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(21) Application No. 52537/76 (22) Filed 16 Dec. 1976
 (31) Convention Application No. 674783 (32) Filed 8 Apr. in
 (33) United States of America (US)
 (44) Complete Specification Published 20 Feb. 1980
 (51) INT. CL. ³ B60R 27/00
 B60S 5/00
 (52) Index at Acceptance
 B7B 341 WL
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(54) VEHICLE AUXILIARY COMPONENTS

(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. 5 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 vehicles and in particular to the positioning of auxiliary components on vehicles.

15 In a conventional vehicle, an engine is provided for driving the wheels, etc. through a transmission. A lubricating system is conventionally provided which may include auxiliary components of the engine, such as lubricant filters, a filler tube having an inlet for delivering lubricant to the lubricating system, and an engine oil quick-fill duct having an inlet for quickly delivering lubricant to the engine. A dipstick may be provided with a manipulator portion for selectively determining the level of lubricant in the system.

20 It is also conventional in such engines to provide an air filter for cleaning the air prior to its delivery to the engine for combustion of the fuel therein. Similarly, a fuel filter may be provided for filtering the fuel prior to its delivery to the engine.

25 It is also usual to provide a filter for the transmission oil and a filter for the hydraulic control system oil.

30 Usually the different auxiliary components are mounted at various positions and often by suitable securing means to different portions of the engine or other vehicle structure. Such components are usually tested prior to installation in the vehicle.

35 In some vehicles certain of the auxiliary components may be adjacently disposed as a result of the independently determined positions for the different primary components.

According to the invention a vehicle has an engine in an engine compartment; a transmission; a lubricating system; and a plurality of auxiliary components including an engine lubricant filter, a transmission lubricant filter, a hydraulic control system fluid filter, a filler tube having an inlet for delivering lubricant to the lubricating system, a dipstick having a manipulating portion for indicating the quantity of lubricant in the lubricating system, an air filter for cleaning air to be delivered to the engine, and a fuel filter; at least a majority of the said auxiliary components being mounted in a servicing compartment distinct from the engine compartment, the servicing compartment having a selectively positionable closure element for providing access to the auxiliary components through an opening in the servicing compartment.

40 A number of the auxiliary components may be mounted to a common support, such as a bracket, permitting the facilitated pre-assembly thereof, bench testing of the components, and facilitated installation in the vehicle within the servicing enclosure.

45 The components disposed in the servicing enclosure may include components of the lubricating system of both the engine and transmission, the air filter, and the fuel filter. Similarly, the transmission oil filter may be provided in the enclosure.

50 One example of a vehicle according to the invention will now be described with reference to the accompanying drawings.

55 FIGURE 1 is a side elevation of a vehicle having a component assembly embodying the invention;

60 FIGURE 2 is an enlarged vertical section taken substantially along the line II-II of Figure 1; and

65 FIGURE 3 is a fragmentary vertical elevation taken substantially along the line III-III of Figure 2.

70 In the exemplary embodiment of the invention as disclosed in the drawing, a vehi-

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cle generally designated 10 is illustrated as a loader vehicle having an engine generally designated 11 carried on a frame generally designated 12 movably supported on a plurality of wheels 13. The vehicle may be provided with earthmoving and handling structure, such as a bulldozer blade 14. The illustrative vehicle is exemplary only, it being understood that the invention is adapted for use with a wide range of vehicles. The vehicle has a transmission 15 for selectively controlling the driving of the vehicle. More specifically, an enclosure portion generally designated 16 of the vehicle is arranged to define a servicing enclosure generally designated 17 in which the auxiliary components are disposed.

Referring now more specifically to Figures 2 and 3, the vehicle component assembly generally designated 18 may include a plurality of auxiliary component structures as conventionally utilized in such vehicles. Such structures include one or more engine oil filters 19, a hydraulic control system oil filter 20, a transmission oil filter 21, an engine air filter 22, and a fuel filter 23.

Additionally, the lubricating system of such engines has an oil fill duct 24 having an inlet 25 through which oil may be added to the lubricating system. A quick-fill duct 26 may be provided having an inlet 27 through which lubricating oil may be quickly delivered to the engine. Additionally, a dipstick device 28 is provided having a manipulating portion 29 for selectively determining the level of lubricant in the lubricating system.

The enclosure portion 16, as shown in Figure 3, may be provided with a selectively removable door 30 for providing controlled access to the servicing enclosure 17.

The present invention comprehends a novel arrangement of the vehicle structure wherein a majority of the auxiliary components are assembled in the enclosure 17 to permit facilitated servicing by means of the improved accessibility provided by the localized assembly and facilitated access through the enclosure portion 16 upon removal of the closure door 30. More specifically, as shown in Figure 2, a plurality of the auxiliary components may be mounted on a common bracket 31 and, thus, supported within the enclosure 17 as a unit. Bracket 31 may be provided with suitable mounting portions 32 adapted to be secured to the enclosure portion 16 by suitable removable securing means, such as bolts 33.

In the illustrated embodiment, the engine oil filters 19, hydraulic control system oil filter 20, transmission oil filter 21, and air filter 22 may be mounted on the support bracket 31 to define a subassembly unit which may be readily rested as by bench testing prior to the installation thereof in the enclosure 17. The lubricating system components, such as filler duct inlet 25, quick-fill duct inlet 27, and dipstick handle 29 may be similarly commonly mounted in a lower portion of enclosure 17, as shown in Figure 2.

The fuel filter 23 may be carried on a separate bracket 34 mounted on the enclosure portion 16, as shown in Figure 2, so as to be disposed also within the enclosure 17.

The invention comprehends disposing a majority of the above discussed component structures within enclosure 17. Such disposition facilitates servicing and replacement of the components when desired. The mounting of a substantial number of the components on a common support further facilitates the original testing and installation thereof, permitting improved low cost manufacture of the vehicle while further providing for facilitated servicing, as discussed above.

By locating the means for introduction of lubricating oil to the system and for manually determining the level of lubricating oil in the system also in the enclosure 17, further improved servicing of the vehicle as a result of the further centralization of the vehicle components is effected.

WHAT WE CLAIM IS:-

1. A vehicle having an engine in an engine compartment; a transmission; a lubricating system; and a plurality of auxiliary components including an engine lubricant filter, a transmission lubricant filter, a hydraulic control system fluid filter, a filler tube having an inlet for delivering lubricant to the lubricating system, a dipstick having a manipulating portion for indicating the quantity of lubricant in the lubricating system, an air filter for cleaning air to be delivered to the engine, and a fuel filter; at least a majority of the said auxiliary components being mounted in a servicing compartment distinct from the engine compartment, the servicing compartment having a selectively positionable closure element for providing access to the auxiliary components through an opening in the servicing compartment. 95
2. A vehicle according to claim 1, wherein in a unitary support is provided carrying the engine lubricant filter and the air cleaner. 100
3. A vehicle according to claim 1, wherein a unitary support is provided carrying the engine lubricant filter and the hydraulic control system fluid filter. 105
4. A vehicle according to any one of claims 1 to 3, wherein a unitary support is provided carrying the engine lubricant filter, the air cleaner, and the hydraulic control system fluid filter. 110
5. A vehicle according to any one of claims 1 to 4, wherein the said auxiliary components further include an engine lubricant quick-fill duct having an inlet in the servicing enclosure. 115
6. A vehicle according to any one of claims 1 to 5, wherein the auxiliary compo- 120

nents further include at least one additional engine lubricant filter.

7. A vehicle according to claim 1, substantially as described with reference to the 5 accompanying drawings.

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Printed for Her Majesty's Stationery Office,
by Croydon Printing Company Limited, Croydon, Surrey, 1980.
Published by The Patent Office, 25 Southampton Buildings,
London, WC2A 1AY, from which copies may be obtained.



