PATENT SPECIFICATION

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Application Date (in United Kingdom): July 12, 1932. No. 19,705/32.

Complete Accepted: Nov. 23, 1933.

COMPLETE SPECIFICATION.

Improvements in or relating to the Mounting of Engines in Motor Vehicles.

We, LANCIA & C. FABBRICA AUTOMOBILI-TORINO-S.A., an Italian Company, of 99, via Monginevro, Turin, Italy, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

The invention relates to the mounting of the engine on the chassis of motor vehicles and has for its object to provide a device which prevents the vibrations of the engine from being transmitted to the vehicle chassis under all running conditions of the engine.

According to the invention, the engine is connected to the chassis by resilient and braked supports each forming a unitary resilient self-braking member consisting of a set of resilient laminæ with interleaved friction braking linings, said laminæ being responsive to bending stresses and being forced together with said interleaved friction braking linings where a respective displacement of adjacent laminæ occurs.

Several constructional forms of the invention are represented diagrammatically by way of example in the accompanying drawings, wherein;

Figure 1 is a side elevation of the portion of a vehicle chassis on which is mounted the engine,

Figure 2 is the corresponding plan view,

Figure 3 shows on a larger scale in longitudinal section the connection of the end of an engine resilient support member according to the invention with the engine,

Figure 4 is a similar cross-section of the connection of an engine resilient support member to the chassis, and

Figures 5 and 6 are views similar to Figure 2 of two modifications.

In the Figures, 1 denotes the longitudinal members of the vehicle chassis and 2 is the engine which, for mounting purposes, is provided with two cross-members 3 and 4.

In the example shown in Figures 1 and 2, each of the chassis longitudinal members 1 has fixed to it by any suitable means, for example by means of bolts 5 and clips 17, the middle portion of a set of laminæ 6, said set having its ends respectively attached each to one end of cross-members 3 and 4, for example by means of bolts 8 and clips 18.

As will be seen more particularly in Figures 3 and 4, the laminæ 6 of each set are spaced apart, and linings 13 and 14 are interleaved with said laminæ, as hereinafter described.

At each point of attachment of each resilient engine support member with the engine (Figure 3), said interleaved linings 13 are made of a material having a high coefficient of friction, such as leather, compressed cardboard, impregnated asbestos or the like, and the laminæ 6, which in these portions of the same move with respect to each other during the flexure or bending of the whole of the resilient support member, are forced together with said interleaved linings 13 by means of their attaching bolts 8, thus creating a frictional resistance against respective displacement of laminæ 6 to damp or brake the bending of said resilient support member.

At the place of attachment of each resilient support member to the chassis longitudinal member 1 (Figure 4), said laminæ 6 are fastened with each other by means of fastening bolts 5 and clips 17, and the interleaved linings 14 are made of a soft and resilient material such as rubber, rubbered fabric, cork or the like.

By such resilient and braked action of the support member due to the interengaging laminæ 6 and linings 13, the vibrations of the engine are absorbed and damped, while yielding linings 14 prevent the residual vibrations from being transmitted to the chassis.

The portions of the laminæ 6 where a respective displacement of the same occurs during bending of the resilient braked support and having friction braking linings 13 interleaved therewith, are forced together preferably by the aid of resilient members.

For this purpose in the illustrated example, each cross-member 3, 4 of the engine has at its points of interconnection

with the set of laminæ 6 (Figure 3) concentric seats wherein rubber cushions 7 are located, one of said cushions bearing on the laminæ set and the other being engaged by the bolt 8 attaching said set to the co-operating engine cross-bar 3 or 4. In the illustrated embodiment the inter-engagement of the parts is provided by a head 9 of bolt 8 which engages the lower section of the clip 18 embracing the laminæ 6 of the set, and by the nut 12 of bolt 8, which nuts bears on the adjacent cushion 7 through the intermediary of a spring 11 enclosed in a cap 10, said cushions 7 being perforated for the passage of the bolt 8 therethrough.

In the case in which the engine is integral with a change speed gear unit, it is preferable that the support of the end of the bear box on a cross-member 15 of the chassis is effected by means of a resilient connection, as indicated in Figures 1 and 2, in which 16 is a resilient blade fixed by one end in a cross-member 15 of the chassis and pivoted by its other end to a lug projecting from the opposite wall of the gear box.

The resilient mounting of the engine may be carried out in a different manner from that shown in Figures 1 and 2, it being merely essential that the engine is supported by members comprising resilient laminæ having means braking their respective motion where a respective movement of said laminæ occurs.

For example, the ends of the cross-members 3 and 4 of the engine may each be connected to an intermediate point of a self-braking resilient member of the described character. In this arrangement a rigid connection between the ends of the cross-members and the self-braking resilient member is effected in a manner similar to that shown in Figure 4, and a resilient connection between the ends of the self-braking resilient member and the chassis is effected in a manner similar to that shown in Figure 3, this arrangement being the reverse of that shown in Figures 1 to 4 as the engine bears on an intermediate portion of the self-braking resilient member and the ends of the latter on the chassis.

Figures 5 and 6 represent two further arrangements in which each set of laminæ 6 is connected to the chassis longitudinal member 1 by means of an end clip 17^1 in the conditions shown in Figure 4, and to the cross-member 3 or 4 of the engine by means of another end clip 18^1 in the conditions shown in Figure 3.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. An arrangement for the resilient mounting of the engine in motor vehicles, characterised in that the engine is connected to the chassis by resilient and braked supports each forming a unitary self-braking member comprising a set of resilient laminæ responsive to bending stresses and forced together with interleaved braking linings where a respective displacement of said laminæ occurs.

2. An arrangement as claimed in Claim 1, characterised in that in each set, the laminæ are spaced apart.

3. An arrangement as claimed in Claims 1 and 2, characterised in that linings of soft or yielding material are interleaved between said laminæ where said laminæ are fast to one of the parts interconnected by the laminæ set.

4. An arrangement as claimed in Claims 1 to 3, characterised in that where the resilient and braked support is connected to the engine said laminæ thereof are forced together with interleaved linings of a material having a high coefficient of friction, and where said resilient and braked support is connected with the vehicle frame said laminæ are fastened thereon with interleaved linings of soft or yielding material.

5. An arrangement as claimed in Claim 1 or 4, characterised in that said laminæ of each resilient and braked support are forced together with the interposition of elastic means such as rubber cushions, a rod which clamps said cushions with the aid of a spring being passed through the said cushions.

6. An arrangement as claimed in Claim 1, characterised in that the engine is supported at the ends of two sets of resilient and self-braking laminæ, each set being connected to the chassis at an intermediate point of the length of the said set.

7. An arrangement as claimed in Claim 1, in which the engine is integral with the change speed gear, characterised in that the latter is coupled to the vehicle chassis by means of a resilient coupling.

8. Arrangements for the resilient mounting of the engine in motor vehicles, substantially as described or substantially as shown in the accompanying drawings.

Dated this 12th day of July, 1932.

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Chartered Patent Agents.

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Fig. 1

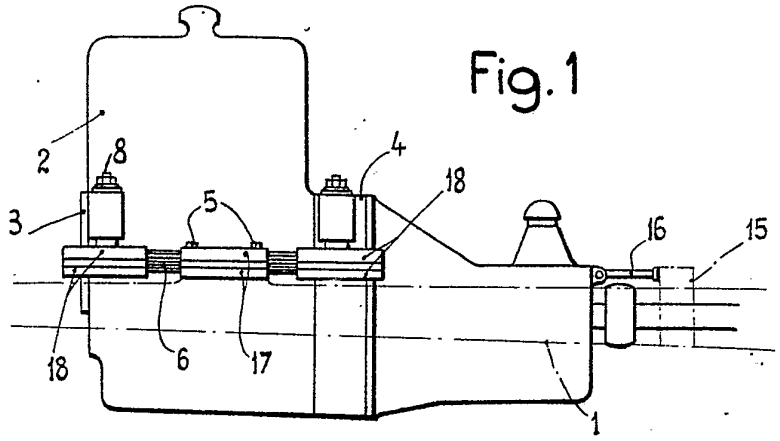


Fig. 2

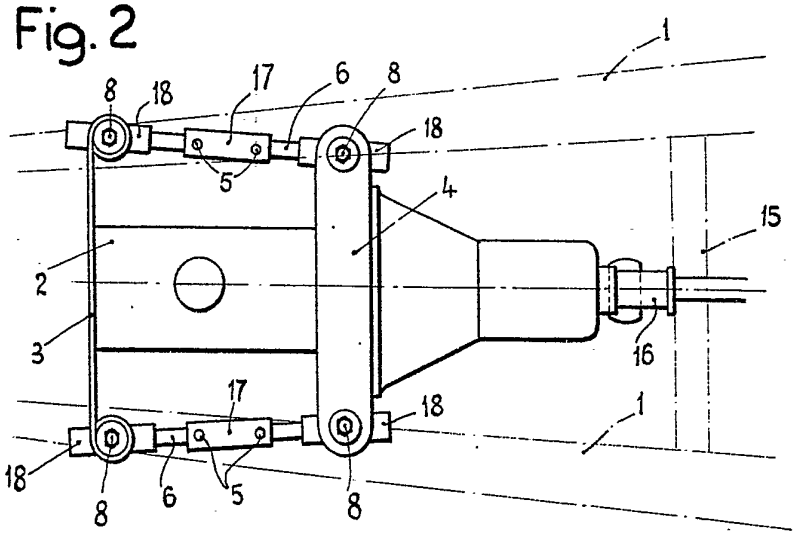


Fig. 3

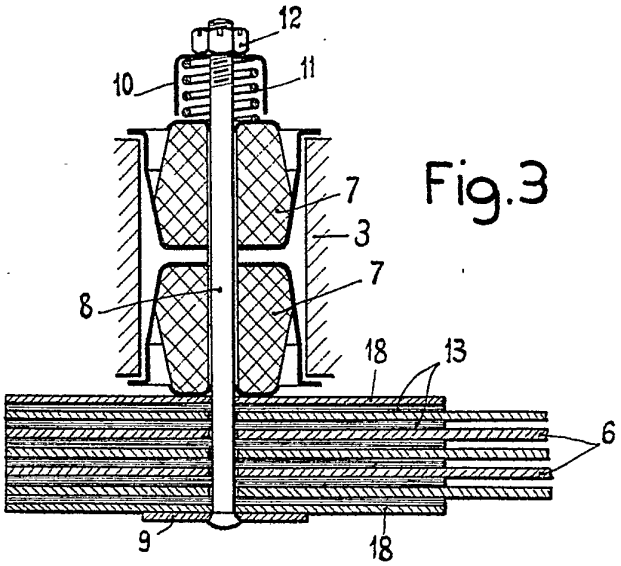


Fig. 4

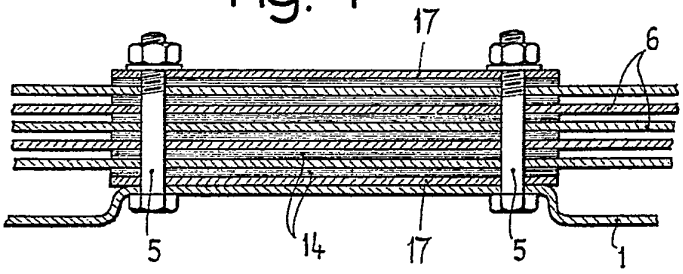


Fig. 5

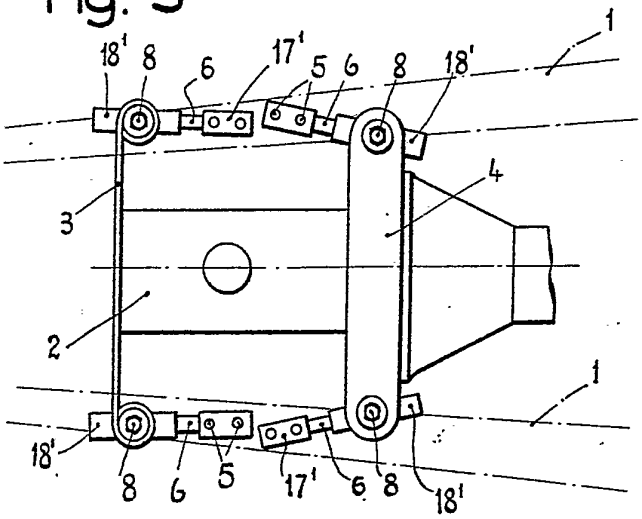
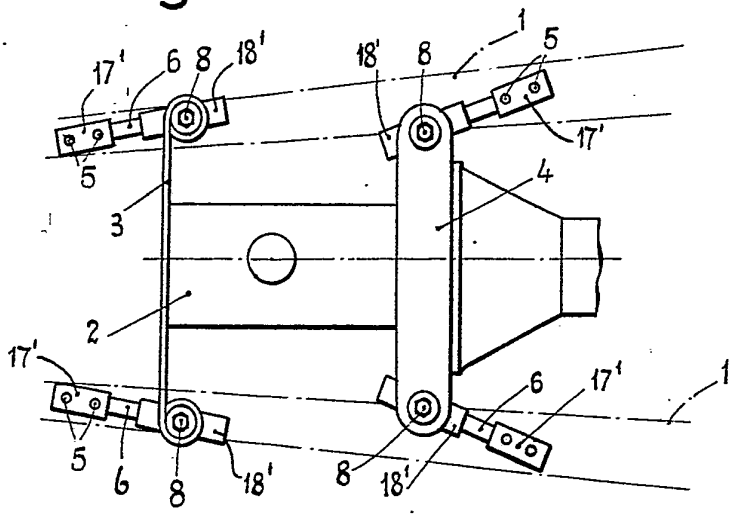


Fig. 6



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2 SHEETS

SHEET 1

SHEET 2

[This Drawing is a reproduction of the Original on a reduced scale.]

Fig. 1

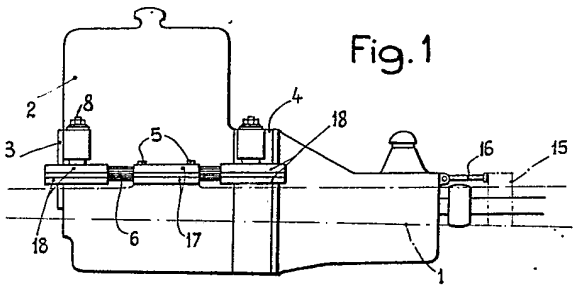


Fig. 2

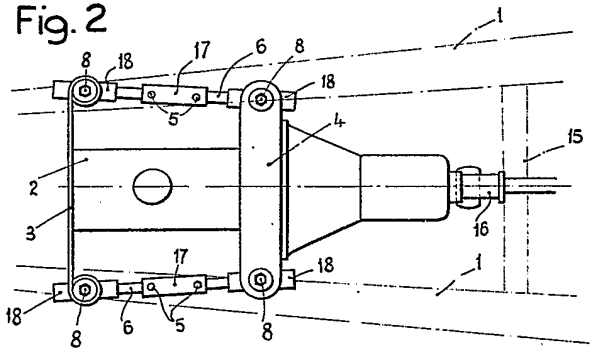


Fig. 3

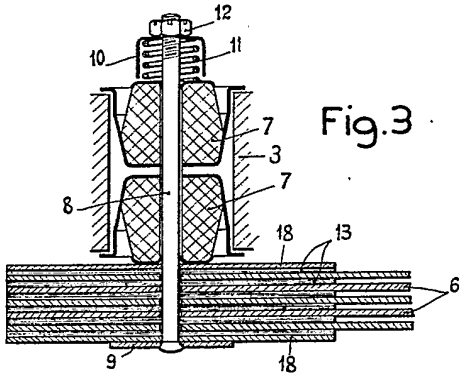


Fig. 4

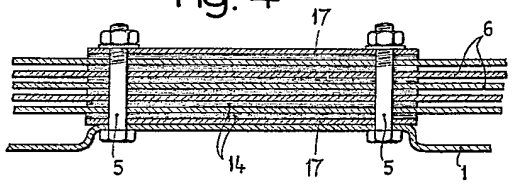


Fig. 5

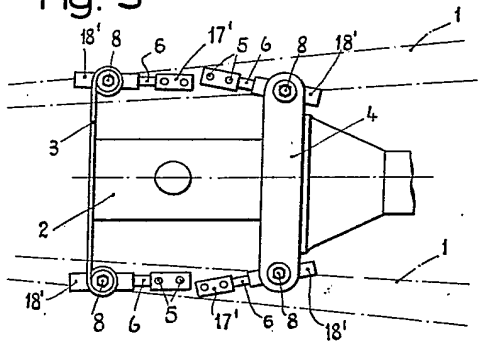
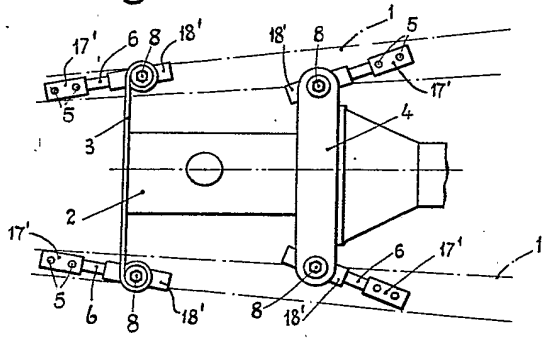


Fig. 6



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