

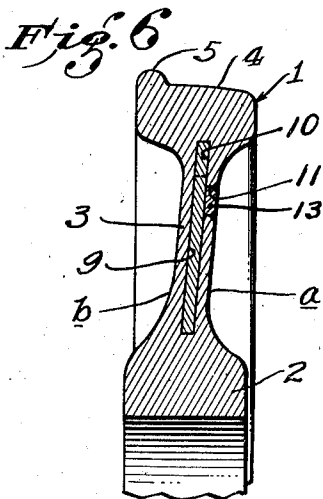
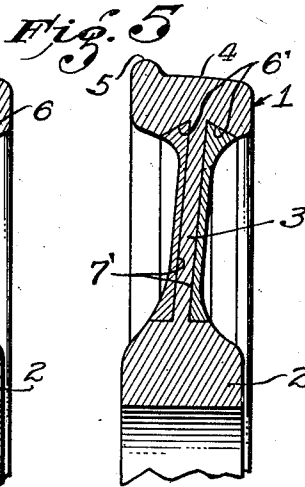
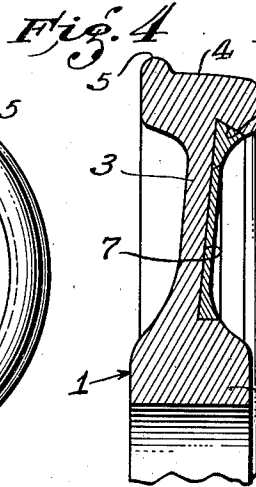
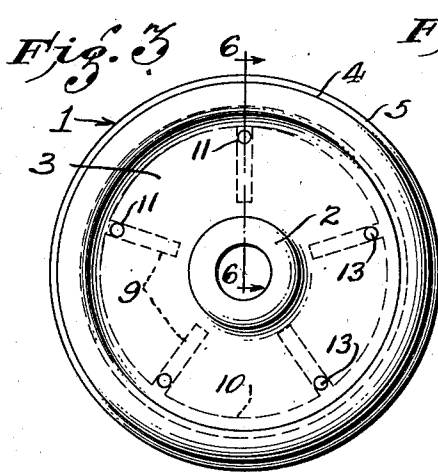
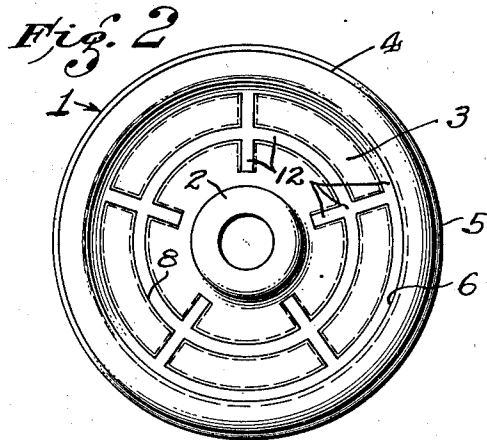
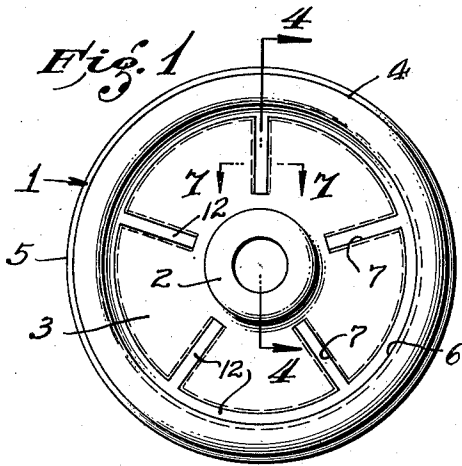
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2,129,178

CAR WHEEL

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CAR WHEEL

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8 Claims. (Cl. 295-7)

My invention relates to car-wheels, and more particularly relates to novel means for deadening or diminution of the noise or absorption of vibration created or caused by two metallic members contacting with each other, such as car-wheels contacting with the rail, gear and sprocket wheels, and similar moving metal mechanical devices.

An object of my invention is to provide a novel car-wheel wherein sound vibrations caused by one metal part contacting another are prevented, reduced or diminished, within the car-wheel itself.

An object of my invention is to provide a novel car-wheel wherein sound or vibration caused by rolling of the wheel along the track on which it runs is materially reduced or deadened before it is transmitted from the rim to the axle to which such wheel is connected.

An object is to provide a novel car-wheel especially adapted for street railway cars or rolling-stock and in which the sound vibrations from the rim of the wheel to the main body of the wheel and its axle is reduced to a minimum.

Another object is to provide a car-wheel provided with novel means which will intercept and deaden the vibrations and sound harmonics that heretofore have been transmitted from the rim of the wheel to its axle and have emanated therefrom in objectionable noises.

Another object is to provide a novel means for deadening and reducing to a minimum vibration and sound harmonics that may emanate from operation of car-wheels, gears, pulleys or other mechanical structures where two metallic members contacting with each other create noise.

A still further object is to provide a novel car-wheel that will attain the foregoing objects and which may be easily and quickly substituted for the car-wheels that are at present in use, and in which the sound deadening means incorporated therein will not in any manner interfere with the normal operation of the wheel when installed for use.

The invention resides in the parts and combinations of parts more particularly hereinafter described and pointed out in the claims.

Other objects, advantages, and features of invention may appear from the accompanying drawing, the subjoined detail description, and the appended claims.

The accompanying drawing illustrates the invention in some of the forms I at present deem preferable.

Figure 1 is a side elevational or face view of a car-wheel showing one style or form of the sound and vibration deadening feature.

Fig. 2 is a view analogous to Fig. 1 but showing a modified form of the sound deadening feature incorporated therein.

Fig. 3 is a view analogous to Figs. 1 and 2 showing a further modified form or style of the sound deadening feature incorporated therein.

Fig. 4 is a fragmentary sectional view on enlarged scale taken on line 4-4, Fig. 1.

Fig. 5 is a fragmentary sectional view analogous to Fig. 4 but showing a further modified form or type of sound deadening feature incorporated with the wheel.

Fig. 6 is a fragmentary sectional view on enlarged scale taken on line 6-6, Fig. 3.

Fig. 7 is a fragmentary sectional view on an enlarged scale taken on line 7-7, Fig. 1.

In the embodiments of my invention as shown in the several figures, the car wheel 1 is provided with a conventional hub 2 to receive the usual axle, not shown, a disk web 3 therearound, and an integral rim or tread portion 4 having a flange 5 around the axially inner periphery of said rim.

With particular reference to Figs. 1 and 4 there is molded or otherwise formed in the car-wheel adjacent the rim 4 an annular channel or recess 6 preferably of dovetail in cross-section. The channel 6 is intersected at equally spaced intervals by the outer ends of a plurality of radiating channels 7 formed in the web 3 and extending from the hub 2 and which radiating channels 7 are also preferably of dovetail in cross-section, as shown in Fig. 7. Or, as shown in Fig. 5 the channels 6' and 7' may be formed in both sides of the wheel.

As shown in Fig. 2 additional annular channels 8 may be formed in the web 3 radially inwardly of the channel 6.

As shown in Figs. 3 and 6 the web 3 may be provided with radiating passages 9 terminating at their outer ends with an annular passage 10 that is adjacent the rim and is intermediate the outer faces *a* and *b* of the web 3. The passages 9 are preferably centrally disposed with respect to the web. The several radiating passages 9 communicate with the exterior of the wheel through lateral ports 11.

The various cavities; that is, channels, or passages of the several embodiments of my invention are filled with a non-resonant or vibration absorbing material, such as lead 12, and form a plurality of spokes of a non-resonant metal or material, and which spokes are embedded in the central portion of the wheel and extend radially inward from the annular member. With the exception of the arrangement shown in Figs. 3 and

6, the vibration material is exposed to the face of the wheel, but is retained in the wheel by reason of the dovetail construction of the various channels. In Figs. 3 and 6, the vibration absorbing material may be poured through the ports 11 which ports may then be permanently closed by welded plugs 13 inserted therein, or the material may be formed in the pattern disclosed and the car-wheel formed therearound.

10 The rotation of a conventional cast steel or cast iron wheel on a track tends to set up vibration harmonics in the axle. At least a percentage of these harmonics apparently travel spirally from the rim toward the axle. With each of the embodiments disclosed, vibration courses intersect the absorbent or non-resonant material, particularly those which are radially directed, and are deadened to a maximum degree before they reach the axle or central portion of the wheel.

20 It will be apparent from the foregoing that the car-wheel may be provided on only one face with a style or form of the sound deadening feature of a pattern illustrated in Figs. 1 or 2, or that such car-wheel may be provided on both faces with a style or form of sound deadening feature of the pattern or style shown in Figs. 1 or 2, or that the same may be incorporated centrally or in the mid-portion of the car-wheel as shown in Fig. 3; and also that the wheel may be provided with one annular channel 6 as shown in Fig. 1 or with a plurality of such annular channels as shown in Fig. 2. It will also be apparent from the foregoing and from an inspection of the drawing that such annular channels or recesses are intersected by a plurality of radially extending channels and which are preferably of an uneven number such as five as shown, or such uneven number may be three, seven, nine, etc., and for the sake of convenience have not been illustrated in the drawing.

35 The non-resonant or vibration absorbing material may be of lead or other suitable material which has different characteristics than that of the wheel proper and which tends to absorb the harmonics created in the wheel to thereby deaden the sound occasioned when the wheel is used.

Whereas in this specification several embodiments of the invention have been indicated, it is to be understood that the invention is not limited or restricted to the precise structural features herein shown, because these may be modified without departure from the spirit of the invention as defined in the appended claims. The invention is also applicable to gear and other wheels to lessen their noise of operation, and where in this specification and claims the term wheel is used the same is used to include such other contacting metallic members such as gear and sprocket wheels, and similar moving metal mechanical devices. It may be that the wheel structure with the radiating and circular cavities therein may efficiently deaden the noise of such wheel without filling such cavities with the non-resonant material, as such cavities may in them-

selves efficiently reduce the noise to an operative minimum.

I claim:

1. A wheel structure comprising a hub and a rim connected by an integral web; radial channels formed in one side of the web; a plurality of annular channels formed in the web and common to said radial channels.
2. A wheel structure comprising a hub and a rim connected by an integral web; radial channels formed in one side of the web; a plurality of annular channels formed in the web and common to said radial channels; said channels being dovetailed in cross-section, and a vibration absorbent material filling said channels.
3. A wheel structure having its rim integral with its central portion and also having an annular member of non-resonant metal embedded in said wheel adjacent said rim and a plurality of spokes of a non-resonant metal embedded in said central portion and extending radially inward from said annular member.
4. A wheel structure having its rim integral with its central portion and also having an annular member of non-resonant metal embedded in said wheel adjacent said rim and another annular member of non-resonant metal embedded in said central portion and a plurality of spokes of a non-resonant metal embedded in said central portion and extending radially inward from said annular members and connected thereto.
5. A wheel structure having its rim integral with its central portion and also having an annular member of non-resonant metal embedded in said wheel adjacent said rim and a plurality of spokes of an uneven number and of a non-resonant metal embedded in said central portion and extending radially inward from said annular member.
6. A wheel structure having its rim integral with its central portion and also having an annular member of non-resonant metal embedded in said wheel adjacent said rim and another annular member of non-resonant metal embedded in said central portion, and a plurality of spokes of an uneven number and of a non-resonant metal embedded in said central portion and extending radially inward from said annular members and connected thereto.
7. A wheel structure comprising a hub and a tread portion connected by a web integral therewith, radial channels formed in one side of the web; there being an annular channel common to said radial channels and formed in said web and being disposed in close proximity to the intersection of said web with said rim.
8. A wheel structure comprising a hub and a rim connected by an integral web, radial channels formed in one side of the web; there being an annular channel common to said radial channels and formed in said web and being disposed in close proximity to the intersection of said web with said rim; said channels being dovetailed in cross-section; and a vibration absorbent material filling said channels.

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