T. C. ROBERTS.

SUSPENSION DEVICE FOR VIBRATORY STRUCTURES.

APPLICATION FILED AUG. 18, 1921.

1,435,258. **Patented Nov. 14, 1922.**

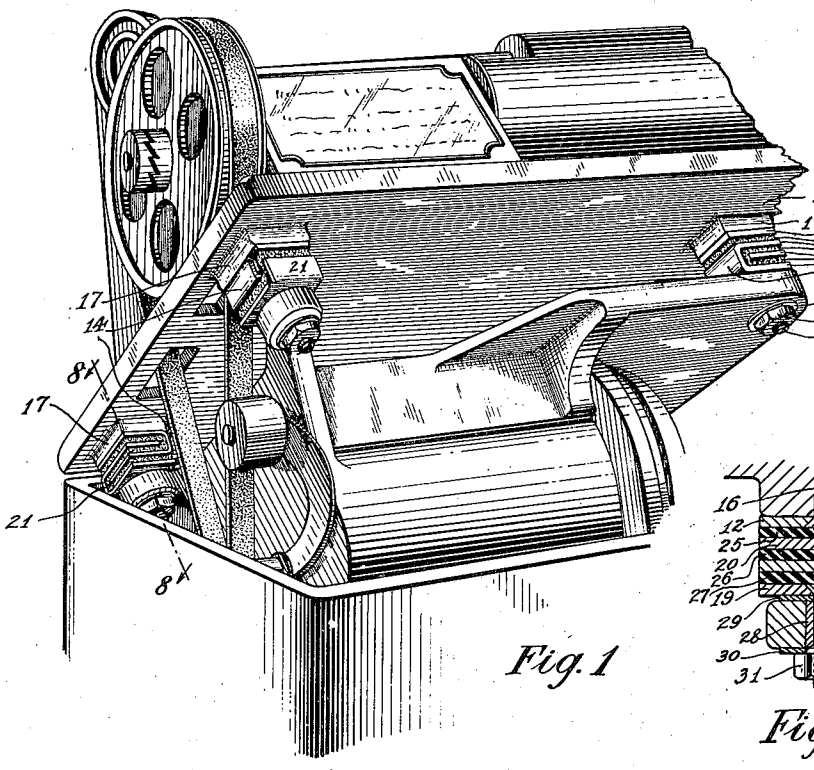


Fig. 1

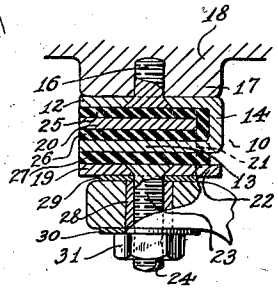


Fig. 8

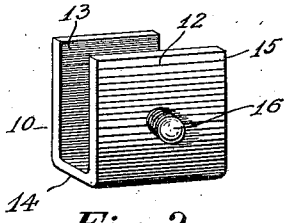


Fig. 2

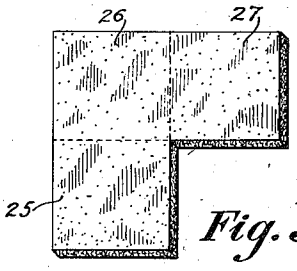


Fig. 3.

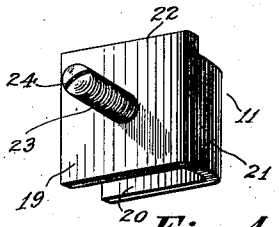


Fig. 4

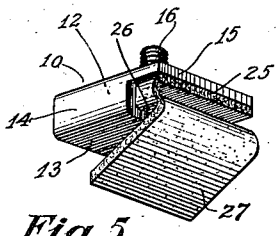


Fig. 5.

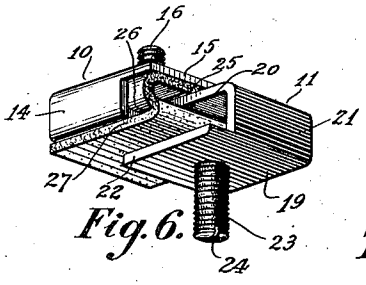


Fig. 6.

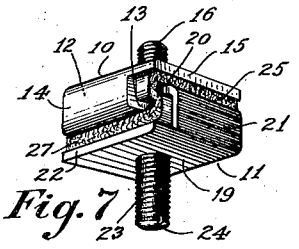


Fig. 7

INVENTOR

Theodore C. Roberts

BY

Ray B. Whitman

ATTORNEY

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UNITED STATES PATENT OFFICE.

THEODORE C. ROBERTS, OF NEW YORK, N. Y., ASSIGNOR TO COLUMBIA GRAPHOPHONE MANUFACTURING COMPANY, OF BRIDGEPORT, CONNECTICUT, A CORPORATION OF DELAWARE.

SUSPENSION DEVICE FOR VIBRATORY STRUCTURES.

Application filed August 18, 1921. Serial No. 493,474.

To all whom it may concern:

Be it known that I, THEODORE C. ROBERTS, a citizen of the United States, and a resident of the city of New York, county and State of New York, have invented certain new and useful Improvements in Suspension Devices for Vibratory Structures, of which the following, taken in connection with the accompanying drawings, is a specification.

This invention relates to a supporting or suspending means for vibratory or other mobile structures, and with particular reference to a suspension means for the electric motor of a commercial dictating machine of the "dictaphone" type.

An object of the invention is to provide a simple and inexpensive means of connecting two structures so that any movement of the one will not be transmitted to the other, but will be absorbed in the connection means.

Another object is to provide such a structure as can be assembled and mounted in the easiest and quickest possible manner; and one that will be most durable in use.

A further object is to simplify the construction of such a device by providing standard parts, a plurality of which may be assembled and used in interlocking relation in each device.

With these and other objects in view, one form of the invention, as applied to a specific use, is shown in the accompanying drawings, and this will be hereinafter more fully described with reference thereto, and the invention finally pointed out in claims.

In the drawings—

Fig. 1 is a perspective view of a "dictaphone," showing the top raised and exposing the motor, suspended by devices formed according to this invention;

Fig. 2 is a perspective view of one of the two hook members forming a part of the device, this being the upper one;

Fig. 3 is a perspective view of the resilient pad, which, in use, is assembled between the hook members.

Fig. 4 is a perspective view of the other or lower hook member;

Fig. 5 is a perspective view of the upper member, showing the insulation pad arranged therein, preparatory to the insertion of the lower member;

Fig. 6 is a similar view, showing the lower hook member partially assembled to the upper member;

Fig. 7 is a like perspective view of the completely assembled device; and

Fig. 8 is a vertical sectional view, partly in elevation, of one of the devices, being taken along the line 8—8 of Fig. 1.

Similar reference characters indicate corresponding parts throughout the several figures of the drawing.

Referring to the drawings, the device comprises a pair of mating and complementary members 10 and 11 (Figs. 2 and 4) in the form of U-shaped hooks. The upper member 10, Fig. 2, consists of flat spaced portions, 12 and 13, of rectangular form, disposed in parallel relation, and connected by a portion 14 disposed at right angles thereto. The portion 12 projects beyond the portions 13 and 14 at one side, forming an overhanging ledge 15; and centrally of the portion 12, there is provided a threaded stud 16 riveted in place, as shown in Fig. 8, and adapted to be secured to the boss 17 at the under side of the supporting plate 18 of the dictaphone.

The lower member 11, Fig. 4, is identical in form with the upper member 10, and consists of parallel portions 19 and 20, a connecting portion 21, and a projecting portion 22 on the portion 19. A threaded stud 23 is also secured centrally of the portion 19, but is relatively longer than the stud 16, of member 10, and has a kerf 24 cut in its end.

A resilient, vibration-absorbing pad is adapted to be interposed between the members in their interlocking relation, this pad being of right-angle form, and comprising three square and integral portions 25, 26, and 27 (Fig. 3). This pad may be formed of rubber, felt, fabricized rubber, or other suitable resilient material; and may, in addition, or in place of its function of providing a vibration insulator, also insulate the supporting from the supported structure, electrically or thermally, in which case fibre, asbestos, or any other suitable material may be employed. Rubber is an example of a material that combines the three characteristics of being resilient, electric insulating, and thermal insulating.

In mounting the device to support the

motor, as here disclosed, the upper member 10 is first secured to the boss 17 of the supporting plate, Fig. 8; the pad is then assembled thereto, as shown in Fig. 5, the portion 25 being folded over upon the portion 26 and positioned between the portions 12 and 13, with the bight of the fold engaging the connecting portion 14 of part 10, while the portion 27 of the pad is folded beneath the portion 13, the bight of this fold being disposed beneath the ledge portion 15, Figs. 5 and 6.

The lower member 11 is thereupon slipped into interlocking relation with upper member 10, as shown in Figs. 6 to 8, the portion 20 engaging between the portions 25 and 26 of the pad and the portions 12 and 13 of the member 10, while the portion 19 engages beneath the portion 27 of the pad and the portion 13 of the member 10.

The members 10 and 11, Figs. 2 and 4, are formed of metal, or other suitable material, the resilient pad being tightly engaged between them, so that the metal parts are effectually insulated and separated, and a compact resilient structure is provided. In the assembled position of the parts (Figs. 7 and 8), the studs 16 and 23 are in axial alignment, their common axis passing centrally through the interlocking members 10 and 11.

The devices are secured upon the bosses 17, situated at four points on the under side of the plate 18, and in register with the four corners of the motor-frame to be supported. These corner portions of the frame are provided with bushed apertures 28, Fig. 8, engaged by the studs 23, washers 29 and 30 being provided at the ends of the bushing. A nut 31 is secured to the end of the stud 23 and rigidly connects the motor-frame to the portion 19 of the lower hook member, thus resiliently supporting the motor-frame from the completely assembled suspension device.

The hook suspension devices are so arranged, with relation to each other, that their vertically-disposed portions 14 and 21 cooperate to positively fix the motor-frame against lateral shifting movement. As is clear from Fig. 1, the portion 21 of the front left hand device cooperates with the portion 21 of the rear left hand device to prevent transverse lateral movement of the frame, while portion 14 of the front left hand device cooperates with the portion 21 of the front right hand device to prevent longitudinal lateral movement, this being so because portion 14 is attached to the base-plate, and 21 to the motor-frame. And similar locking is effected by the two rear devices.

The four devices positively fix the position of the motor-frame against bodily movement, and yet provide a suspension connection which entirely insulates the motor-frame from the base-plate, the devices being resilient to such an extent as to absorb the vibrations of the motor-frame, as transmitted by the motor, and so prevent their transmission through to the base-plate.

The invention is thus seen to provide an extremely simple and inexpensive vibration-absorbing connection means, and one that lends itself especially to the use disclosed herein, namely—the supporting of motors for sound recording and reproducing machines.

While the drawings illustrate, and the specification describes rather specifically a preferred form of the device for a particular use, it will be understood that major changes involving omission, substitution, reversal, or other changes in the device, its detailed construction or assemblage may be made without departing from the scope of the invention. For instance, while here shown as a suspension means, it is apparent the device is equally well adapted for use as a supporting means; while shown for a specific use, it may, of course, be used wherever a readily-detachable movement-absorbing or electrical-insulating, or heat-insulating connection is required.

In short, this invention is not limited to the specific disclosure, but includes all the modifications coming within the scope of the appended claims.

Having now described the invention, what is claimed as new, and for which Letters Patent is desired, is:

1. A suspension device for vibratory structures, comprising a pair of U-shaped self-sustaining interlocking members having their parallel side portions disposed in parallel and spaced relation to each other and in horizontal planes, and their connecting portions contiguous to each other to prevent lateral disengaging movement in two directions at right angles, means for attaching one of said members to a supporting structure, means for attaching the other to a supported structure, and an L-shaped resilient pad folded into the three spaces between the adjacent surfaces of said members, the bights of the folds spacing the connecting portions of each of said members from the opposed edge of the other of said members.

2. A suspension device for vibratory structures, comprising a pair of interlocking members, each consisting of an upper portion, a lower portion, and a connecting portion connecting the upper and lower portions along one side and spacing them apart, one of said portions being cut away along one side, the members adapted to be interlocked with the connecting portion of one member disposed in the cut away portion of the other member, whereby the surface of said connecting portion is substantially flush with an edge of said other member, and a resilient pad interposed between the adjacent surfaces

of the members and comprising an intermediate rectangular portion and two end rectangular portions extending along two contiguous edges thereof, said portions being respectively folded into said spaces to separate the adjacent lateral surfaces of the members, the surfaces of said connecting portions and the cut away portion being separated by the bights of the folded pad.

3. A supporting device for vibratory structures, comprising a pair of interlocking members, each consisting of an upper portion, a lower portion, and a connecting portion connecting the upper and lower portions along one side and spacing them apart, one of said portions being relatively wider and projecting beyond the other portion along a side adjacent the connecting portion, the members being adapted to be interlocked with the wider portion outermost, each member adapted to embrace the narrower portion of the other member with the connecting portion of one member disposed adjacent to and in flush relation to the projecting portion of the other member, and resilient means interposed between the adjacent surfaces of said members and housed along two of its edges beneath the projecting portions of the members.

4. A supporting device for vibratory structures, comprising a pair of interlocking members, each consisting of an upper portion, a lower portion, and a connecting portion connecting the upper and lower portions along one side and spacing them apart, one of said portions being relatively wider and projecting beyond the other portion along a side adjacent the connecting portion, the members being adapted to be interlocked with the wider portion outermost, each member adapted to embrace the narrower portion of the other member with the connecting portion of one member disposed adjacent to and in flush relation to the projecting portion of the other member, resilient means interposed between the adjacent surfaces of said members and housed along two of its edges beneath the projecting portions of the members, and connection means for the supporting structure and the supported structure, and respectively secured substantially centrally of said wider portions of the members.

5. In a vibration-absorbing structure, the combination of two U-shaped interlocking members, the bend of each member being on adjacent sides when in interlocked position, and an L-shaped vibration-absorbing pad adapted to be interposed between the surfaces of the two members.

Signed at Bridgeport, in the county of Fairfield and State of Connecticut, this 15th day of August A. D. 1921.

THEODORE C. ROBERTS.