Aug. 23, 1932. R. K. LEE 1,872,768

MOTOR MOUNTING

Filed Feb. 24, 1930

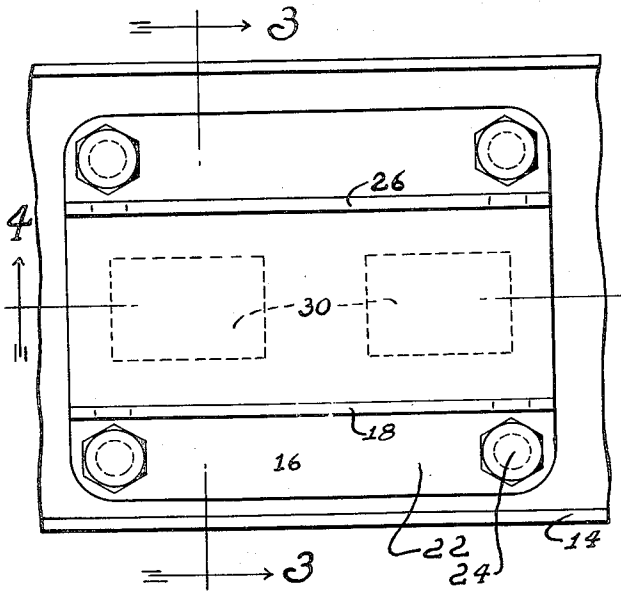


Fig. 2.

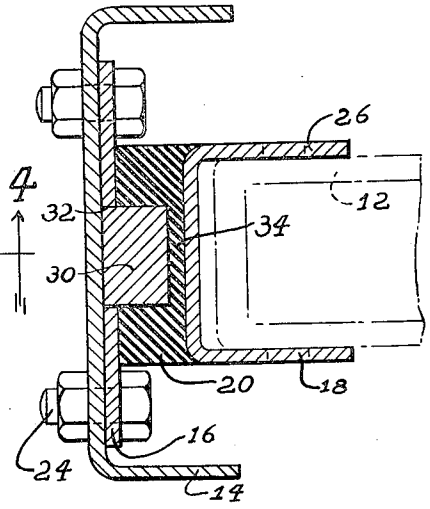


Fig. 3.

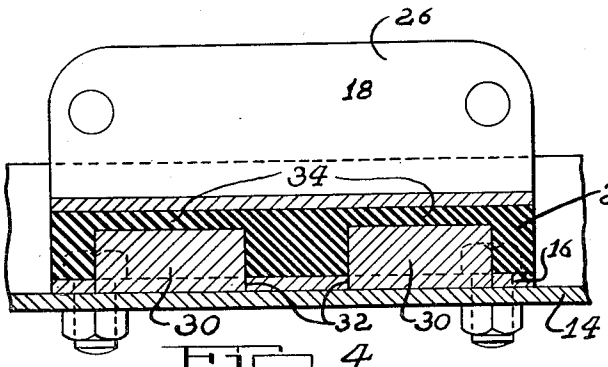


Fig. 4.

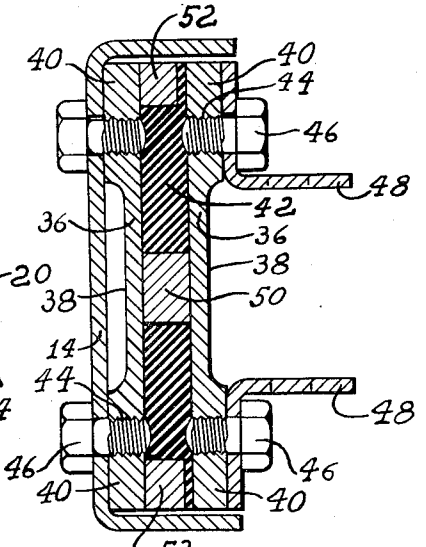


Fig. 5.

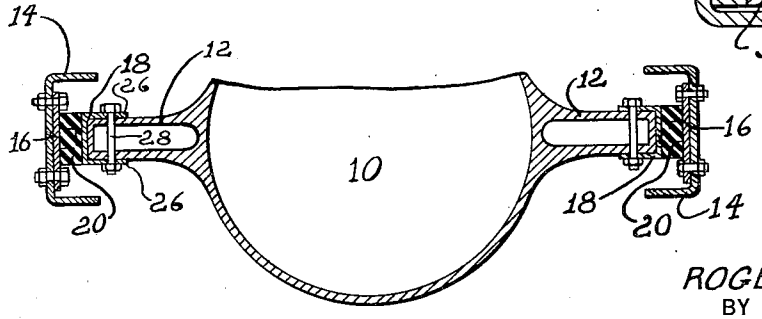


Fig. 1.

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1,872,768

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MOTOR MOUNTING

Application filed February 24, 1930. Serial No. 430,635.

This invention relates to a resilient support and more particularly to a mounting between an internal combustion engine and the side frame members of an automobile chassis.

An object of the invention is to provide a mounting in which there is a given rate of deflection in one direction between a support and a member to be supported.

Another object of the invention is to provide oppositely spaced members arranged in overlapping relation having a resilient material between the members to permit a given rate of deflection in one direction and to arrange a means, such as rigid blocks, between the two members to restrict the rate of vibration in the opposite direction.

A further object of the invention is to vulcanize a resilient material between spaced overlapping members and to embed in the resilient material a rigid member to restrict relative movement in a direction at right angles to the plane of the supporting member.

Other objects and advantages of the invention will more fully appear from the following description taken in connection with the accompanying drawing, in which:

Fig. 1 is a sectional view showing a portion of an internal combustion engine supported between the side members of a chassis frame illustrating a preferred embodiment of my invention.

Fig. 2 is a side elevation showing an enlarged view of the mounting secured to a side frame member.

Fig. 3 is a sectional view taken on line 3—3 of Fig. 2.

Fig. 4 is a sectional view taken on line 4—4 of Fig. 2.

Fig. 5 is a sectional view corresponding to Fig. 3 but showing a modification of my invention.

Referring to the drawing, I have shown an internal combustion engine 10 having laterally projecting arms 12. Side frame members 14 have been illustrated as the frame members of an automobile chassis adapted to form the support for the engine 10.

The mounting which forms a connection between one side frame member and the arm 12 comprises a metallic plate like member 16, a U-shaped member 18 and a resilient material 20, such as rubber, having its opposite faces vulcanized to the adjacent faces of the plate 16 and the central portion of the U shaped member 18. The plate 16 is provided with flanges 22 having openings therein for the reception of bolts 24 which secure the plate 16 to the central portion of the side frame member 14. The side flanges 26 of the U shaped member 18 engage the opposite sides of the arm 12 and a bolt 28 extending through the flanges 26 and arm 12 secures the mounting to the engine.

The resilient material 20 permits a given rate of deflection in one direction between the engine and the side frame as well as permits the same rate of deflection in a direction at right angles to the plane of the plate 16. It is desirable to restrict the rate of vibration, in a lateral direction, between an engine and its side frame member. In the form of my device shown in Figs. 1 to 4 inclusive, I have provided rigid blocks 30, preferably formed from hard rubber, but which could be formed from wood or metal. These blocks 30 are arranged between the plate 16 and the central portion of the U shaped member 18, embedded in the resilient material 20. One end of each block is spaced from one of the members with a thin layer of the resilient material between the end of the block and one of the members. The other end of each block is rigidly supported by the other of the members, either against the member itself or against the part to which the member is secured. As a means for properly locating the blocks 30 I have shown openings 32 in the plate 16 to receive the blocks 30. The outer ends of the blocks 30 abut against the inner surface of the side frame member 14 and the opposite ends of the blocks 30 are spaced from the central portion of the U shaped member 18 with a thin layer 34 of resilient material therebetween.

Referring to the modified form of my invention, Fig. 5, I have provided a pair of plates 36 which may be rolled from strips of metal having a central depressed portion 38

and thickened edge portions 40. These plates are spaced in overlapping relation, the inner faces thereof being straight to which the opposite faces of a resilient material 42, such as rubber, are vulcanized. Screw threaded openings 44 are formed in the thickened edge portions 40 to receive bolts 46 which secure the plates to the frame member 14 and the angle brackets 48. The angle brackets 48 are adapted to be secured on the arms 12. In this form of my device, I have shown a rigid block 50 engaging the adjacent faces of the plates 36 which is centrally located. A pair of rigid blocks 52 located at the outer edges of the plates 36 have one end in engagement with one of the plates and the opposite end spaced from the other plate with the resilient material 42 therebetween.

When a rigid block is centrally positioned in the mounting and the end blocks are spaced from one of the plates, the plates may have relative angular movement with relation to each other, the plates being more resilient in a direction at right angles to the plates at their outer edges than at the center.

It will be understood that in both forms of my device the mounting has a definite rate of deflection in a direction parallel to the plane of the plates but that the rate of deflection is restricted in a direction at right angles to the plane of the plates.

Various changes including the size, shape and arrangement of parts may be made without departing from the spirit of my invention and it is my intention to cover by the appended claims such changes as may be reasonably included within the scope of my invention.

I claim:

1. A mounting of the class described comprising, a member adapted to be secured to a support, a member spaced from and in overlapping relation with said first named member adapted to be secured to a part to be supported, a resilient rubber member between and vulcanized to the adjacent faces of said members, and non-resilient rubber embedded in the resilient rubber and disconnected from said members.

2. A mounting of the class described comprising, a supporting member and a supported member, resilient means held under tension between the members and connecting them, and relatively non-resilient means disconnected from and between the members tending to prevent compression of the resilient means.

3. A mounting of the class described comprising, a supporting member and a supported member, resilient rubber held under tension between the members and connecting them, and relatively non-resilient means disconnected from and between the members tending to prevent compression of the said rubber.

4. A mounting of the class described comprising, a supporting member and a supported member, resilient rubber held under tension between the members and connecting them, and relatively hard non-resilient rubber between and disconnected from the members tending to prevent compression of the resilient rubber.

5. A mounting of the class described comprising, a member having a plane surface extending in a given plane and adapted to be secured to a support, a member having a plane surface extending in a plane parallel to the plane of the first mentioned plane surface, and spaced therefrom in over-lapping relation therewith, a non-resilient member between and in frictional engagement with the adjacent faces of the plane surfaces, and rubber between and bonded to the adjacent faces of the plane surfaces of said members, and means for securing the members between parts which have relative movement in a plane parallel to the plane of the plane surfaces of said members.

6. A mounting of the class described comprising, a member having a flat surface and adapted to be secured to a support, a member having a flat surface spaced from and in over-lapping relation with the flat surface of the first mentioned member, said last named member adapted to be secured to a part to be supported, resilient means between the flat surfaces and bonded to the adjacent faces of the flat surfaces permitting relative movement between the surfaces in a plane parallel to the plane of the surfaces, and non-resilient means between the flat surfaces eliminating relative movement of the surfaces of said members toward each other.

7. A motor mounting including a pair of vertically disposed plates having rubber disposed between them and serving to connect them and a non-resilient insert disconnected from and positioned between the plates serving to hold them against movement toward each other.

8. A mounting of the class described comprising, a member adapted to be secured to a support, a member spaced from and in overlapping relation with said first named member adapted to be secured to a part to be supported, resilient material between said members having its opposite faces bonded to the adjacent faces of said members, and non-resilient material disconnected from and between said members and embedded in said resilient material.

9. A mounting of the class described comprising, a member adapted to be secured to a support, a member spaced from and in overlapping relation with said first named member adapted to be secured to a part to be supported, resilient material between said mem-

bers and bonded to the adjacent faces of said members, and non-compressible material disconnected from and between said members embedded in said resilient material and bridging the space between the adjacent faces of said members.

10. A mounting of the class described comprising, a member adapted to be secured to a support, a member spaced from and in overlapping relation with said first named member adapted to be secured to a part to be supported, a rubber member between said members and bonded to the adjacent faces of said members, and a non-compressible insert between said members disconnected from at least one of said members.

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