolster 16 has a central opening 17 through which the center pin 14 extends. Surrounding the central opening 17 is an upwardly facing annular bearing surface 18 on the truck bolster 16 which also is shown in FIG. 3. That portion of the truck bolster 16 which includes the annular bearing surface 18 constitutes a center plate and is so referred to herein. An inner annular flange 19 surrounds the central opening 17 and extends above the level of the bearing surface 18. An outer annular flange 20 extends along the outer periphery of the annular bearing surface 18 and, with the inner annular flange 19, forms an annular groove for receiving the depending central section 11 of the car body center plate 10.

Difficulty has been encountered in providing a proper lubricant between the annular bearing surfaces 12 and 18. One satisfactory solution to this problem is provided by the construction disclosed in U.S. Patent No. 3,170,740, issued February 23, 1965, and assigned to the assignee of this application. The present invention is an improvement over that construction.

Since the bearing pressure between the surfaces 12 and 18 is the order of 1,000 lbs. per square inch, it has been difficult to provide adequate lubrication therebetween. The relative rotation between the surfaces 12 and 18 during the normal operation of a railway car is of the order of 5°. If a lubricating material is placed between the surfaces 12 and 18 in lump form, it will not disperse or

spread out readily or easily. In accordance with this invention the lubricator, shown generally at 23, is provided. The lubricator 23 is in the form of an annular disc having a thickness of the order of 3/32" and internal and external diameters such that it can be placed on the annular bearing surface 18 with adequate clearance between the flanges 19 and 20 along the inner and outer peripheries.

As indicated in FIG. 4 of the drawing, the lubricator 23 is a lubricating disc that comprises a disintegrable plastic binder having dispersed therethrough a mixture of metallic and non-metallic lubricating materials. Preferably the plastic binder is a phenolic resin. The metallic materials are non-ferrous and include brass and lead in the form of metal particles. The lubricant is graphite.

A satisfactory lubricator 23 has been manufactured having the following composition, the percentages being by weight:

	Percent
Phenolic resin carrier material	30
Brass turnings	30
Lead pellets	30
Graphite chunks	10

These ingredients are thoroughly mixed and then formed into the annular disc shape as seen in FIGS. 1 and 4 of the drawing. The metallic and non-metallic lubricating materials are dispersed in the plastic carrier which is frangible and which will break up once it is subjected to the pressure applied thereto by the car body center plate 10 a short time after the car has been in operation and there has been relative movement between the surfaces 12 and 18 to the extent above noted. This action releases the non-ferrous metal particles and the graphite with the result that they are in position to work over the complete surfaces 12 and 18 so that adequate lubrication thereover is provided.

The lubricator 23 can be formed in the manner above described using a different combination of materials. It can be formed as follows:

	Percent
Phenolic resin carrier material	12
Brass turnings	70
Graphite chunks	18

This combination of ingredients, while satisfactory, is less satisfactory than the combination first above mentioned.

What is claimed as new is:

1. For installation between the center plates of a railway car having a center pin extending therethrough, a lubricator in the form of an annular disc composed of a frangible readily disintegrable carrier material having dispersed therethrough a mixture of non-ferrous metal particles and a lubricant compising by weight:

	Percent
Phenolic resin	30
Brass	30
Lead	30
Graphite	30

2. For installation between the center plates of a railway car having a center pin extending therethrough, a lubricator in the form of an annular disc composed of a frangible readily disintegrable carrier material having dispersed therethrough a mixture of non-ferrous metal particles and a lubricant comprising by weight:

	Percent
Phenolic resin	12
Brass	70
Graphite	18

3. For installation between the center plates of a railway car relatively rotatable in normal operation through about 5° under pressure of about 1000 lbs. per square inch and having a center pin extending therethrough, a lubricating medium in the form of an annular disc composed of:

a normally stable resinous carrier material subject to frangible disintegration when in use between said plates, and

a lubricating mixture of lead, brass and graphite dispersed through said carrier material.

4. For combination with the center plates of a railway car that are relatively rotatable in normal operation through an angle of about 5° with a bearing pressure of about 1000 lbs. per square inch between the juxtaposed bearing surfaces of said center plates a lubricating medium in disc form for positioning between said surfaces comprising:

one or more non-ferrous metals in particle form, and

a frangible binder temporarily holding said non-ferrous metal or metals between said center plates and characterized by being disintegrable due to said relative rotation and bearing pressure to release said non-ferrous metal or metals to work over said juxtaposed surfaces of said center plates and provide lubrication thereover.

5. The lubricating medium called for by claim 4 wherein the non-ferrous metal particles include brass turnings.

6. The lubricating medium called for by claim 4 wherein the non-ferrous metal particles include lead particles.

7. The lubricating medium called for by claim 4 wherein the non-ferrous metal particles include brass turnings and lead pellets.

8. For combination with the center plates of a railway car that are relatively rotatable in normal operation through an angle of about 5° with a bearing pressure of about 1000 lbs. per square inch between the juxtaposed bearing surfaces of said center plates a lubricating disc for positioning between said surfaces composed essentially of:

brass and lead particles in equal amounts by weight, graphite in a lesser amount, and

the balance being a normally stable resinous carrier material subject to frangible disintegration when in use between said center plates due to said relative rotation and bearing pressure to release said brass and lead particles and said graphite to work over said juxtaposed surfaces of said center plates and provide lubrication thereover.

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