Oct. 14, 1969 C. C. BARRIO 3,472,223

APPARATUS FOR THE REACTIVATION OF CERTAIN FUNCTIONS OF THE HUMAN BODY

Filed Feb. 15, 1966 3 Sheets-Sheet 1

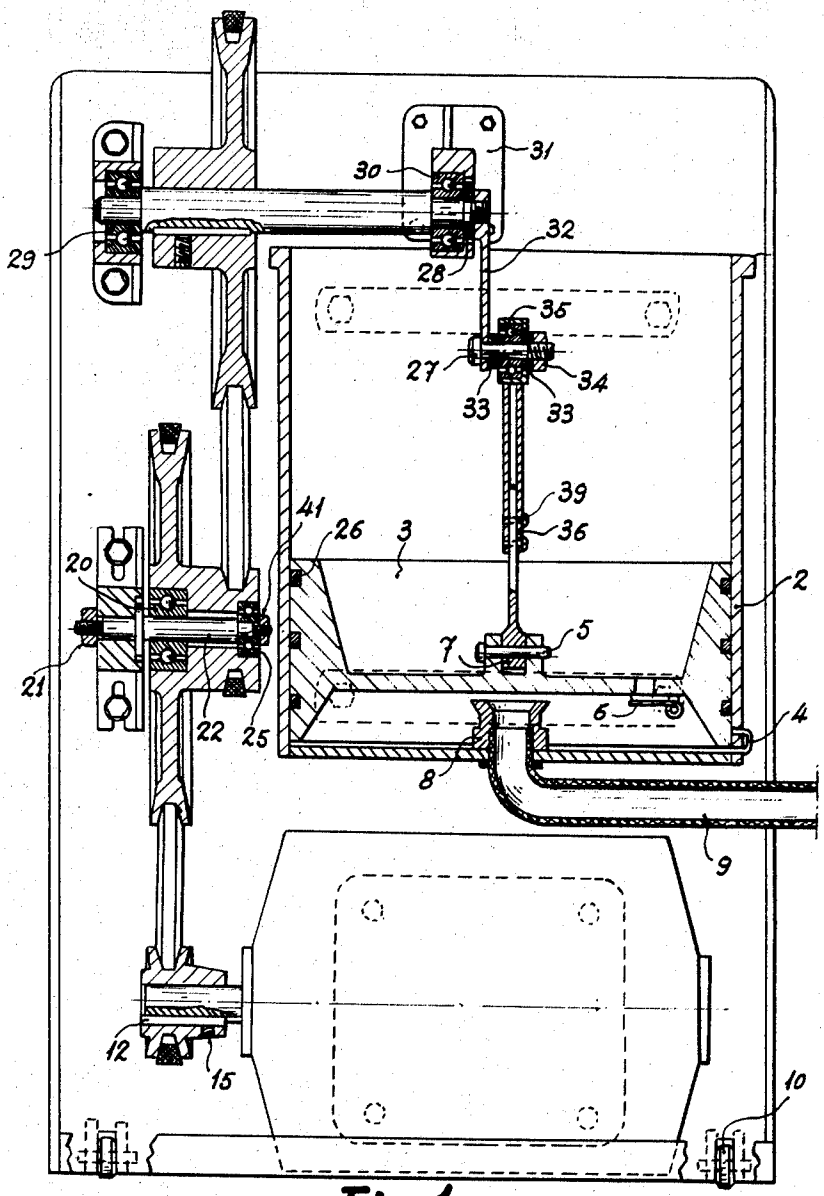

Fig. 1

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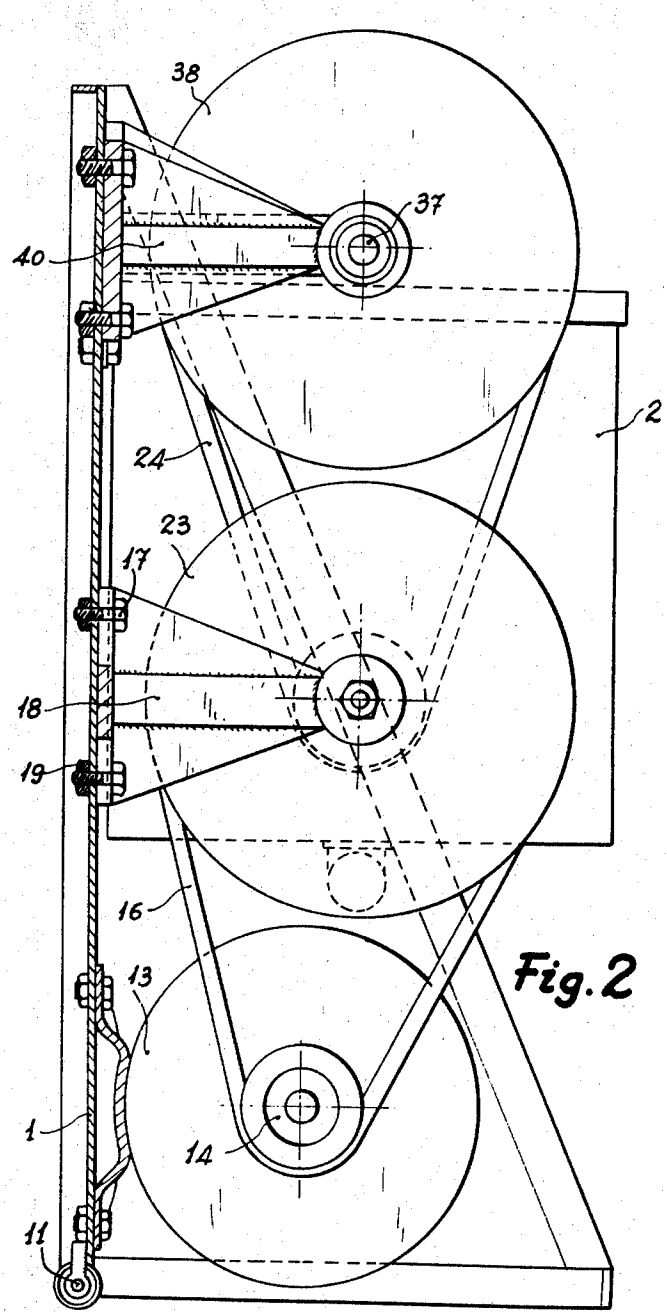

Fig. 2

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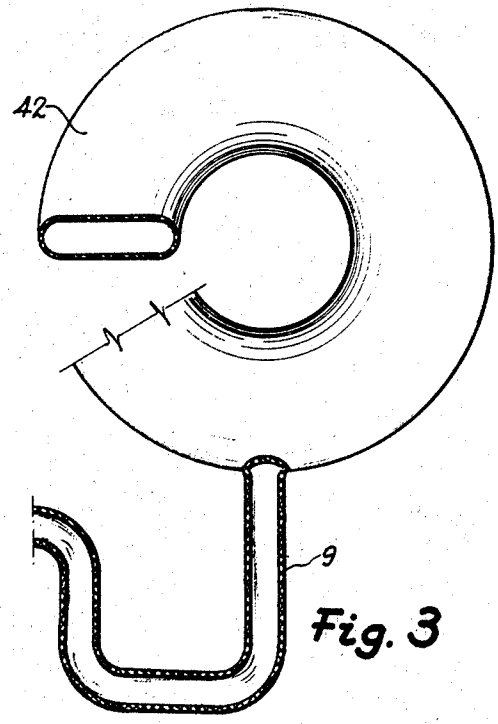

Fig. 3

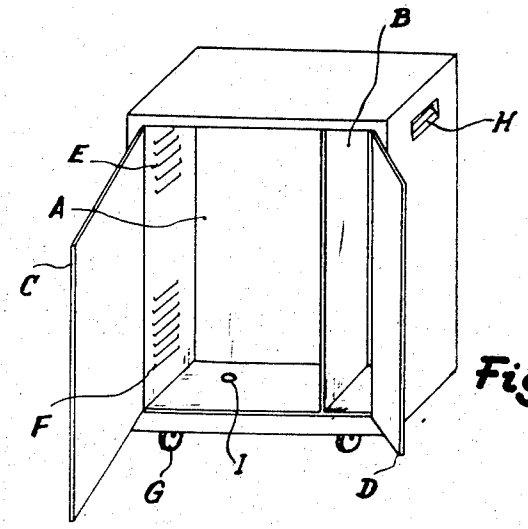

Fig. 4

United States Patent Office 3,472,223
Patented Oct. 14, 1969

3,472,223

APPARATUS FOR THE REACTIVATION OF CERTAIN FUNCTIONS OF THE HUMAN BODY

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Filed Feb. 15, 1966, Ser. No. 527,456
Claims priority, application Spain, Aug. 31, 1965, 316,987
Int. Cl. A61h 31/02; A62d 7/00
U.S. Cl. 128—30 1 Claim

ABSTRACT OF THE DISCLOSURE

A pneumatic or hydraulic chamber in a body whose walls are flexible and impermeable is connected via a flexible tube to a pump arrangement which alternately supplies and withdraws fluid from the chamber and thereby produces expansion and contraction thereof.

This descriptive memorandum is concerned with an apparatus for the reactivation of certain functions of the human body, for which a patent of invention is solicited in order to obtain the privilege of its exclusive industrial and commercial exploitation in accordance with the legislation at present in force.

The object of the apparatus is to achieve in an automatic manner the alternate separation and approximation of two masses, one of which weighs down on the other, so that a part of the apparatus situated between the said two masses alternately increases and decreases in thickness, thus producing the movement desired.

The apparatus essentially consists of a pneumatic or hydraulic circuit in which there is produced an alternating displacement of a fluid by means of an electrically-driven piston pump the circuit of which is connected by means of a flexible tube with a chamber which has impermeable and flexible walls, the volume of which chamber varies alternately with the admission or expulsion of the fluid.

The use of the apparatus is envisaged in cases such as the reactivation of the respiratory function of victims of electrocution, drowning, attacks, etc.

One of its principal applications is that of an auxiliary means for the achieving of sexual intercourse in the case of people who are old, paralysed, etc.

In this latter case the separating element will have the form of a solid ring with an orifice.

In order to facilitate a more exact understanding of the apparatus for which a patent is being applied, there is represented in the attached drawings, which complement this exposition, a practical form for its construction on an industrial scale, this said form being included merely by way of information, and is thus in no sense limitative of the said apparatus.

FIG. 1 of the said drawings shows a section through a vertical plane of the compressor of the machine in a preferential form of construction.

FIG. 2 shows a lateral view of the same compressor.

FIG. 3 shows a plan view, cut away in part, of the separating element.

FIG. 4 shows a perspective view of the case for housing the apparatus.

The machine under reference consists of the following elements: a motor, belt and pulley transmission systems, a cylinder with a piston, a flexible tube and a pneumatic chamber.

The operation of the apparatus, described in general terms, is as follows:

It consists of a motor which provides a movement which makes it possible, by means of a transmission system, to cause a piston to move within a cylinder, this

movement giving rise to an injection of air or liquid which is carried to a pneumatic chamber through a flexible tube.

Lubrication is effected when the piston travels to the base of the cylinder and becomes covered with oil which it distributes along its whole run.

The machine functions by means of the motor **13** which through the pulleys **14**, **23** and **38**, and the belts **16**, **24**, transmits its rotatory movement, which is converted into rectilinear movement by means of the crank **32** and the semiconnecting rod **36**, which latter can be adjusted by means of the screws **39** to the semiconnecting rod **7**, which latter is joined, in such a manner that it can revolve, by a rod **5** to the piston **3** which adopts a rectilinear movement in the sense of upward and downward travel. In the initial upward movements of the piston, the valve **6** opens, and the cylinder **2** becomes filled to capacity with air or liquid. When the piston moves downwards, the valve is almost totally closed by a spring, and at the end of the said downward movement it is closed by the pressure which builds up within the cylinder. The entire content of air or liquid is then injected through the tube **9**, which transports it to the pneumatic chamber **42**, which does not have check valves. When the piston changes its direction of movement, it again draws the air or liquid previously injected into the chamber, causing the latter to increase and decrease in volume in a constant manner in accordance with the movements of the piston, the movement desired thus being achieved. Lubrication is effected by the cylinder itself, since when the piston reaches the bottom of the latter it is submerged in oil, which it spreads over the walls of the cylinder in the course of its upward movement. The height of the oil in the cylinder can be controlled by the level **4**, of glass or plastic material (in the case of hydraulic operation, the liquid employed would have the lubricant mixed with it). At the vertex which is formed by the base of the apparatus with the perpendicular plate **1**, there are two wheels which always project from the sides to enable the machine to be easily transported from one place to another.

All the various parts of which the machine is composed are joined by means of screws to the base **1**.

An explanation is next given of the numbered elements which have not been referred to in the foregoing detailed description.

Number **30**, bearing of the shaft **37** of the pulley **38**, on the crank side; **29**, the bearing of the side opposite to the above; **28**, a washer which separates the bearing **30** from the crank **32**; **27**, shaft screw between the transmission rod and the crank; **26**, adjusting rings between the piston **3** and the cylinder **2**; **25** and **20**, bearings between the shaft **22** and the pulley **23**; **21** a nut which secures the shaft **22** to the support **18**; **41**, nut which secures the bearing **25**; **12**, cotter pin of the motor shaft pulley; **14**, pulley attached to the motor shaft; **15**, screw which secures the cotter pin **12**; **31**, base of the support of the shaft of the pulley **38**; **33** separating washers between the bearing **35** and the crank **32**, and the screw-nut **34** which secures the crankshaft **7**, allowing it to rotate freely; **8**, tube fixed in the center of the cylinder base **2** so that the lubricating oil is kept at the proper level within the cylinder; **40**, support of the shaft **37**; **17** and **19**, screws which secure the support **18** to the chassis **1**.

The case in which the apparatus will be housed is shown in FIG. 4. The case is divided into two compartments, a large compartment, A, where the machine itself is housed, and a smaller compartment, B, which serves to house the flexible tube and the chamber, with its gates C and D. In one side of compartment A are provided apertures E and F, intended for the cooling of the motor. Towards the front part, the case is supported on

two wheels, G; on the two lateral parts and on the upper part it has two handles, H, and at the bottom, at the rear, two rubber feet, I.

What I claim is:

1. Apparatus comprising a body defining an enclosed chamber with walls which are flexible and impermeable, and means for selectively supplying a fluid to and removing the fluid from said chamber to cause expansion and contraction thereof, the latter means comprising a flexible tube connected to said body, and a compressor connected to said tube to alternately supply fluid thereto and remove fluid therefrom, said compressor comprising a vertical cylinder, a piston sealably and slidably supported in said cylinder, and means for driving the piston in reciprocation in said cylinder, said tube opening into said cylinder at the lower end thereof beneath said piston, said piston having a lower concave face including a portion above the level of the opening of said tube when the piston is in its lowermost position whereby the cylinder can contain a lubricant in a layer beneath the tube opening and the piston becomes immersed into the lubricant layer when it reaches its lowermost position thereby enabling lubrication of the piston as it travels in the cylinder, and valve means in said piston which opens to permit entry of fluid to the chamber until a limiting quantity of fluid is reached whereupon the fluid is transferred in alternation between said chamber and said cylinder during reciprocal movement of the piston, wherein said means for driving the piston comprises a crankshaft of adjustable length.

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CHARLES F. ROSENBAUM, Primary Examiner

U.S. Cl. X.R.

128—64, 79; 230—190