Oct. 16, 1951 H. D. WHEELER 2,571,398

PULSATING PRESSURE MASSAGE DEVICE

Filed June 20, 1949

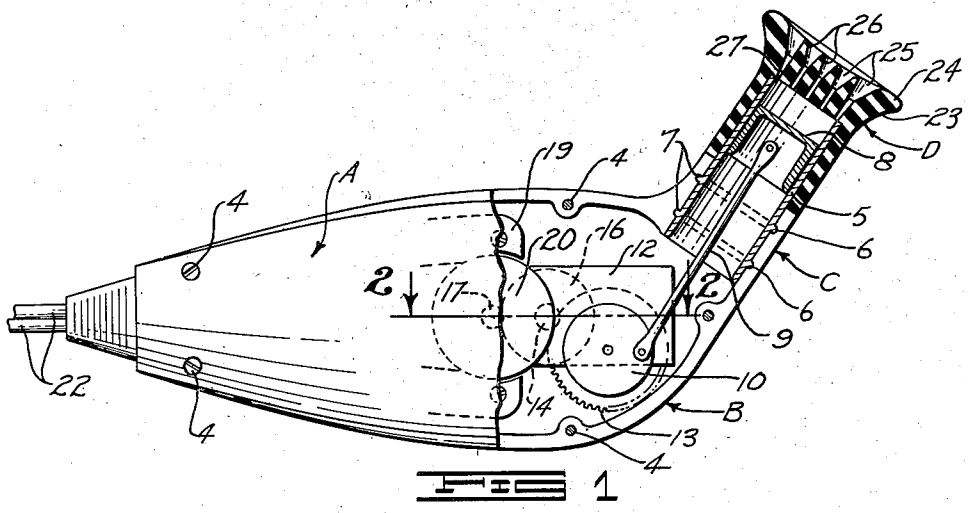

FIG 1

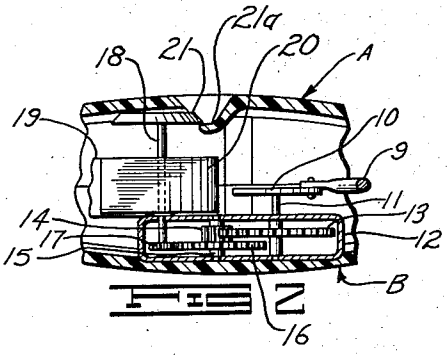

FIG 2

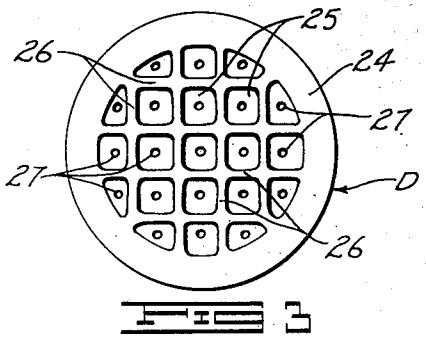

FIG 3

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PULSATING PRESSURE MASSAGE DEVICE

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3 Claims. (Cl. 128—38)

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This invention relates to apparatus or devices for applying pulsating fluid pressure to tissue and skin areas for the purpose of massaging the same to stimulate circulation of blood or to improve the tone or health of nerve centers. More particularly it concerns small portable or hand held devices for effecting such purposes. A device of the general type of this invention is shown in my issued Patent No. 2,266,931, dated December 23, 1941.

One object of the invention is to provide a very simple and compact hand-held device of the type described.

Another object is to reduce the weight and overall length of such a device and to make it particularly convenient to apply to all areas with the requisite amount of pressure to effect the desired degree of stimulation. Another object is to improve the efficiency of such devices.

Still another object is to simplify the construction and to improve the operation and control of massage devices of the described type.

Other objects and features of construction and operation will be apparent from the detailed description which follows.

In my improved device the applicator through which the pulsations are imparted to the area to be massaged and stimulated is rigidly mounted upon the handle which houses the operating mechanism, and the rigid connection is at such an angle to the handle as will make the device most convenient to apply to all areas and parts of the human body. The rigid connection makes it easy and convenient to hold the device with the applicator on the area to be massaged with just the amount of pressure to achieve the best results. The pressure pulsations are created within a cylinder provided with reciprocating piston. By mounting this cylinder in a rigid connection closely adjacent the applicator, compactness of construction is achieved, and extended passages for the pulsating fluid are avoided, thus insuring instant and full effect from the movement of the piston. In fact the close proximity of piston and applicator permits the maximum range in gentleness or severity in the pulsating effect on the area being massaged, such range being under instant control of the operator and dependent upon the amount of force or pressure which he employs to hold the applicator in contact with the area being massaged.

In order to illustrate the invention one concrete embodiment thereof is shown in the accompanying drawings, in which:

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Fig. 1 is a plan view, partly cut away and showing certain parts in section;

Fig. 2 is a partial vertical sectional view substantially on the line 2—2 of Fig. 1; and

Fig. 3 is an end elevation view on an enlarged scale of the portion or face of the applicator which directly contacts the area to be massaged.

In the drawings, parts A and B are held in engagement by machine screws 4 to form a hollow casing of such size and shape as to fit the hand of the operator. By preference, parts A and B have integral portions forming a generally cylindrical extension C at any desired or convenient angle to the longitudinal axis of the casing. Extending within casing extension C and gripped by the integral portions of parts A and B is a cylinder 5. Suitable means are provided to keep cylinder 5 in place such as annular ribs or flanges 6 on cylinder 5 which seat in corresponding grooves or recesses 7 in the inner walls of extension C.

A piston 8 within cylinder 5 is reciprocated by a rod 9 pivotally connected at one end to cylinder 5 and at the other end to a crank disk 10 on a shaft 11 projecting from a reducing gear box 12 seated in a recess therefor on the interior of casing part B. The reduction gearing in box 12 may, for example, comprise a toothed gear 13 on shaft 11 engaging a pinion 14 on counter shaft 15 which in turn has a toothed gear wheel 16 engaging a smaller gear 17 on drive shaft 18.

Any suitable motor means may be provided within casing AB to drive shaft 18. In the present instance I provide a small electric motor partly shown at 19 having a rotating armature 20 attached to shaft 18. On drive shaft 18 at the end remote from gear 17 is a thumb wheel 21 for spinning shaft 18 to start the motor after a suitable control switch (not shown) is thrown to "on" position. To give access to thumb wheel 21 casing part A is slotted, and one side of the slot is depressed as indicated at 21*a* in Fig. 2. Power to operate the electric motor 19, 20 is supplied by leads 22 (Fig. 1). Operation of the motor acts through the above described mechanism to reciprocate piston 8 and thereby create fluid pressure pulsations in cylinder 5, generally in the form of alternating vacuum and pressure.

Cylinder 5 projects well beyond extension C on motor casing A, B as indicated in Fig. 1 to provide a convenient mounting for an applicator D. While any suitable or desired type of applicator may be utilized, by preference it is of the general type disclosed and claimed in my copending application, Ser. No. 697,007, filed September 14,

1946, Patent No. 2,478,648, issued August 9, 1949. The applicator is of rubber or other soft, flexible resilient material to conform to the shape of the surface to be massaged but at the same time sufficiently stiff to distribute the pulsations created by the reciprocating action of piston 8. As shown, applicator D has a cylindrical part which is expanded over cylinder 5 to resiliently grip the same and to abut the end face of casing extension C. Applicator D has a flared and relatively thick face portion 23, integral with the cylindrical portion, to span and closely abut against the outer open end of cylinder 5. Thus applicator D forms a cushioning protector for the projecting part of cylinder 5 as well as for the person who is to be massaged.

The flared portion or face 23 of applicator D terminates in an annular lip 24 within which is a series of tapered pockets 25 extending partially through the thickness of face portion 23 (Figs. 1 and 3). These pockets or cups 25 are separated by transverse ribs 26 extending approximately at right angles to one another across the outer face 23 (Fig. 3). Each pocket or cup 25 is connected directly to the interior of cylinder 5 by a port 27 so that the fluid pressure pulsations created in the cylinder by reciprocating piston 8 are effective throughout the face 23 of applicator D.

In the construction of the massaging device of the present invention casing parts A and B will be formed to position extension C at such angle to the axis of the casing as will make the device most convenient for use, for example, at an angle of about 45° to 65°. An angle of approximately 55°, as shown in Fig. 1, has been found very desirable.

In use, applicator face 23 is moved into contact with the area to be massaged. A light pressure will produce a mild or gentle massaging effect evenly distributed over the area enclosed by applicator lip or rim 24. As the pressure of the applicator is increased on the area by the operator the massaging effect will be more pronounced since cups 25 will be contracted or partly collapsed and the ribs 26 will be brought into engagement with the area being massaged.

While the invention has been herein described in what is now considered to be a preferred form, it is to be understood that the invention is not limited to the specific details thereof but covers all changes, modifications and adaptations within the scope of the appended claims.

I claim:

1. In a massage device, in combination, a cylinder having an open end, a piston reciprocable in said cylinder, and an applicator of flexible resilient material attached to said cylinder and enclosing the open end thereof to transmit pulsations induced by the reciprocating action of said piston directly to an area engaged by said applicator; said applicator having a cylindrical portion extending over and resiliently gripping said cylinder, and a face portion integral with said cylindrical portion extending across and closely abutting the open end of the cylinder.

2. A massage device comprising engaging parts forming a hollow casing adapted to serve as a handle, a cylinder gripped at one end between said parts and projecting outwardly from said casing at an angle to the longitudinal axis thereof and having an open outer end, a piston reciprocable in said cylinder, motor means in said casing for reciprocating said piston, and a flexible resilient applicator having a cylindrical portion extending over and resiliently gripping the outwardly projecting portion of said cylinder and a face portion integral with said cylindrical portion extending across the open outer end of said cylinder with ports to transmit pulsations induced by the action of said piston to an area directly engaged by said face portion.

3. A massage device comprising engaging parts forming a hollow casing adapted to serve as a handle, said parts having integral portions forming an extension at an angle to the longitudinal axis of said casing, a cylinder partly received within said extension and projecting outwardly therefrom and having an open outer end, interengaging means on said cylinder and said parts for retaining said cylinder in place, a piston reciprocable in said cylinder, motor means within said casing for reciprocating said piston, and an applicator of flexible resilient material having a cylindrical portion extending over and resiliently gripping the exterior of the outwardly projecting portion of said cylinder and a thick webbed closure portion for the outer end of said cylinder, said closure portion of said applicator being integral with said cylindrical portion and having a series of ports for transmitting pulsations caused by movement of said piston to an area contacted by said applicator.

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The following references are of record in the file of this patent:

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1,964,590	Muller	June 26, 1934
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2,314,590	McCarty	Mar. 23, 1943
2,478,648	Wheeler	Aug. 9, 1949