United States Patent [19]

Abramovitz

[11] **3,762,402**

[45] **Oct. 2, 1973**

[54] **FOOT MASSAGING MACHINE**

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[52] **U.S. Cl.** ..... **128/33,** 128/36, 128/25 B

[51] **Int. Cl.** **A61h 1/00**

[58] **Field of Search** ..... 128/25 B, 32–36

[56] **References Cited**

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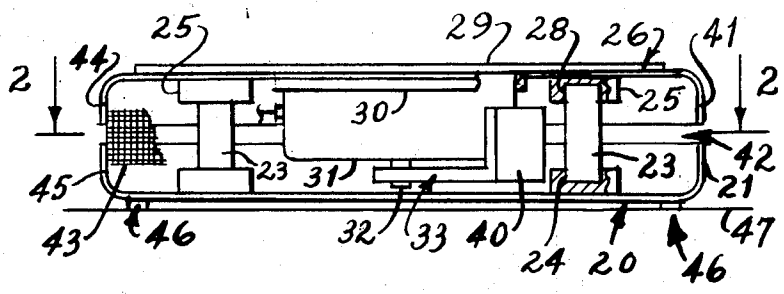
Primary Examiner—Lawrence W. Trapp

Attorney—Charles Marks

[57] **ABSTRACT**

A motor hangs from a platform and extends downwardly towards a base which is connected to the platform by means of oscillatable supports. The motor rotates an eccentric mass so as to cause the platform to vibrate, a portion of the eccentric mass being disposed laterally of the motor and between the ends thereof.

4 Claims, 14 Drawing Figures



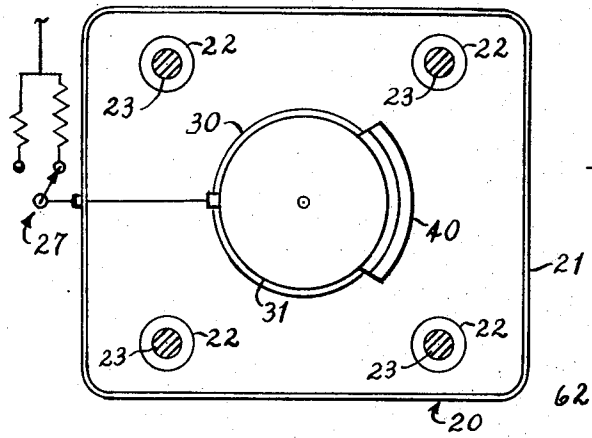


FIG. 2

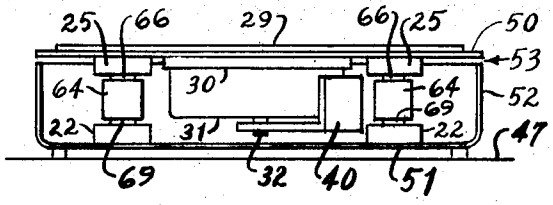


FIG. 5

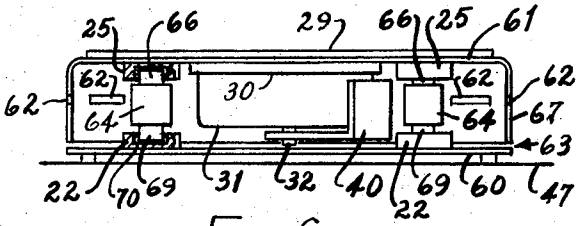


FIG. 6

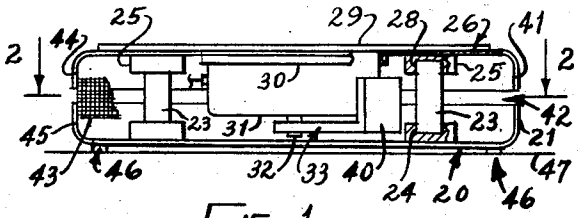


FIG. 1

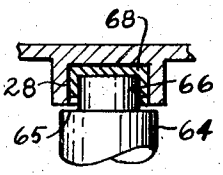


FIG. 7

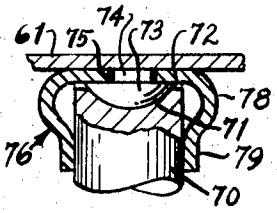


FIG. 8

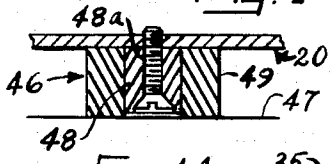


FIG. 14

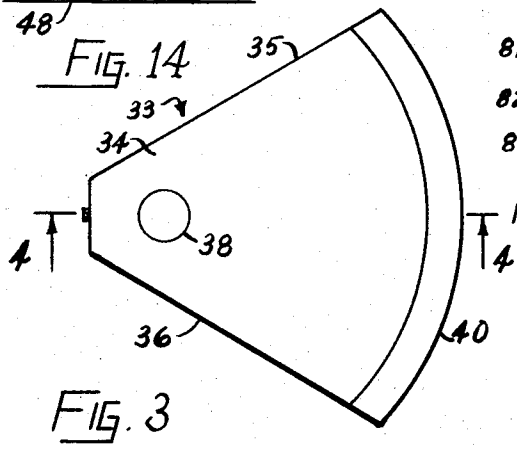


FIG. 3

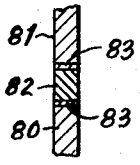


FIG. 9

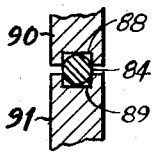


FIG. 10

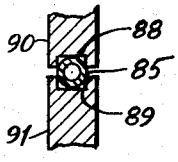


FIG. 11

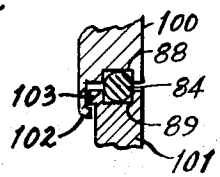


FIG. 12

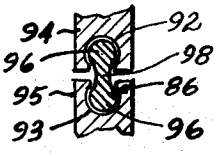


FIG. 13

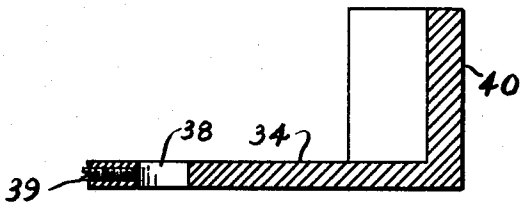


FIG. 4

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FOOT MASSAGING MACHINE

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates generally to vibratory devices and is more particularly concerned with a vibratory foot massaging machine.

2. Description of the Prior Art

Heretofore, vibratory foot massaging machines have employed a variety of intricate and cumbersome mechanisms which have required such machines to be of substantial bulk and height, as a consequence of which they have had a number of disadvantages. The height of such machines has necessarily resulted in the user thereof being positioned at a comparatively great height from the floor or other surface upon which the machines are disposed, thereby exposing him to the risk of injury in the event of a fall during operation of the machine.

Again, the vibration of the platforms of such machines tends to create moments of force with respect to the surface upon which the machines are mounted whereby, depending upon the height of the machines, they may become unstable or may make it difficult for the user to retain his position thereon. Moreover, the range of weight which conventional machines may accommodate is often quite limited so that when users thereof are of excessive weight, the machines may become inoperative or may operate inadequately or inefficiently.

Beyond this, the mechanisms employed in conventional machines of the foregoing kind often employ numerous parts and are correspondingly expensive and difficult to build and maintain.

The present invention solves these problems.

Thus, it is an object of the present invention to provide an improved vibratory foot massaging machine which is of minimal height and which imparts a strong vibratory effect.

Another object of the invention is to provide a machine of this kind which is of simple, inexpensive design, employs a minimum of parts and is easily maintained.

Another object of the present invention is to provide a vibratory foot massaging machine which can accommodate users having a great variation in weight.

Still another object of the invention is to provide a machine of the foregoing kind which is compact, easily portable and readily stored.

Other objects and advantages of the invention will be understood from the following discussion when read in conjunction with the accompanying drawing.

SUMMARY OF THE INVENTION

The present invention comprises a vibratory platform supporting a motor, the shaft of which is provided with an eccentric, rotatable mass. The motor is positioned between the vibratory platform and a base member, the said motor hanging downwardly from the platform; and said rotatable mass is mainly disposed laterally of the motor and extends upwardly towards the platform — thereby permitting minimal space between the platform and the base member.

The platform is supported by oscillatable means, utilizing rubber or other elastomeric members to permit vibration of the platform when the motor is actuated so as to turn the said eccentric mass. In addition, cold flow of said oscillatable means may be obstructed so as to limit downward movement of the platform, thereby permitting it to accommodate users of very heavy weight as well as users of lighter weight.

BRIEF DESCRIPTION OF THE DRAWING

In the drawing:

FIG. **1** is a cross-sectional, elevational view of one embodiment of the invention;

FIG. **2** is a view taken about the line **2—2** of FIG. **1**;

FIG. **3** is an enlarged plan view of the eccentric mass employed in the foregoing embodiment of the invention;

FIG. **4** is a view taken about the line **4—4** of FIG. **3**;

FIGS. **5** and **6** are cross-sectional, elevational views similar to that of FIG. **1** but showing modified forms of the invention;

FIG. **7** through **13** are fragmentary views of modified forms of oscillatable supports which may be employed in the invention;

FIG. **14** is an enlarged view of a supporting leg employed upon the base of the invention.

Throughout the several views, similar numerals are employed to refer to similar parts of the invention.

DESCRIPTION OF THE PREFERRED EMBODIMENT

As shown in FIGS. **1** and **2** of the accompanying drawing, one embodiment of the present invention comprises a horizontal base, generally designated by the numeral **20** and provided with an upright side wall **21.** The base **20** is also provided with a plurality of bosses adapted to accommodate upright, laterally oscillatable means which may comprise upright columns **23** composed of a resilient rubber or other elastomeric substance, each of said columns **23** being received within a suitable socket **24** formed in each of the bosses **22.**

The upright columns **23** are preferably disposed equidistant from the center of the base **20** and are located at equal angular intervals about the center of the base **20.**

Bosses **25** are also disposed upon the bottom of a platform generally designated by the numeral **26,** each of said bosses **25** being provided with a socket **28** similar to the previously mentioned socket **24** and surmounting each of the upright columns **23,** thereby accomplishing the support of the platform **26.**

Here again, it will be noted that the columns **23** are preferably disposed equidistant from the center of the platform **26** and are located at equal angular intervals about the center of the platform **26.**

A suitable rubber pad **29** or other slip-preventing means may be affixed to the top of the platform **26** as desired.

The bottom of the platform **26** is also provided with a centrally located ring **30** formed integrally with the platform **26** and accommodating driving means, such as a motor **31** depending from the platform **26,** as by suitable fasteners (not shown), and having a downwardly projecting shaft **32.** The shaft **32** is disposed coaxially of the centers of the base **20** and platform **26.** The bottom of the shaft **32** is in spaced relation with respect to the base **20.**

An eccentric mass, generally designated by the numeral **33** is accommodated upon the shaft **32** and is shown in FIGS. **3** and **4,** which depict enlarged views

thereof. This eccentric mass 33 includes a flat plate 34 having divergent sides 35, 36, an aperture 38 adapted to receive the aforesaid shaft 32 and means for fastening said plate 34 to said shaft 32, such as the socket screw 39 depicted in FIG. 4. The aperture 38 is located in the vicinity of one end of the plate 34. At the opposing end thereof, there is provided a curved upright member 40 having the conformation of a circular arc.

As may be seen in FIGS. 1 and 2, the plate 34 is mounted upon the shaft 32, extends laterally of the motor 31, and the upright member 40 extends upwardly toward the platform 26, the bulk of said upright member 40 being disposed laterally of the motor 31 and in a region between the level of the bottom of the motor 31 and the platform 26. The plate 34 may be made as thin as desired and the upright member 40 may be made as thick and as heavy as desired, thereby concentrating the bulk of the eccentric mass 33 laterally of the motor 31.

The platform 26 is also provided with a downwardly extending flange 41 which is aligned with and in spaced relation with respect to the side wall 21, thereby defining an aperture 42 therebetween, which said aperture 42 permits the circulation of air for cooling purposes. If desired, a suitable mesh 43 may be mounted upon the internal surfaces 44, 45 of the flange 41 and side wall 21, so as to occupy the said aperture 42 while at the same time permitting air to circulate therethrough.

The motor 31 may be controlled by a two speed switch, shown diagrammatically and designated generally by the numeral 27 in FIG. 1 and connected to a suitable source of power (not shown), it being understood that other multi-speed or variable speed switches may be employed if desired.

With the foregoing arrangement, it will be seen that upon actuation of the motor 31, the eccentric mass 33 will be rotated so as to cause the upright columns 23 to oscillate laterally, thereby permitting the platform 26 to undergo a corresponding oscillation or vibration. In this way the platform 26 is available for communicating such vibration to any desired part or parts of the body of the user, such as his feet, legs, arms, torso and the like, which may be brought into contact with the platform 26 as desired.

In conventional vibratory machines, the vibration is frequently vertical or extends in only two opposing, horizontal directions so that any massage thereby communicated to the user is corresponding limited. However, in the present invention, the foregoing oscillation or vibration is not only horizontal but is also rotational, the said oscillation or vibration being directed radially of the center of the platform and at angular intervals extending throughout 360 degrees around the center of the platform 26. Moreover, if desired, the machine may be disposed at any desired inclination with respect to the horizontal so as to communicate a massage in said inclined direction.

An important feature of the invention resides in the fact that the principal limitation upon the distance between the platform 26 and the base 20 is the depth of the motor 31. As is well known, such depth may be comparatively shallow, there being, for example, so-called "pancake" motors which are commercially available and which are quite thin. Consequently, the height of the platform 26 from any surface 47 upon which the base 20 is disposed, is correspondingly small so as to require very little effort on the part of the user to mount the platform 26. So, also, the stability of said platform 26 and the ease with which the user may maintain his position thereon is correspondingly increased. Moreover, a very large vibratory force may be generated by the rotation of the eccentric mass 33 in the confined space between the base 20 and the platform 26, and hence, it will be seen that such vibratory force is available in a very compact machine.

It will also be noted that when the weight of the user is imposed upon the platform 26, its vibration will not result in any significant tendency of the entire machine to "crawl" or move horizontally upon any surface 47 on which it rests. However, the vibration will urge the machine more effectively to move about such a surface 47 when the weight of the user is not imposed upon the platform 26.

To avoid such movement, a plurality of legs, generally designated by the numeral 46, depend from the base 20 and rest upon said surface 47. As shown in FIG. 14, which depicts an enlarged cross-sectional view of one of the legs 46, it includes a central core 48 composed or a rigid substance having a high spring constant, such as hard rubber, said core 48 being affixed to the base 20 by suitable fastening means such as a screw 48*a*, the core 48 being retracted from the surface 47 when the weight of the machine is not disposed thereon. A yieldable, resilient sleeve 49, composed of a material having a low spring constant, such as soft rubber, is engaged with said core 48 and rests upon the surface 47. With this arrangement, the weight of the above described machine is sufficient to depress the core 48 into contact with the surface 47 so as to permit said core 48 to support said weight effectively. At the same time, the sleeve 49 is compressed between the base 20 and the surface 47, and any vibration of the platform 26 which may be communicated to the base 20 will tend to be absorbed by the sleeve 49 as well as the core 48 so as to inhibit movement of the base 20 and consequently, of the entire machine, about the surface 47.

Modified forms of the invention are depicted in FIGS. 5 and 6. As may be seen in FIG. 5, the platform 50 is horizontal and is not provided with any flange; and the base 51 is provided with upright side walls 52 which are in spaced relation with respect to the platform 50, thereby forming an aperture 53 for air circulation purposes.

As may be seen in FIG. 6, the base 60 is horizontal and is not provided with any side walls; and the platform 61 is provided with a flange 67 extending downwardly towards the base 60 but being in spaced relation with respect thereto so as to form an aperture 63 for air circulation purposes. Additional apertures 64 may be provided in the flange 67 as desired.

In the forms of the invention depicted in FIGS. 5 and 6, a modified form of laterally oscillatable means may be employed. Thus, as shown in FIG. 7, said laterally oscillatable means may comprise a column 64 composed of a metallic or other rigid material and provided with a shoulder 65 and extension 66 having a diameter smaller than that of the column 64. The extension 66 is accommodated within a cup 68 composed of a yieldable rubber or other elastomeric material, which said cup 68 is disposed within the socket 28 formed in the same manner as in the previously described form of the invention depicted in FIGS. 1 and 2. At the lower portion of the column 64, there is also provided an exten-

sion 69 (as depicted in FIGS. 5 and 6) similar to the extension 66 and similarly accommodated within a cup 70 similar to the cup 68 and disposed in boss 22.

It will be seen that when the motor 31 and eccentric mass 33 are actuated, the columns 64 are induced to oscillate laterally and to permit the platforms 50, 61 to undergo a corresponding oscillation or vibration, the yieldable cups 68, 70 permitting the oscillatory movement of the columns 64.

It will also be observed that when the platforms 50, 61 are depressed by a weight imposed thereon, the elastomeric material of the cup 68 will be squeezed so as to tend to flow out of the socket 28, thereby permitting the bosses 25 of the platforms 50, 61 to be urged into contact with the columns 64 so as to interfere with the vibratory movement of said platforms 50,61. To avoid this, the said flow of the elastomeric material of the cup 68 is abuttable with the shoulder 65, thereby maintaining the column 64 in spaced relation with respect to each boss 25. Hence, even though a very obese user imposes his entire weight upon the platforms 50, 61, an efficient vibratory movement of said platforms 50, 61 may still be accomplished.

FIG. 8 depicts a modified arrangement of parts which may be employed in lieu of other laterally oscillatable means previously described. In FIG. 8, the column 70 is composed of a metallic or other rigid material and is provided with a curved recess 71 formed in the upper end 72 of the column 70. Said curved recess 71 slidably accommodates a rounded head 73 in spaced relation with the platform 61 but connected thereto by a neck 74. Said neck 74 extends through an aperture 75 in a yieldable rubber sleeve generally designated by the numeral 76 and having an expanded portion 78 near its upper end and a portion 79 of reduced diameter near its lower end, which said portion 79 embraces the column 70. Here again, the column 70 is susceptible of lateral oscillation while at the same time permitting the platform 61 to undergo a corresponding oscillation or vibration.

Other laterally oscillatable supporting means may also be employed in lieu of those previously described. The above described columns and sockets may be dispensed with entirely and in their place, portions of the platform and base may be employed as supporting means separated by suitable oscillatory joints. Thus, as shown in FIG. 9, the side wall 80 similar to the above mentioned side wall 21 is aligned with flange 81 similar to the above mentioned flange 41. In this arrangement, however, a yieldable gasket 82 is affixed by a suitable adhesive 83 to the side wall 80 and flange 81, thereby permitting lateral oscillation of the flange 81 with respect to the side wall 80, which also provides support for said flange 81.

As alternatives to the arrangement depicted in FIG. 9, a yieldable, solid gasket 84 or a yieldable, tubular gasket 85, as shown in FIGS. 10 and 11, or a gasket 86 of elongated cross-section, as shown in FIG. 13 may be employed. The solid gasket 84 or tubular gasket 85 may be disposed in opposing planar grooves 88, 89 formed in the flange 90 and side wall 91; and the gasket 86 may be disposed in the opposing curved grooves 92, 93 formed in the flange 94 and side wall 95, the said gasket 86 including, in cross-section, opposing rounded ends 96 and an intermediate connecting web 98. If desired, these alternatives may also include a snap-on arrangement which prevents accidental disassembly of the various parts of the invention. Thus, as shown in FIG. 12, the solid gasket 84 is disposed in opposing planar grooves 88, 89 formed in flange 100 and side wall 101. A curved, overhanging lip 102 depends from the flange 100 and is snappably engageable with an enlarged bead or ridge 103 formed on the side wall 101, thereby permitting easy engagement of said flange 100 and side wall 101 and obstructing disengagement thereof.

It is to be understood that the flanges and side walls depicted in FIGS. 9 through 13 are intended as alternatives to the previously described flanges and side walls forming parts of the above mentioned platform and base, and that in the case of the forms of the invention employing the arrangements shown in FIGS. 9 through 13, the yieldable gaskets 82, 84, 85, 86 are laterally oscillatable so as to permit oscillation or vibration of the platform in a manner similar to that described in connection with the forms of the invention shown in FIGS. 1, 2, 5 and 6.

I claim:

1. In a vibratory massaging machine, the combination comprising:
- a. a base;
- b. supporting means provided on said base;
- c. laterally oscillatable means surmounting said supporting means;
- d. driving means depending from said platform and extending downwardly from said base;
- e. an eccentric mass driven by said driving means;
- f. a portion of said eccentric mass extending upwardly towards said platform from the region at the bottom of said driving means;
- g. the said supporting means provided on said base including a plurality of bosses formed integrally with said base and having a plurality of sockets;
- h. the said platform including a plurality of bosses formed integrally with said platform and having a plurality of sockets;
- i. the said laterally oscillatable means including upright columns accommodated within the sockets in said base and platform;
- j. said upright columns being equidistant from the center of said platform and disposed at equal angular intervals thereabout;
- k. said columns being composed of a rigid material;
- l. the ends of said columns being formed with curved recesses;
- m. rounded members depending from said platform and slidably engaged with said curved recesses;
- n. an elastic sleeve disposed between the ends of said columns and said platform, and engaged with said columns.

2. In a vibratory massaging machine, the combination comprising:
- a. a base;
- b. supporting means provided on said base;
- c. laterally oscillatable means surmounting said supporting means;
- d. driving means depending from said platform and extending downwardly towards said base;
- e. an eccentric mass driven by said driving means;
- f. a portion of said eccentric mass extending upwardly towards said platform from the region at the bottom of said driving means;
- g. said base including a horizontal portion and a side wall;

h. said platform including a horizontal portion and a flange aligned with said side wall;
i. said flange and side wall being in spaced relation with respect to each other and being provided with a resilient gasket affixed to said flange and side wall.

3. In a vibratory massaging machine, the combination comprising:
a. a base;
b. supporting means provided on said base;
c. laterally oscillatable means surmounting said supporting means;
d. driving means depending from said platform and extending downwardly towards said base;
e. an eccentric mass driven by said driving means;
f. a portion of said eccentric mass extending upwardly towards said platform from the region at the bottom of said driving means;
g. said base including a horizontal portion and a side wall;
h. said platform including a horizontal portion and a flange aligned with said side wall;
i. said flange and side wall being in spaced relation with respect to each other and being provided with opposing grooves;
j. a resilient gasket being accommodated within said opposing grooves.

4. In a vibratory massaging machine, the combination comprising:
a. a base;
b. supporting means provided on said base;
c. laterally oscillatable means surmounting said supporting means;
d. driving means depending from said platform and extending downwardly towards said base;
e. an eccentric mass driven by said driving means;
f. a portion of said eccentric mass extending upwardly towards said platform from the region at the bottom of said driving means;
g. said base being provided with a plurality of legs disposable upon a supporting surface;
h. each of said legs including a central core and a sleeve surrounding said central core;
i. said central core being composed of a rigid material;
j. said sleeve being composed of a soft, resilient material;
k. said central core being normally retracted within said sleeve;
l. said sleeve being compressible by the weight of said machine against said surface, whereby said central core is brought into abutment with said surface.

* * * * *