

PATENT SPECIFICATION

(11) 1 469 611

8
9

1 469 611

- (21) Application No. 276/75 (22) Filed 3 Jan. 1975
(31) Convention Application No. 431 100
(32) Filed 7 Jan. 1974 in
(33) United States of America (US)
(44) Complete Specification published 6 April 1977
(51) INT CL² E02F 9/00//B62J 15/00
(52) Index at acceptance
E1F 10 22
B7J 82D3 82DX



(54) EARTHWORKING VEHICLES

(71) We, CATERPILLAR TRACTOR CO., a corporation organised and existing under the laws of the State of California, United States of America, of 100 N. E. Adams Street, Peoria, State of Illinois 61602, 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:—

Modern earthworking vehicles, such as wheeled, shovelling vehicles, normally comprise fender constructions which provide substantial protection to the operator and vehicle components in the event that the wheels kick up debris during an earthworking operation. In addition, the advent of track belts and the like on the wheels dictates the need for heavily constructed fenders upon the remote possibility that the track belts would break. Conventional fenders normally do not provide such full protection while yet providing the vehicle's operator with good visibility. In addition, the forward portion of a conventional fender is normally subjected to the greatest potential damage and cannot be replaced unless the entire fender is so replaced.

An object of this invention is to overcome the above briefly described problems by providing an economical and compact fender for an earthworking vehicle which exhibits a high degree of structural integrity, does not unduly impair an operator's vision and is adapted to be repaired expeditiously.

According to the invention we provide an earthworking vehicle comprising a frame having a pair of laterally spaced ground engaging wheels rotatably mounted on a front end thereof and an operator's cab mounted on said vehicle, rearwardly of said wheels, said vehicle including fenders associated with the wheels, each fender comprising a rearward portion mounted on a side of said frame to extend at least generally vertically downwardly from above an associated one of said wheels a substantial distance be-

hind said wheel in covering relationship therewith and an upper portion secured to said rearward portion to extend at least generally horizontally towards the front of said vehicle to substantially cover the top of said wheel, said upper portion including a forward section extending forwardly in cantilevered relationship from said upper portion and constituting a reinforced open frame construction positioned to permit a substantially unobstructed view along an imaginary line of sight, extending from the operator's cab towards the front end of said vehicle in approximate tangential relationship with respect to said wheel.

Preferably the forward section is detachably mounted on the upper portion of the fender by releasable fastening means to facilitate replacement thereof.

Attention is drawn to our co-pending U.K. patent application No. 36025/76, serial No. 1469612, which is a divisional of the present application and which is also concerned with earthworking vehicles.

Other features of this invention will become apparent from the following description and accompanying drawings wherein:—

FIG. 1 is a side elevational view of an earthmoving vehicle according to the invention.

FIG. 2 is a top plan view of a front portion of the vehicle of Fig. 1;

FIG. 3 is an isometric view illustrating a fender in covering relationship relative to a road wheel of the vehicle;

FIG. 4 is a top plan view of a forward section of the fender; and

FIG. 5 is a sectional view of the fender, taken in the direction of arrows V—V in FIG. 3.

Referring to Fig. 1, an earthmoving vehicle 10 comprises a front frame 11 having a pair of laterally spaced ground engaging road wheels 12 rotatably mounted on a front end thereof. An operator's cab 13 is mounted on the vehicle, rearwardly of the wheels, to permit the operator to have a clear line of vision over and alongside the

roadwheel, as depicted by imaginary line 14. A fender for association with a road wheel 12 comprises a rearward portion 15 secured on a side of frame 11 and an upper portion 16 secured to the side portion and partially attached to the frame.

The fender's rearward portion extends at least generally vertically downwardly from above a respective road wheel 12 a substantial distance behind such wheel in covering relationship therewith. The fender's rearward portion 15 comprises sections 17 and 18 (FIG. 3) welded together and detachably mounted on frame 11 by bolts 19. The fender's upper portion extends at least generally horizontally towards the front of the vehicle to substantially cover the wheel.

The fender's upper portion comprises a rearward section 20 welded or otherwise suitably secured to section 18 and also bolted onto the frame by bolts 19. As shown in Fig. 5, section 20, as well as sections 17 and 18, comprises an inverted U-shaped cover plate 21 having downwardly extending inner and outer flanges 22 and 23, respectively. Angle bars 24 and 25 are respectively secured at their edges to the underside of the cover plate and the flanges to form a rigid, reinforced box section at the inner and outer corners of each section 17, 18 and 20.

A plurality of longitudinal spaced and inverted U-shaped reinforcing members 26, disposed between angle bars 24 and 25, are welded to the underside of the cover plate. A bottom plate 27 extends between and is secured to the angle bars. Inner flange 22 of the cover plate is welded to a mounting plate 28, bolted to frame 11 by bolts 19.

Referring to Fig. 4, upper portion 16 further comprises a forward section 29 extending forwardly in cantilevered relationship thereon. The forward section extends forwardly from approximately above the rotational axis *R* of wheel 12 and terminates at its forward end above the front of wheel 12. The forward section is detachably mounted on section 20 by releasable fastening means, such as bolts 30.

As further shown in Figs. 1 and 4, the forward section constitutes a reinforced open frame construction positioned to permit substantially unobstructed view along an imaginary line of vision 14, extending from operator's cab 13 towards a front end of a vehicle in approximate tangential relationship with respect to wheel 12. The forward section comprises a series of integral box sections 31, 32, 33, 34 and 35 suitably welded together. Forwardly disposed box section 32 is secured between the forward ends of laterally spaced box sections 31 and 33.

Intermediate pair of box sections 34 and 35

have their forward ends secured to a respective box section 31 or 33. Box sections 34 and 35 converge rearwardly towards and have their rearward ends secured to a mounting plate 36 as do the rearward ends of box sections 31 and 33. A plate 36a is secured to the bottoms of the box sections 31, 33, 34 and 35. The mounting plate 36 and plate 36a are bolted to a forward end of section 20 by bolts 30 and 30a.

As mentioned above, the disposition of the fender's forward section 29 substantially covers the top of wheel 12 and also permits a substantially unobstructed view along line of vision 14 from the operator's cab (FIG. 1). Should such forward section be damaged by impact with a flying object, such as a broken belt 37 of wheel 12 (FIG. 3), the forward section would tend to bend upwardly to guide the broken track belt forwardly and away from operator's cab 13. Any portion of a broken belt which may be thrown upwardly and rearwardly of forward section 29 would be positively arrested by fender sections 17, 18 and 20. The damaged forward section can be replaced expeditiously by merely releasing bolts 30. Likewise, the entire fender may be replaced, if so desired, by merely removing and replacing bolts 19.

WHAT WE CLAIM IS:—

1. An earthworking vehicle comprising a frame having a pair of laterally spaced ground engaging wheels rotatably mounted on a front end thereof and an operator's cab mounted on said vehicle, rearwardly of said wheels, said vehicle including fender's associated with the wheels, each fender comprising a rearward portion mounted on a side of said frame to extend at least generally vertically downwardly from above an associated one of said wheels a substantial distance behind said wheel in covering relationship therewith and an upper portion secured to said rearward portion to extend at least generally horizontally towards the front of said vehicle to substantially cover the top of said wheel, said upper portion including a forward section extending forwardly in cantilevered relationship from said upper portion, and constituting a reinforced open frame construction positioned to permit a substantially unobstructed view along an imaginary line of sight, extending from the operator's cab towards the front end of said vehicle in approximate tangential relationship with respect to said wheel.

2. A vehicle as claimed in claim 1 wherein the rearward portion and a rearward section of the upper portion of said fender are integrally secured together and detachably mounted on said frame by releasable fastening means.

3. A vehicle as claimed in claim 2 wherein the rearward portion of said fender com-

roadwheel, as depicted by imaginary line 14. A fender for association with a road wheel 12 comprises a rearward portion 15 secured on a side of frame 11 and an upper portion 16 secured to the side portion and partially attached to the frame.

The fender's rearward portion extends at least generally vertically downwardly from above a respective road wheel 12 a substantial distance behind such wheel in covering relationship therewith. The fender's rearward portion 15 comprises sections 17 and 18 (FIG. 3) welded together and detachably mounted on frame 11 by bolts 19. The fender's upper portion extends at least generally horizontally towards the front of the vehicle to substantially cover the wheel.

The fender's upper portion comprises a rearward section 20 welded or otherwise suitably secured to section 18 and also bolted onto the frame by bolts 19. As shown in Fig. 5, section 20, as well as sections 17 and 18, comprises an inverted U-shaped cover plate 21 having downwardly extending inner and outer flanges 22 and 23, respectively. Angle bars 24 and 25 are respectively secured at their edges to the underside of the cover plate and the flanges to form a rigid, reinforced box section at the inner and outer corners of each section 17, 18 and 20.

A plurality of longitudinal spaced and inverted U-shaped reinforcing members 26, disposed between angle bars 24 and 25, are welded to the underside of the cover plate. A bottom plate 27 extends between and is secured to the angle bars. Inner flange 22 of the cover plate is welded to a mounting plate 28, bolted to frame 11 by bolts 19.

Referring to Fig. 4, upper portion 16 further comprises a forward section 29 extending forwardly in cantilevered relationship thereon. The forward section extends forwardly from approximately above the rotational axis R of wheel 12 and terminates at its forward end above the front of wheel 12. The forward section is detachably mounted on section 20 by releasable fastening means, such as bolts 30.

As further shown in Figs. 1 and 4, the forward section constitutes a reinforced open frame construction positioned to permit substantially unobstructed view along an imaginary line of vision 14, extending from operator's cab 13 towards a front end of a vehicle in approximate tangential relationship with respect to wheel 12. The forward section comprises a series of integral box sections 31, 32, 33, 34 and 35 suitably welded together. Forwardly disposed box section 32 is secured between the forward ends of laterally spaced box sections 31 and 33.

Intermediate pair of box sections 34 and 35

have their forward ends secured to a respective box section 31 or 33. Box sections 34 and 35 converge rearwardly towards and have their rearward ends secured to a mounting plate 36 as do the rearward ends of box sections 31 and 33. A plate 36a is secured to the bottoms of the box sections 31, 33, 34 and 35. The mounting plate 36 and plate 36a are bolted to a forward end of section 20 by bolts 30 and 30a.

As mentioned above, the disposition of the fender's forward section 29 substantially covers the top of wheel 12 and also permits a substantially unobstructed view along line of vision 14 from the operator's cab (FIG. 1). Should such forward section be damaged by impact with a flying object, such as a broken belt 37 of wheel 12 (FIG. 3), the forward section would tend to bend upwardly to guide the broken track belt forwardly and away from operator's cab 13. Any portion of a broken belt which may be thrown upwardly and rearwardly of forward section 29 would be positively arrested by fender sections 17, 18 and 20. The damaged forward section can be replaced expeditiously by merely releasing bolts 30. Likewise, the entire fender may be replaced, if so desired, by merely removing and replacing bolts 19.

WHAT WE CLAIM IS:—

1. An earthworking vehicle comprising a frame having a pair of laterally spaced ground engaging wheels rotatably mounted on a front end thereof and an operator's cab mounted on said vehicle, rearwardly of said wheels, said vehicle including fender's associated with the wheels, each fender comprising a rearward portion mounted on a side of said frame to extend at least generally vertically downwardly from above an associated one of said wheels a substantial distance behind said wheel in covering relationship therewith and an upper portion secured to said rearward portion to extend at least generally horizontally towards the front of said vehicle to substantially cover the top of said wheel, said upper portion including a forward section extending forwardly in cantilevered relationship from said upper portion, and constituting a reinforced open frame construction positioned to permit a substantially unobstructed view along an imaginary line of sight, extending from the operator's cab towards the front end of said vehicle in approximate tangential relationship with respect to said wheel.

2. A vehicle as claimed in claim 1 wherein the rearward portion and a rearward section of the upper portion of said fender are integrally secured together and detachably mounted on said frame by releasable fastening means.

3. A vehicle as claimed in claim 2 wherein the rearward portion of said fender com-





10
11

prises a pair of sections integrally secured together, each of said pair of sections and said rearward section being detachably mounted on said frame by said releasable fastening means.

4. A vehicle as claimed in claim 3 wherein each of said pair of sections and said rearward section are detachably mounted on said frame by said releasable fastening means.

5. A vehicle as claimed in claim 1, 2 or 3 wherein said rearward portion and said rearward section each comprise an inverted U-shaped cover plate having downwardly extending inner and outer flanges and an angle bar having its edges respectively secured to an underside of said cover plate and to a respective one of said flanges to form a reinforced box section thereat.

6. A vehicle as claimed in claim 5 wherein said rearward portion and said rearward section further comprises a bottom plate extending between and secured to said flanges and said angle bars.

7. A vehicle as claimed in claim 6 wherein said rearward portion and said rearward section further comprise a reinforcing member disposed between said angle bars and secured between said cover and bottom plates.

8. A vehicle as claimed in any preceding claim wherein the forward section of said upper portion extends forwardly from approximately above the rotational axis of

said wheel and terminates at its forward end above the front of said wheel.

9. A vehicle as claimed in any preceding claim wherein said forward section is detachably mounted on a rearward section of said upper portion by releasable fastening means.

10. A vehicle as claimed in any preceding claim wherein the forward section of said upper portion comprises a pair of laterally spaced box sections and a forwardly disposed box section secured between forward ends of said laterally spaced box sections.

11. A vehicle as claimed in claim 10 wherein said forward section further comprises a mounting plate secured to rearward ends of said laterally spaced box sections and a pair of intermediate box sections having their forward ends secured to a respective laterally spaced box section and converging rearwardly towards and having their rearward ends secured to said mounting plate.

12. An earthworking vehicle substantially as described with reference to the accompanying drawings.

For the Applicants,
FRANK B. DEHN & CO.,
Chartered Patent Agents,
Imperial House,
15/19 Kingsway,
London, WC2B 6UZ.