United States Patent

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[45] Patented **Nov. 23, 1971**

[54] **DOUBLE CRANK PORTABLE EXERCISER**
4 Claims, 5 Drawing Figs.

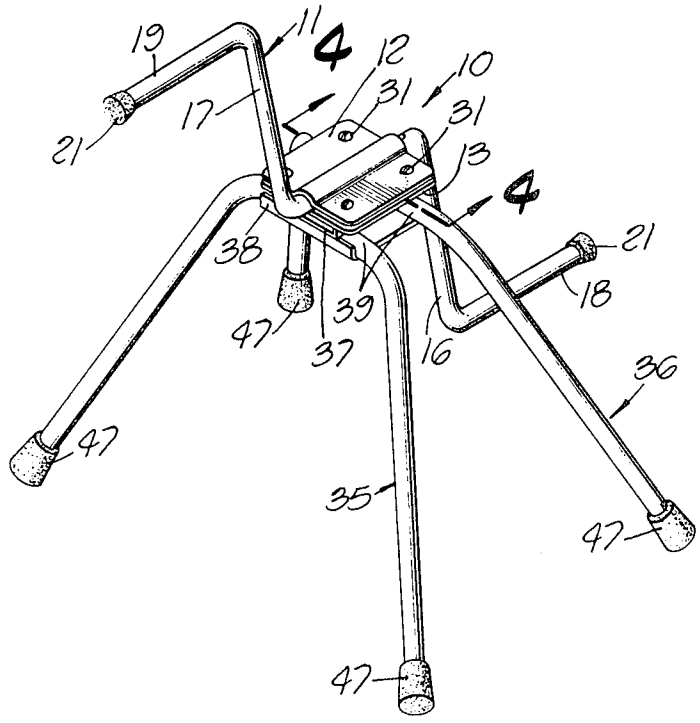
[52] U.S. Cl. **272/73,** 272/DIG. 3
[51] **Int. Cl.** **A63b69/16,** A63b 23/04
[50] **Field of Search** 272/79, 73

[56] **References Cited**
UNITED STATES PATENTS

Des. 158,675	5/1950	Longfellow	272/73
2,668,709	2/1954	Boyko	272/73
3,373,992	3/1968	Ludeman	272/73

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ABSTRACT: Two grooved bearing plates rotatably secure a tubular shaft of a double crank between them. The plates are spaced apart vertically to determine the crank friction load. A lubricant wick lies in one groove in contact with the crankshaft. A pair of U-shaped legs are held in splayed relationship between top and bottom clamping plates. Elongate fasteners extend through all plates and the legs to unitize the devices.



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SHEET 1 OF 2

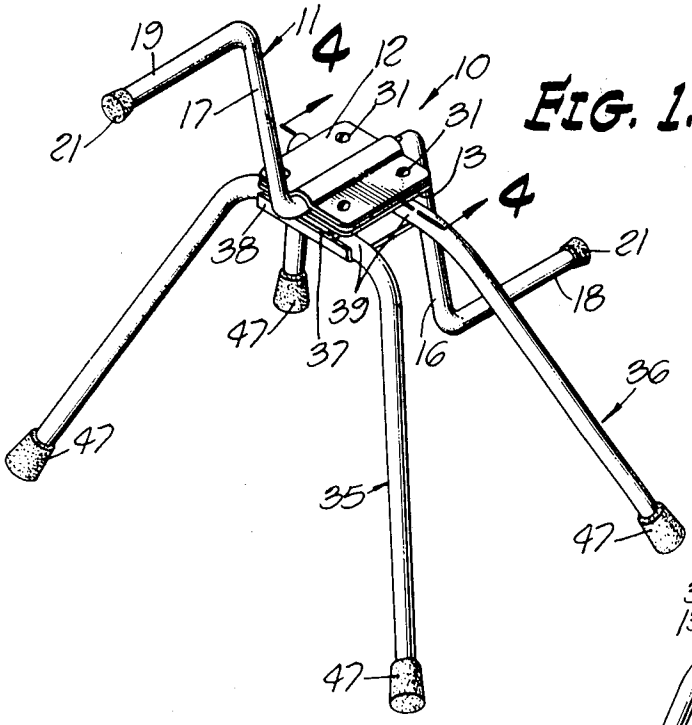


FIG. 1.

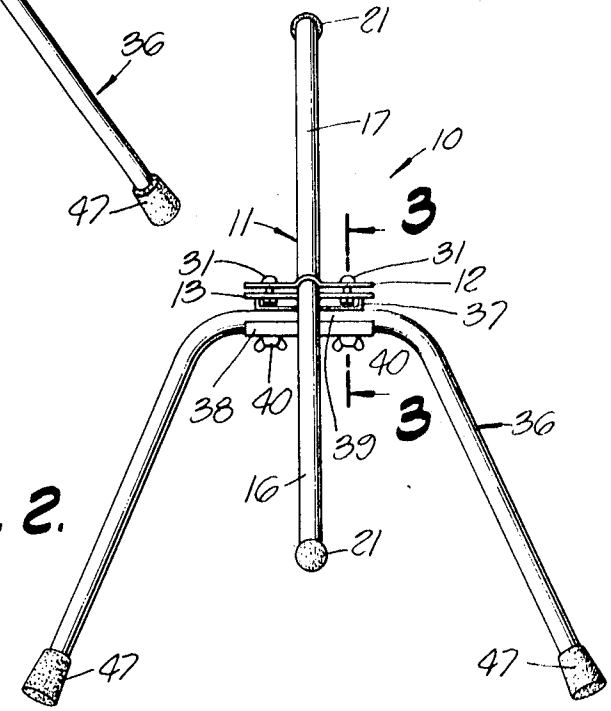


FIG. 2.

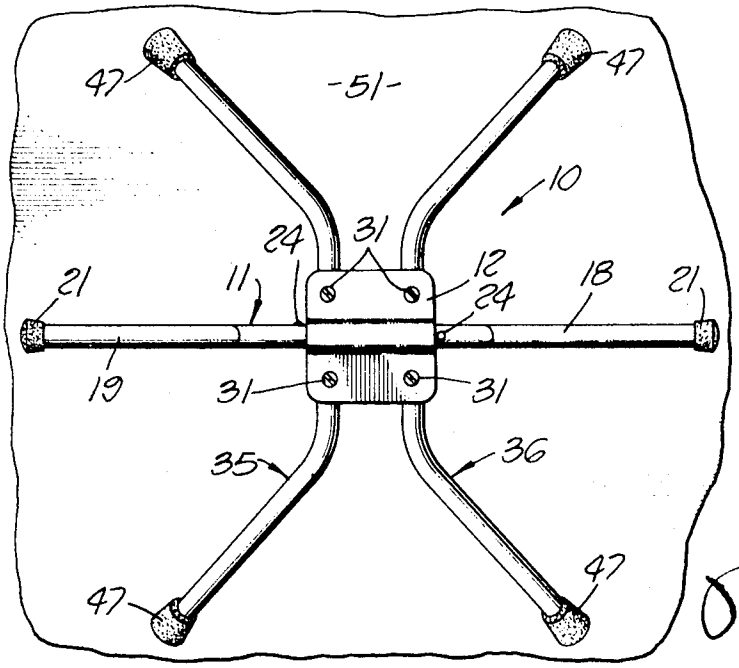


FIG. 5.

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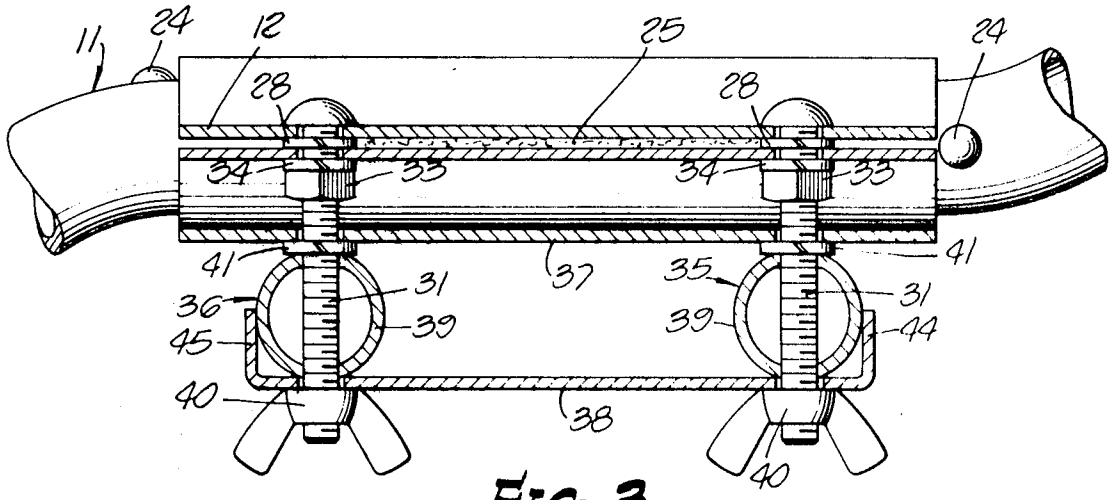


FIG. 3.

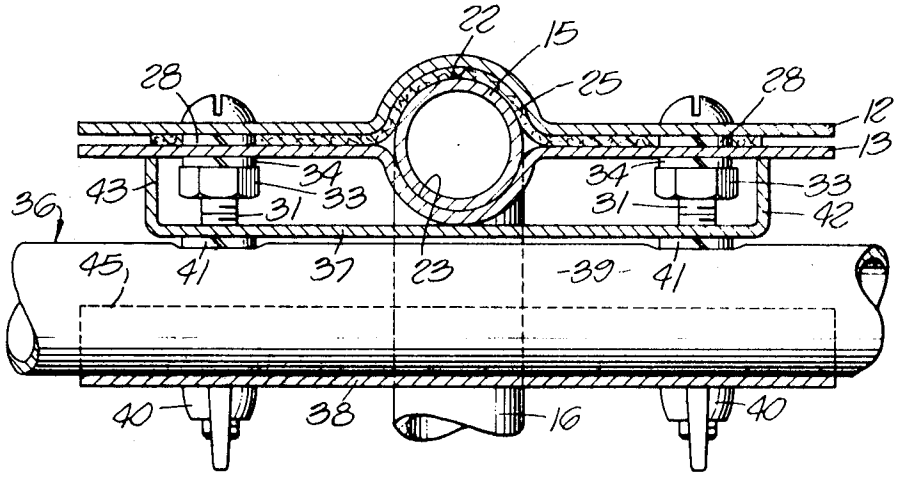


FIG. 4.

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DOUBLE CRANK PORTABLE EXERCISER

BACKGROUND OF THE INVENTION

The invention relates to exercise devices principally used for arms and legs and more particularly to portable devices utilizing a double crank by which both arms or both legs may be simultaneously exercised.

Many crank type exercisers are in use. Some are motor driven such that the exercise is passive. Others use friction devices to load the crank against turning. Some crank devices which are primarily for leg exercise have auxiliary devices to exercise trunk and arms attached to the basic crank exerciser. Like many of the exercisers of this type, the latter is expensive, heavy, and requires mechanical maintenance.

SUMMARY OF THE INVENTION

An object of the invention is to provide an exerciser by means of which both isometric and isotonic exercises may be done, without change in the device, to either build muscular structure or exercise joints.

Another object of the invention is to provide an exerciser that is simple to fabricate, assemble, and use.

A further object is to provide an exerciser that can be packaged and shipped in a flat condition so as to save shipping space, yet which is subassembled such that the friction load for the crank may be preestablished at the factory.

A still further object is to provide an exerciser by which the rotating part may be lubricated with simple wick reservoir.

Another object is to provide an exerciser in which fabrication costs are decreased by use of substantially identical parts which perform different functions in the device.

The invention contemplates an exercise double crank having a bearing shaft from which crank arms extend perpendicularly at each end, each of said arms terminating in a grip extending normal to the arm. First and second grooved bearing plates support the shaft within the facing grooves of the plate. Spacers between the plates predetermine the friction load on the crank. A wick is interposed between the groove of a plate and the bearing shaft of the crank. The wick is preferably impregnated with a lubricant. A first clamping plate has extending flanges against which the second grooved plate bears. U-shaped legs support the first clamping plate. A second clamping plate has flanges which extend at right angles to the flanges of the first clamping plate. The second clamping plate bears tangentially against the outer periphery of the central portion of the U-shaped legs. Elongate screws pass through the first and second bearing plates, the spacers therebetween, the first clamping plate, the legs, and the second clamping plate. Nuts bearing against the second clamping plate secure the structure as a unit.

Lock nuts on the screws which bear against the second bearing plate clamp the bearing plates against the spacers, determining the friction load upon the crank. The lock nuts are adjustable independently of the fastening of the elongate screws to the clamping plates such that the crank friction may be determined upon fabrication prior to complete assembly. Preferably, the grooved bearing plates are substantially identical, but oppositely oriented in the assembled device.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of an exerciser embodying the features of the present invention;

FIG. 2 is a side elevation of the device as shown in FIG. 1;

FIG. 3 is a fragmentary enlarged vertical sectional view taken along the line 3—3 of FIG. 2;

FIG. 4 is a fragmentary enlarged horizontal sectional view taken along the line 4—4 of FIG. 1; and

FIG. 5 is an elevational view of the device of FIG. 1 oriented against a vertical wall structure for arm exercise.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The figures illustrate an exercise device 10 which comprises a double crank 11 having a bearing shaft 15 (FIG. 3) held between first and second bearing plates 12 and 13, and from which shaft ends perpendicular arms 16 and 17 extend. Each arm has a grip or foot rest 18 and 19, respectively, which extends at right angles to the arm. The crank is preferably constructed of a tubular material and plastic or rubber caps 21 seal the open ends of the tube.

As can be seen in FIG. 4, bearing plates 12 and 13 have semicylindrical grooves 22, 23, respectively, which receive bearing shaft 15 of the crank. Limit pins 24, which may be rivets (FIG. 3), extend from the shaft outside each plate to limit its axial movements. A fabric wick 25 is disposed between the inner surface of groove 22 and the bearing crank. The wick extends outwardly from the shaft between the plates 12 and 13 on either side. Preferably, the wick is impregnated with a lubricant such as machine oil.

Four spacers 28, which may be lock washers of suitable thickness, separate the bearing plates and in part determine the friction loading on the shaft. Elongate screws 31 extend through the bearing plates at spaced points and are shown at the plate corners. The screws extend through the spacers between the plates and downwardly below the bottom or second bearing plate. Each of the four screws has a locknut 33 which clamps the bearing plates about the spacers. Lock washers 34 may be used between the locknut and the surface of the second bearing plate. The above-described crank, bearing plates, spacers and lubricating wick comprise a subassembly held together by the screws and lock nuts. This subassembly may be shipped in a relatively shallow box when the crank 11 is turned 90° from the position shown in FIG. 2 such that the crank arms are substantially parallel with the bearing plates. A pair of generally U-shaped support members such as legs 35, 36 and first and second clamping plates 37, 38 may be disposed about the subassembly within the shallow box without the need of increasing the depth of the box in order to encompass the entire device.

By adjusting the locknuts 33 at the site of fabrication, the appropriate friction loading on the shaft of the crank may be established prior to shipping and final assembly, with no need of adjustment by the ultimate user.

The screws 31 extend through the first clamping plate 37 at four spaced points and are shown at the plate corners. Two screws extend through the intermediate shank 39 of each leg and through the second clamping plate 38. Wing nuts 40 on each screw secure the clamping plates with respect to the leg shank and are locked by lock washers 41 between the shank and the first clamping plate.

The bearing plates 37 and 38 are substantially identical, but oppositely oriented in the assembly. Flanges 42, 43 of the upper or first plate support the bearing plate subassembly and mask the locknuts 33. Similar flanges 44, 45 of the second or bottom clamping plate 38 orient the legs as shown in FIG. 3. The axial paths of the screw holes through the legs deviate from the plane of the leg structure such that the legs are splayed with respect to one another to give wider support base. Preferably, the legs are of bent tubing and the open ends thereof are closed by rubber or plastic feet 47.

In the orientation of FIGS. 1 and 2, the exerciser may be used by a seated user. In the field of geriatrics knee and ankle joints often lose mobility because of the inability of the person to manipulate the legs while bearing the full weight of the body. Loss of mobility also occurs in certain postoperative situations. Therefore, the device of the invention affords means for exercising the joints without imposing body weight upon the exerciser. A foot of the seated user is placed on each foot rest 18, 19. The crank may then be turned in either direction by foot pressure. With the main portion of the body weight of the user supported by a chair the user may easily manipulate the crank to exercise joints and leg muscles in a manner not possible if the leg muscles also must support the body weight.

The periphery of each of the foot rests **18** and **19** rubs against the sole of the foot of the user since such periphery is revolving about the axis of the crank. Thus, the exerciser massages the soles of the feet by the relative movement thereof as well as exercising the joints. Circulation is thus promoted for a more relaxed feeling.

In those instances where the exerciser is used as a muscle builder rather than for muscle and joint manipulation, isometric exercise may be achieved by opposing the motion of the knees. For example, pressing the hands upon the knee caps resists the upward motion of the knees in their reciprocation induced by the crank motion. By alternately opposing the motion and then releasing the hand load, an isometric-isotonic pattern of exercising can be established in keeping with presently approved exercise practice.

FIG. **5** illustrates the exerciser **10** placed with its support members against a vertical wall surface **51**. With a hand holding each grip **18, 19**, the user leans toward the wall and turns the crank. A portion of the body weight is imposed upon the exerciser legs **35, 36** which causes them to bear against the wall with sufficient force to hold the exerciser at the proper elevation such that arm manipulation may be achieved. By varying the body pressure against the grips the exercise may be varied in strenuousness suitable with the purpose of the user. By opposing motion of one hand by the other an isometric-isotonic exercise pattern may also be established wherein the crank is held motionless by opposing hand loading and released for turning by moving the hands in the proper directions.

I claim:

1. An exercise device comprising a double crank having a bearing shaft, opposed arms, and a right-angled portion on each arm; a pair of spaced support members; means including a crank bearing assembly disposed in an elevated position by said support members and rotatably mounting the crank, and first and second clamping plates for orienting the support members, the bearing assembly being supported on one of the clamping plates; and means removably connecting said bearing assembly with said support members, including fastening means extending through the bearing assembly, the clamping plates and the support members.

2. A device in accordance with claim **1**, wherein said first clamping plate has spaced parallel flanges supporting the bearing assembly above the support members and said second clamping plate has spaced parallel flanges abutting the support members.

3. A device in accordance with claim **1**, wherein the clamping plates are substantially identical dimensionally and oppositely oriented in the device.

4. a device in accordance with claim **1**, wherein the bearing assembly comprises first and second bearing plates and plate spacers, said plates having oppositely opening grooves for receiving the crank-bearing shaft, and including a lubricating fabric wick embraced between said first and second bearing plates and extending across said crank-bearing shaft.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,622,153 Dated November 23, 1971

Inventor(s) John H. Thompson

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

Column 1, line 63 should read as follows, --cal. The flanged clamping plates are also identical, but oppositely oriented in the assembled device.--

Signed and sealed this 25th day of April 1972.

(SEAL)
Attest:

EDWARD M.FLETCHER,JR.
Attesting Officer

ROBERT GOTTSCHALK
Commissioner of Patents

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