

## [54] PHYSICAL TRAINING DEVICE

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[58] Field of Search .... 73/379 R, 380 R,  
73/381 R; 272/79 R, 79 B, 79 D, 80 R

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Primary Examiner—Herbert Goldstein

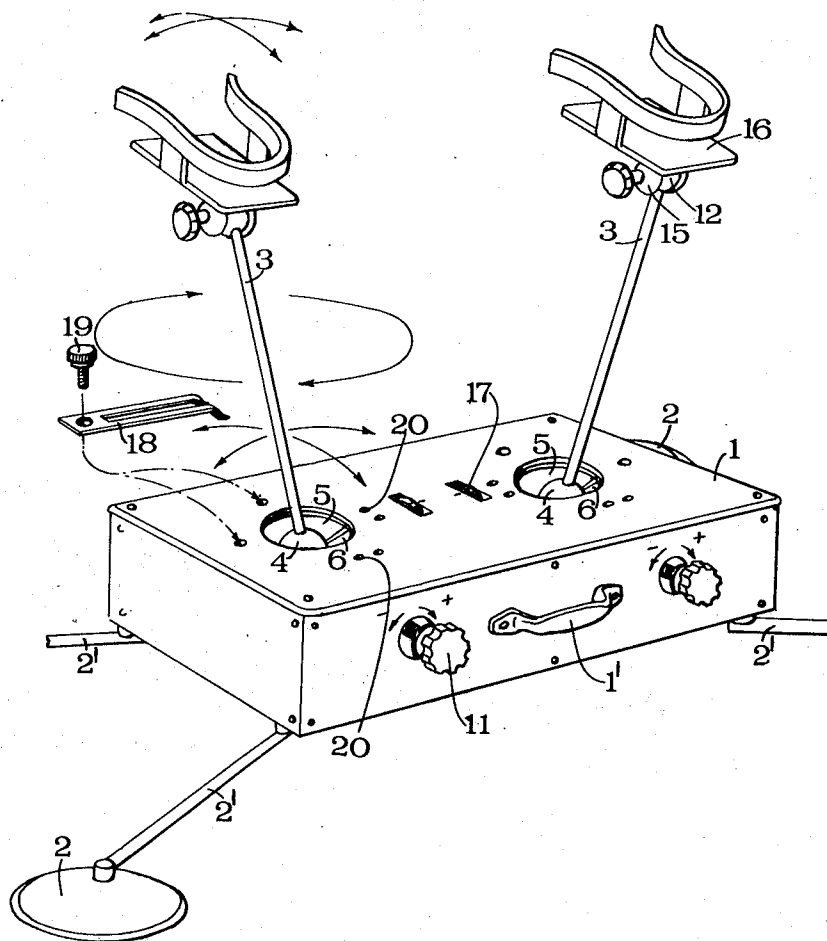
Attorney—Oberlin, Maky, Donnelly &amp; Renner

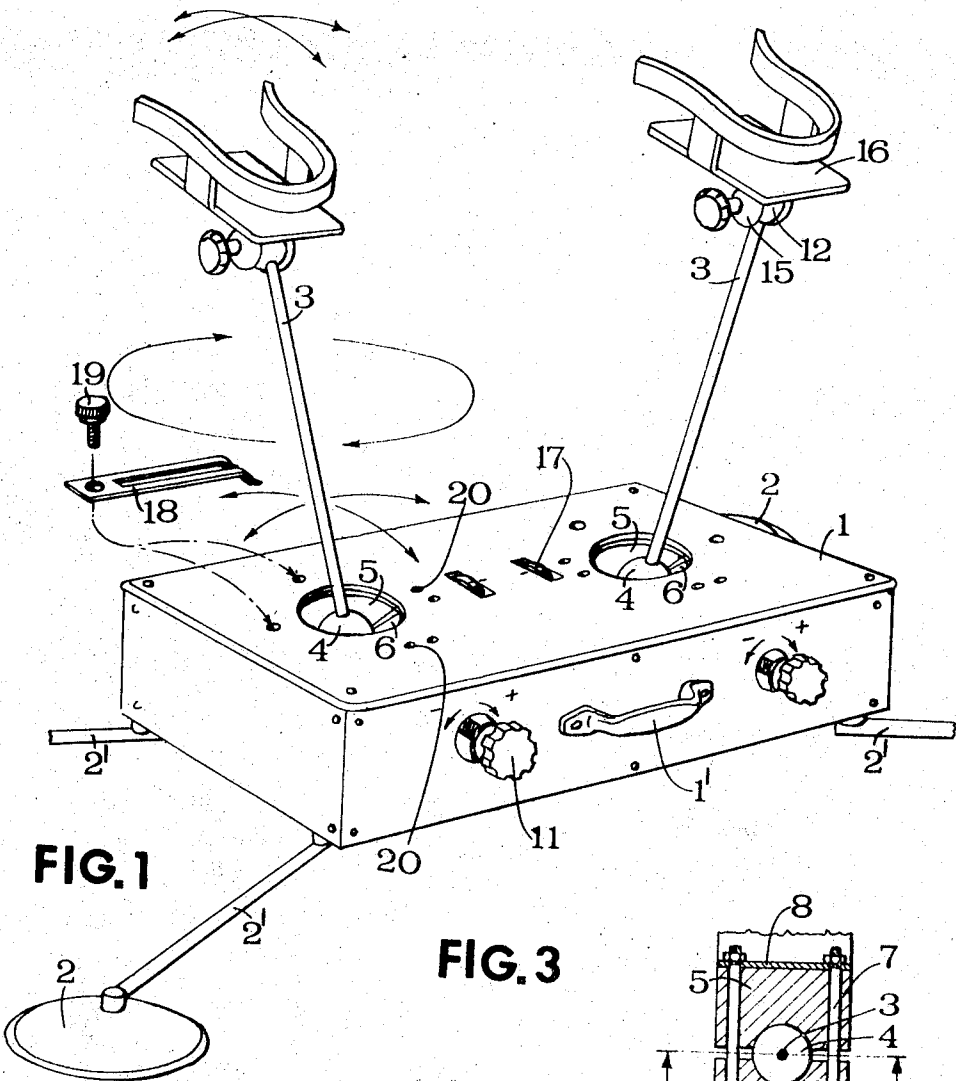
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## ABSTRACT

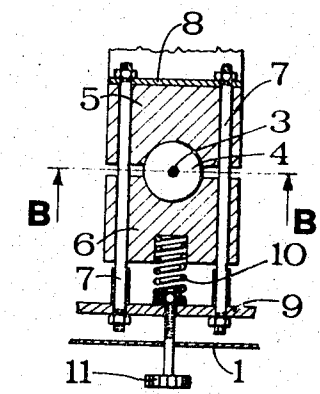
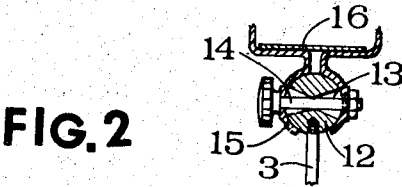
A physical training device comprising a casing from which two movable rods are extending and have a pedal or handgrip at their free ends, the lower ends being mounted in ball joints for movement in all directions within a certain angle or only in a substantially vertical angular direction, the movement of the ball of the ball joints within the casing being restrained by appropriate adjustable means.

8 Claims, 4 Drawing Figures

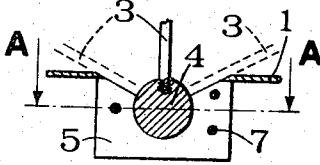




**FIG. 3**



**FIG. 4**



## PHYSICAL TRAINING DEVICE

This invention relates to a physical training device suitable for making physical exercises for medical or orthopedical purposes as well as for practising gymnastics or body building.

Various types of such physical training devices are already known and available in commerce, such as the rowing machines, cycling machines, chest expanders etc.

However, all these devices have a well defined purpose in that each of them is designed to cure or develop and given group of muscles, for example, the cycling machines are designed to develop the muscles of the legs, the expanders those of the arms and chest, or when these devices are more complex such as the rowing machine, they take up very much space so that they can only be kept in a gymnasium but not in a flat or apartment.

It is the object of the present invention to provide a physical training device which is of simple construction and relatively small handy size and permits the execution of a plurality of exercises both with the upper and lower limbs.

The physical training device according to the invention comprises

- a. a parallelepiped casing provided with a plurality of arms extending therefrom in the manner of the legs of a spider and each carrying at its free end a sucking vessel for securing the casing to the ground or a wall,
- b. a pair of rigid rods extending upwardly from the casing and secured thereto by ball joints each located in a conical recess in the casing so that each of the rods can assume any desired angle within said conical recess,
- c. means at the upper free end of each of said rods, adapted to be engaged and moved by a training person, and
- d. means restraining the movement of said ball joints within said conical recesses in the casing.

In other words or more particularly, this physical training device comprises

- a. a parallelepiped casing adapted to be secured to the ground or a wall by appropriate arms (of the spider leg type) extending from the casing and provided with sucking vessels;
- b. two rigid rods likewise extending from the casing and having one end secured thereto by a ball joint located in a conical recess in the casing, each of the rigid rods being movable to the desired position within the solid angle of the conical recess and carrying on its other end a handgrip or pedal likewise secured thereto by a ball joint to carry out physical exercises either with the upper or lower limbs, the ball joint between each of said rods and the casing substantially comprising a ball connected to the end of the rod and enclosed in the hemispherical recesses of two jaws secured to the casing, the pressure exerted by the jaws on the ball being adjustable from outside of the casing and being determined by appropriate spring means, for example, a torsion spring; the ball joint between each rod and the handgrip or pedal likewise substantially comprising a ball connected to the end of the rod and enclosed in the hemispherical recess of two jaws firmly secured to the handgrip or pedal, the pres-

sure exerted by the jaws on the ball being adjustable from outside and determined by appropriate clamping means, for example, a through bolt;

- c. two straight guide members adapted to be secured to the casing at the base of each of said rods above the ball joint between each rod and the casing in predetermined positions for limiting the movement of the rods to a predetermined vertical plane to permit the execution of particular exercises, for example, bending and extension or abduction of the upper or lower limbs;
- d. a handle for the casing to enable it to be carried in the manner of a suitcase, and
- e. at least two indicators, one for each of said rods, for indicating the force exerted during each exercise.

A preferred embodiment of the invention will now be described by way of example and with reference to the accompanying drawing, in which:

FIG. 1 is a perspective view of a physical training device according to the invention;

FIG. 2 is a sectional view of a ball joint mounting a pedal of the physical training device;

FIG. 3 is a longitudinal section taken on the line A—A in FIG. 4 and showing a ball joint mounting the pedal supporting rods on the casing, and

FIG. 4 is a transverse section taken on the line B—B in FIG. 3.

FIG. 1 shows a casing 1 having a parallelepiped form and a handle 1'. The casing 1 can be mounted on the ground or a wall by four sucking vessels 2 carried by arms 2' extending from the four corners of the casing 1. The sucking vessels 2 may be movably or rigidly mounted on the arms 2'. Two rigid spaced rods 3 extend upwardly from the casing 1 and the lower end of each of them is screwed into a ball 4 enclosed by two jaws 5 and 6 each provided with a hemispherical recess with the two recesses facing each other to receive the ball 4. As shown in FIG. 3, the two jaws 5 and 6 are shiftably mounted on a pair of rods 7 secured to support members 8 and 9. The jaws 5 and 6 clamp the ball 4 under the action of a helical spring 10 whose clamping force can be adjusted from outside the casing 1 by turning a knob 11 having a shaft threadably engaged in the support member 9 to thereby adjust or vary the frictional force exerted between the ball 4 and the jaws 5, 6 and thus the resistance encountered in carrying out the physical exercise.

As shown in FIG. 2, the upper end of each rod 3 is also threaded and screws into a ball joint essentially comprising a ball 12 provided in its centre with a through hole 13 having the shape of an inverted double cone. A shaft 14 extends through the hole 13 and a spherical sheath 15 surrounds the ball 12 and is provided with screw means to tighten the spherical sheath 15 on the ball 12 and, if desired, lock it thereon. The sheath 15 forms part of a pedal 16 which, if desired, may be replaced by a handgrip.

The casing 1 is further provided with an indicator 17 for each rod 3, which indicates the force exerted during each physical exercise.

Further, a bifurcated straight guide member 18 may be secured to the casing 1 adjacent each rod 3 by means of a screw 19 adapted to be threaded into appropriate holes in the casing 1 after the bent-over ends of the bifurcate portion of the guide member 18 have been inserted in corresponding holes 20 in the casing

1. The movement of the rod 3 is thereby limited to an arcuate movement in a vertical plane to permit the execution of particular exercises as mentioned before.

Obviously the arrangement of the various members and the details of construction may be different from what has been described and illustrated without departing from the scope of the invention.

I claim:

1. A physical training device comprising

a. a parallelepiped portable casing provided with a plurality of arms extending therefrom, each of said arms carrying at its free end a sucking vessel for securing the casing to a supporting surface,

b. at least two rigid rods extending upwardly from the casing and secured thereto by ball joints each located in a conical recess in the casing so that each of the rods can assume any desired angle within said conical recess, said rods being readily disengagable from said ball joints for storage within said casing when the device is carried or in storage,

c. means restraining the movement of said ball joints within said conical recesses in the casing,

d. means at the upper free end of each of said rods adapted to be engaged and moved by the hands or feet of a training person,

e. a ball joint connecting said means at the upper free end of each of said rods to the associated rod, each of said ball joints comprising a ball screwed to the free end of said rod received within a sheath forming part of said means adapted to be engaged and moved by the training person, said ball being traversed by a central hole having the shape of an inverted double cone, and a shaft extending through said hole and said sheath and being provided with screw means to enable the sheath to be tightened on the ball, and

f. handle means on the exterior of said casing for permitting the same to be carried conveniently to the point of use.

2. A physical training device comprising

a. a portable casing provided with a plurality of arms extending substantially therefrom at each bottom corner thereof so as to firmly anchor said casing, each of said arms carrying at its free end a suction member for removably securing the casing to a supporting surface,

b. at least two rigid rods extending upwardly from the casing and secured thereto by ball joints each located in a conical recess in the casing so that each of the rods can assume any desired angle within said conical recess, each of said ball joints comprising a ball and a pair of adjustable jaws on either side of said ball, said jaws being formed with recesses which cooperatively define said conical recess, said rods being threaded to and thus readily disengagable from said ball joints for storage within said casing when the device is carried or in storage,

c. means for restraining the movement of said ball joints within said conical recesses formed by said jaws, comprising a pair of rods extending through said jaws mounting said jaws between spaced support members, and spring means for engaging one of said jaws for urging said jaws together to clamp said ball,

d. means at the upper free end of each of said rods adapted to be engaged and moved by the hands or feet of a training person, and

e. handle means on the exterior of said casing for conveniently carrying the same to the point of use.

3. A physical training device comprising

a. a portable casing provided with a plurality of arms extending substantially therefrom at each bottom corner thereof so as to firmly anchor said casing, each of said arms carrying at its free end a suction member for removably securing the casing to a supporting surface,

b. at least two rigid rods extending upwardly from the casing and secured thereto by ball joints each located in a conical recess in the casing so that each of the rods can assume any desired angle within said conical recess, said rods being threaded to and thus readily disengagable from said ball joints for storage within said casing when the device is carried or in storage,

c. means including resilient biasing means for restraining the movement of said ball joints within said conical recesses in the casing,

d. means at the upper free end of each of said rods adapted to be engaged and moved by the hands or feet of a training person, said means being connected to said rods by means of a ball joint and including means permitting rotation of said means at the upper free ends of said rods about axes through said ball joints, and

e. handle means on the exterior of said casing for conveniently carrying the same to the point of use.

4. The physical training device as claimed in claim 3 wherein further means are provided adjacent said conical recess in the casing for limiting the movement of said rods to an arcuate movement in a substantially vertical plane.

5. The physical training device as claimed in claim 3 wherein said means at the upper free end of each of said rods comprises a petal.

6. The physical training device of claim 3 wherein each of said ball joints located in said conical recess in the casing comprises a ball and a pair of adjustable jaws on either side of said ball, said jaws being formed in the areas thereof with recesses which cooperatively define said conical recess.

7. The physical training device as claimed in claim 6 wherein said means for restraining the movement of said ball joints within said conical recesses comprises a pair of rods extending through said jaws for mounting said jaws between spaced support members, and spring means for engaging one of said jaws for urging said jaws together to clamp said ball.

8. The physical training device as claimed in claim 7 wherein at least one of said jaws is adjustable from outside the casing to move along said rods and clamp the ball of the ball joint with the cooperation of the other jaw, a threaded shaft associated with said adjustable jaw and extending through one of said support members and having a control knob at its free end located exteriorly of said casing, said spring means comprising a helical spring inserted between said adjustable jaw and said one support member.

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UNITED STATES PATENT OFFICE  
CERTIFICATE OF CORRECTION

Patent No. 3,782,721

Dated April 16, 1974

Inventor(s) FRANCO UGO PASSERA

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

In the heading format on page 1 of the issued patent, between data element identifiers [21] and [52], the following insertion should appear:

[30] Foreign Application Priority Data

December 10, 1970 Italy 71096-A/70

Signed and sealed this 1st day of October 1974.

(SEAL)

Attest:

McCOY M. GIBSON JR.  
Attesting Officer

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