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Brown, Jr.

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[54] **KINESITHERAPY APPLIANCE**

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

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

[58] **Field of Search** 128/33–36, 128/24.2, 41

[56] **References Cited**

UNITED STATES PATENTS

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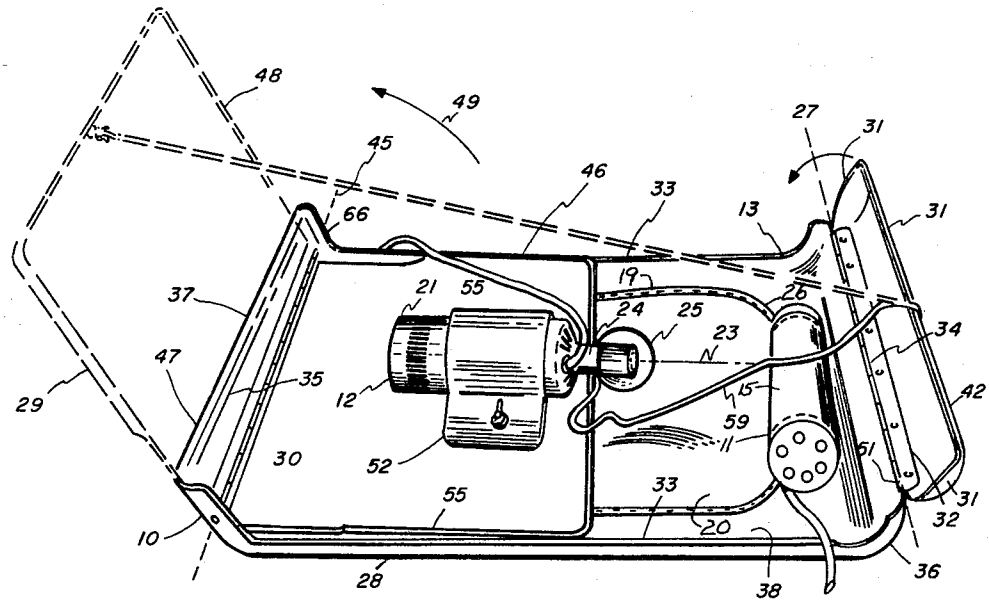
[57] **ABSTRACT**

A kinesitherapy appliance for use in demonstrating motor operated vibratory devices has a panel structure that includes a base panel member for supporting a pad-type vibratory device. The panel member is equipped with pivotally mounted end panel members at its opposite ends and a hand manipulatable vibratory device is mounted on one of these panels. Biasing means are employed during use of the appliance to urge the end panel against the foot end of a participant in the demonstration. The motor housing or casing for the pad-type device is located at the other end of the base panel member, and here a pivotally mounted end piece is arranged to cover and shield the casing from the participant's leg and which is urged by the weight of the participant's leg into an arrangement where the casing is clamped between the end piece and the underlying support panel. End walls to which the end panels are pivoted provide arrangements that enable the end panels to fold downward into a compact package-type arrangement that facilitates easy storage and carrying of the appliance. Structurally, either vibrating device may be removed from the assembly and separately employed for demonstration purposes.

7 Claims, 5 Drawing Figures



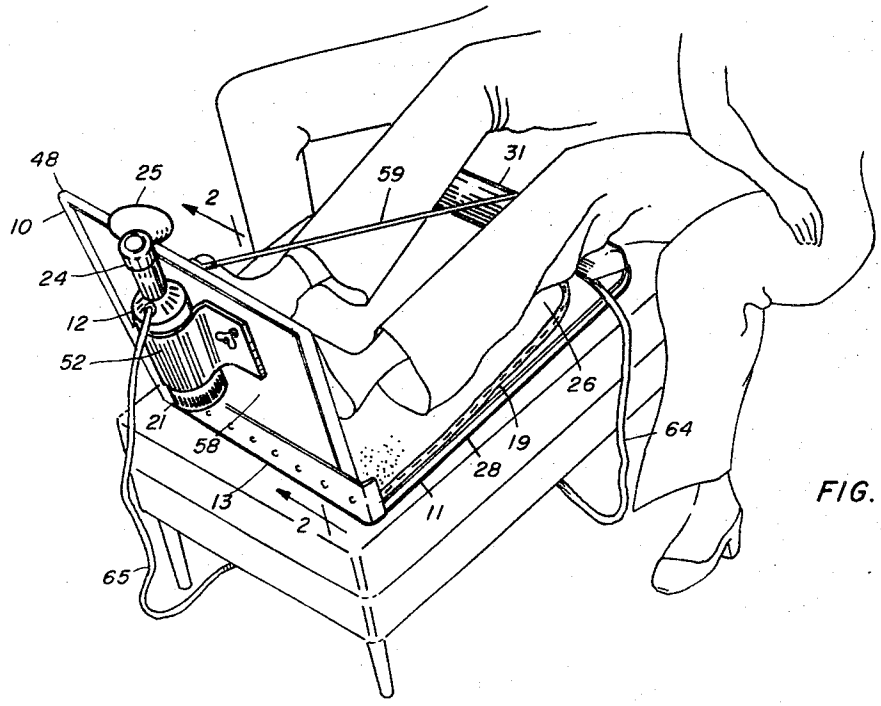

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FIG. 1

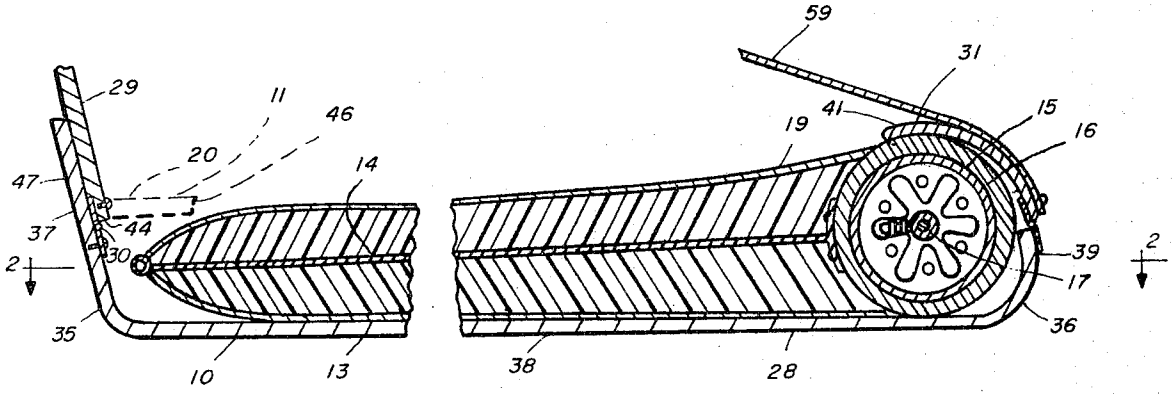
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FIG. 2

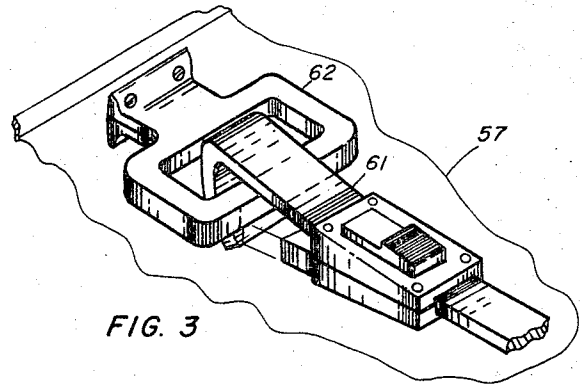

FIG. 3

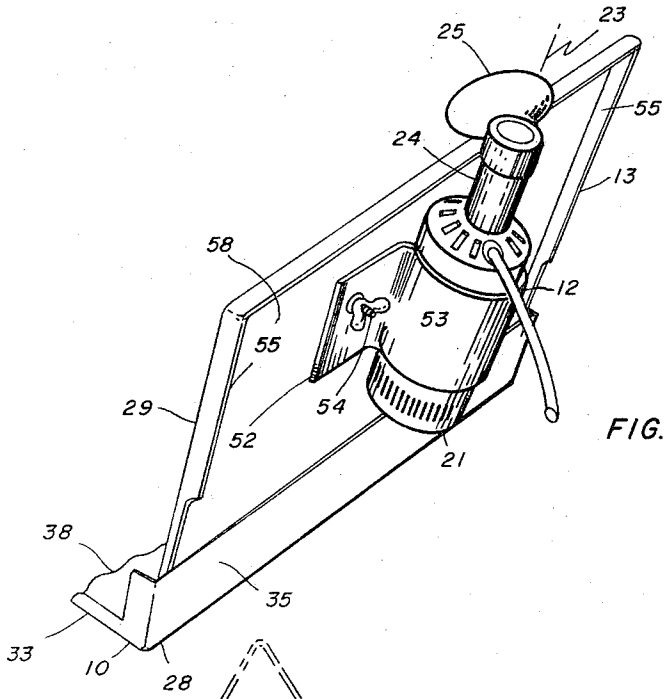

FIG. 4

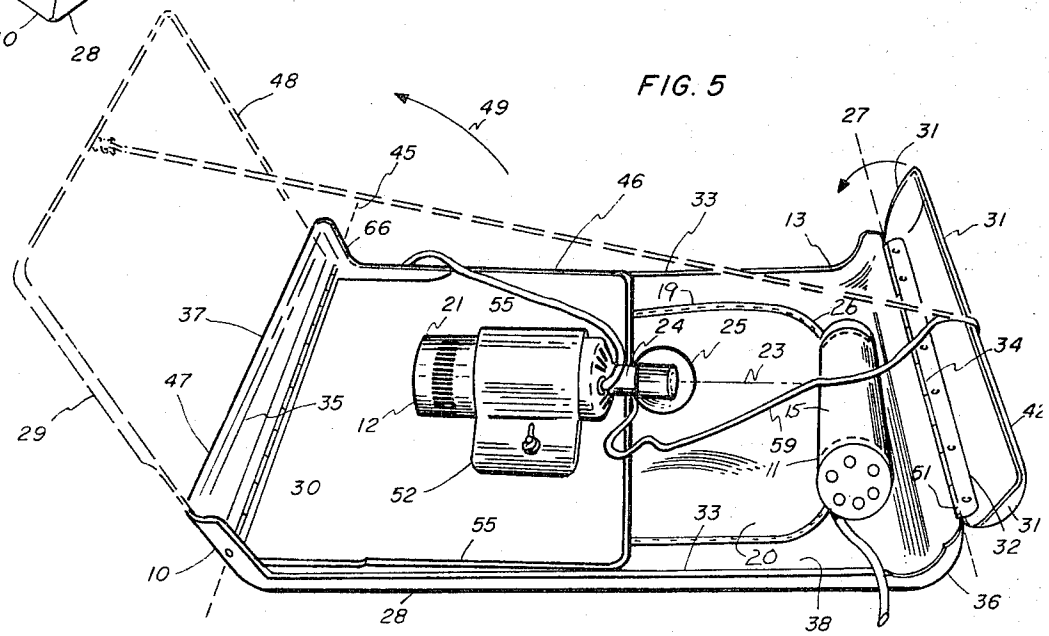

FIG. 5

KINESITHERAPY APPLIANCE

This invention relates to a kinesitherapy appliance which may be used for massaging the foot and leg areas of a human body for purposes of demonstrating motor operated kinesitherapy devices that may be used separately and apart from their assembled arrangement in the appliance.

Kinesitherapy is frequently recommended for treating those afflicated with blood circulation problems, strained muscles, arthritic conditions, insomnia, and other afflictions. The two most popular electric motor operated vibratory devices that are used in such treatments are the hand manipulatable-type of vibratory device which is held in the hand by the user, and the pad-type vibratory device which in use is normally supported on a suitable support surface.

The hand manipulatable-type vibratory device has a head element, usually in the form of a small resilient suction cup, that is applied directly to the afflicated body part and the vibratory motion is transmitted to the body part through this head element. This type of vibratory device has a rigid casing that houses a motor with an eccentrically weighted shaft and when the motor is energized it imparts a gyratory-type vibratory motion to the casing and head element that is mounted on the casing.

The pad-type of vibratory device is supported on a suitable surface during use and the body part being massaged receives the treatment through contact with the pad. The pad has a flat, more or less rigid internal core structure that is fixed at one end of the pad to a casing in which an electric motor with an eccentrically weighted shaft is similarly housed. By energizing the motor, the vibratory motion imparted to the casing is in turn imparted to the core structure of the pad. The core in these pad-type kinesitherapy devices is usually surrounded by a media of resilient material and the body part being massaged receives the treatment from vibratory motion that is transmitted to the body part through the resilient material.

The selection or purchase of a kinesitherapy device by a person desiring or needing such treatment is usually confusing and somewhat embarrassing to the potential purchaser. For one, the sensation from a treatment by each of the aforementioned types of vibratory devices is different from that derived through the use of the other device. As a result, a demonstration of each device is needed, or at least desirable, in order for the purchaser to sample the stimulating and therapeutic effects before making a decision as to the selection of either of the devices. Potential purchasers are usually reluctant to participate in such presale demonstrations however. This is attributed to embarrassment resulting from the presence at such demonstrations of the sales or demonstrating personnel. In many cases, for example, a person afflicted with a muscular disorder is reluctant to have the disordered area subjected to a demonstrative treatment in the presence of the demonstrating sales person. On the other hand, it has been found that a potential purchaser is less reluctant to participate in the demonstration if, as a participant, he may be seated during the demonstration and, without the aid of another, permitted to sample and experience the vibratory motions of the respective devices in the foot and calf areas of the body. The nerve response to vibratory motions applied in these areas of the body is extremely acute and capable of pleasurable and relaxing interpretations by a participant in such demonstrations. Accordingly, there is a need for some type of appliance that can be used for massaging the foot and calf areas of the body and which incorporates in its structure vibratory devices that can be separated from the other components of the appliance and separately used for kinesitherapy treatments.

A general object of the invention is to provide improved kinesitherapy appliances and devices. One particular object is to provide an appliance for demonstrating motor operated vibratory devices that may be detached or separated from the appliance and separately used for kinesitherapy treatment independently of the appliance or other vibratory device embodied therein. Yet another object is to provide a kinesitherapy appliance for demonstrating such devices and which is simple and inexpensive to manufacture and which during use for demonstration purposes is free from offensive noises that frequently occur when assembled mechanical parts are subjected to vibratory motions. Still another object of the invention is to provide a kinesitherapy appliance that may be used in the demonstration of vibratory devices and thereafter folded up to provide a compact package which may be stored or readily carried about.

The kinesitherapy appliance of the invention was developed for demonstrating a hand manipulatable-type vibratory device and a pad-type vibratory device either simultaneously or independently as components of the appliance or alternatively as vibratory devices that may be used separate and apart from any cooperating relationship as components of the appliance. The appliance has a rigid base panel member on which the pad-type vibratory device is supported. Hinged at one end of this base panel member is an end panel member that can be swung from a generally horizontal position at which the pad of the pad-type vibratory device is sandwiched between it and the bottom portion of the base member to a generally upright position at which the panel serves as a vibrating component that is encountered by the foot of a participant in a demonstration utilizing the appliance. The hand-type vibratory device is centrally mounted against the outer face of this end panel member and serves as the initial source of vibratory motion that is transmitted to the foot of the participant through the end panel. One aspect of the invention has to do with the use of a means for biasing the rigid end panels toward the pad sandwiching position when it is in the generally upright position. This biasing means constantly urges the contact member into contact with the foot of the participant during use of the appliance. Suitable spring means or other means may be used for this purpose but the use of an elongated elastic deformable means has been found preferable to the use of metal springs because the latter have a tendency to rattle and set up unwanted noises when the motorized components are energized.

The pad-type vibratory device component of the appliance has an end mounted casing in which the motor is housed and the axis of the casing and of the eccentrically weighted shaft of the motor assumes a generally horizontal transverse position at the end of the base panel member which is opposite that of the end panel. Here at this opposite end, the base panel member has a rigid end panel piece or member that is hinged to swing to a position at which it overlies the motor casing

of the pad. When the participant in a demonstration is being subjected to treatments by the devices, the calf of the participant's leg generally rests on the pad with the foot in contact with the end panel on which the hand manipulatable vibratory device is mounted and in this position the weight of the leg serves to clamp the vibrating casing of the pad-type device between the pivotally mounted end piece in the bottom portion of the base panel. By being clamped in the sandwiched position between the end piece and bottom portion of base panel, the vibrating motion from the casing of the pad-type device is imparted to the end piece in addition to being imparted to the core of the pad. As such, the participant's leg is subjected to vibratory motion through three different areas of the appliance.

The novel features which are believed to be characteristic of this invention are set forth with particularity in the appended claims. The invention itself, however, both as to its organization and method of operation, together with further objects and advantages thereof may best be understood by reference to the following description taken in connection with the accompanying drawings, in which:

FIG. **1** is an isometric view illustrating a kinesitherapy appliance embodying the principles of the invention and which is seen in an operating position as supported on a suitable structure;

FIG. **2** is a longitudinal sectional view through the appliance as generally seen along the Lines-**2**—**2** of FIG. **1**;

FIG. **3** is an isometric view of a fragment of the assembled appliance showing a means that is used for attaching a resilient element to the foot panel of the appliance;

FIG. **4** is an isometric view of a fragment of the device showing the means employed for securing the hand held vibrating device to the foot panel member of the support structure for the vibratory devices; and

FIG. **5** is an isometric view of the appliance seen in FIG. **1** as viewed with the foot panel in a collapsed position.

Reference is now made to the drawings and wherein the kinesitherapy appliance is generally designated at **10.** It includes a pad-type motor operated vibratory device **11,** a hand manipulatable type motor operated vibratory device **12,** and a supporting panel structure **13** for the vibratory devices **11** and **12.** The panel structure **13** is collapsible to provide a relatively compact package that can be stored or carried about and as seen in FIG. **1** as opened up for use in a demonstration.

The pad-type motor operated kinesitherapy device shown in the illustrated embodiment is of a type shown in Murphy U.S. Pat. No. 2,833,276. It includes a rigid, flat core member **14** that is fixed at one end **26** of the pad component **19** of the device to the housing or casing **15** for a motor **16** that has an eccentrically weighted shaft **17.** The core **14** is encased in resilient material **18,** such as foam rubber, and the generally flat pad **19** is provided with a suitable, flexible outer protective cover that is generally designated at **20.** The electric motor **16** of the device is connected to a suitable electrical power source by means of the electrical cord designated at **64.**

The hand manipulatable-type kinesitherapy device or vibrator **12** shown in the illustrated embodiment is of a type shown in Murphy U.S. Pat. No. 2,674,994. It has a rigid metal casing **21** that houses a motor **22** which like the motor of the other device has an eccentrically weighted shaft. The axis of rotation for the motor shaft is designated at **23,** and the neck **24** of the casing **21** is equipped with a head element **25.** This head element **25** is shown in the form of a resilient suction cup-type member that is adapted to encounter the human body when the device is used separately and apart from the assembled arrangement shown for the appliance **10.** The motor of this device **12** is connectable with a suitable electrical power source as by means of the electrical cord designated at **65** in FIG. **1.**

The panel structure **13** for supporting the vibratory devices **11** and **12** includes a rigid base panel member **28,** a rigid end panel member **29** that is hinged by hinge **30** to member **28** and serves as a foot contacting vibratory member during use of the appliance, and yet another end panel member or piece **31** that is hinged, as by means of a hinge component **32,** to member **28.** As previously indicated, this end piece member of the supporting structure **13** serves to shield the leg from direct contact with the metal casing for the pad-type vibrating device and serves under the weight of the participant's leg to clamp the casing **21** against the base panel.

Panel members **28, 29** and **31** are substantially rigid members that will transmit vibratory forces applied to them. In the illustrated embodiment, these panel members are shown as made from fiberglass reinforced and molded plastic material although any other suitable rigid material, such as metal or wood, may be used in the construction of the panel members in accord with the principles of the invention. The base panel member **28** is basically designed to support the flat, pad-type vibratory device **11** in the generally horizontal position shown in FIG. **1.** It has up turned opposite side edges **33** that serve to restrict lateral movement of the device in its supported position on the flat bottom portion **38** of the member. At its opposite ends **34** and **35,** the base panel member **28** is provided with up turned end edges that provide opposite end wall components **36** and **37** in the base panel structure. These end wall components are integrally molded with the flat bottom portion **38** of the base member **28** in the illustrated structural arrangement.

End wall **36** has a contour that generally conforms to the peripheral contour of the motor casing **15** of the pad-type device **11.** The elongated end panel piece or member **31** as best seen in FIG. **5** is oriented transversely to the base panel member and pivotally mounted at the upper edge **39** of the end wall **36** as by means of a piano-type hinge designated at **32.** Panel member **31** is also contoured to that of the motor casing **15** in the illustration, and by virtue of the hinge connection is capable of being swung about the horizontal pivot axis **27** of the hinge pin **51** from a first position **41** at which the motor casing **15** is clamped between the panel member **31** and the bottom portion **38** of the base panel **28** (see FIG. **2**) and a second or open position **42** (see FIG. **5**) at which the pad-type vibrator **11** may be removed from the supporting structure. The opposite ends of the end panel piece **31** are provided with decorative down turned edges **43** and in the clamping position **41,** these edges **43** are sufficiently spaced from the adjacent side edges **33** of the base panel member **28** to permit circulation of air into the area of the motor casing **15** for motor cooling purposes. A piano-type hinge is preferred for making the pivotal connection and is arranged so that it basically spans the

distance between the opposite sides of the base panel so that vibrations transmitted between the panels through the hinge are uniformly transmitted and/or dampened through the connection. The hinge is also arranged so that the pivot axis **27** is offset from the general plane of the bottom portion **38** of panel member **28** to facilitate an arrangement where the forces applied to the panel **31** in clamping the motor casing **15** against the bottom portion when the panel is in the operating position **43** are primarily exerted in a downward direction.

The opposite end wall **37** of panel member **28** is upwardly inclined from the flat bottom portion **38,** and the foot end panel **29** is hinged along its lower edge **44** to this end wall **37** by means of yet another piano-type hinge **30.** The hinge arrangement here is such that the pivot axis **45** for movement of the foot panel **29** is offset from and spaced above the plane of the bottom portion of the base panel so as to accommodate a sandwiched location for pad **19** between the bottom portion **38** and panel **29** when the latter panel member **29** is swung to the collapsed position **46** (see FIG. **5**).

The axis **45** is also located between the upper edge **47** of wall **37** and the bottom portion **38** of panel **28** so that when the foot panel member **29** is swung to the open position **48,** the wall **46** serves to limit and stop further pivotal movement in the direction of arrow **49.**

The foot panel member **29** has decorative out turned edge portions **50** above the end wall **37** and the hand manipulatable vibrating device **12** is mounted at the outer face **51** of the panel member **29** as by means of a yoke-type bracket designated at **52.** Bracket **52** is releasably secured to the panel **26** by means of wing nuts **53** that screw onto suitable screw elements **54** that are spaced apart and rigidly mounted on the panel. The motor casing **21** for the hand manipulatable device **12** is clamped against the outer face of the panel **29** by the bracket **52** in the illustrated arrangement and is seen with the axis **23** of the motor shaft oriented generally perpendicular to the axis of movement of the panel. This arrangement of the motor axis is optional and tends to impart a lateral vibratory movement to the foot panel when the vibrator **12** is operating. If the arrangement is such that the casing is clamped with the axis parallel to the pivot axis **45** for movement of the end foot panel, the vibratory motion imparted to the foot panel is in a direction which is transverse to the pivot axis **45.** Regardless of which way the casing is oriented in its clamped position on the foot panel, it is preferable that the device be centrally mounted between the opposite side edges **55** so that vibrations transmitted to the base panel member **28** through the hinge **30** are dampened and/or transmitted uniformly. Thus if the device **12** is mounted closer to one of the opposite edges **55** than the other, not only is there unequal distribution of the vibratory forces to the base panel but the hinge pin **66** tends to wear unevenly and thus have a shorter useful life.

The appliance also has a means for biasing the foot panel **29** toward the collapsed position **46.** This is shown in the illustrated embodiment in the form of an elongated elastic element **59** that resiliently urges the panel **29** in the direction of arrow **56** when the panel is in the operating position **48** shown in broken lines in FIG. **5.** Element **59** may be made from rubber or other suitable resiliently deformable material and is shown in the illustrated embodiment as fixed at one end by a suitable fastener **60** to the end wall **36** of the base panel member (see FIG. **2**). At the other end the element **59** carries a hook element **61** which may be releasably fastened to a suitable eyelet **62** that is mounted on the inside face **57** of the foot panel.

The use of the appliance **10** is illustrated in FIG. **1.** When the appliance is placed in use, it is supported on a suitable support such as the foot stool shown in the figure, and from a seated position the participant in the demonstration places his leg in the position shown in the figure and with the calves supported on the pad **19** and the foot in contact with the inner face of the foot end panel **29.** The appliance may be used by two people simultaneously, as illustrated in FIG. **1,** with the leg of each person on opposite sides of the elastic element **59.** Alternatively, when the device is being used by one person in a demonstration, the person's legs may be positioned to straddle the element **59.** With the participant's legs in the positions shown, either one or both of the vibrators **11** and **12** may be energized to carry out their intended function in the assembled appliance **10.** With both of the devices energized the participant will sample the vibratory forces from the pad-type vibrator **11** through contact with the pad **19** in the calf area of the leg and through contact with the clamping end piece **31** will experience the vibratory forces that are imparted to the motor casing clamping panel member **31.** Simultaneously the vibratory forces from the hand manipulatable vibratory **12** will be imparted to the foot area of the participant through the foot end panel **29.**

The resilient element **59** carries out an important function in the assembled appliance in that it constantly urges the foot end panel against the foot end of the participant's leg so that the panel follows the foot if there is any tendency on the part of the participant to withdraw from the vibratory forces applied at the foot end panel of the appliance. The use of the elastic element also has the advantage over metal spring-type means that may be used in accord with broader aspects of the invention to urge the foot end panel against the participant's foot in that movement of the elastic element under the vibratory forces imparted to it is relatively free of noises that would otherwise be present with the use of metal biasing means.

Yet another feature of the invention lies in the fact that either one or both of the vibrator-type devices **11** and **12** may be removed from the supporting panel assembly **13** and used by the participant for massaging other areas of the body.

Needless to say the supporting panel assembly may be folded together to provide a compact package which facilitates its storage or carrying about for demonstration purposes.

While only certain preferred embodiments of this invention have been shown and described by way of illustration, many modifications will occur to those skilled in the art and it is, therefore, desired that it be understood that it is intended herein to cover all such modifications as fall within the true spirit and scope of this invention.

What is claimed as new and what it is desired to secure by Letters Patent of the United States is:

1. A kinesitherapy appliance comprising a first vibrator device having a casing for housing an electric motor which is energizable to impart vibratory motion to the

casing, a second vibrator device having a generally flat pad and a casing which is secured to the pad and houses an electric motor that is energizable to impart vibratory motion to the pad, a support structure for the vibrator devices which includes a rigid base panel member having opposite ends and a flat horizontally arranged bottom portion therebetween, and a rigid end panel member that is hinged to said base panel member for pivotal movement about a horizontal pivot axis located at one of said opposite ends, said pad being supported by and resting horizontally upon said bottom portion, said end panel member being pivotally movable between a first position at which said pad is sandwiched between said end panel member and said bottom portion, and a second position at which said end panel is arranged generally upright with respect to said bottom portion, said appliance further comprising means attached to said end panel member for biasing said end panel member toward its first position when the end panel member is at its second position, and the casing of said first vibrator device being rigidly secured to and pivotally movable with said end panel member.

2. A kinesitherapy appliance in accord with claim **1** wherein the casing of said second vibrator device is restingly supported on said bottom portion at the other of said opposite ends, where said structure further includes a rigid second end panel member that is hinged to said base panel member for pivotal movement about a horizontal pivot axis located at said other of said opposite ends, said rigid second end panel member being pivotally movable to a position at which the casing of said second vibrator device is sandwiched between said second end panel and said bottom portion.

3. A kinesitherapy appliance in accord with claim **2** where said base panel member has an end wall located at said other of said opposite ends, where said second end panel member is hinged to said end wall, and where the horizontal pivot axis located at said other of said opposite ends is located spacedly above said bottom portion.

4. A kinesitherapy appliance in accord with claim **1** where said end panel member has an outer face, and where said appliance comprises means releasably secured to said end panel member at said outer face and rigidly clamping the casing of said first vibrator device thereagainst.

5. A kinesitherapy appliance in accord with claim **1** where said means comprises elongated elastic means connected to said rigid base panel member and to said end panel member.

6. A kinesitherapy appliance in accord with claim **1** where said base panel member has an end wall located at said one of said opposite ends, where said end panel member is hinged to said end wall, and where said horizontal pivot axis is locates spacedly above said bottom portion.

7. A kinesitherapy appliance in accord with claim **6** where said end wall extends above said pivot axis and is arranged to limit pivotal movement of the end panel member at its second position.

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