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VIBRATION REDUCING DEVICE

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Fig. 1.

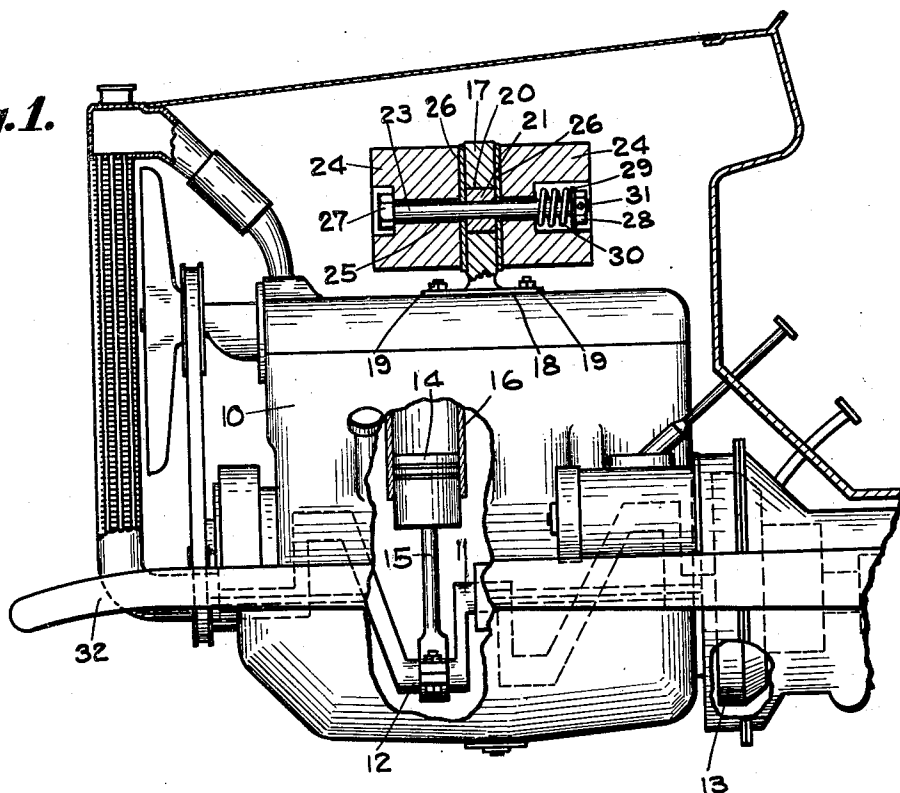
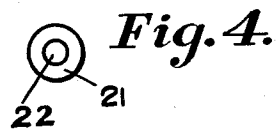
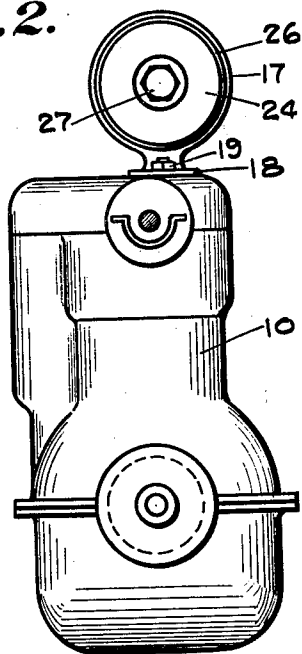


Fig. 2.



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VIBRATION REDUCING DEVICE

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This invention relates to a vibration reducing device particularly adapted for use in connection with internal combustion engines or the like vibration producing machines.

10 An object of the invention is to provide a means whereby the vibration generated by the moving reciprocating parts of an internal combustion engine will be partially eliminated and thereby eliminate or reduce the annoying rumbling noises generated within a sedan body of an automobile.

Another object of the invention is to provide a means whereby the small fittings of an automobile, such as bolts and nuts, will be prevented from becoming loosened and subsequently lost.

A still further object of the invention is to increase the horse power of engines.

20 A primary object of the invention is to provide a device which will reduce the vibration generated by an internal combustion engine, said device to be readily attachable by the owner or user of the engine or automobile after the latter has been manufactured.

Other and further objects and advantages of the invention will be understood from the following detailed description, reference 30 being had to the accompanying drawings wherein:

Figure 1 is a side view of an internal combustion engine and automobile frame certain parts thereof being broken away and showing in section, the new device being shown in section and applied to the engine in a position of use.

Figure 2 is an end view of the engine and device shown in Figure 1.

40 Figure 3 is a face view of an asbestos cushion employed.

Figure 4 is an end view of a resilient bushing.

Referring now to the drawings for a more 45 particular description in which like numerals of reference designate like or corresponding parts throughout the several views, the numeral 10 indicates generally an internal combustion engine of any conventional 50 type. The engine is provided with a crank

shaft 11 having a plurality of cranks or throws 12, some of which are indicated by dotted lines. A fly wheel 13 is, in accordance with the conventional practice, rigidly secured to the crank shaft 11.

55 The engine is provided with a plurality of reciprocating pistons 14, which are adapted to communicate motion to the crank shaft through their connecting rods 15. The engine may be of the internal combustion type 60 and provided with the conventional arrangement of a carburetor, an intake manifold, an exhaust manifold, spark plug and a source of fuel supply, not shown. The piston 14 is adapted to have reciprocating movements 65 within the walls of its cylinder 16 in a well-known manner.

The new device comprises a standard or support 17 which is preferably formed circular in plan and secured to a plate 18. The 70 faces of the standard are preferably smooth and in alignment or vertical parallelism with respect to each other, as shown in Figure 1.

75 The plate 18 and the standard is rigidly secured to the engine by means of suitable bolts or keepers indicated at 19. The plate may be of any suitable size or configuration to accommodate the several various conventional types of engines in use today and it 80 will be understood that the plate may be secured to the engine at any suitable location. The preferred position of the new device is on top of the engine, since when so positioned it is out of the way of the engine accessories 85 heretofore mentioned.

The support 17 is preferably provided with a central bore 20, within which a sleeve or bushing 21 may be fitted.

90 The bushing 21 is preferably formed of resilient material such as rubber and is provided with a central bore or aperture 22 which is adapted to receive an elongated shaft or bolt 23.

95 Preferably two weights are slidingly carried by the bolt 23. The weights 24, for convenience of assembly upon the bolt 23, are provided with elongated apertures 25 which are adapted to snugly receive the bolt 23.

100 A cushion 26 which is preferably formed

of material such as asbestos clutch linings is positioned between each weight 24 and the opposed faces of the standard or support 17 for purposes later described.

5 The bolt 23 is provided with a head 27 which is adapted to prevent the adjacent weight from moving an undesired distance away from the support 17. The shank of the bolt opposite to its head 27 is provided
10 with screw threads and is adapted to receive a rotatable nut 28. A washer 29 is preferably positioned upon the bolt between said nut and the head of the bolt. A resilient normally expanding spring 30 is carried by
15 the bolt and is adapted to exert pressure between the washer and the adjacent weight. A cotter pin 31 is preferably provided and received adjacent the end of the bolt for the purpose of preventing unauthorized persons
20 from readily removing the nut 28.

It is well known that vibration is particularly noticeable in four cylinder engines. The new device is adapted to oppose, neutralize and minimize vibration created by the engine, said opposition to said motion being in
25 a plane parallel to the face of the support 17.

It is well known that the main part of the movements created by the vibration of the engine is transversely of the engine or of the
30 frame 32 of the automobile.

In operation the reciprocation of the pistons within the engine sets up a vibration thereby shaking all parts of the automobile. When the new device is installed as above
35 described the weight or weights will have correlative movements with respect to said vibratory movements of the engine and will neutralize, or minimize said latter motion on account of the weights contacting, in alternation, with the support. The shims or cushions 21 prevent undue wear, "seizure" or
40 "freezing" of the weights with their support.

The nut 28 may be adjusted to provide a
45 desired tension of the spring 29 to accommodate the individual requirements of a particular engine. The desideratum is to provide means whereby the weights may move away from the support a slight distance and
50 be returned toward the support by means of a resilient member such as the spring.

From the foregoing description it is thought to be obvious that a vibration reducing device constructed in accordance with
55 my invention is particularly well adapted for use by reason of the convenience and facility with which it may be assembled and operated, and it will also be obvious that my invention is susceptible of some change and
60 modification without departing from the spirit and principles thereof and for this reason I do not wish it to be understood as limiting myself to the precise arrangement and
65 formation of the several parts herein shown

in carrying out my invention in practice except as hereinafter claimed.

I claim:—

1. A vibration reducer for a mounting on an engine having reciprocating vibration
70 generating parts, comprising a support rigidly carried by the engine, and a weight carried by the support adapted to be actuated in movements whereby on the movement of the support in one direction, the weight is
75 disposed against the support and on the movement of the support in the opposite direction, the weight is disposed away from the support, whereby vibratory movements of the engine are adapted to be reduced by
80 the said movements of the weight.

2. A vibration reducer for a mounting on an engine, comprising a rigid support carried by the engine, a shaft carried by the support, and a weight slidingly carried by the shaft.

3. A vibration reducer for a mounting on an engine, comprising a rigid support carried by the engine, a weight carried by the support, and means for causing the weight to
90 normally engage the support.

4. A vibration reducer for a mounting on an engine, comprising a support rigidly secured to the engine, a threaded shaft carried by the support, a weight slidingly received upon the shaft, a spring carried by the shaft for causing the weight to normally engage the support, and means including a rotatable
100 nut upon the shaft for adjusting the tension of the spring.

5. A vibration reducer for a mounting on an engine, comprising a rigid support carried by the engine, a weight slidingly carried by the support, and a cushion between
105 the support and the weight.

In testimony whereof, I have affixed my signature.

JEROME A. WILTSE.

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