Dec. 18, 1962 J. F. SUAREZ 3,068,858

ELECTRIC MASSAGE PAD

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Fig. 1

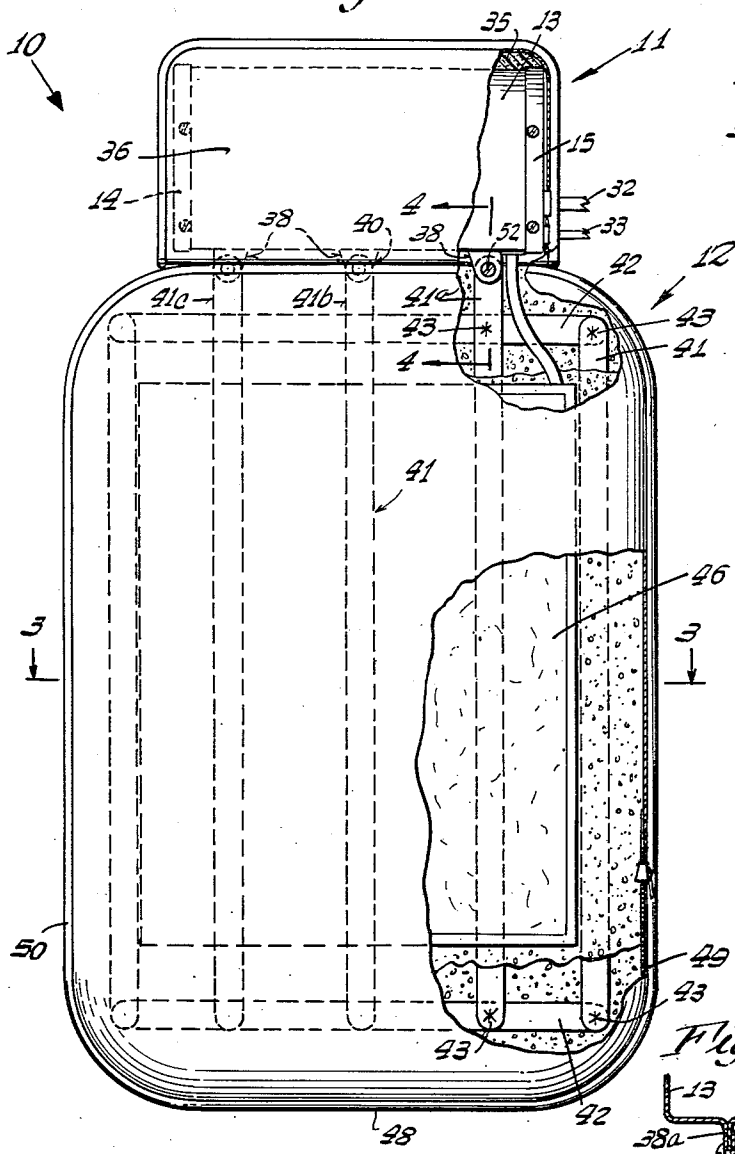


Fig. 2

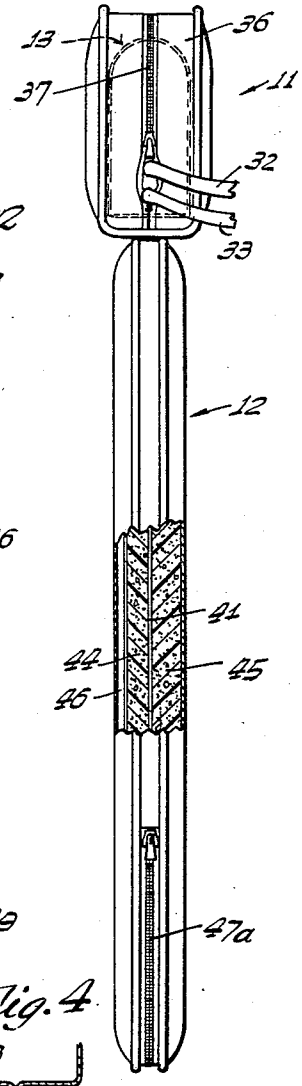


Fig. 3

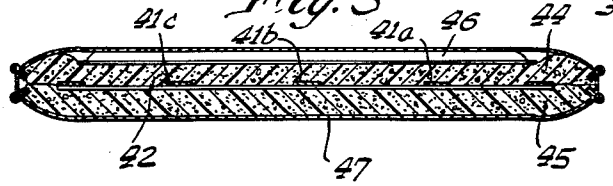
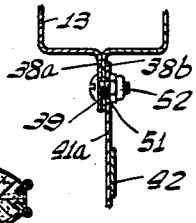


Fig. 4



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Fig. 5

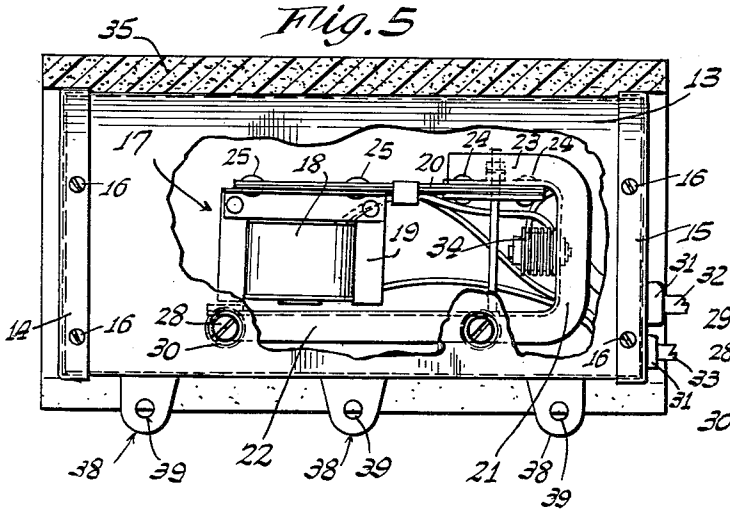
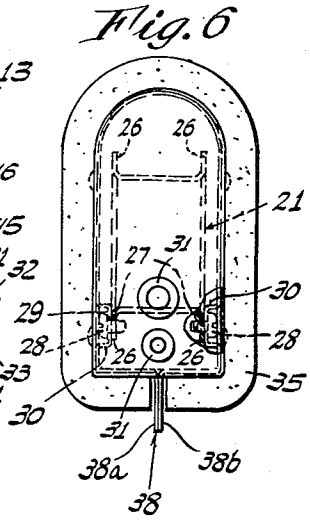


Fig. 6



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ELECTRIC MASSAGE PAD

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6 Claims. (Cl. 128—33)

The present invention relates to a relatively stiff flat pad which is caused to vibrate to produce a massage effect on the portion of an individual in contact therewith.

An object of the present invention is to provide an electric massage pad that is of simple construction and composed of relatively few parts that enable it to be economical to fabricate and yet durable in use.

Another object of the present invention is to provide an electric massage pad which achieves the above objects by employing a reciprocating electric motor that is effectively and efficiently interconnected in the pad to produce vibrations lengthwise of the pad.

A further object of the present invention is to provide an electric massage pad in which the vibration producing electric motor is housed and connected to the rest of the pad structure in a manner that provides ease in fabrication and assembly and, when necessary, disassembly for repair.

In carrying out the above objects, the present invention provides an electric massage pad that has an electric motor housing portion enclosing the electric motor that is connected to a vibrating pad portion to form the complete pad. In use, the electric motor, when intermittently energized, produces vibrations that are transmitted to the pad portion, the pad portion normally being in contact with an individual to produce the desired massage effect. The pad portion is relatively stiff, though sufficiently flexible to substantially conform to the shape of the user's body in contact therewith and is composed of a plurality of aligned, spaced, coplanar bars with transverse bars connected thereto to form a flat lattice, the lattice being covered on both sides by sheets of resilient material, such as foam plastic, and a wear-resistant covering, such as sheet plastic, encloses the resilient sheets and lattice.

The motor housing portion is simply and efficiently formed by bending a piece of sheet metal into an elongate tubular portion and having integral tabs formed on the sheet metal that provide a connection to the pad portion. The reciprocating electric motor is secured directly to the housing and hence its vibrations are transmitted to this single sheet of metal and thence to the pad portion.

If desired, and as shown in the hereinafter disclosed embodiment of the present invention, an electric heating element is positioned on one side of the pad portion to provide heat, either separately or simultaneously with the vibrations.

Other features and advantages will hereinafter appear.

In the drawings:

FIGURE 1 is a plan of the electric massage pad of the present invention with portions thereof removed to show underlying structure.

FIG. 2 is a side view thereof, also having portions removed to show underlying structure.

FIG. 3 is a section taken on the line 3—3 of FIG. 1.

FIG. 4 is a detail taken along the line 4—4 of FIG. 1.

FIG. 5 is a view of the motor housing shown partly in section and with portions of the housing removed.

FIG. 6 is an end view of FIG. 5.

Referring to the drawing, the electric massage pad of the present invention is generally indicated by the reference numeral 10 and includes a motor housing portion 11 and a pad portion 12. The motor housing portion

comprises a housing 13 formed of sheet metal that is bent into the cross-sectional shape (shown in FIG. 6) to form an elongate tube with end caps 14 and 15 being secured on the ends of the tube, as by screws 16, to form the closed motor housing.

A reciprocating electric motor 17 is located in the housing and has a coil 18 and a paramagnetic core 19 secured on an end portion of a flexible link 20 formed from strips of resilient metal. The motor frame 21 is substantially U-shaped having a long leg 22 and a short leg 23 with one end portion of the link 20 being secured to the short leg, as by rivets 24, while the core and coil are secured to the other end portion of the link 20 as by rivets 25. The frame 21 in cross-section has side flanges 26 which have formed therein threaded apertures 27. Screws 28 pass through apertures 29 formed in the sides of the housing to thread into the holes 27 to secure the frame of the motor directly to the housing. It is preferable to provide indents 30 in the housing adjacent the apertures 29 to recess the heads of the screws 28.

The end cap 15 is provided with apertures in which insulating bushings 31 are positioned to form a passage for electric cords 32 and 33, the cord 32 being connected to an on-off switch, while the cord 33 is connected to a source of alternating current. To provide intermittent operation of the coil, a one-way valve or rectifier 34 is connected between the source of electrical energy and the coil. Enclosing the periphery of the housing of the motor is a sheet 35 of resilient material such as foam plastic while covering the sheet 35 is a cover 36 formed of wear-resistant plastic. The cover has a zipper 37 that closes the cover yet enables the positioning of taking it off the metal tube and resilient material.

In carrying out the present invention, in order to economically and effectively secure the housing portion of the pad to the pad portion, so that vibrations produced by the motor may be efficiently transmitted to and throughout the latter, the present invention provides for three tabs 38 which are formed integrally with the sheet metal 23 at each of its abutting ends and thus a tab 38 has two identical portions 38*a* and 38*b* each with an aperture 39 extending therethrough. As shown, portions of the resilient padding material 35 are located adjacent the tabs with a portion of the tab extending beyond and adapted to project through slits 40 formed in the cover 36.

The pad portion 12 of the pad of the present invention is relatively stiff by reason of it being composed of spaced, aligned coaxial metallic bars 41, five being shown in the specific embodiment of the invention herein disclosed, with crossbars 42 at the upper and lower ends of the bars 41 that are secured thereto at their abutting surfaces by spot welds 43. It will be appreciated that the bars 41 and 42 form a lattice which is relatively stiff. Positioned on each side of the lattice are sheets 44 and 45 of resilient foam material, such as foam plastic, with the sheets being larger than the lattice to provide resiliency not only on the flat sides but also along the edges. Located on the top of the sheet 44 is a heating pad 46 which is of well-known and conventional construction because it has been found desirable to provide both a heating and massage effect simultaneously or individually. A cover 47 formed of wear-resistant plastic encloses the lattice, the sheets 44 and 45 and the heating pad 46 and the cover has a zipper 47*a* which enables the positioning in and the taking off of the cover, the zipper extending along the bottom edge 48 and partially along the sides 49 and 50.

To enable the vibrations produced by the reciprocating motor to be transmitted throughout the length of the pad portion 12, the three middle bars 41*a*, 41*b* and 41*c* have end portions which project beyond these connections

to the upper crossbar 42. Each of these end portions is formed with an aperture 51 through which a nut and bolt 52 passes to secure the bars to the tabs 38 of the motor housing. It will be appreciated that the nut and bolt 52 not only secures the bars to the tabs but also secures the tab portions 38*a* and 38*b* together to prevent opening of the housing.

According to the present invention the connection, i.e. 52, between the housing portion and the pad portion is normally hidden from view and yet is readily accessible. This is effected by the exposed end portions of the tabs 38 passing through slots formed in the covering 46 so that the connection, i.e. nut and bolt 52, is contained within the covering 46. If accessibility to the connection is desired, it will be appreciated that by compressing the resilient sheet portions of the sheet 35 adjacent the tabs inwardly and compressing the portions of the sheets 44 and 45 adjacent the end portions of the bars 41*a*, 41*b* and 41*c* inwardly that the connection will be easily accessible without removal of either cover. This structure facilitates not only the fabrication of the electric massage pad of the present invention but also repairs if such are found necessary.

In the electric massage pad of the present invention, it will be appreciated that passage of alternating current through the one-way valve 34 will cause intermittent energization of the coil and by reason of its magnetic attraction to the adjacent portion of the long leg 22 of the frame, it will move toward that portion flexing the link 20. Upon deenergization, the flexed link will cause the coil and core to move in the other direction. This reciprocating movement causes a vibration to be produced in the motor frame and transmitted, by means of the screws 28, directly to the metal housing, the metal housing having integral therewith the tabs 38 and which by reason of their connection to the bars 41*a*, 41*b* and 41*c* effectively and efficiently transmit the vibration of the motor frame throughout the length of the lattice and hence the area of the pad portion 12. It will further be appreciated that the coil and core move in an arc in a plane which is substantially coplanar with and parallel to the direction of the bars 41 and that there is no component of vibration which is perpendicular to the plane of the lattice or the pad portion 12. Moreover, the pad portion 12 by having its lattice formed of five aligned bars 41 and only two transverse bars 42 is stiff in the direction of vibration yet relatively flexible transversely in the same plane.

For a more detailed description of the reciprocating electric motor of the present invention and the controls therefor, reference is had to my copending application, Serial No. 753,290 filed August 5, 1958, now abandoned and entitled Vibratory Therapeutic Device.

It will accordingly be appreciated that there has been disclosed an electric massage pad which employs a reciprocating electric motor to produce the vibrations and hence when the pad is in contact with an individual, a massage. The reciprocating electric motor is efficiently yet economically connected to the pad portion of the pad of the present invention by means of the protective housing which closes the motor by the housing having formed integrally therewith, tabs that are connected to the stiffening bars of the pad portion and thus vibrations produced by the motor are transferred throughout the whole area of the pad. These vibrations, moreover, by reason of the employment of the reciprocating motor and the manner of its interconnection to its housing and the pad portion cause vibrations in the pad which are solely in the plane of the pad portion and extended lengthwise of the pad portion.

Variations and modifications may be made within the scope of the claims and portions of the improvement may be used without others.

I claim:

1. An electric massage pad comprising a frame, a reciprocating electric motor having a coil and a core mounted for reciprocating planar movement on said frame, an elongate tubular housing enclosing the motor and having outwardly extending tabs integral therewith, means securing the frame rigidly to the housing, said housing being formed from a piece of sheet metal with the tabs being formed thereon at the abutting ends of the piece, a pad portion comprising a plurality of spaced, aligned, coplanar bars and a plurality of crossbars extending transversely of the bars and connected thereto to form a lattice, resilient means positioned on each side of the lattice and enclosing the housing, a cover over the pad portion and a cover over the housing, and means connecting the tabs to at least one of the bars.

2. The invention as defined in claim 1 in which there is a tab portion at each abutting end of the piece with the tab portions being aligned and forming a tab, and means securing the tabs to the bars also secures the tab portions together.

3. An electric massage pad comprising a reciprocating electric motor having a U-shaped frame including a short leg and a long leg, an elongate flexible link having one end portion secured to the short leg, a coil with a core secured to the other end portion of the link and positioned adjacent the long leg, an elongate tubular housing enclosing the motor and having outwardly extending tabs integral therewith, means rigidly connecting the long leg to the housing, a pad portion comprising a plurality of spaced, aligned, coplanar bars and a plurality of crossbars extending transversely of the bars and connected thereto to form a lattice, resilient means positioned on each side of the lattice and enclosing the housing, a cover over the pad portion and a cover over the housing, and means connecting the tabs to at least one of the bars.

4. The invention as defined in claim 3 in which the means that connects the long leg of the motor frame to the housing consists of screws that pass through apertures in the housing to thread into the long leg.

5. The invention as defined in claim 3 in which the flexible link extends transversely to the direction of the bars.

6. An electric massage pad comprising a frame, a reciprocating electric motor having a coil and a core mounted for reciprocating planar motion on said frame, an elongate tubular housing enclosing the motor and having outwardly extending tabs integral therewith, means securing the frame rigidly to the housing, a pad portion comprising a plurality of spaced, aligned, coplanar bars and a plurality of crossbars extending transversely of the bars and connected thereto to form a lattice, resilient means positioned on each side of the lattice and enclosing the housing, a cover over the pad portion and a cover over the housing, and means connecting the tabs to at least one of the bars, the resilient means having portions adjacent the tabs with the outer portion of the tabs projecting therebeyond, the outer portion of the tabs normally extending through the cover for the pad portion and being covered by the resilient means positioned on each side of the bars.

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