Oct. 3, 1933. M. ANDIS 1,928,612

ELECTRICALLY OPERATED MASSAGING DEVICE

Filed May 14, 1931

FIG. 1.

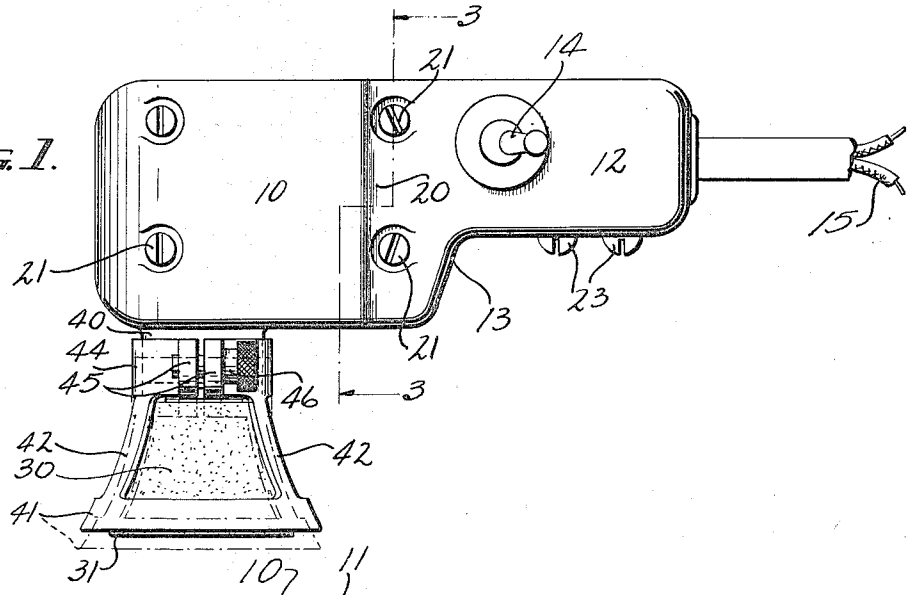


FIG. 2.

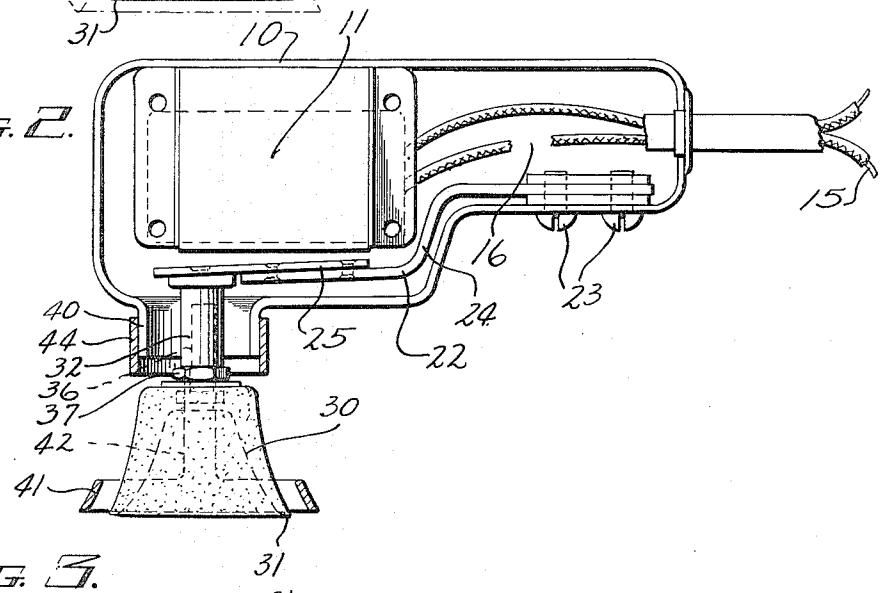
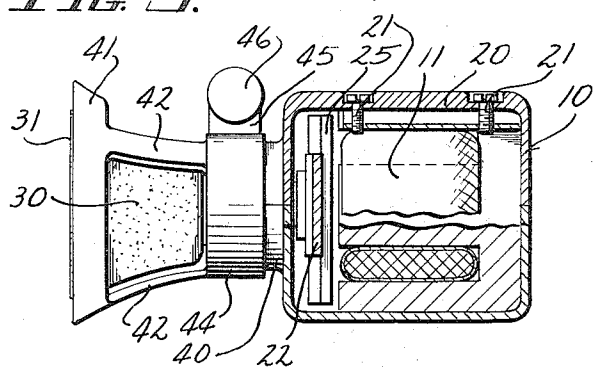


FIG. 3.



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ELECTRICALLY OPERATED MASSAGING DEVICE

Mathew Andis, Racine, Wis.

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7 Claims. (Cl. 128—41)

My invention relates to improvements in electrically operated massaging devices.

Objects of my invention are to provide a simple, inexpensive, durable, and conveniently operated massaging mechanism.

More specifically stated, it is my object to provide an electromagnetic massaging device in which a vibrator, preferably in the form of a none-metallic flexible bell, may be connected directly with an armature which may be vibrated with a frequency equal to that of an alternating current, such, for example, as a sixty cycle current. A further object is to provide means for varying the massaging effect without change of vbrating frequency by providing an adjustable supporting member adapted to bear upon the person of the operator or patient in such a manner as to limit the impacts of the vibrating bell. Also, to provide means whereby different massaging tools may be quickly substituted for the bell ordinarily employed.

In the drawing:

Figure 1 is a side elevation of my improved massaging tool, showing the regulator in an intermediate position of adjustment, and with dotted lines indicating a forward position of adjustment for light massaging operation.

Figure 2 is a similar view with the side wall of the casing removed, and with the adjustable regulator shown in section drawn to a plane intersecting the axis of the regulator and massaging bell.

Figure 3 is a sectional view drawn to line 3—3 of Figure 1.

Like parts are identified by the same reference characters throughout the several views.

The portion 10 of the casing houses the electromagnet 11 and the portion 12 is reduced, this portion having inwardly curving sides, and its inner face being abruptly reduced to form the shoulder 13, whereby the portion 12 can be conveniently grasped by the operator. One of the sides of the portion 12 is provided with a switch lever 14 controlling the circuit of the electromagnet 11. The switch may be of any ordinary type, and it is therefore not illustrated in detail. It is sufficient to state that it controls the circuit through the electrical conductor 15 at the break indicated at 16 in Figure 2.

The electromagnet 11 will preferably be secured to a relatively thick portion 20 of what may be conveniently termed the side wall of the casing, by screws 21 as shown in Figure 3, and a resilient armature supporting arm 22 has one end clamped to the front or inner wall of the portion 12 by clamping screws 23. This arm 22 is offset at 24, and an armature plate 25 is supported by the offset portion opposite one or more pole pieces of the electromagnet 11 and held resiliently by the arm 22 at a short distance therefrom, whereby when an alternating current is sent through the coil of the magnet the armature will be alternately attracted and repelled as the polarity changes. By employing a coil of limited extent upon a pole piece of soft iron or other readily demagnetizable material, magnetic lag will be reduced to a minimum and the armature can be vibrated in correspondence with the frequency of an alternating current.

The shouldered portion 13 of the casing is located at a sufficient distance from the electromagnet to allow the offset portion 24 of the arm 22 to extend through the intervening space and freely vibrate therein in accordance with the movement of the armature. Flexion will necessarily occur at both ends of the spring to a greater extent than in the intermediate portion 24, since the magnetic pull will be exerted more nearly at a right angle to the end portions. The greatest flexion will occur within the handle portion, due to the greater distance from the armature with correspondingly increased leverage, and therefore the armature is made extremely sensitive and quick in its response as compared with armatures supported by short springs which do not extend into the handle portion of a magnet enclosing casing. The two fields or areas of flexion permit a more or less independent reaction when the magnet is deenergized, and also permit the armature to move toward a position parallel with the magnet poles by an initial flexion of the armature supporting end of the spring preparatory to the major movement of the armature toward the poles by flexion of the portion of the spring within the handle. The relatively stiff intermediate portion 24 is but slightly flexed, its movement being substantially a bodily movement. Also, the elongation of the supporting spring, which becomes possible by its extension into the handle, permits of a considerable elongation in the stroke of the applicator or massaging tool 30.

The massaging tool 30 preferably comprises a rubber bell having a relatively thin flexible margin 31 and having a crown portion secured by a connecting post 32 directly to the armature plate 25. For convenience in assembly a screw 36 may have its head embedded in the rubber composing the crown of the bell, the screw being locked in the post 32 by a nut 37, whereby the bell is made removable to facilitate the replacement or the

substitution of a vibrating tool of different form.

The casing is formed with a tubular boss 40 through which the post 32 extends, and an annular regulating ring 41 is supported by arms 42 in a position concentric with the mouth or margin 31 of the bell by a clamping ring 44 which engages the tubular boss 40. This clamping ring is a split ring, provided with projecting ears 45 which may be pressed together by a clamping screw 46 to rigidly connect the regulator with the casing boss 40. The clamping ring has sufficient width to allow it to be thus clamped to the boss in various positions of axial adjustment, whereby the ring 41 may be adjusted outwardly to a position where the vibrating bell will just contact with the skin of the patient at the limit of its outward stroke, and may also be reversely adjusted to a point where it will operate merely as a steadying device while allowing the full impactive or vibratory effect of the bell to be exerted upon the skin of the patient. Between the two extremes any desired degree of impacting pressure of the bell upon the skin may be obtained. The bell-shaped tool will preferably be employed for the reason that during the retroactive strokes suction will be exerted, thereby increasing the effect upon the circulation and facilitating opening the pores of the skin.

While I have described my invention as intended to be used with an alternating current, it will be obvious that if desired it might be operated by an interrupted current and that, therefore, either a direct current or an alternating current might be employed and used in connection with any ordinary interrupter. Such interrupters being well known, it is not deemed necessary to illustrate or describe such a device in detail.

I claim:

1. An electrically operated massaging device comprising the combination with a housing having a reduced handle portion extended from the upper part of the housing, of an electromagnet in the housing portion provided with an armature disposed for vibration in a plane perpendicular to the axis of the handle portion and having an outwardly projecting applicator supporting post, and an armature supporting spring having one end secured within the handle portion, said spring having a downwardly offset intermediate portion and an end portion secured to the armature, the connecting wall of the housing and handle portions being spaced from the electromagnet sufficiently to permit free vibration of the spring in the intermediately offset portion thereof in correspondence with flexion in the end portions.

2. An electrically operated massaging device comprising the combination with a casing having a magnet housing portion and a handle portion, of an electromagnet in the housing portion, an associated vibratory armature in said portion out of line with the handle portion, a spring having one end secured within the handle portion and its other end in supporting relation to the armature, the intermediate portion of said spring being offset and relatively resistant to flexion as compared with the end portions, and an applicator detachably connected with the armature.

3. An electrically operated massaging device comprising the combination with a casing having a magnet housing portion and a handle portion, of an electromagnet in the housing portion, an associated vibratory armature in said portion out of line with the handle portion, a spring having one end secured within the handle portion and its other end in supporting relation to the armature, the intermediate portion of said spring being offset and relatively resistant to flexion as compared with the end portions, an applicator detachably connected with the armature, and a steadying annulus concentric with the applicator margin and having an adjustable support exterior to the housing and movable while the applicator is being vibrated.

4. An electrically operated massaging device comprising the combination with a casing body having a tubular boss projecting laterally from one end portion thereof, an electromagnet within the body, a vibratory armature between the electromagnet and said tubular boss and provided with a post extending therethrough, an applicator detachably connected with the post, a sleeve in sliding adjustment upon the outer surface of the post, and an annulus supported from the sleeve in a position to serve as a steadying member in spaced relation to the applicator.

5. An electrically operated massaging device comprising the combination of a casing body having a tubular boss near one end and a handle-like extension at the other end, an electromagnet within the casing body, an intermediately offset armature supporting spring having one end secured within the handle portion and having an armature secured to its other end, a post connected with the armature and extending through said tubular boss, an applicator connected with said post, and a steadying annulus spaced from the outer margin of the applicator and adjustably mounted upon the outer wall of the tubular boss.

6. A massaging device comprising the combination with a casing having a hollow extension adapted to serve as a handle, an electromagnet within the casing capable of polarity reversal in response to alternating current impulses, an armature having a resilient supporting arm intermediately offset and connected within the handle at a sufficient distance from the armature to allow the latter to vibrate in tune with the alternating current impulses, and an applicator having a post-like connection with the armature, said casing being provided with a tubular boss through which said post extends in a direction substantially perpendicular to the handle extension, whereby said armature and its supporting spring may be housed within the casing and connected with the applicator through said tubular boss.

7. In an electrically operated massaging device having a casing provided with an aperture through which a vibratory post projects and an exterior applicator connected with said post, the combination with said applicator and casing of a steadying annulus encircling the outer margin of the applicator, and an adjustable support for said annulus mounted exterior to the casing and movable during vibration of the applicator to advance or retract said annulus with reference to the applicator.

MATHEW ANDIS.