Oct. 15, 1940. D. TWEDDLE 2,218,443

MASSAGE APPARATUS

Filed Sept. 14, 1939

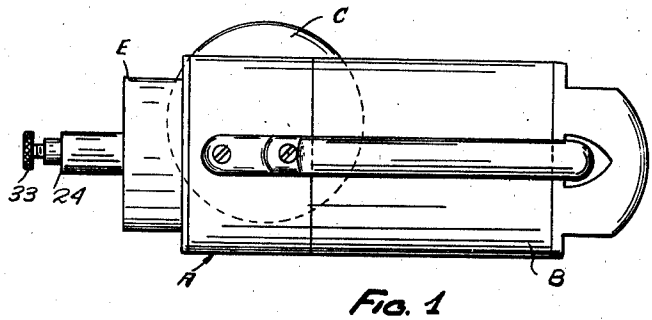


FIG. 1

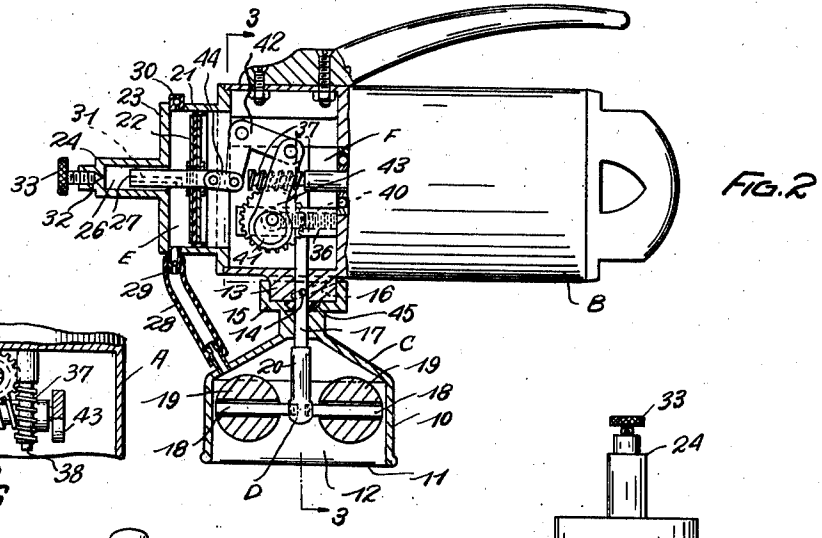


FIG. 2

FIG. 6

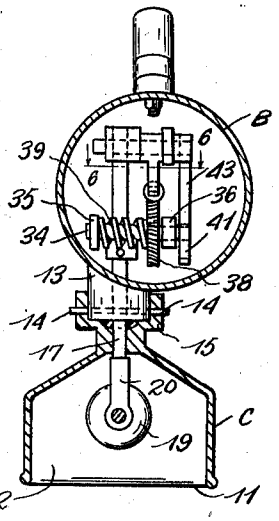


FIG. 3

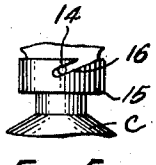


FIG. 5

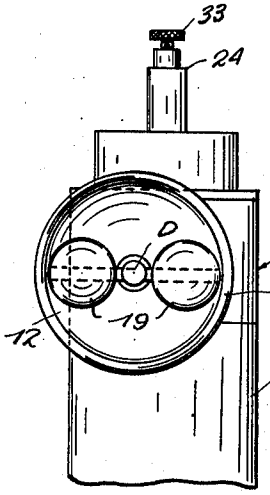


FIG. 4

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Patented Oct. 15, 1940 2,218,443

UNITED STATES PATENT OFFICE

2,218,443

MASSAGE APPARATUS

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Application September 14, 1939, Serial No. 294,946

4 Claims. (Cl. 128—297)

This invention relates to massage apparatus, and, more particularly, to an improved form of apparatus which will apply a vacuum to the surface to be massaged.

The beneficial results accruing from the use of massage on various parts of the human body are well known. By the massage action, the rate of blood circulation is increased and in those cases where excess fatty tissue has accumulated, the tissue is broken down and carried off in the blood stream.

It has been found that the application of vacuum to the area being treated provides a stimulating effect tending to increase the rate of blood circulation. Accordingly, the provision of apparatus which will effectively create or produce a vacuum over the surface being treated provides a distinct advantage over many conventional types of massage apparatus. The material increase in the rate of blood circulation makes such apparatus extremely useful in clearing up various types of congestion in addition to its usefulness in effecting a reduction in weight by the dissipation of fatty tissue.

The principal object of this invention is to provide a massage chamber with rotatable massaging elements mounted therein, and apparatus for reducing the pressure or creating a vacuum in the chamber.

A further object is to provide, in apparatus of the character referred to, novel mechanism for imparting movement to the rotatable massaging elements, and novel mechanism for actuating the vacuum producing apparatus together with common mechanism for driving such mechanisms from a single motor or source of power.

A further object is to provide a control for the vacuum producing apparatus for varying the amount of reduction of pressure in the massage chamber.

A still further object is to provide means for detachably supporting the massage chamber, permitting the use of chambers and massaging devices of various sizes with a single actuating device.

Other objects and advantages of the invention will become apparent during the course of the following description.

In the drawing, there is shown a preferred embodiment of the invention. In this showing—

Figure 1 is a top plan view of apparatus constructed in accordance with the principles of this invention.

Figure 2 is a side elevational view of the apparatus shown in Figure 1, parts thereof being broken away and shown in section.

Figure 3 is a vertical sectional view taken substantially on the line 3—3 of Figure 2.

Figure 4 is a bottom plan view of the massage chamber, showing the massaging elements mounted therein.

Figure 5 is a broken away side elevational view showing the manner in which the massage chamber is secured in position.

Figure 6 is a partial sectional view taken substantially on the line 6—6 of Figure 3 showing the arrangement of parts of the driving mechanism.

Referring to the drawing, A indicates as a whole a massage appliance provided with a casing B housing an electric motor (not shown). A massaging chamber C is detachably secured to the casing B and is provided with massaging apparatus D mounted therein. A vacuum producing pump E is secured to the casing B and is operable to withdraw air from the chamber C to effect a reduction of pressure in the chamber C. A common driving mechanism F is mounted in the casing B and is operated by the electric motor in the casing B to impart movement to the massaging apparatus D while simultaneously operating the pump E to create a vacuum in the chamber C in a manner to be described.

The massage chamber C is in the form of a hollow cylindrical cup shaped member 10 having an edge or rim 11 defining an opening to the interior 12 thereof. The casing B is provided with a projection 13 having a pin 14 projecting outwardly therefrom. The projection 13 is receivable within a collar 15 formed on the upper part of the body 10 of the chamber C. The collar 15 is provided with angularly inclined grooves 16 in which the projecting portions of the pin 14 are receivable. In assembling the device, the projecting portions of the pin 14 are inserted in the grooves 16 and a turning movement is imparted to the body 10. Such movement will cause the collar 15 to be cammed upwardly into engagement with the projection 13 to secure the chamber C to the casing B.

A rotatable shaft 17 extends through parallel openings in the projecting member 13 and collar 15. Supporting shafts 18 are secured to the shaft 17 at an angle with respect to the shaft 17. Spherical massaging elements 19 are rotatably mounted on the shafts 18 for free turning movement relative thereto. In order that the chamber C may be readily detached from the casing B the shafts 18 are secured to the shaft 17 by a

detachable carrying member 20, which may be readily removed from the shaft 17 to permit removal of the chamber C without interference from the massaging apparatus D.

The vacuum pump E comprises a cylinder 21 secured to the casing B and a piston 22 mounted therein. The head 23 of the cylinder 21 is provided with a projection 24 having a hollow cylindrical opening 26. A centering rod 27 is secured to the piston 22 and is slidably receivable within the opening 26 for centering the piston 22 during its reciprocating movement. The chamber C is connected to one end of the vacuum pump E by a conduit 28. A check valve 29 is provided to prevent the pump E from returning air to the chamber C. A check valve 30 is provided for preventing atmospheric air from entering the end of the cylinder 21 when the piston 22 is being operated in a direction to withdraw air from the chamber C.

In order that the amount of vacuum produced by the pump E within the chamber C may be controlled, the centering rod 27 is provided with a passage 31. An opening 32 is formed in the outer end of the projection 24 for connecting the interior of the chamber C with the atmosphere through the opening 31. A manually adjustable member 33 is provided for controlling the effective size of the opening 32 to permit the bleeding of air in various quantities into the interior 12 of the chamber C. By controlling the amount of air bled into the chamber C, it will be apparent that the amount of vacuum which may be created by the pump E within the chamber C may be effectively controlled.

A driving shaft 34 is rotatably carried by supporting members 35 and 36 mounted in the casing B. A worm 37 is formed on the drive shaft of the electric motor (not shown) mounted in the casing B. A worm gear 38 is keyed to the shaft 34 and is driven from the electric motor through the worm 37. A worm 39 is keyed to the shaft 34 and is engageable with a worm gear 40 keyed to the drive shaft 17 for imparting a turning movement thereto whenever the driving shaft 34 is driven from the electric motor.

A crank or eccentric 41 is keyed to the outer end of the driving shaft 34 and is connected to one end of a bell crank lever 42, pivotally mounted in the casing B, by a connecting rod 43. The other end of the bell crank lever 42 is connected to the piston 22 by a connecting link 44.

When a rotating movement is imparted to the driving shaft 34, it will be apparent that the crank or eccentric 41 through the connecting rod 43 will impart a rocking movement to the bell crank lever 42 which through the link 44 will impart a reciprocating movement to the piston 22. Reciprocating movement of the piston 22 will operate to withdraw air from the chamber of the casing thereby reducing the pressure and creating a vacuum therein. The air evacuated from said chamber escapes to the atmosphere through the valve 30.

A packing member 45 is mounted in the collar 15 and is adapted to be compressed upon turning movement of the chamber C into close fitting engagement with the shaft 17 to provide a vacuum seal for the chamber C.

In operation, the motor in the casing B is connected to a source of electric current to impart a driving movement to the driving shaft 34. As pointed out heretofore, such movement of the driving shaft 34 will operate to drive pump E to create a vacuum in the chamber C, and simultaneously impart a turning movement to the drive shaft 17 for operation of the massaging elements 19. With the device operating in this manner, the rim 11 of the cup 10 is placed in engagement with the surface of the area to be massaged. The vacuum in the chamber C will draw flesh into the interior of the chamber C and into engagement with the massaging rollers or elements 19, which are, as shown in Figures 2 and 3, spaced inwardly of the rim 11.

The drive shaft will rotate the rollers or spherical massaging elements 19 about the axis of the shaft 17 and since such elements are freely rotatable about the axis of their respective supporting shafts 18, the frictional engagement with the surface being treated will cause the elements 19 to rotate about the axis of their respective supporting shafts 18 in addition to moving in a circular path about the axis of the shaft 17.

It will, therefore, be apparent that the elements 19 will roll over the surface of the area being treated with an effective massaging action. It will also be apparent that the walls of the cup 10 will prevent movement of the elements 19 endwise off the shafts 18 by centrifugal force.

From the foregoing, it will be apparent that there is provided a novel apparatus for massage treatment, wherein the surface of the area being treated is effectively subjected to a reduced atmospheric pressure or vacuum in addition to a massaging action. By reason of the combined actions of the apparatus, its use for massage treatment will provide an effective aid to bad circulation and the troubles incident thereto.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:

1. An apparatus of the character described comprising a casing, a motor in said casing, driving mechanism operable by said motor, a massage chamber, a vacuum pump connected to said driving mechanism for actuation thereby and operable to create a vacuum in said chamber, massaging devices mounted in said chamber, means connecting said devices to said driving mechanism for actuation thereby and means for detachably securing said massage chamber to said casing comprising a cam groove formed in the body of said chamber and a pin secured to said casing movable into said groove for causing a camming movement of said chamber into engagement with said casing when said chamber is turned relatively to said casing.

2. An appliance of the character described, comprising a casing, a motor in said casing, driving mechanism operable by said motor, a massage chamber secured to said casing, massaging devices mounted in said chamber, gearing connecting said massaging devices to said driving mechanism for actuation thereby, and means for creating a vacuum in said chamber comprising a pump having a cylinder and a piston therein, a crank associated with said driving mechanism and operable thereby for imparting a reciprocatory movement to said piston, a conduit connecting the interior of said chamber with said pump at one side of said piston, and check valve means permitting the evacuation of air from said chamber through said conduit and preventing the return of air to said chamber.

3. An appliance of the character described, comprising a casing, a motor in said casing, a massage chamber secured to said casing, a drive

shaft extending into the interior of said chamber, a supporting shaft secured to said drive shaft at an angle thereto, a spherical massage device rotatably mounted on said supporting shaft, means for creating a vacuum in said chamber comprising a pump having a cylinder and a piston therein, a conduit connecting the interior of said chamber with said pump at one side of said piston, check valve means permitting the evacuation of air from said chamber through said conduit and preventing the return of air to said chamber, and driving mechanism operable by said motor comprising gearing for operating said drive shaft and a crank connected to said piston to impart a reciprocatory movement thereto to create a vacuum in said chamber upon operation of said massaging device by said drive shaft.

4. An appliance of the character described, comprising a casing, a motor in said casing, a massage chamber secured to said casing, a drive shaft extending into the interior of said chamber, a supporting shaft secured to said drive shaft at an angle thereto, a spherical massage device rotatably mounted on said supporting shaft, means for creating a vacuum in said chamber comprising a pump having a cylinder and a piston thereon, a conduit connecting the interior of said chamber with said pump at one side of said piston, check valve means permitting the evacuation of air from said chamber through said conduit and prevent the return of air to said chamber, and driving mechanism comprising a driving shaft rotatably supported within said casing, gearing connecting said driving shaft to said motor for actuation thereby, gearing connecting said drive shaft to said driving shaft for imparting movement to said massaging device, and a crank keyed to said driving shaft and connected to said piston to impart a reciprocatory movement thereto to create a vacuum in said chamber upon operation of said massaging device by said drive shaft.

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