United States Patent

Fawick

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[54] TWO-BULB, FLUID FILLED HAND EXERCISING DEVICE

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[51] **Int. Cl.** **A63b 21/30**

[58] **Field of Search** 272/68, 57; 46/87–90; 9/342

[56] **References Cited**

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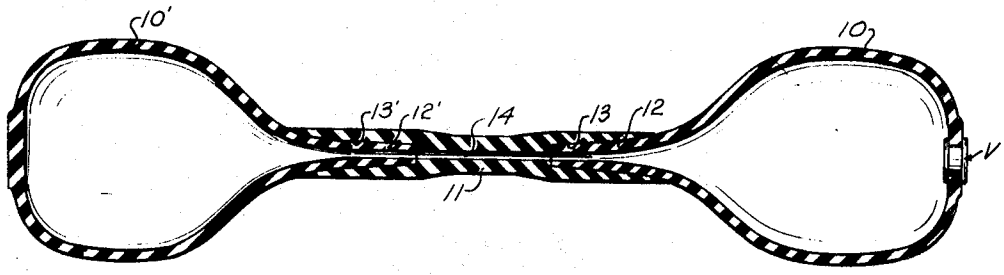
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[57] **ABSTRACT**

The present hand exercising device has a pair of air-filled rubber bulbs, one for each hand, and an unobstructed small diameter passageway connecting the bulbs. Preferably, this passageway is provided by a rubber tube which may be longitudinally stretchable. One bulb carries a normally-closed check valve which opens if the air pressure in the device drops below atmospheric pressure.

3 Claims, 3 Drawing Figures



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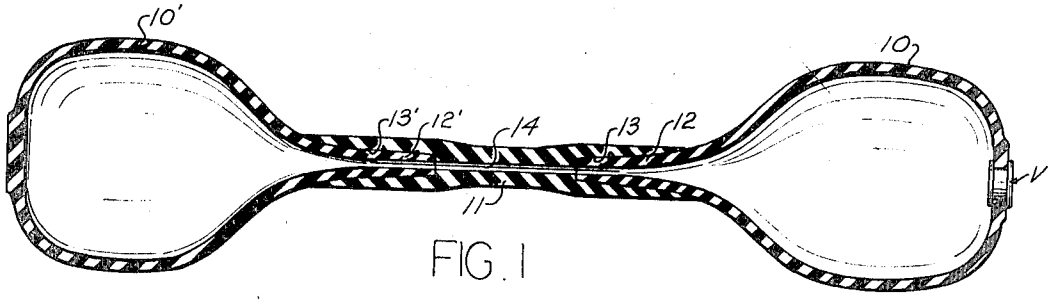


FIG. 1

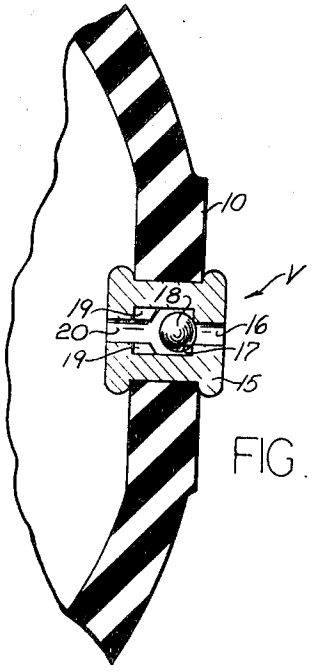


FIG. 2

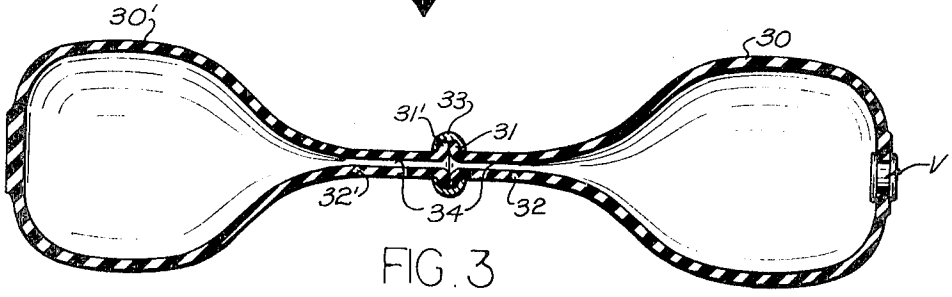


FIG. 3

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TWO-BULB, FLUID FILLED HAND EXERCISING DEVICE

This invention relates to a hand exercising device.

Briefly, the present invention comprises a pair of fluid-filled deformable bulbs, one for each hand, and an unobstructed small diameter passageway between them. Preferably, the fluid which fills the bulbs in air. The user may squeeze either bulb with the corresponding hand to increase to the desired extent the fluid pressure in both bulbs because of the connecting passageway between them. The bulbs may be squeezed simultaneously or alternately to provide the desired exercising of either or both hands, either to increase the strength of the hands or to exercise the joints, as in the case of arthritis sufferers.

It is a principal object of this invention to provide a novel and improved hand exercising device which enables the user to selectively control the resistance to squeezing that the device exerts against either hand.

Another object of this invention is to provide such a hand exercising device that may also be used for exercising the arm and shoulder muscles.

Another object of this invention is to provide a novel and improved hand exercising device having a check valve arranged to prevent the fluid pressure inside the device from dropping below atmospheric pressure.

Further objects and advantages of this invention will be apparent from the following detailed description of certain presently-preferred embodiments thereof, which are illustrated in the accompanying drawing.

In the drawing:

FIG. 1 is a longitudinal section through a first embodiment of the present invention;

FIG. 2 is an enlarged longitudinal section through the check valve on the FIG. 1 device; and

FIG. 3 is a longitudinal section through a second embodiment of the present invention.

Referring first to FIG. 1, the first embodiment of the present invention comprises a pair of hollow bulbs **10** and **10'** and a hollow connecting tube **11**, all composed of flexible and resilient rubber-like material. Each bulb **10** and **10'** is shaped and dimensioned to be grasped by a respective hand of the user.

At its inner end the hollow bulb **10** has an inwardly-tapered neck **12** which has a snug fit in a complementary tapered recess **13** formed in the adjoining end of the connecting tube **11**. The bulb neck **12** and the connecting tube **11** are adhesively bonded to each other in fluid-tight fashion at this location, such as by vulcanized adhesion.

Similarly, the bulb **10'** has at its inner end an inwardly-tapered neck **12'** which is received snugly in a complementary recess **13'** in the connecting tube and is secured adhesively in fluid-tight fashion to the latter, such as by vulcanization.

The connecting tube **11** and the tapered inner ends of bulbs **10** and **10'** present an elongated, small diameter, longitudinal passageway **14** which is unobstructed along its complete length between the hollow interiors of the bulbs **10** and **10'**. This small diameter passageway provides fluid communication between the interiors of the respective bulbs.

In the preferred embodiment of this invention the fluid which fills the two bulbs **10**, **10'** and the passageway **14** between them is air, which is at substantially atmospheric pressure when both bulbs are in their normal expanded conditions, as shown in the drawing.

Preferably, also, the bulb **10** carries a check valve in its outer end wall which is normally closed. This check valve is adapted to open in case the air pressure inside the device drops below atmospheric pressure.

Referring to FIG. 2, the check valve V may comprise a housing **15** having an inlet passage **16** which is open at the outside of the bulb **10** and which presents a valve seat **17** for engagement by a ball **18**. A passage **20** in back of the ball **18** leads into the interior of the bulb **10**. The valve housing presents a plurality of circumferentially-spaced ribs **19** at the front of passage **20**. These ribs are spaced a short distance behind ball **18** when the latter engages valve seat **17**. These ribs

define between them a plurality of passages around the ball **18** when the latter abuts against the ribs.

When the pressure inside bulb **10** drops significantly below atmospheric pressure, the pressure differential on opposite sides of the ball **18** will cause it to move inwardly, away from the seat **17** and against the inner ends of the ribs **19**. When the ball **18** unseats in this manner the inlet passage **16** is connected via the passages between the ribs **19** to the passage **20** leading into the interior of the bulb, so as to bring the internal pressure in the device up to substantially atmospheric pressure.

It is to be understood that the check valve of FIG. 2 is disclosed merely for purposes of illustration, and that any suitable check valve may be used on the present hand exercising device.

FIG. 3 illustrates a second embodiment of the present invention having two identical bulbs **30** and **30'** with tapered inner ends **32** and **32'**, respectively, which terminate in annular flanges **31** and **31'**, respectively. These flanges are held in fluid-tight, abutting engagement with each other by a metal ring **33** which is crimped tightly around them. The inner ends of the bulbs provide the unobstructed, small diameter passageway **34** connecting the interiors of the bulbs **30** and **30'**. Both bulbs preferably are of deformable and resilient soft rubber or the like. Bulb **30** carries a check valve V in its outer end wall for the purpose already explained.

In the use of this exercising device, the user grasps one bulb in each hand and he may squeeze either or both bulbs to increase the air pressure in them to the desired extent. For example, if the user wishes to exercise one hand he can first squeeze the other bulb with his opposite hand to increase the air pressure in the bulb grasped by the hand he wishes to exercise. It will be understood that the bulb which is squeezed first offers relatively slight resistance initially to being compressed, but the bulb held by the other hand will be at the increased pressure before it is squeezed and therefore it presents a relatively high resistance initially, which initial resistance can be controlled by the squeezing force exerted by the opposite hand. Therefore, the present invention provides a hand exercising device whose resistance to squeezing can be selectively regulated by the user.

Obviously, both bulbs can be squeezed simultaneously, to match the strength of one hand against the other, or the bulbs can be squeezed and relaxed in alternate sequence to alternately exercise the hands individually.

The connecting passageway between the bulbs, though unobstructed, is of sufficiently small diameter to provide a brief time delay between the squeezing of one bulb and the resulting pressure increase in the other bulb. This enables the user to time the squeezing of the latter bulb so that this hand will encounter a progressively increasing resistance which is due both to the delayed pressure increase originating from the first bulb and the pressure increase due to the squeezing of the latter bulb itself.

In the embodiment of FIG. 1, the connecting tube **14** preferably is longitudinally stretchable, such as by being composed of soft rubber or the like, and it may have a length between the bulbs which is appropriate for the user to exercise his arm and shoulder muscles by pulling the bulbs apart, stretching the connecting tube in the process of doing so.

While certain presently preferred embodiments of the present exercising device have been described in detail with reference to the accompanying drawing, it is to be understood that various modifications, omissions and adaptations which depart from the disclosed embodiment may be adopted without departing from the scope of the present invention. For example, the normal fluid pressure in the bulbs may be above atmospheric, and the fluid itself may be a gaseous or liquid medium other than air, if desired.

I claim:

1. A hand exercising device comprising a pair of fluid-filled bulbs of deformable material and each shaped to be gripped in a respective hand of the user, means providing an unob-

structed small diameter passageway between said bulbs, and a normally closed check valve on one bulb which opens if the internal fluid pressure in the device drops significantly below atmospheric pressure.

2. A hand-exercising device comprising a pair of air-filled bulbs and a connecting tube extending between them, each of said bulbs being of flexible and resilient rubber-like material and being shaped and dimensioned to fit in a respective hand of the user, said connecting tube being sealed to each bulb and presenting an obstructed small diameter air passageway connected at its opposite ends to the interior of said bulbs, and a normally closed check valve on one bulb which is constructed and arranged to open if the air pressure in the device drops significantly below atmospheric pressure.

3. A hand-exercising device according to claim 2, wherein said tube is flexible and is longitudinally stretchable manually.

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