Nov. 25, 1930. F. W. KNOTT 1,783,171

ELECTRIC MASSAGING MACHINE

Filed June 12, 1929 5 Sheets-Sheet 1

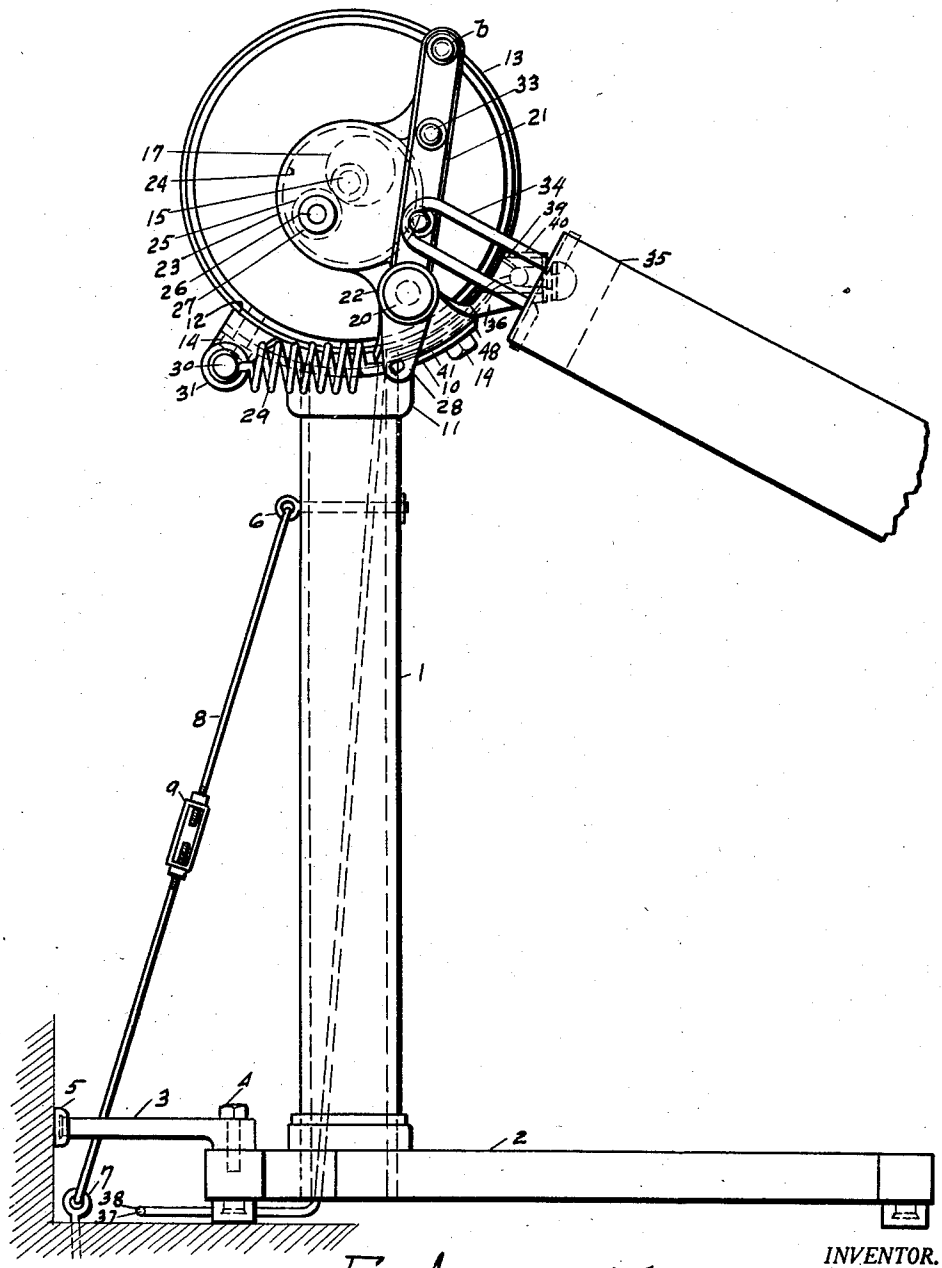


Fig. 1

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ELECTRIC MASSAGING MACHINE

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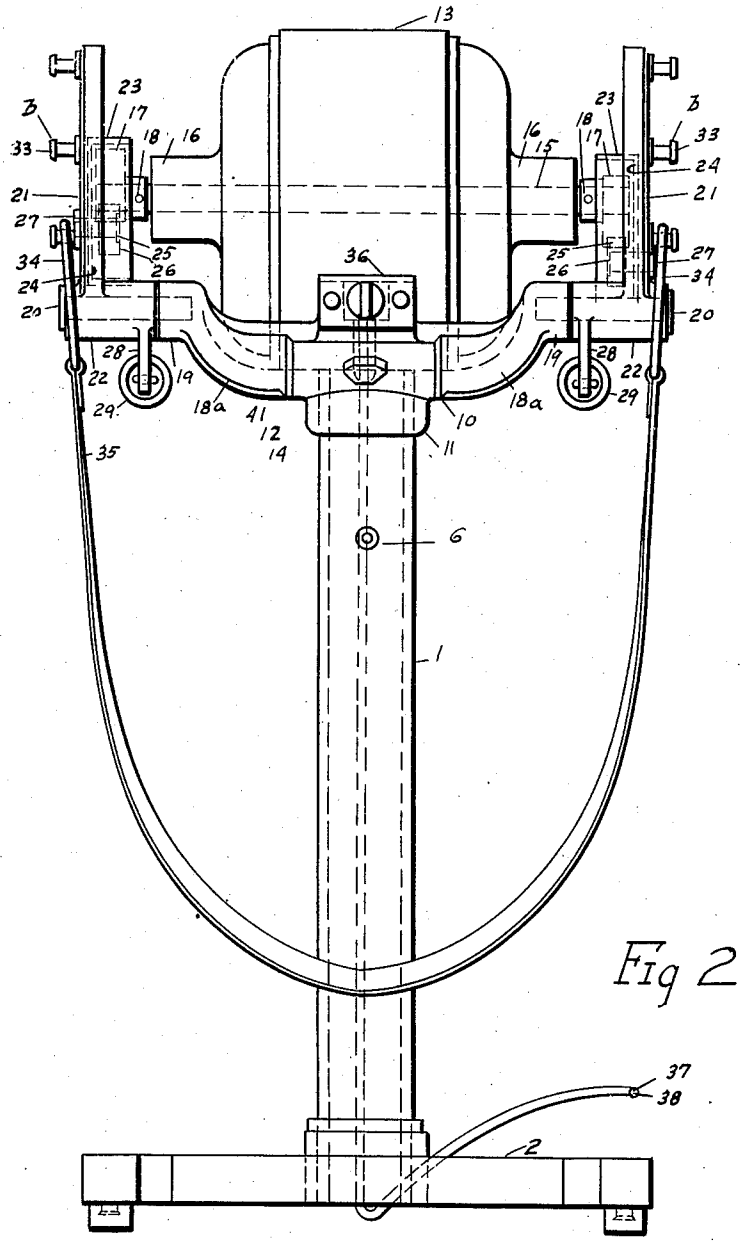


Fig 2

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ELECTRIC MASSAGING MACHINE

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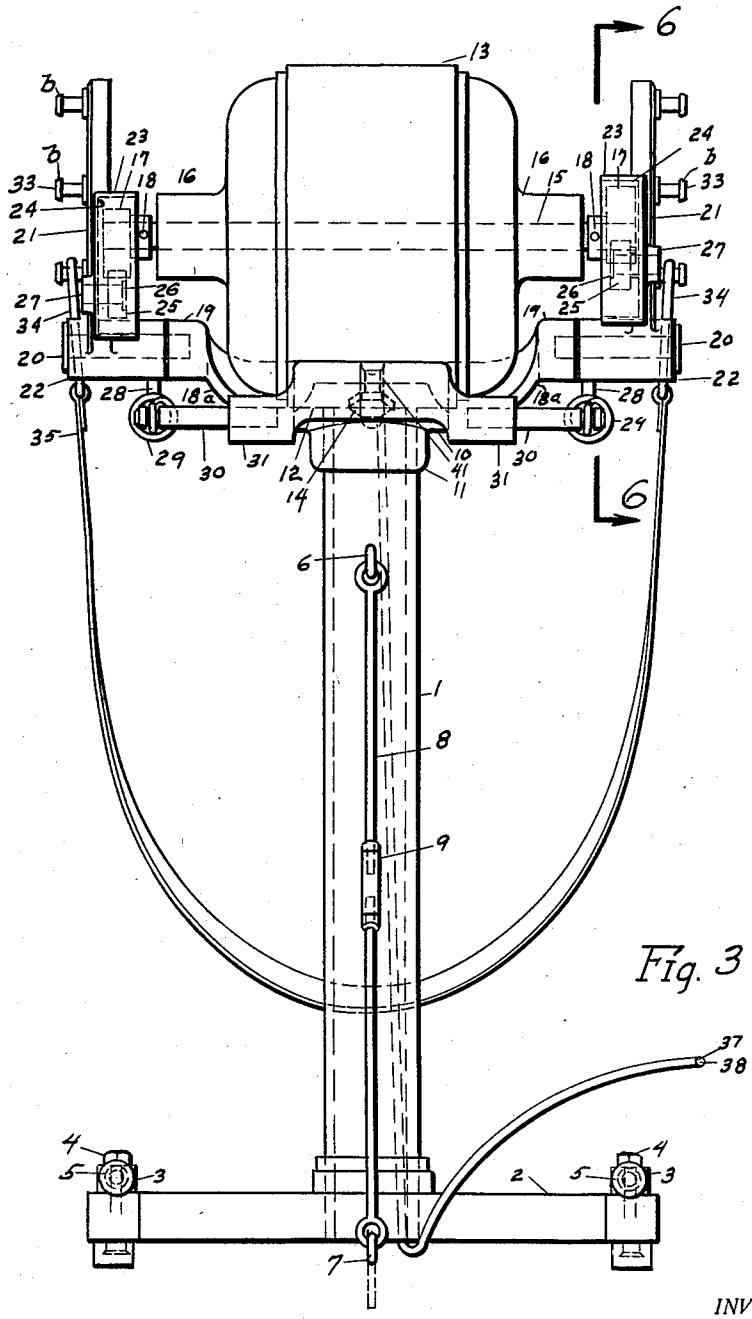


Fig. 3

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ELECTRIC MASSAGING MACHINE

Filed June 12, 1929 5 Sheets-Sheet 4

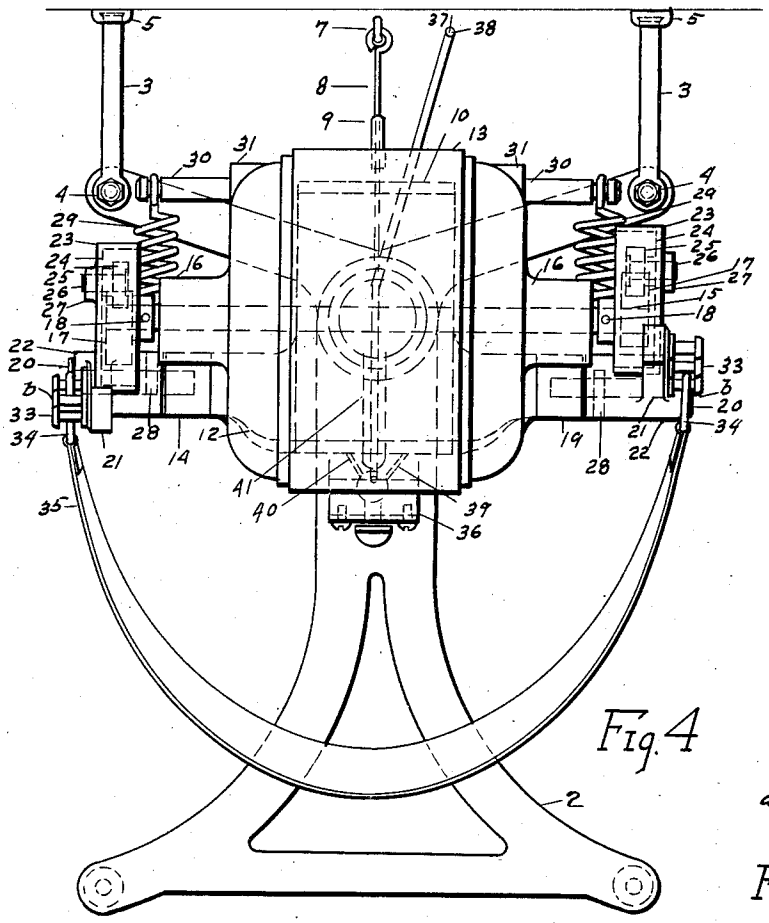


Fig. 4



Fig. 7

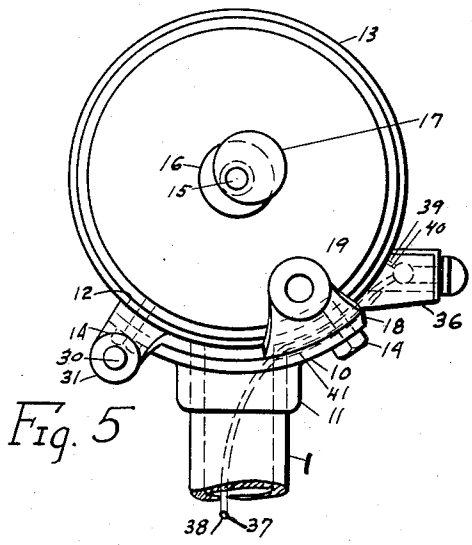


Fig. 5

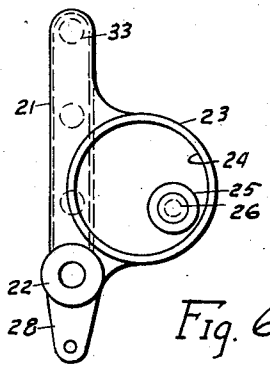


Fig. 6

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ELECTRIC MASSAGING MACHINE

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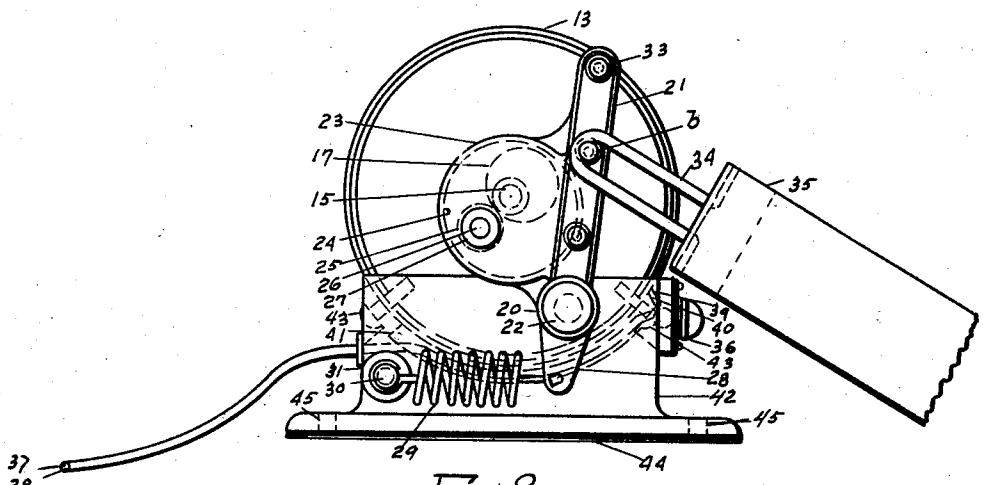


Fig. 8

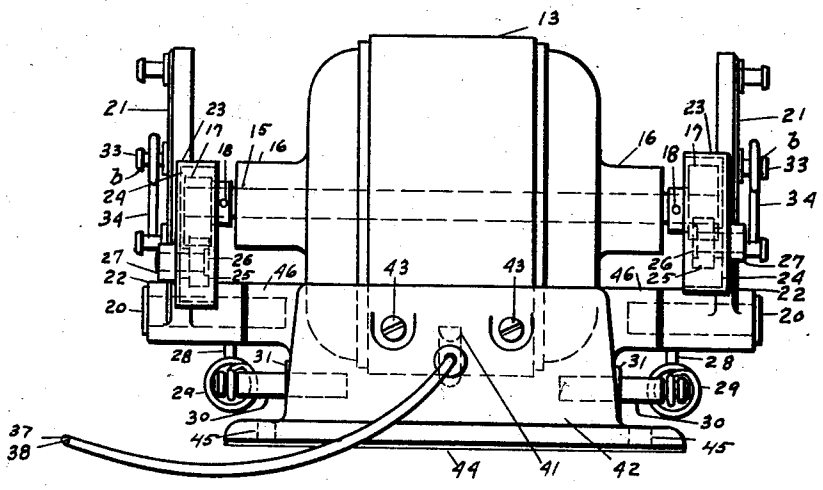


Fig. 9

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UNITED STATES PATENT OFFICE

FRANK W. KNOTT, OF DETROIT, MICHIGAN, ASSIGNOR TO KNOTT & GARLLUS COMPANY, OF DETROIT, MICHIGAN, A CORPORATION OF MICHIGAN

ELECTRIC MASSAGING MACHINE

Application filed June 12, 1929. Serial No. 370,437.

The object of my invention is to produce a health massaging machine of the oscillating type for massaging the body by use of a flexible applicator belt.

Another object is to construct a small, inexpensive massaging machine, especially adapted for home use that will occupy a very small space.

A further object is to produce a massaging machine utilizing but few operating parts for simplifying the construction and producing as near a noiseless machine as possible.

A still further object is to produce an oscillating massaging machine, having adjustable applicator arms operated directly from a rotating cam shaft for producing as nearly as possible a uniform motion and applying the same directly to opposite ends of a flexible applicator belt.

These several objects are attained in the preferred form by the construction and arrangement of parts more fully hereinafter set forth.

Similar parts on all drawings are marked by similar numerals.

Fig. 1 is an end view of my device, showing the mounted operating motor and means for connecting pivoted applicator arms.

Fig. 2 is a front view of my device, showing the relative position of the operating motor mounted on the frame and the attached applicator arms pivoted thereto at each end of the motor.

Fig. 3 is a back view of the device, showing the position of the attached cam cups on the applicator arms and spring means for assisting the cam movement.

Fig. 4 is a top view of my device, showing the general arrangement of the connecting parts and the relative position of the supporting base.

Fig. 5 is an end view of the motor section, with the applicator arm and cam cup removed, showing the operating cam as attached to the end of the motor shaft.

Fig. 6 is a sectional view taken on line 6—6 of Fig. 3, showing the inside construction of the applicator arm and connected cam cup and the relative position of the operating motor mounted therein.

Fig. 7 shows a front view of the pivoted shoe which may be substituted for the roller inside the cam cup shown in Fig. 6.

Fig. 8 shows an end view of an alternate form of support casting for converting my device into the stand type of machine.

Fig. 9 is a side view of the alternate form shown in Fig. 8, showing the general arrangement of the stand base and connected parts.

I will now describe more fully the detailed construction of my device, referring to the drawings and the marks thereon.

In general, my device comprises a standard slow speed motor, mounted in a suitable supporting frame, the motor being designed with a bearing shaft projected outside of the bearings at both ends and having an eccentric cam mounted on each end of the motor shaft, the same being set diametrically opposite each other. At each end of the motor shaft is mounted an applicator arm, formed with a cam cup on one side, and pivotally attached to the supporting frame in a position to enclose one of the motor shaft cams in each cup for oscillating therewith, the applicator arms being provided with means for attaching a flexible applicator belt for transferring the alternate oscillations of the arms directly into the belt.

The support column —1— is preferably made of a hollow tubular standard, and may be made from the ordinary metal tubing, of sufficient diameter to provide a stiff rigid support column. The column —1— is mounted in a rigid base —2—, preferably made of cast metal and preferably formed of a ribbed construction, and extending sufficiently to provide a rigid stable support for the frame and attached massaging machine when a side pressure is applied thereon, the column —1— being mounted in the base —2— near one end thereof for providing added stability thereto when in use, and preferably attached to the base by a tight pressed fit therein, although it may be attached thereto in any manner which will provide a strong rigid connection. At the back side of the base —2—, near the column connection, are mounted two wall pins —3— attached to the base by the bolts —4—. The wall pins are

extended a few inches back from the base in a horizontal position and are provided with rubber end caps —5— on the outer ends thereof, the rubber end caps being designed to engage a vertical wall for more permanently holding the base in a secure position. Through the column —1—, near the upper end thereof, is mounted an eyelet bolt —6—, which is securely attached to the column. Also a floor eyelet —7— is provided for screwing into the floor near the wall, eyelets —6— and —7— being connected by an adjustable brace rod —8—, provided with a turn buckle —9—, for securely and permanently attaching the massaging machine supports to the floor in a manner for resisting the moving of the machine when pressure is applied thereto. Mounted at the top end of the support column —1— is a support frame —10—, preferably made of cast metal, and provided with an attaching flange —11— formed on the bottom side thereof, the flange —11— being made hollow and is preferably attached to the column by pressed fit for the column end, although it may be attached thereto by any other means which would provide a suitable strong and rigid connection. The support frame —10— is formed with an upper cylindrical curved surface —12—, positioned with the axis of the curve at right angles to the column and intersecting with the column center line. Within the curved section of the support frame —10— is mounted a standard slow speed motor —13—, the motor —13— being constructed with a cylindrical drum body, which fits the upper curved surface —12— of the support and is securely attached thereto by means of the bolts —14— passing through the support casting and motor drum casing, rigidly holding the motor in place, the motor —13— being of a slow speed type, capable of operating preferably about 800 revolutions per minute, and is provided with an armature shaft —15— which projects outside of the motor bearings —16— at both ends thereof. On both ends of the shaft —15— are attached eccentric disc cams —17— fixedly connected thereto by either a pressed fit on the shaft or set screws —18—, positioned diametrically opposite each other and rotated directly with the motor. The support frame —10— is formed with projecting arms —48— at each end of the curved section —12—, which are provided with bearing bosses —19— at the outer end thereof. Within the bosses —19— are mounted pivot bearing pins —20— fixedly attached thereto and positioned in parallel alignment with the motor shaft —15—, the pins —20— being provided with heads on the outer ends thereof. Pivotally mounted on the bearing pins —20— are applicator arms —21— formed with hub sections —22— near one end thereof, providing suitable bearings for the arms. Formed on the back side of each of the applicator arms is a cam cup —23—, preferably made or cast as a part of the arm member and is formed with an open cylindrical recess —24— within the inner face thereof, the cam cup being positioned to one side of the center line of the arm, and carries a cam roller —25— rotatably mounted therein by the pivot pin —26— fixedly mounted through the boss —27—of the outer cam cup wall. The roller —25— is positioned within the cam cup approximately along the circumference of a circle passing through the center of the motor shaft, and concentric with the center of the pivot —20— for engaging the surface of the eccentric cams —17— and imparting an alternate oscillating movement to the attached applicator arms —21— as the motor —13— is rotated. On the opposite sides of the hubs —22— are formed projecting tension arms —28— extending below the hubs —20— and carry mounted thereon tension coil springs —29—, the coil springs —29— having their opposite ends connected to support studs —30— fixedly mounted in the hubs —31— formed on opposite sides of the support frame —10—, the hubs —31— being positioned on the support frame on the side opposite the pivot bosses —19— and in a manner for stressing the connected springs —29— for holding the cam rollers —25— tightly against the motor cam —17— at all times, the motor cams forcing the arms —21— backward during the pull stroke and the stressed coil springs returning the arms to their initial positions on the release strokes. The tension of the springs —29— should be sufficient to effect a constant contact between the rollers —25—and the cams —17— for the full operating motor speeds, the rollers —25— being designed to lessen the friction of the sliding cams in effecting the power movement of the stroke. If desired, the rollers —25— may be replaced by the shoe —32— as shown in Fig. 7 and which is formed with a concave surface —*a*— for fitting and engaging the outer surface of the cam —17—, which slides therein. The shoe —32— is pivoted within the cam cup in the same manner as the roller —25— and is free to rock on the supporting pivot as the cam operates instead of rolling. Along the outer sides of the applicator arms —21— are mounted applicator attaching buttons —33— fixedly attached to the arm face, the applicator buttons —33— being formed with a head —*b*— for receiving and retaining the end hook —34— of the flexible applicator belt —35—, the hook —34— being of a size for easily detaching the same from the applicator buttons and may be attached to various positions thereon: the applicator buttons —33— being placed at various positions along the arm provide means for securing the different length strokes of the

applicator belt during the alternate oscillating movements of the arms. The applicator belt —35— may be made of any desired material suitable for that type of belt and also may be provided with any type of hook end suitable for attaching and detaching to the button heads. On the front side of the support frame —10— is mounted a switch box —36— and may be of any standard type for making and breaking electric connections within electric circuit wires. The switch —36— is connected into an electric circuit through the circuit wires —37— and —38—, while the opposite side of the switch —36— is connected to the motor poles by the terminal wires —39— and —40—. For neatness in appearance, it is desired to extend the circuit wires —37— and —38— through the grooved recess —41— formed along the top curved surface of the supporting frame and down through the hollow column —1—, leading therefrom at the lower end of the column.

A modified form of my device is shown in Figs. 8 and 9, illustrating the same general construction and arrangement of the motor and connecting applicator arms, although mounted within a cabinet frame for table or stand use, instead of the stand type base and supporting casting heretofore shown, the motor —13— being mounted within the upper recess of a cabinet frame —42— and securely attached by the bolts —43— in the manner heretofore described, the cabinet base —42— being formed with a flat bottom and preferably provided with a mat base covering —44— to prevent the cabinet from marring surfaces upon which it may be rested. The cabinet may be securely attached to any supporting surface by means of bolts through the flanged holes —45—. The applicator arms —21— are pivotally mounted in bosses —46— formed on the side cabinet walls and operate in exactly the same manner as heretofore described, the spring support studs —30— being also fixedly mounted within the sides of the cabinet and projecting therefrom in the same manner as heretofore described, and in all respects the assembled device operates exactly as heretofore set forth.

Having fully described my electric massaging machine, what I claim as my invention and desire to secure by Letters Patent is:

1. A massaging machine adapted for massaging the body through an attached flexible applicator belt, comprising a rigid supporting frame, having a slow speed electric motor mounted therein, means attached to said motor for connecting the same within an electric power circuit, said motor being provided with an armature shaft extending beyond the motor bearings at both ends thereof, eccentric cams fixedly attached to the outer ends of the armature shaft positioned diametrically opposite each other, applicator arms pivotally mounted on opposite sides of the supporting frame positioned to one side of and adjacent to the said eccentric cams, a bearing roller mounted on the sides of the applicator arms positioned to engage the cam surface of the eccentric cams, spring means attached to the applicator arms for forming continuous contact of the rollers with the cam surfaces during the rotation of the motor armature, and a series of applicator attaching buttons mounted on the sides of the applicator arms for attaching the ends of a flexible applicator belt thereto in various positions along the arms.

2. A massaging machine adapted for massaging the body through an attached flexible applicator belt, comprising a rigid supporting frame provided with means for permanently attaching the same on a supporting surface, a slow speed electric motor fixedly mounted within the top of the supporting frame and provided with means for connecting said motor within an electric power circuit, said slow speed motor being provided with an armature shaft extending beyond both motor bearings, eccentric cams fixedly attached to opposite ends of the armature shaft and positioned thereon diametrically opposite each other, applicator arms pivotally mounted on opposite sides of the supporting frame and each positioned adjacent to one of the eccentric cams and in alignment therewith, said applicator arms being formed with side members projected below the adjacent cam and provided with a contact roller pivotally mounted on the outer end thereof positioned to engage the said cams on the sides opposite the arms, spring means attached to the said applicator arms for holding the contact rollers in continuous contact with the eccentric cam surfaces during continuous rotation of the motor for imparting an alternate oscillating movement to the applicator arms, a series of applicator buttons mounted on the face of the applicator arms for attaching the ends of a flexible applicator belt thereto for transmitting the alternate oscillating movement into the applicator belt.

3. A massaging machine adapted for massaging the body through an attached flexible applicator belt, comprising a rigid supporting frame having a slow speed motor mounted therein and securely attached thereto, means mounted on said slow speed motor for connecting the same within an electric power circuit, said motor being provided with an armature shaft extending beyond the motor bearings at each end, eccentric cams fixedly mounted on the outer opposite ends of said armature shaft positioned diametrically opposite each other, applicator arms pivotally mounted on opposite sides of the supporting

frame positioned adjacent to the respective cams and in approximate alignment therewith, said applicator arms being provided with a cam cup formed on one side thereof, said cam cup being of a size and positioned to enclose the respective eccentric cams and allow the cams to rotate freely therein, a contact roller mounted within each of the cam cups positioned to engage the cam surface on the side opposite the applicator arms forming a contact therewith, spring means mounted on the said applicator arms in a manner for holding the contact rollers in continuous contact with the eccentric cams during the continuous rotation of the motor armature for producing a continuous alternate oscillating movement of the applicator arms, and a series of applicator attaching buttons mounted on the applicator arms for attaching the ends of a flexible applicator belt thereto at various positions along the arms for transmitting the alternate oscillating movement of the arms directly into the attached applicator belt.

In witness whereof, I sign these specifications.

FRANK W. KNOTT.