

PATENT SPECIFICATION

(11) 1 233 394

DRAWINGS ATTACHED

- (21) Application No. 15640/68 (22) Filed 1 April 1968
 (61) Patent of Addition to No. 968 180 dated 20 Aug. 1963
 (45) Complete Specification published 26 May 1971
 (51) International Classification A 63 b 21/02
 (52) Index at acceptance
 A6M 8D1A 8D1Y 8DY 8J1B1 8J1BY 8J1Y 8JY
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(54) IMPROVEMENTS IN OR RELATING TO PHYSICAL EXERCISERS

(71) We, MUSEXPORT LIMITED, a Body Corporate organised under the laws of Canada, of 110 Yonge Street, 16th Floor, Toronto 1, Canada, do hereby declare the invention for which we pray that a patent may be granted to us and the method by which it is to be performed, to be particularly described in and by the following statement:—

The invention relates to a physical exercising appliance for strengthening the muscles, with which many different exercises can be carried out. This appliance is also disclosed in our co-pending Patent Application No. 45550/70 (Serial No. 1233395.)

According to the present invention there is provided a physical exercising appliance comprising two tubes one of which is telescopically slidable within the other, each said tube being provided at its outer end with a hand grip, a coil spring biasing said tubes to an extended telescopic position, a flexible rope-like connection forming two lengths between said hand grips and a slide and scale device for registering the force applied to the ends of the tubes.

An embodiment of the invention will now be described by way of example only, with reference to the accompanying drawings in which.—

Figure 1 is a front elevation of the appliance;

Figure 2 is an enlarged front elevation, partly in longitudinal section of the appliance;

Figure 3 is a partial longitudinal section of the lower hand grip shown in Figure 2; and

Figure 4 is a cross-section of the smaller tube of the appliance, including the slide.

In the embodiment illustrated in Figures 1 to 4, the appliance comprises an inner tube 1, which can slide telescopically into an outer tube 2. The two tubes 1 and 2 enclose a one-piece coil spring, 3. The free end of each of the tubes 1 and 2 carries a hand grip 4 which encloses the said tube end. On their side faces, the hand grips 4 are formed with recesses, 14, separated by ribs 13. The fingers of one hand can rest snugly in the recesses 14.

The tubular extension 20 on the hand grip

4 projects into the free end of the tube 1 or 2. To provide a firm seating, the extension 20 is formed with a number of ring-shaped ribs, 21, the outside diameter of which is slightly larger than the inside diameter of the respective tube. A pin or screw bolt 8, serves to fix the individual hand grip 4 to its associated tube 1 or 2.

In that end of the hand grips 4 which is nearer to the tubes 1 and 2, an endless flexible rope-like connection 17 passes through two holes 16, which lie opposite each other forming two lengths. The length of the flexible connection 17 are such that the coil spring 3 is pre-stressed when the appliance is out of use, so that the lengths of flexible connection 17, which runs alongside the tubes 1 and 2, are stretched taut. The flexible connection 17 consists of an inner steel rope embedded in a plastics sheath.

A clamp 18 serves to join the ends of the steel rope to form a continuous loop.

For measuring the force applied to the ends of the appliance during each exercise, a slide and scale device 23, is attached at one end, by means of the screw 25 to the hand grip 4 by which the tube 1 is closed. At its other end, the scale is mounted with the aid of a sliding ring 22, which is slipped over the tube 2 or, if the ring made of resilient material, it can subsequently be forced on to the tube 2. The tube 1 carries a slide 26, which can be restored by hand and with which the applied force achieved can be read off accurately from the scale. On its back, the slide contains a groove 27, into which the scale 23 fits, thus affording better guidance for the slide. The lines marked on the scale are numbered 24.

However, accurate measurement of the force applied in any exercise is possible only when there is no noteworthy friction between the telescopic components of the appliance. The coil spring must therefore be prevented from buckling sideways, as the tubes 1 and 2 of the appliance slide one within the other, and coming into contact with the tube walls, the result of which would be not only to produce

friction between the spring and the tube walls, but also to tilt the tubes out of alignment with each other. To prevent this, the coil spring 3 is threaded over a long rod, which may be made of plastics. This rod 5 keeps the coil spring 3 straight at all times, so that it cannot come into contact with the inner walls of the tube 1 or 2. A bush 6 is inserted into that end of the tube 1 which lies within the tube 2, an opening being left in the end 7 of the bush, to enable the rod to pass through. When the appliance is forced together, the tip of the rod 5 is therefore able to move a corresponding distance axially through the opening in the end 7 of the inserted bush 6, whereas the coil spring 3 comes up against the end 7 of the inserted bush 6. As the appliance is forced further together, the tip of the rod 5 finally comes up against the extension 20 on the hand grip 4 and thus prevents the appliance from being closed up any further.

The other end of the rod 5 carries a collar 9, which bears against a corresponding recess in the tubular extension 20 on the hand grip 4. The upper end of the coil spring 3 bears against the lower face of the collar 9, so that the force exerted by the coil spring, at the top end as well, is transmitted directly to the hand grip 4.

An end portion 10, extends the rod 5 past the collar 9 into the space 11 within the hand grip 4 and is terminated by a slotted part, 12. The clamp 18 rests in the slot 12, so that the cut-back ends of the plastics sheathing on the flexible connection 17, adjacent to the join in the latter, prevent the flexible connection from shifting, the join remaining in the position shown in Figure 3. To reduce weight, the rod 5 may be made hollow, as shown in Figure 3. Exercises of a widely varying nature can be carried out with an appliance embodying the invention.

To carry out pressing exercises, for developing the arm and chest muscles, the two hand grips are held in the palms of the hands and pressed together, so that the tubes 1 and 2 slide telescopically one within the other until the coil spring 3 has been fully compressed. To carry out pulling exercises, the two runs of flexible connection 17 are grasped by the hands approximately in the middle and pulled apart, this likewise causing the spring 3 to be compressed. The appliance may also be held by placing both hands on one hand grip 4, the other hand grip being braced against the wall or floor of the room, whereupon the appliance is pressed together. Another possibility is to twist the two lengths of flexible connection 17 with both hands, this being a particularly good method of strengthening the chest muscles.

Again, one can stand with both feet on one length of the rope 17, with the appliance horizontal, and use both hands to exert an upward pull on the other length of the flexible connec-

tion which develops the back muscles. For strengthening the stomach muscles, the appliance is braced against the floor and the upper hand grip is pushed down with both hands. One can also, while sitting on the floor, grasp the top hand grip with both hands and force the appliance together with a downward movement.

When the tubes are telescoped in the course of one of the exercises described above, the tube 2 pushes the slide 26 mounted on the inner tube 1 upwards through a distance corresponding to the force exerted. When this force is removed, the slide 26 will stay in whatever position it has reached, by virtue of its own friction, so that the precise force exerted can be read off the scale guided in the groove 27. Before the next force is applied to the appliance, the slide 26 can be restored by hand to its starting position, that is to say until it is up against the tube 2, so that it is possible to read off the force applied during each individual exercise.

The appliance thus offers the possibility of many different exercises and enables the entire muscular system to be developed, in the course of which the gradual strengthening of the individual muscles can be recorded over a long period with the aid of the scale of force. In all exercises, the appliance is safe against accidents, because if the hand grip should be released inadvertently, the appliance in a state of compression will be braked by the tension of flexible connection at the end of its expansion movement.

WHAT WE CLAIM IS:—

1. A physical exercising appliance comprising two tubes one of which is telescopically slidable within the other, each said tube being provided at its outer end with a hand grip, a coil spring biasing said tubes to an extended telescopic position, a flexible rope-like connection forming two lengths between said hand grips and a slide and scale device for registering the force applied to the ends of the tubes.

2. A physical exercising appliance according to claim 1 in which means are provided for guiding the coil spring within the tubes.

3. A physical exercising appliance according to claim 1 or 2, in which the slide and scale device comprises a scale fixed at one end to the hand grip on the inner tube, its other end being mounted to slide on the outer tube which other end carries the slide, which can be restored by hand to its original position, and which acts as an indicator enabling the force applied during each exercise to be read off the scale.

4. A physical exercising appliance according to any of claims 1 to 3, in which one end of the coil spring which is fitted over a rod, which is part of the guide means, bears against the hand grips, through a collar on the rod, the other end of the spring bearing against a base connected to one of the tubes.



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4. A physical exercising appliance according to any of claims 1 to 3, in which one end of the coil spring which is fitted over a rod, which is part of the guide means, bears against the hand grips, through a collar on the rod, the other end of the spring bearing against a base connected to one of the tubes.

5. A physical exercising appliance according to claim 3 or 4 in which the slide is in the form of a resilient ring, the back of which contains a shallow groove for guiding the scale.
- 5 6. A physical exercising appliance according to any one of claims 3 to 5, in which that end of the scale which slides on the outer tube is attached to a ring-shaped slide fitted over the outer tube.
- 10 7. A physical exercising appliance according to any one of claims 4 to 6 in which the rod extends beyond the collar to a slotted end in which slot a join of the flexible connection is inserted.
- 15 8. A physical exercising appliance according to any one of claims 4 to 7, in which that end of the rod which is remote from the collar passes through an opening in the base connected to the inner tube and, when the appliance is compressed to its extreme position, comes up against the hand grip.
- 20 9. A physical exercising appliance according to any one of claims 4 to 8, in which the rod is a hollow plastics member.
- 25 10. A physical exercising appliance substantially as hereinbefore described with reference to and as shown by the accompanying drawings.

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Printed for Her Majesty's Stationery Office by the Courier Press, Leamington Spa, 1971.
Published by the Patent Office, 25 Southampton Buildings, London, WC2A 1AY, from which copies may be obtained.

