May 3, 1949. L. H. SNYDER 2,468,949

MASSAGE VIBRATOR

Filed Sept. 22, 1945

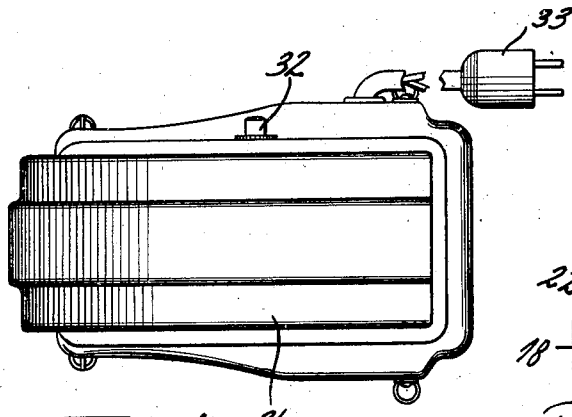


Fig. 1

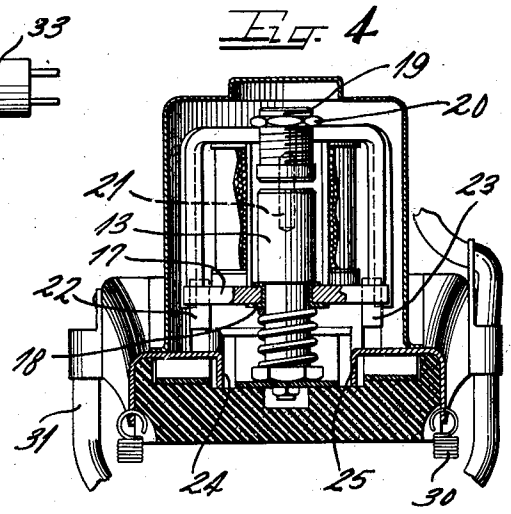


Fig. 4

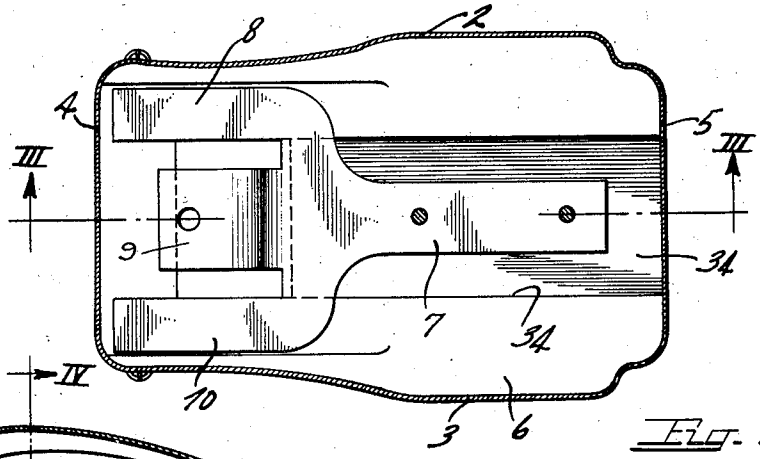


Fig. 2

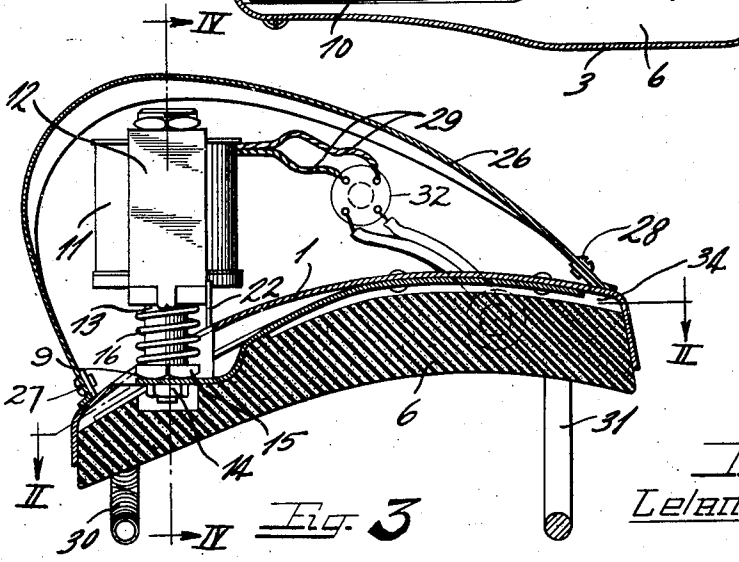


Fig. 3

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Patented May 3, 1949

2,468,949

UNITED STATES PATENT OFFICE

2,468,949

MASSAGE VIBRATOR

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Application September 22, 1945, Serial No. 618,026

7 Claims. (Cl. 128—41)

1

This invention relates to improvements in electric massage vibrators of the type that are intended to be positioned on the back of an operator's hand and in which a solenoid imparts vibration to the operator's fingers through a pad, usually a rubber pad.

The general object of the invention is to provide a device of the character described designed to impart vigorous vibration from a solenoid to a resilient pad supported on the back of the operator's fingers.

Another object of the invention is to provide a massage vibrator having a solenoid housed within a casing, but wholly supported upon a spring whose vibrations are imparted to a resilient pad.

Another object of the invention is to provide an electric massage device wherein the solenoid is supported wholly upon a spring member, the latter being in contact with a resilient pad which is to be vibrated.

Another object of the invention is to provide a massage device having a spring anchored near one of its ends to a base and a solenoid supported on a free end of the spring by means of the solenoid plunger, with the entire solenoid free to move during operation thereof.

Another object of the invention is to mount the solenoid with both its coil and plunger free to vibrate and located near that end of the vibrator which is nearest the finger tips of the operator during use.

Other objects and advantages of the invention will be apparent from the following specification, taken in connection with the accompanying drawings in which

Figure 1 is a top plan view of a device made in accordance with this invention;

Figure 2 is a multi-plane sectional view taken along the line II—II of Figure 3 at the under side of the base above the rubber pad;

Figure 3 is a sectional view taken at the position of the line III—III of Figure 2; and

Figure 4 is a sectional view taken on the line IV—IV of Figure 3.

As shown in the drawings the device comprises a base 1 having depending side walls 2 and 3 and depending end walls 4 and 5, which together form a shell with a downwardly facing opening in

2

which is positioned a resilient pad 6 which preferably will be made of sponge rubber or some other equally soft and resilient material suitable to rest upon the back of the hand of the operator during the use of the device.

Secured to the underside of the base 1 is a spring having a tongue 7 by means of which it is attached to the base by rivets or the like and having three independently flexible extensions, as shown in Figure 2, indicated as 8, 9 and 10. The extensions 8 and 10 rest flatly upon the upper surface of the pad 6 whereas the extension 9 is curved and depressed somewhat below the general level of the lateral extensions 8 and 10, having a portion contacting the pad and serving as a platform on which the solenoid is supported.

The solenoid consists of a coil 11 positioned in a yoke 12, while a reciprocable plunger 13 extends downwardly from within the solenoid and is secured by a pair of nuts 14 and 15 to the extension 9.

A spring 16 surrounding the lower end of the plunger opposes the action of the solenoid on the plunger. Where the plunger passes through a cross member 17, connected to the open end of the yoke 12, there is provided a brass bushing 18 for guiding the plunger.

At the top of the yoke and threaded therethrough is a plug 19 serving as the core of the solenoid. Preferably this core plug will have a kerf (not shown) in its upper end by means of which the core may be rotated to be raised or lowered in the yoke and thereafter locked by means of the nut 20 to thereby adjust the air gap between the core and plunger.

A brass guide pin 21 will be fixed in the upper end of the plunger and allowed to reciprocate in a suitable aperture in the core to furnish an additional guide for the plunger.

It will now be evident that the solenoid is wholly supported on the center portion 9 of the spring by means of the attachment of the plunger thereto. As a vertical guide, and to prevent any rotation of the solenoid, there preferably will be struck up from the body of the base a pair of ears 22 and 23 which will bear against the cross piece 17, having a sliding contact therewith. At the margins of the aperture in the base 1 through

which the plunger extends, flanges 24 and 25 are bent downwardly as indicated at Figure 4.

A casing or housing 26 is provided and is secured to the base in any suitable manner, for example by screws 27 and 28, being shaped to entirely enclose the solenoid and to serve as a convenient hand grip for carrying the device.

Electrical wires 29 connect the solenoid to a source of alternating current to cause it to vibrate in accordance with frequency of that current.

While springs or cords or other devices for securing the pad to the hand of the operator do not form a part of this invention I have indicated in the drawing that a spring such as 30 may be connected as shown while a heavy cord preferably of a flexible nature such as 31 may also be provided.

For convenience a switch 32 may be interposed in the electrical circuit as indicated and the plug 33 may be used to connect the device to the source of power.

In the operation of the revice the solenoid will be energized and de-energized in accordance with the frequency of the alternating current and the plunger will thereby be caused to vibrate rapidly relatively to the core. As the coil is not anchored directly to the casing, vibration of the coil itself will occur, thus yielding a compound vibration which is imparted to the spring member, primarily to the extension 9, and through it to the independently flexible extensions 8 and 10. As all three extensions are in contact with the rubber pad, these vibrations will be imparted with varying force to the rubber pad.

While the pad may have various shapes I find the shape indicated to be efficient and I prefer to provide in its upper surface a channel indicated at 34 extending centrally and longitudinally of the pad, leaving the adjoining portions of the pad out of contact with the spring. Consequently, the greatest portion of the vibratory thrust exerted upon the pad that will be felt occurs in that area adjoining the solenoid, and nearest to the finger tips of the operator.

While various means for securing the pad, preferably a sponge rubber pad, to the base may be employed, a snug fit therein coupled with the use of adhesive between the contiguous surfaces of the pad and base is satisfactory.

Some variation in vibration may be obtained by varying the air gap, as explained above, but otherwise the device is generally free from adjustment and is intended therefore to be a durable massage device suited for vigorous and long commercial use.

Although I have shown and described one particular embodiment of my invention, I do not desire to be limited to the exact details of construction herein shown and described. It should be understood that the invention comprehends all variations and modifications within the scope of the appended claims.

I claim as my invention:

1. A massage vibrator comprising a base having downwardly extending side and end walls forming a downwardly opening shell, a soft resilient pad supported within said shell and protruding below said opening thereof, a casing mounted upon the upper side of said base, a spring member secured to said base and extending therebelow and positioned for flexing in response to vibrations imparted thereto and arranged in contact with said pad to vibrate the latter, and a solenoid having a coil positioned within said casing above said base and having a plunger extending through

said base secured to a flexible portion of said spring member for supporting the entire solenoid thereby, the whole being arranged whereby vibrations of the plunger are imparted to said spring member and thence to said pad.

2. A massage vibrator comprising a base provided with side and end walls extending downwardly from the base to provide a downwardly opening shell, a soft resilient pad supported within said shell and protruding below the margins of said opening, a casing mounted on the upper side of said base, a spring member secured to said base and extending therebelow and having a plurality of spaced apart flexible extensions several of which are arranged to contact said pad to vibrate the latter, and a solenoid having a coil positioned within said casing above said base and having a plunnger extending through said base secured to one flexible extension of said spring for supporting the entire solenoid thereby, the whole being arranged whereby vibrations generated by said solenoid are imparted to said spring member extensions and thence to said pad.

3. A massage vibrator comprising a base, a resilient pad positioned on the under side of said base, a spring member having one end anchored to said base and having two spaced apart flexible extensions contacting said pad, a solenoid having a coil positioned above said base, and a plunger operable by the solenoid coil secured to said spring member apart from said extensions supporting the coil and arranged to vibrate the pad through said extensions.

4. A massage vibrator comprising a base, a resilient pad positioned on the under side of said base, a spring member having one end anchored to said base and having two spaced apart flexible extensions contacting said pad, a third extension on said member contacting the pad and located between the first two extensions, a solenoid having a coil positioned above said base, and a plunger operable by said coil secured to said third extension supporting the coil and arranged to vibrate the pad through all three extensions.

5. A massage vibrator comprising a base, a resilient pad positioned on the underside of said base, the central portion of said pad being free of said base and thereby capable of vibratory movements independent of said base, a leaf spring member having a vibratile portion secured to said central portion of the pad, a casing secured above said base, and a solenoid housed within said casing having a plunger secured to said vibratile portion of the spring thereby supporting the solenoid and vibrating the spring and pad upon energization of the solenoid by periodic currents.

6. A massage vibrator comprising a base, a resilient pad positioned on the underside of said base, said pad having a recessed central portion free of said base and thereby capable of vibratory movements independent of said base, a spring member extending below said base for contact with said central portion of the pad, a casing secured above said base, a solenoid housed within said casing, and a plunger axially vibratable by said solenoid and having one end thereof secured to said spring, thereby providing the sole support for the solenoid and vibrating said spring and pad.

7. A massage vibrator comprising a base, a resilient pad supported by said base and having a recessed central portion free of said base and thereby capable of vibratory movements independent of said base, a leaf spring member having one end portion anchored to the underside of

said base and having a vibratile portion lying within said recessed central portion of said pad, and secured to said central portion of the pad, a casing secured upon said base, and a solenoid positioned within said casing having a plunger secured to said vibratile portion of said spring member for vibrating the spring member and pad upon energization of the solenoid by alternating current.

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