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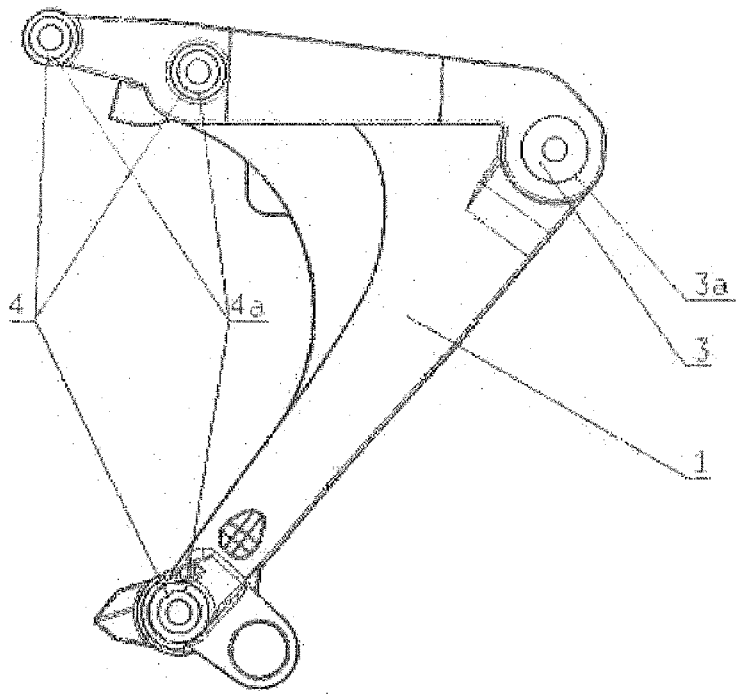
(54) Title: POLYMERIC ENGINE AND/OR GEARBOX BRACKET

FIGURE 1



(57) Abstract: The subject matter of the invention relates to the polymeric engine and/or gearbox bracket which fall within the scope of automotive industry and is used for supporting the engine and/or the gearbox. Brackets are usually manufactured by using different metals. According to the invention, the bracket is made of PA6 polymeric material reinforced by glass fibres. It enables to produce a lighter engine and/or gearbox bracket, while keeping all the other properties and characterises unchanged in comparison with the classic engine and/or gearbox brackets.

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POLYMERIC ENGINE AND/OR GEARBOX BRACKET

Subject matter of the invention

The subject matter of the invention is a polymeric engine and/or gearbox bracket which falls within the scope of automotive industry and is used for supporting the engine and/or the gearbox.

Known situation

The known solutions of the engine and/or gearbox bracket are versions made of different metals, such as iron and aluminium alloys. They are produced by casting technology, trimming of gating systems, heat treatment of the casting, artificial aging of casting and machining. In general, these brackets satisfy the functional requirements related to the carrying of the engine and/or the gearbox. But a technical problem which is not satisfactorily resolved is the one regarding their mass, considering that the automotive industry constantly requires lowering of the mass of some automotive parts, while at the same time the parts with lowered mass have to provide the same or even better characteristics, i.e., greater hardiness, higher temperature resistance, easier and cheaper manufacturing. The task and the scope of the invention is to conceive an engine and/or gearbox bracket which will preserve all characteristics of the engine and ensure the supporting function while having a lighter mass and providing the possibility of being manufactured in a simpler and cheaper way.

Description of the Invention

According to the invention, the engine and/or gearbox bracket is realized of a single part of polymeric material indicated PA6, which is nylon or polycaprolactam, reinforced with glass fibres. The PA6 is particularly distinguished by its high blow-out resistance and the simplicity of manufacture, while the use of glass fibres additionally contributes to the supplementary reinforcement of the bracket.

With the use of the said polymeric material and glass fibres, the engine and/or gearbox mass shall be reduced while function of supporting and the characteristics shall remain unchanged. The

construction and the shape of the bracket depend on the type of the vehicle and it is each time adapted to the type of the vehicle. The basic construction of the bracket is made of polymeric material reinforced with glass fibres with bushings provided for strengthening the fastening points of the bracket to the chassis and to the engine and/or gearbox. Fixing is performed by screwing, while the additional reinforcement of the fastening points due to the bushings prevents the formation of cracks in the bracket which could occur if the screwing were performed directly in the polymeric material. Considering that the engine construction is made of polymeric material and the manufacturing is carried out in a mould, the adjustment of the construction to each type of vehicle shall be faster, simpler and cheaper.

The invention shall be presented in detail on the picture no. 1.

The picture no.1 represents the engine and/or gearbox bracket in accordance with the invention

The bracket 1 is produced of one single part made of PA6, reinforced with glass fibbers, so the bracket 1 is fastened to the engine and/or gearbox with one part and to the chassis of the vehicle with two arms. The final shape of the bracket 1 is each and every time adapted to the type of the vehicle. On the sides the bracket 1 is fastened to the engine and/or gearbox it has holes in which to introduce the appropriate fixing bushings. The bushing can be made of different materials, priority being given to the aluminium ones. They have to withstand the given requirements for resistance to the standard temperature range and humidity impacting the engine and gearbox parts, and their lifetime should be adequate despite vibrations the bracket has to withstand. On the side where the bracket 1 shall be fastened to the engine and/or gearbox, the bushing 3 is to be introduced into the hole 3a of the bracket 1, and on the side where the bracket shall be fastened to the chassis of the vehicle the bushings 4 are to be introduced into the holes 4a of the bracket 1. Screwing of the bracket 1 is performed through the bushings 3 and 4. The bushings 3 and 4 are made of metal, so they enable to satisfy the screw prestress requirement and prevent cracks from forming in the bracket 1, which could occur if the screwing were performed directly in the polymeric material from which the bracket 1 is made.

The manufacturing of the bracket 1 is performed in a mould. According to the type of the vehicle, a metal mould shall be made with pre-defined positions of the holes 3a and 4a. The PA6

polymeric material is mixed with glass fibres, whereby a part by weight of fibres should be between 25 and 40 percent, the bushings 3 and 4 are to be manually introduced into the appropriate points 3a and 4a and the mixture is to be injected in a mould. Once the reaction is finished, i.e. after cooling on room temperature, the mould shall be opened and the bracket removed from the mould.

In this way, it is possible to produce the engine and/or gearbox bracket which is on average 5% lighter, while all the other properties and characteristics remain unchanged in comparison with the classic engine and/or gearbox brackets.

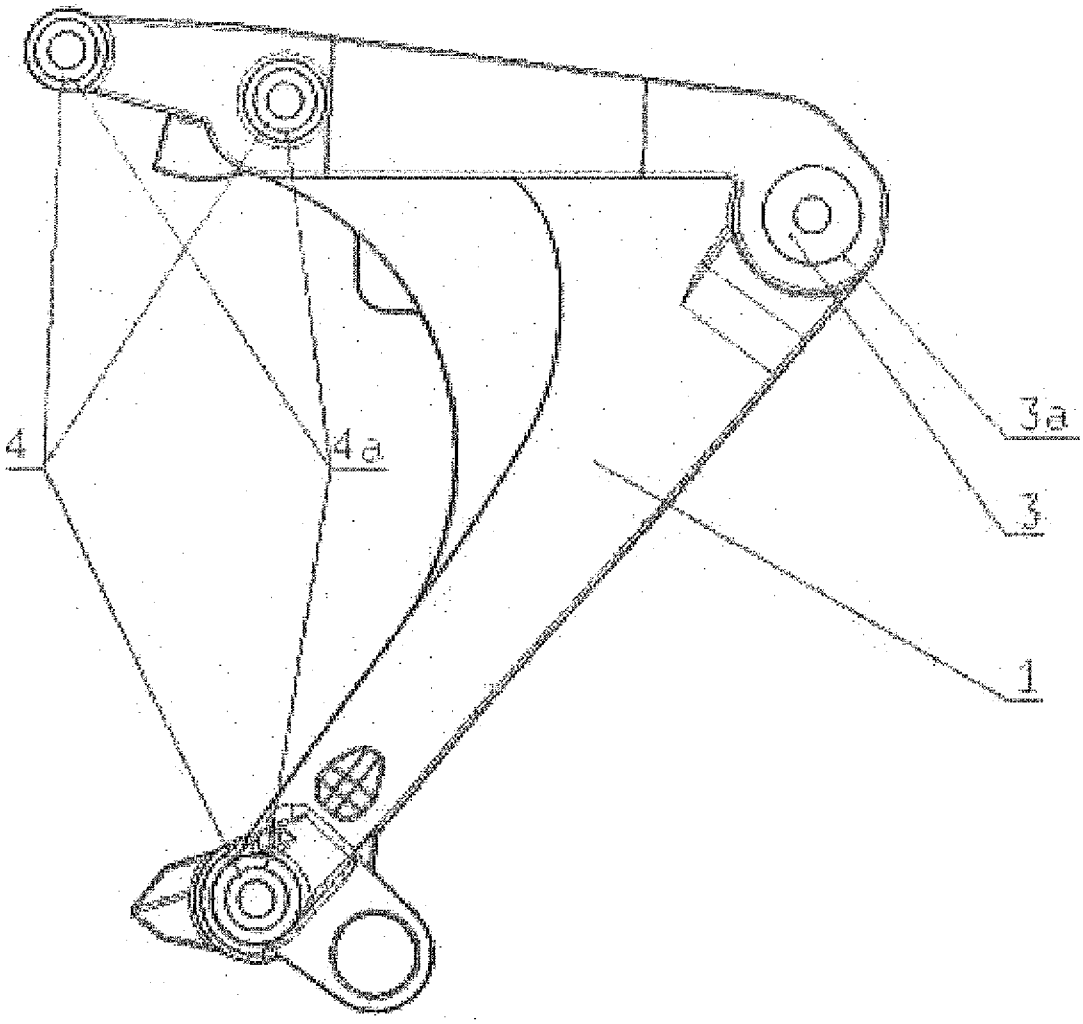
Claims

1. A polymeric engine and/or gearbox bracket characterized in that the bracket (1) is manufactured from one single part from polymeric material PA6, reinforced with glass fibres and on the fastening points of the bracket (1) to the chassis of the vehicle or to the engine and/or gearbox the bushing (3, 4) are provided for strengthening the fastening points.

2. A bracket according to claim 1 characterized in that the bracket (1) has holes (3a, 4a) on the sides where the bracket (1) is fastened to the engine and/or gearbox and to the chassis of the vehicle in which the bushings (3, 4) are introduced, whereby the bushings (3, 4) are made of metal, preferably of aluminium.

3. A process for the manufacturing of the bracket according to claims 1 and 2, characterized in that depending on the type of the vehicle, a metal mould is made with the pre-defined points of the bracket (1) where the holes (3a, 4a) are to be executed; the bushings (3, 4) are manually introduced into the appropriate points (3a, 4a); the polymeric material PA6 is mixed with glass fibres whereby a part by weight of fibres is between 25 and 40 percent, and the mixture injected in a mould; once the reaction is finished, the mould is opened.

FIGURE 1



INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER
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According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
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