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(54) CLEANING BAR ASSEMBLY FOR COMPACTOR WHEELS

(71) We, CATERPILLAR TRACTOR Co., a corporation organized and existing under the laws of the State of California, United States of America, of 100 N. E. Adams Street, Peoria, State of Illinois 61629, United States of America, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to a cleaning bar assembly for compactor wheels of the type disclosed in our U.S. Patent Specification No. 3,633,471.

Such compactor wheels tend to pick-up and retain material between the pads thereof, particularly when operated over damp materials such as clay. The build-up of such material between the pads reduces the operating efficiency of the compactor wheel unless means are provided for continuously cleaning the same. To this end, a frame having a plurality of cleaning bars secured thereon is normally positioned adjacent to the compactor wheel to continuously break-up the material upon rotation of the compactor wheel. The frame may comprise a closed box-like structure completely surrounding the compactor wheel, such as the type disclosed in the above-referenced U.S. Patent Specification No. 3,633,471.

According to the present invention a compactor wheel assembly for a vehicle includes an axle housing and a compactor wheel rotatably mounted on the axle housing for rotation about a central longitudinal axis thereof, the wheel having a plurality of circumferentially disposed pads secured on its periphery to extend radially outwardly therefrom and the axle housing having a cleaning bar assembly secured thereto and comprising a one-piece U-shaped frame having an inboard support bar disposed transversely relative to the axis and secured to the axle housing, a pair of legs cantilevered

on the support bar to straddle the compactor wheel on either side thereof and disposed in parallel relationship relative to the axis, a plurality of cleaning bars secured to each of the legs and extending inwardly therefrom generally towards the axis and lying between the pads and coupling means at the free end of each of the legs for enabling attachment of the outboard support bar thereto.

The invention may thus provide an improved and multipurpose cleaning bar assembly for a compactor wheel. The coupling means are secured on the end of each of the legs for selectively attaching an outboard support bar thereon pursuant to applications wherein it is desirable to provide a box-like cleaning bar assembly for the compactor wheel.

One example of an assembly according to the invention will now be described with reference to the accompanying drawings in which:—

Figure 1 is a side elevational view of a compactor wheel having a cleaning bar assembly mounted adjacent thereto;

Figure 2 is a top plan view of the compactor wheel and cleaning bar assembly;

FIG. 3 is an enlarged view of the area of the cleaning bar assembly subscribed by circle III—III in FIG. 2; and

FIG. 4 is a sectional view taken in the direction of arrows IV—IV in FIG. 2.

Referring to FIGS. 1 and 2, a compactor wheel 10 is rotatably mounted on an axle housing 11, suitably secured to a frame of a vehicle (not shown), for rotation about a central longitudinal axis X thereof. The compactor wheel is adapted to be driven by an axle 12 rotatably mounted in the housing and operatively connected to the compactor wheel by a suitable gear train (not shown) fully disclosed in U.S. Patent No. 3,633,471. A plurality of circumferentially disposed pads 13 are secured on the periphery of the compactor wheel to extend

radially outwardly therefrom for soil compacting purposes.

This invention relates to a cleaning bar assembly 14 secured to axle housing 11 for continuously engaging and cleaning materials which may tend to lodge between pads 13. The cleaning bar assembly comprises an integrally formed one-piece U-shaped frame 14 having an inboard support bar 15 disposed transversely relative to axis X. Referring to FIG. 4, the support bar is secured intermediate its ends to axle housing 11 by a plurality of bolts 16 and 17, the latter bolts securing a U-shaped strap 18 (not fully shown) beneath the axle housing.

A pair of legs 19 and 20 are integrally secured in cantilevered relationship on opposite ends of support bar 15 to straddle the compactor wheel on either side thereof. The legs, disposed in parallel relationship relative to axis X, have a plurality of cleaning bars 21 secured thereon. The cleaning bars extend inwardly from the legs, towards axis X so as to pass between respective pads 13 for cleaning purposes on rotation of the wheel.

Referring to FIG. 1, each cleaning bar is preferably disposed at an acute angle α relative to a horizontally disposed imaginary horizontal plane P, preferably selected from the range of from 5° to 25°. In addition to being downwardly inclined, the cleaning bars are disposed below axis X to further aid in dispelling materials downwardly and away from the compactor wheel. It should be noted that the disposition of the cleaning bars on either side of the compactor wheel will function to clean the same regardless of the direction of rotation thereof.

In certain compacting operations and for certain vehicles it may prove desirable to utilize a box-like cleaning bar assembly in lieu of the U-shaped one described above. In such applications, an outboard support bar 22 can be attached to the outer ends of legs 19 and 20 expeditiously. Referring to FIG. 3, a coupling means 23 is secured on the end of each of the legs in parallel relationship relative to axis X to facilitate such expeditious attachment of the outboard support bar thereon and to provide a coupling therebetween which exhibits a high degree of structural integrity.

Each coupling means comprises a vertically spaced pair of annular support members 24 each having its inner end secured to leg 19, for example, by an annular weld 25. The outer end of member 24 has a frusto-conically shaped support portion 26 formed integrally thereon and adapted to self-center within a like-shaped recess 27 formed in an opposed end of an L-shaped member 28. The latter member is integrally secured to a respective end of support bar 22 by an annular weld 29.

Thus, upon tightening of a bolt 30, threadably mounted in threads 31 formed internally in member 24, member 28 will be drawn tightly onto conically shaped support portion 26 of the coupling means. Referring to FIGS. 1 and 2, a bracket 32, secured on outboard support bar 22 intermediate its ends, is suitably mounted on a trunnion 33. The trunnion may be suitably secured to the final drive cover of compactor wheel 10 to provide further support for the outboard support bar as well as for cleaning bar assembly 14.

WHAT WE CLAIM IS:—

1. A compactor wheel assembly for a vehicle, the assembly including an axle housing and a compactor wheel rotatably mounted on the axle housing for rotation about a central longitudinal axis thereof, the wheel having a plurality of circumferentially disposed pads secured on its periphery to extend radially outwardly therefrom and the axle housing having a cleaning bar assembly secured thereto and comprising a one-piece U-shaped frame having an inboard support bar disposed transversely relative to the axis and secured to the axle housing, a pair of legs cantilevered on the support bar to straddle the compactor wheel on either side thereof and disposed in parallel relationship relative to the axis, a plurality of cleaning bars secured to each of the legs and extending inwardly therefrom generally towards the axis and lying between the pads and coupling means at the free end of each of the legs for enabling attachment of an outboard support bar thereto.

2. An assembly according to claim 1 wherein each of the coupling means comprises an annular support member having its inner end secured to a respective leg and having an axis substantially parallel to the wheel axis.

3. An assembly according to claim 2 wherein the support member is secured to the leg by an annular weld.

4. An assembly according to claim 2 or claim 3 wherein an outer end of the support member is frusto-conically shaped.

5. An assembly according to any one of claims 2 to 4, wherein the support member includes an internal screw-threaded aperture.

6. An assembly according to claim 5, further comprising an outboard support bar attached to each of the coupling means by a bolt threadably engaging the threads in the support members.

7. An assembly according to claim 6 wherein each end of the support bar is formed with an L-shaped member secured thereto and wherein each of the bolts extends through a respective one of the L-shaped members.

8. An assembly according to claim 6 or 130

radially outwardly therefrom for soil compacting purposes.

This invention relates to a cleaning bar assembly 14 secured to axle housing 11 for continuously engaging and cleaning materials which may tend to lodge between pads 13. The cleaning bar assembly comprises an integrally formed one-piece U-shaped frame 14 having an inboard support bar 15 disposed transversely relative to axis X. Referring to FIG. 4, the support bar is secured intermediate its ends to axle housing 11 by a plurality of bolts 16 and 17, the latter bolts securing a U-shaped strap 18 (not fully shown) beneath the axle housing.

A pair of legs 19 and 20 are integrally secured in cantilevered relationship on opposite ends of support bar 15 to straddle the compactor wheel on either side thereof. The legs, disposed in parallel relationship relative to axis X, have a plurality of cleaning bars 21 secured thereon. The cleaning bars extend inwardly from the legs, towards axis X so as to pass between respective pads 13 for cleaning purposes on rotation of the wheel.

Referring to FIG. 1, each cleaning bar is preferably disposed at an acute angle α relative to a horizontally disposed imaginary horizontal plane P, preferably selected from the range of from 5° to 25°. In addition to being downwardly inclined, the cleaning bars are disposed below axis X to further aid in dispelling materials downwardly and away from the compactor wheel. It should be noted that the disposition of the cleaning bars on either side of the compactor wheel will function to clean the same regardless of the direction of rotation thereof.

In certain compacting operations and for certain vehicles it may prove desirable to utilize a box-like cleaning bar assembly in lieu of the U-shaped one described above. In such applications, an outboard support bar 22 can be attached to the outer ends of legs 19 and 20 expeditiously. Referring to FIG. 3, a coupling means 23 is secured on the end of each of the legs in parallel relationship relative to axis X to facilitate such expeditious attachment of the outboard support bar thereon and to provide a coupling therebetween which exhibits a high degree of structural integrity.

Each coupling means comprises a vertically spaced pair of annular support members 24 each having its inner end secured to leg 19, for example, by an annular weld 25. The outer end of member 24 has a frusto-conically shaped support portion 26 formed integrally thereon and adapted to self-center within a like-shaped recess 27 formed in an opposed end of an L-shaped member 28. The latter member is integrally secured to a respective end of support bar 22 by an annular weld 29.

Thus, upon tightening of a bolt 30, threadably mounted in threads 31 formed internally in member 24, member 28 will be drawn tightly onto conically shaped support portion 26 of the coupling means. Referring to FIGS. 1 and 2, a bracket 32, secured on outboard support bar 22 intermediate its ends, is suitably mounted on a trunnion 33. The trunnion may be suitably secured to the final drive cover of compactor wheel 10 to provide further support for the outboard support bar as well as for cleaning bar assembly 14.

WHAT WE CLAIM IS:—

1. A compactor wheel assembly for a vehicle, the assembly including an axle housing and a compactor wheel rotatably mounted on the axle housing for rotation about a central longitudinal axis thereof, the wheel having a plurality of circumferentially disposed pads secured on its periphery to extend radially outwardly therefrom and the axle housing having a cleaning bar assembly secured thereto and comprising a one-piece U-shaped frame having an inboard support bar disposed transversely relative to the axis and secured to the axle housing, a pair of legs cantilevered on the support bar to straddle the compactor wheel on either side thereof and disposed in parallel relationship relative to the axis, a plurality of cleaning bars secured to each of the legs and extending inwardly therefrom generally towards the axis and lying between the pads and coupling means at the free end of each of the legs for enabling attachment of an outboard support bar thereto.

2. An assembly according to claim 1 wherein each of the coupling means comprises an annular support member having its inner end secured to a respective leg and having an axis substantially parallel to the wheel axis.

3. An assembly according to claim 2 wherein the support member is secured to the leg by an annular weld.

4. An assembly according to claim 2 or claim 3 wherein an outer end of the support member is frusto-conically shaped.

5. An assembly according to any one of claims 2 to 4, wherein the support member includes an internal screw-threaded aperture.

6. An assembly according to claim 5, further comprising an outboard support bar attached to each of the coupling means by a bolt threadably engaging the threads in the support members.

7. An assembly according to claim 6 wherein each end of the support bar is formed with an L-shaped member secured thereto and wherein each of the bolts extends through a respective one of the L-shaped members.

8. An assembly according to claim 6 or 130



(22) (28)

claim 7, further comprising a trunnion secured to the compactor wheel and a bracket secured to the outboard support bar intermediate the ends thereof and
5 mounted on said trunnion.

9. An assembly according to claim 1, substantially as described with reference to the accompanying drawings.

10. A vehicle including an assembly according to any one of claims 1 to 9.

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