

939,822.

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Fig. 1.

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 MASSAGE AND AIR COMPRESSING MACHINE.
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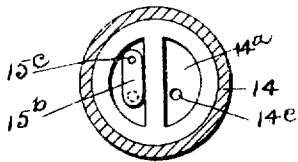
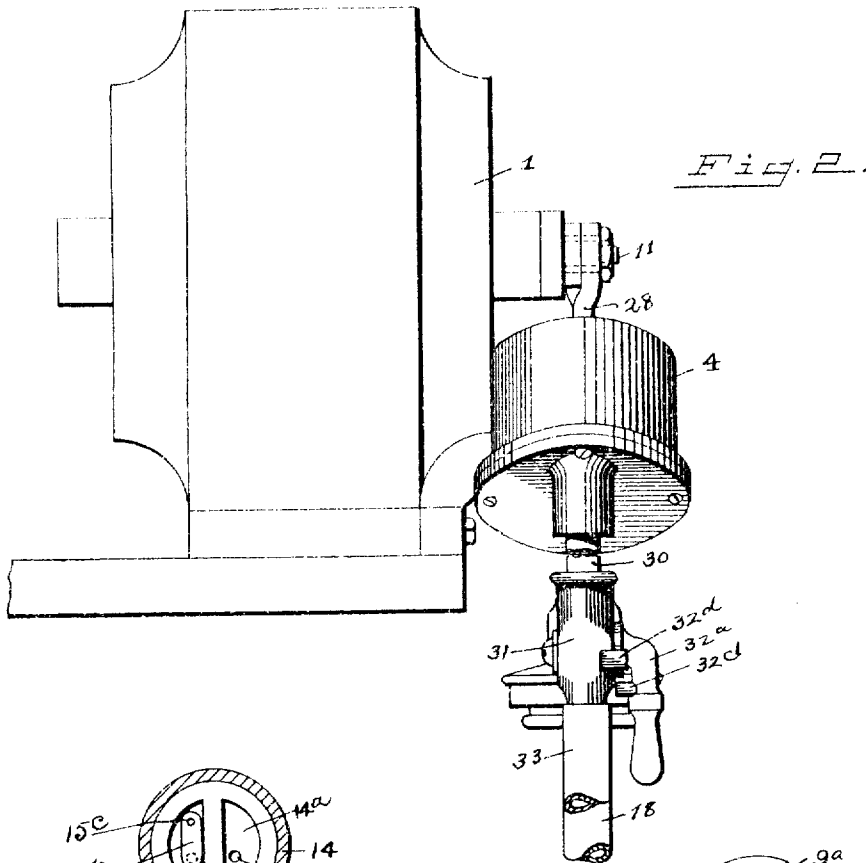


Fig. 3.

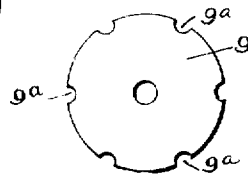


Fig. 4.

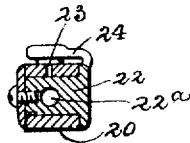


Fig. 5.

Witnesses

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UNITED STATES PATENT OFFICE.

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MASSAGE AND AIR-COMPRESSING MACHINE.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOSEPH B. FEY, a citizen of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented certain new and useful Improvements in Massage and Air-Compressing Machines, of which the following is a specification.

My invention relates to the improvement of power operated massage machines, and the objects of my invention are to provide a machine of this class embodying improved means for withdrawing the air from the massaging cup and for forcing air under compression through a nozzle; to provide improved means whereby a continued vacuum may be produced in the suction cup, or an alternate vacuum and air compression produced therein; to provide means for producing a partial vacuum within the cup when desired and to produce other improvements the details of which will be more fully pointed out hereinafter. These objects I accomplish in the manner illustrated in the accompanying drawings, in which:

Figure 1 is a central vertical section through the cylinders and valve mechanism of my improved massage and air compressing machine, Fig. 2 is a side elevation of the same with portions of the air conducting tubes and cup supporting attachments removed, Fig. 3 is a transverse section on line $x-x$ of Fig. 1, Fig. 4 is a plan view of one of the piston guide disks which I employ in the cylinders, and, Fig. 5 is a sectional view on line $y-y$ of Fig. 1.

Similar numerals refer to similar parts throughout the several views.

In carrying out my invention, I employ a suitable motor 1 which may be operated by electricity or other suitable power and which is provided with the usual central motor shaft 2. Adjacent to one side of the motor, I provide two cylinders 3 and 4, these cylinders converging toward their upper ends and arranged on radial lines from the center of the motor shaft, said cylinders being suitably connected with the motor casing or its supporting frame. In the cylinder 3, I provide a piston which comprises a cup leather 5 having upturned marginal portions, said cup leather being bound between upper and lower side plates 6 and 7. The piston thus formed is carried on a short central piston rod 8 which also carries above the piston a guide disk 9 which fits and slides

within the cylinder 3 and which as indicated more clearly in Fig. 4 of the drawing, has its periphery provided with a plurality of recesses or notches 9^a. With the piston rod 8 is pivotally connected a connecting arm 10, the remaining end of which is pivotally connected with a pin 11, which projects eccentrically from the end of the motor shaft 2. The lower and otherwise closed end of the cylinder 3, is provided with an outlet passage 3^a from which leads a vertical pipe section 12, the lower end of which connects with the hollow upper end of a valve casing section 13. Into the cup-like lower end of the valve casing section 13, is screwed a lower casing section 14. The upper hollow portion of the section 13 is intersected by a rotary valve body 15 which has formed therethrough a valve opening or passage 15^a. From the bottom of the valve seat 15, lead downward through the lower portion of the section 13 two ports or passages 16 and 17, the port 16 communicating with an upper side recess 14^a in the valve casing section 14 and the port 17 communicating with a similar recess 14^b in the upper side of said valve casing section. The valve casing section 14 is formed with a central downwardly extending stem 14^c, with the central hollow of which are connected ports 14^d and 14^e which lead respectively from the recesses 14^a and 14^b. In the recess 14^b, I provide a check valve 15^b which normally closes the upper end of the port or passage 14^d, said valve being in the nature of a flexible strip connected at one end as indicated at 15^c with the lower valve casing section 14.

With the valve casing stem 14^c I connect one end of a flexible tube 18, the remaining end being connected with a hollow bulb-shaped handle 19, the latter having an angular terminal neck 20 with which is adapted to be connected detachably a massaging cup of suitable size and construction such as is indicated at 21. At the angle of the handle neck 20, the central passage thereof is intersected by a rotatable valve 22 which has a central passage or opening 22^a, the ends of which are adapted to be brought into communication with the central passage or hollow of the neck 20. In that portion of the neck 20 which forms a casing for the valve 22, I provide a plurality of comparatively small air openings 23 which are adapted to be closed by the periphery of the valve 20 or to be successively brought

into communication with one of the flaring ends of the central passage 22^a of said valve. The valve 22 is adapted to be operated through a suitable hand lever 24.

5 As prescribed for the cylinder 3, I provide the cylinder 4 with a piston which comprises a plate-bound cup leather 25, this cup leather, however, having its marginal portions turned downwardly, as shown. The
10 piston thus formed is carried on the lower end portion of a short piston rod 26 corresponding with the piston rod 8 and which as prescribed for the latter also carries a guide disk which is indicated at 27 and
15 which corresponds in construction and arrangement with the guide disk 9 of the cylinder 3. With the piston rod 26 is pivotally connected a connecting arm 28, the upper end of which is, as prescribed for the
20 arm 10, pivotally connected with the eccentrically located shaft pin 11. The underside of the cylinder 4 is provided with a passage 29 with which is connected through the medium of a vertical pipe section 30, the
25 hollow upper end of a valve casing 31 through which is formed vertically, a passage 31^a which is intersected by an enlarged recess or valve seat 31^b in which is rotatably mounted a valve 32, the latter having a suitable
30 operating handle 32^a. The valve 32 has formed therethrough a port or passage 32^a, the mouth of which at one end is slightly enlarged on one side, as shown at 32^b.

With a downward extension of the valve casing 31 is connected a flexible tube 33, the lower end of which is connected with a hollow and preferably bulb-shaped handle 34 having an angular neck termination 35 which is adapted to receive and support a
40 suitable form of discharging nozzle 36. In the angle of the neck termination 35 is rotatably mounted a controlling valve 37 which is formed with a central passage 37^a.

The operation of my device is substantially as follows: Through the operation of the motor, rotary motion is imparted to the shaft 2, which through the connections of the arms 10 and 28 with the eccentric pin 11 of said motor shaft, must result in a reciprocating motion of the piston rods 8 and 26 and the cup-leathers 5 and 25 and guide plates 9 and 27. Assuming that the device is being used for the purpose of massaging the skin of a patient and it is desired to
55 produce a suction within the massaging cup 21, the valve 15 is turned to the position shown in Fig. 1 of the drawing, in which position the upper end of the passage 16 is closed and the upper end of the passage 17 is in connection with the upper hollow of the valve casing section 13 through the valve
60 port 15^a. At each upward movement of the cup leather 5, it is obvious that the valve 15^b will be raised and that the suction produced by such upward movement of the cup

leather, will in addition, draw air from the cup 21 through the valve opening 22^a, handle member 19, tube 18 and passage 14^a, thence upward through the ports 17, 15^a, pipe section 12 and passage 3^a to the cylinder. Assuming that the cup is in air tight contact
70 with the skin of the patient, it is obvious that the successive upward movements of the cup leather 5, must result in the production of a continued vacuum within the cup 21.

Owing to the flexibility of the cup leather and the fact that its marginal portion is turned upward, the air below the cup leather will, on the descent of the latter, find a means of escape upward through the
80 cylinder, about said cup leather and through the edge recesses of the plate 9. It is obvious that the downward movements of the cup leather 5, will operate to impart an air pressure to the upper side of the valve 15^b,
85 thereby retaining said valve closed during the downward movements of said cup leather.

In case it is desired to successively make and break a vacuum within the massage cup, the valve 15 may be so turned as to bring the lower end of its passage 15^a into communication with the port or passage 16, with the result that owing to the absence of an intervening valve such as the valve 15^b, suction
95 will be created within the massage cup on the upward movement of the piston of the cylinder 3 and a downward air compression will be imparted at each downward stroke of said piston, thus producing successive
100 inward and outward air pulsations within the cup. The parts being in the position shown in Fig. 1 of the drawing, and it being desired to create but a partial vacuum within the massage cup, the valve 22 may
105 be so turned as to bring one of the flaring ends of the valve passage 22^a into communication with one or more of the comparatively small air inlet openings 23, thus providing for the admission of a desirable
110 amount of air.

In case it is desired to utilize my improved mechanism for forcing a current of air under pressure through the nozzle 36 for the purpose of drying the skin or other purpose,
115 the valve 32 may be turned to the position indicated in Fig. 1 of the drawing, in which position it is obvious that the air compressed by the downward movements of the cup leather 25, will be forced through
120 the tube 33, hollow handle 34, neck extension 35 and nozzle 36, the valve 37 having previously been opened.

If it be desired to secure a continuous flow of air under reduced pressure through tube 33, the valve 32 may be turned until its passage 32^a is substantially in the position indicated in dotted lines in Fig. 1 of the drawing, in which position a reduced quantity of
125 air will be driven through the passage 32^a. 130

Owing to this choking of the inlet and outlet ends of said valve passage, it will be understood that in the upward movements of the cup leather 25, a comparatively small volume of air will be drawn upward into the cylinder and that the tendency will be to produce through the downward movements of said cup leather, a substantially continuous although reduced pressure of air through the atomizer and its outlet nozzle, thus providing the desired continuous spraying effect.

In order to insure a proper degree of movement of the valve handle 32^a, to accomplish the partial choking effect in the air passage, I may provide said valve handle with a lug 32^c (see Fig. 2) which when the handle is sufficiently turned to permit of the contact of said lug with a lug 32^d on the valve casing, will prevent further movement of the handle and indicate that the valve has been turned the desired distance.

It is obvious that the volume of air passing out through the nozzle 36 may be at all times regulated by the turning of the valve 37.

From the construction and operation described, it will be seen that a comparatively simple, although effective mechanism is provided wherein either a suction or vacuum effect or a pulsating or intermittent compression effect may be produced within the massage cup and that such mechanism is combined with means for discharging air under compression through a desirable form of nozzle.

What I claim, is:

1. In a machine of the character described, the combination with a cylinder, a piston therein, and means for imparting a reciprocating movement to said piston, of a valve casing connected with one end of said piston, a rotary valve in said casing having a port therethrough, said casing having an

internal recess, a pair of passages leading from separated points in said rotary valve seat to a single passage in the lower portion of the valve casing, a check valve adapted to normally close one of the passages of said pair, an air conductor connected with said valve casing, and a massage cup at the end of said conductor.

2. In a machine of the character described, the combination with a cylinder, a piston therein, and means for imparting a reciprocating motion to said piston, of a valve casing connected with said cylinder, a valve controlled passage in said casing intersected by a check valve adapted to be opened only on the up-stroke of the piston, an air conductor connected with said valve casing and its passage, an angular terminal member on said conductor, a rotary valve seated in said terminal member and having a central passage, said terminal member having a plurality of ports extending from the valve seat through its wall, and a massaging cup carried by said terminal member.

3. In a machine of the character described, the combination with a cylinder and a reciprocating piston therein, of a valve casing, a valve mounted therein, a pair of separated ports in said valve casing, said valve being adapted to bring either of said ports into communication with the cylinder a check valve in one of said ports, said check valve opening toward the cylinder, a massage cup, and a conductor leading from said massage cup to said valve casing, both of the ports of said valve casing being in communication with said conductor.

In testimony whereof I affix my signature in presence of two witnesses.

JOSEPH B. FEY.

Witnesses:

A. L. PHELPS,
L. CARL STOUGHTON.