March 4, 1941. L. J. ANDRES 2,234,102

VIBRATOR

Filed April 26, 1937

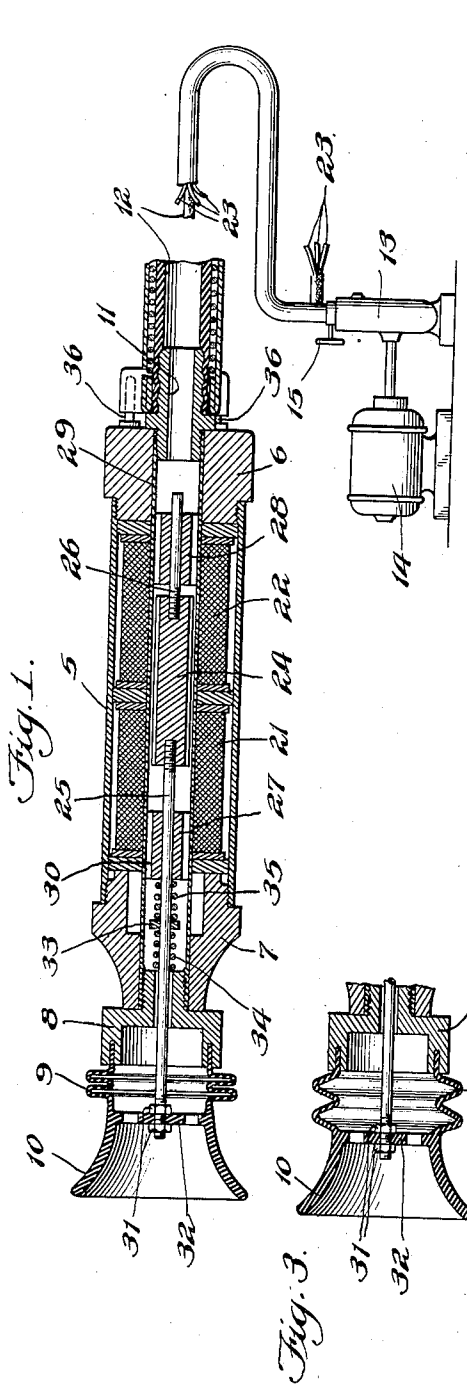


Fig. 1.

Fig. 3.

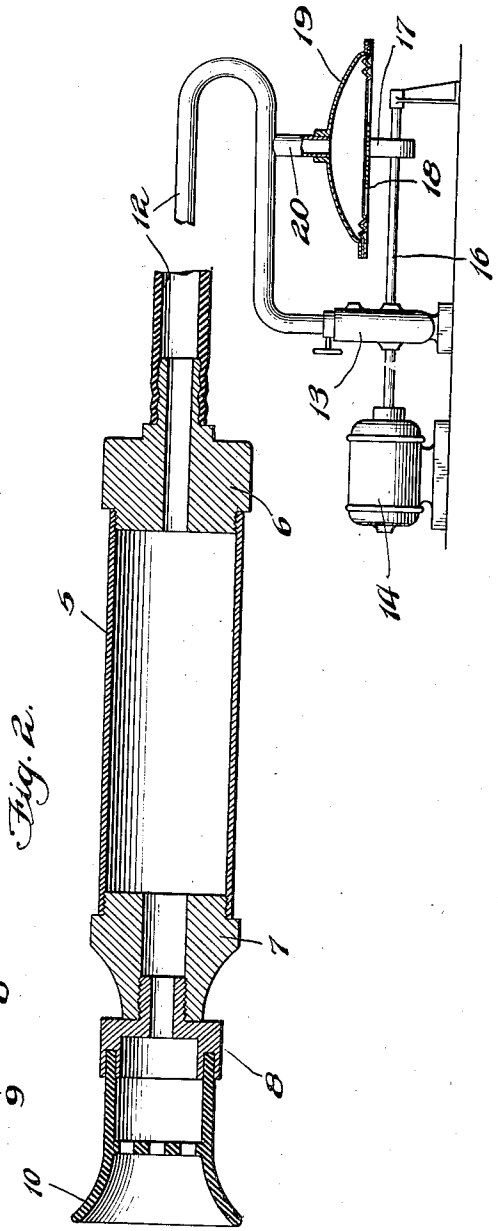


Fig. 2.

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Patented Mar. 4, 1941 2,234,102

UNITED STATES PATENT OFFICE

2,234,102

VIBRATOR

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Application April 26, 1937, Serial No. 139,073

5 Claims. (Cl. 128—52)

This invention relates in general to an electrically operated hand vibrator having a yieldable suction cup actuated by the vibrator and subject to a variable suction or pressure.

An important object of the invention is in the provision of a vibrator having a suction or applicator cup which is both positively actuated by the vibrator and in which the pressure or suction may be varied independently of or in conjunction with the actual vibration of the cup.

Other objects of the invention are to provide an electrical suction vibrator with a pulsating attachment; to vibrate the suction cup with respect to the handle; to pulsate the air pressure or suction in the cup; and to oscillate the cup and pulsate the air therein both separately and in conjunction with the cup vibration.

Other objects of the invention will appear hereinafter, a preferred embodiment of the invention being illustrated in the accompanying drawing, in which

Figure 1 is a sectional view of a vibrator in accordance with the invention and a suction or pressure means for connection therewith;

Fig. 2 is a sectional view of the hand vibrator omitting the electrical vibrating means and showing the cup in extended position and also showing a pressure pulsator in connection with the suction or pressure producing means; and

Fig. 3 is a partially expanded view of the cup.

This invention is illustrated and described in connection with a massage applicator of the suction or pressure cup type as illustrated in my application Serial No. 47,291, filed October 29, 1935, for Electric vibrator, with the addition that the vibrator cup is compressible or has a flexible mounting portion by means of which it may be oscillated with respect to the remainder of the hand attachment and also the pressure or suction may be varied periodically for pulsating the air or fluid within the vibrator.

Referring now more particularly to the drawing, the vibrator comprises a hollow handle including a metal sleeve 5 with perforated ends 6 and 7. Threaded in one end 7 is a fitting 8 to which the flexible collapsing neck 9 of a more rigid applicator cup 10 is attached. This cup may be made of rubber or any other suitable material and the connecting neck is yieldable or flexible to allow the cup to oscillate with respect to the remainder of the handle. Connected to the other end 6 is a fitting 11 for attaching a hose 12 which leads to a pump 13 of the reversible suction or pressure type operated by a motor 14. The pressure or suction may be controlled by a valve 15.

In the form of the invention shown in Fig. 2, a motor and pump shaft 16 is extended and carries a cam 17 for engaging a diaphragm 18 of a pulsating pressure device 19 having a pipe connection 20 with the hose 12.

This vibrator may be utilized in the form shown in Fig. 2 by simply contacting the applicator cup with the skin or other surface to be treated and then operating the pressure or suction device and with it the pulsating means. The pulsating means may be of sufficient strength and variation to produce the collapsing or oscillating movement of the cup with respect to the hand portion, thereby producing the vibration desired.

This vibrator also comprises a pair of magnet windings 21 and 22 which alternately receive a pulsating current through conductors 23 for electrically oscillating an armature 24 reciprocably mounted at its ends upon rods 25 and 26 extending through perforated bearing blocks 27 and 28 respectively. The armature is freely movable and the bearing blocks are fixed in an inner sleeve 29 and are provided with longitudinal grooves 30 to permit a free passage of the pressure or fluid through the handle to the cup 10.

The bearing rod 25 at the cup end extends loosely through the fitting 8 and the extremity of this rod is connected by fastening nuts 31 with a perforated partition 32 extending across the cup 10, the perforations allowing the pressure or suction to be applied through the cup. Centering means comprising a collar 33 and springs 34 and 35 surround the rod 25 between the fitting 8 and the bearing block 27 and tend to keep the armature 24 in a central position with respect to the windings 21 and 22.

Current is supplied through the conductors 23 and contacts 36 to the windings 21 and 22 so that the windings are alternately energized to oscillate the armature 24 which moves with it, the rigid applicator portion of the applicator 10 collapsing and extending it upon the flexible neck 9. This produces a massaging effect which is highly desirable, and although the outer portion of the applicator cup is described as more or less rigid it is simply by comparison with the flexible neck 9 as the contacting portion of the cup is usually composed of rubber or other suitable flexible and yielding material.

When the vibrator is used in connection with the suction and pulsating means, the oscillating movement of the cup is effected by the suction or pressure application and by the pulsating device which may be in addition to and in conjunction with the electrical vibrator, or separately therefrom. Thus a combined vibrator is produced

in which there is positive movement of the applicator and also a yielding suction or pressure which may be pulsated as desired.

I claim:

1. An electrical hand vibrator having a substantially rigid applicator cup with a yielding bellows neck flexibly attached to the vibrator, and electromagnetic vibrating means connected to the outer portion of the cup to oscillate it with respect to the vibrator by means of said neck.

2. In a vibrator, an applicator cup with a resilient collapsible neck connected to the vibrator, an electro-magnetic device connected from the vibration to the cup for vibrating it, suction means connected through the vibrator to the cup, and pulsating means in connection with the suction means for varying the suction in the cup.

3. A vibrator having a hollow handle, an electro-magnet therein and an armature reciprocable thereby, an applicator cup with an outer comparatively rigid portion connected to the handle by a collapsible flexible neck, and a connection between the outer portion of the cup and the armature for reciprocating the cup with respect to the handle at the said neck.

4. In a vibrator as in claim 3, a stem extending from the armature and a transverse partition in the cup to which the stem is connected for oscillating the cup by means of said collapsible neck.

5. In a suction vibrator, a hollow handle having an applicator cup with an outer rigid portion connected to the handle by a flexible collapsible neck, electro-responsive means in the handle having an armature movable reciprocably and connected to the rigid portion of the cup for reciprocating it, suction means comprising a pump and a hose connected to the handle, and pulsating means connected to the hose comprising a diaphragm and cam means for engaging it periodically to vary suction in the cup when applied to a surface under treatment.

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