

[54] ARM AND LEG PUSH PULL TYPE EXERCISING DEVICE

2,716,027 8/1955 Gehri ..... 272/83 R

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[21] Appl. No.: 273,440

Related U.S. Application Data

[60] Continuation of Ser. No. 116,865, Feb. 19, 1971, which is a division of Ser. No. 705,064, Feb. 13, 1968.

[52] U.S. Cl. .... 272/80, 272/57 R, 272/79 R

[51] Int. Cl. .... A63b 21/00

[58] Field of Search ..... 272/79 R, 82, 81, 272/80, 83 R, 57 B

[56] References Cited

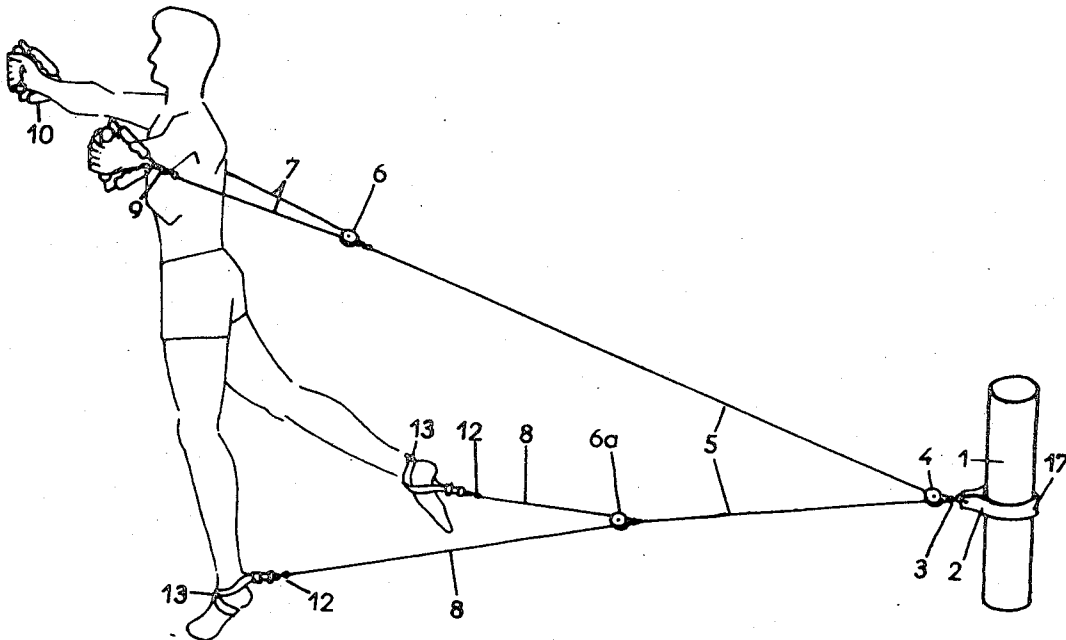
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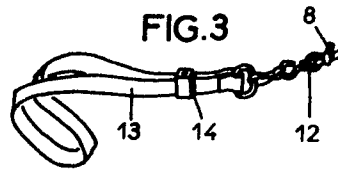
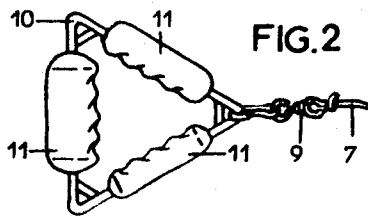
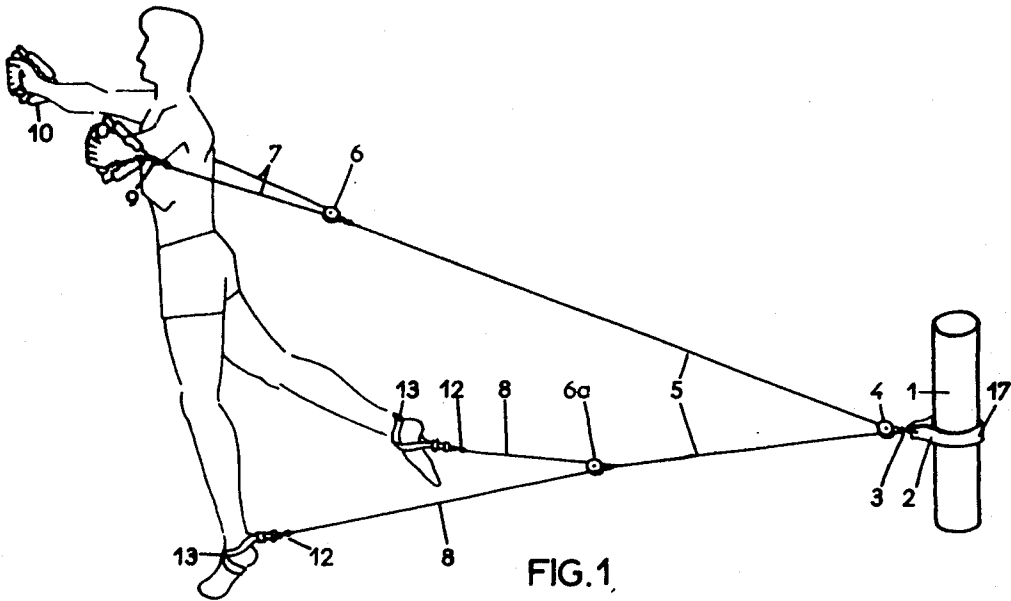
864,188 8/1907 Patterson ..... 272/80

[57] ABSTRACT

A portable exercise apparatus that has hand grips attached to opposite ends of a cable for reciprocation during an exercise. The hand grips are mounted on a separate cable reeved over a pulley. The apparatus also has, attached to the opposite end of the cable, straps that are attached to the feet of a user, which also are reciprocated during an exercise. The straps are attached to a separate cable reeved over a pulley.

1 Claim, 22 Drawing Figures





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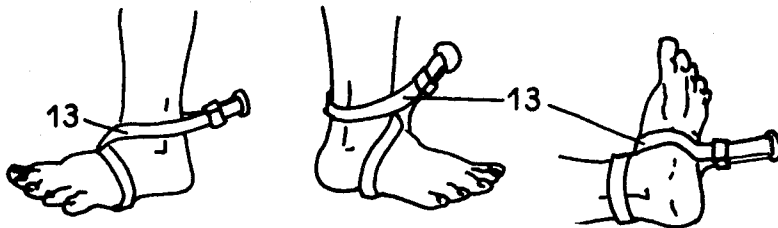


FIG. 4

FIG. 4a

FIG. 4b

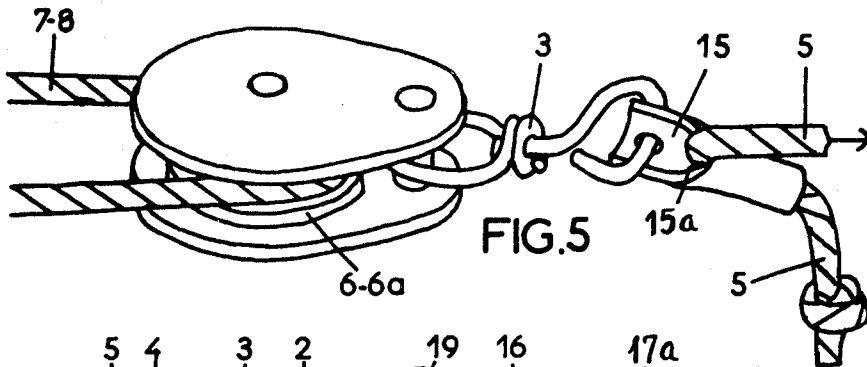


FIG. 5

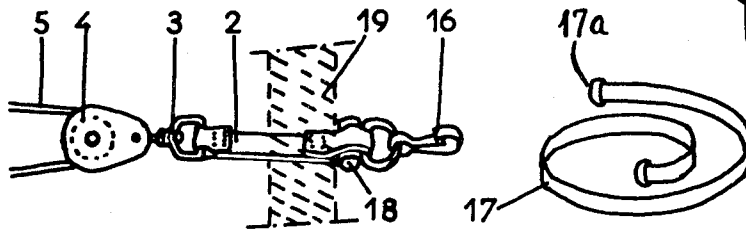


FIG. 6

FIG. 7

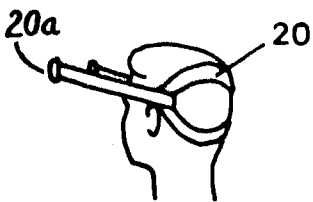


FIG. 8

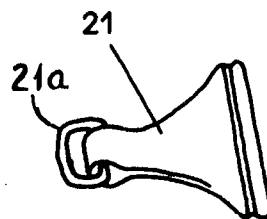
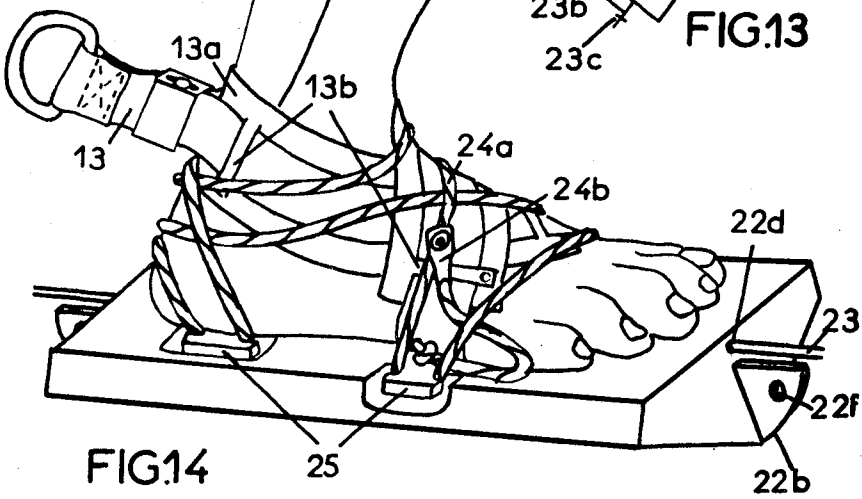
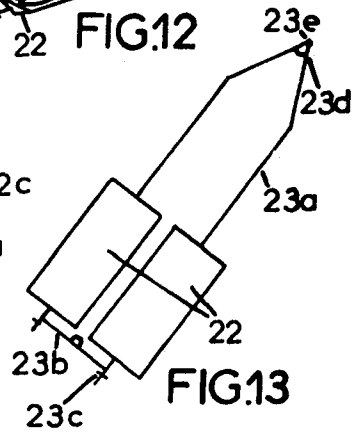
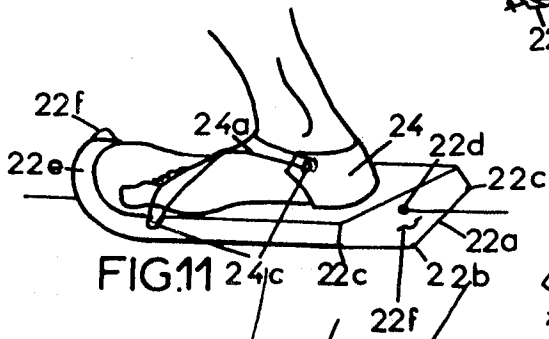
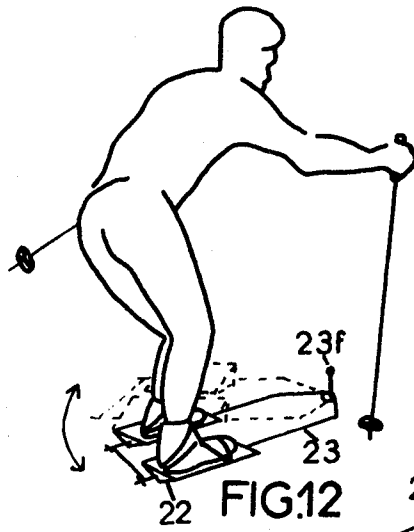
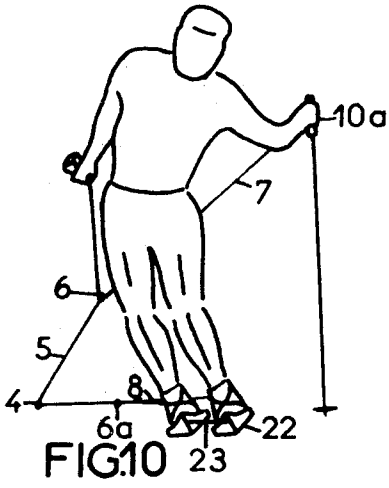


FIG. 9



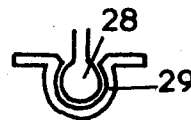
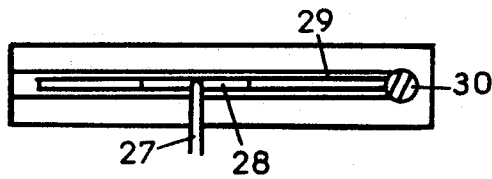
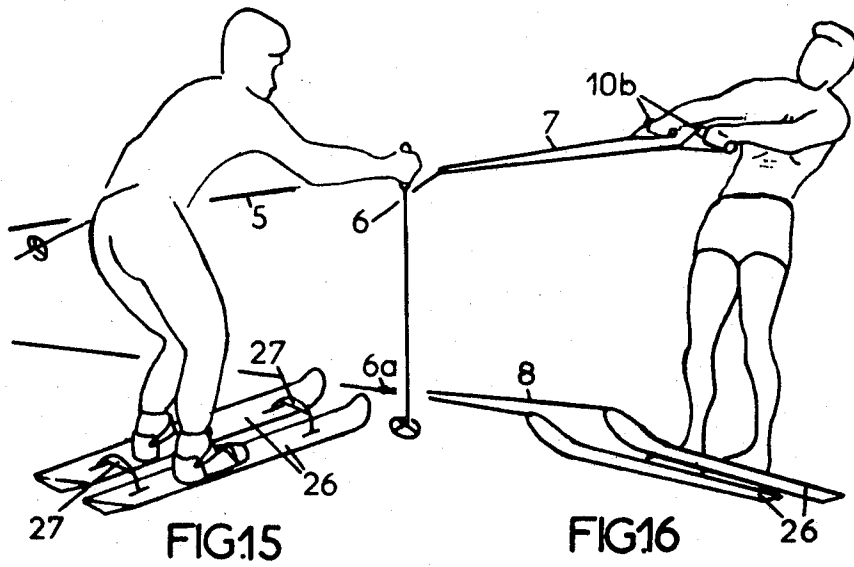


FIG. 17e

FIG. 17f

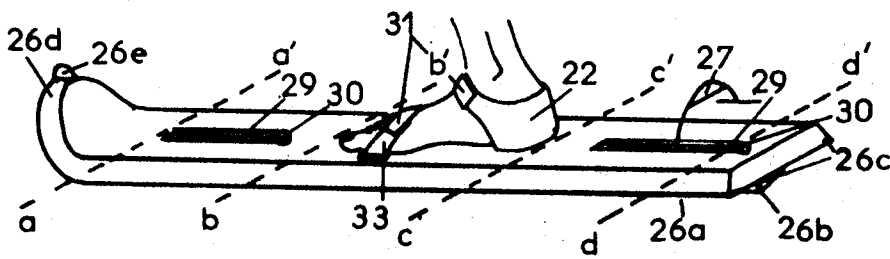


FIG. 17

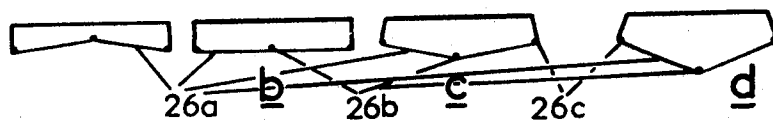


FIG. 17a

# ARM AND LEG PUSH PULL TYPE EXERCISING DEVICE

## REFERENCE TO COPENDING APPLICATIONS

This is a continuation, of application Ser. No. 116,865 filed Feb. 19, 1971, which is a division of patent application Ser. No. 705,064, filed Feb. 13, 1968 now Pat. No. 3,565,424.

## BACKGROUND OF THE INVENTION

For some time, physical culture addicts have wished to have an apparatus that could be used in limited space for exercise and for practicing sports. To be sure, physical training apparatus have existed using varying numbers of cables and pulleys and having means for gripping and fastening, but none of them has the same characteristics, permits the same performances, and finally is related in such a direct way to physical training and to sports. Most equipment of this kind is bulky and expensive. In addition, such apparatus has lacked versatility as to the variety of muscles that could be exercised and the types of sports that could be practiced. These and other difficulties experienced with the prior art devices have been obviated in a novel manner by the present invention.

It is, therefore, an outstanding object of the invention to provide an improved apparatus which, although simple in construction, permits the user to exercise his four limbs in coordination or in opposition, while providing him, in case of need, with a usable support.

Another object of this invention is the provision of apparatus which is versatile as to muscles that may be exercised and sports that may be practiced.

A further object of the present invention is the provision of exercise and practice apparatus which can be used in limited quarters and which is simple and inexpensive.

With these and other objects in view, as will be apparent to those skilled in the art, the invention resides in the combination of parts set forth in the specification and covered by the claims appended hereto.

## SUMMARY OF THE INVENTION

The invention is characterized by the fact that it comprises in combination a pulley and the means of fastening in a removable way to a fixed point, a main cable passing over this pulley, two intermediate pulleys fixed to the free ends of this main cable, and two auxiliary cables each passing over one of the intermediate pulleys and which are equipped with holding means especially adaptable on the upper and lower limbs of a user.

## BRIEF DESCRIPTION OF THE DRAWINGS

The character of the invention, however, may be best understood by reference to one of its structural forms, as illustrated by the accompanying drawings, in which:

FIG. 1 is a perspective view of exercise apparatus embodying the principles of the present invention, FIG. 2 and 3 are enlarged views of portions of the apparatus shown in FIG. 1,

FIG. 4, 4a, and 4b show different ways of arranging the foot fastenings of the apparatus of FIG. 1,

FIG. 5 shows the details of mounting of a swivel, equipped with a block-slide,

FIGS. 6 and 7 show a variation of the means of fastening the apparatus,

FIGS. 8 and 9 show accessories which may be used with the apparatus,

FIG. 10 shows a variation of the apparatus of FIG. 1, including clogs,

FIG. 11 is a view in perspective of a clog used in the apparatus of FIG. 10,

FIG. 12 is a view showing a special use of the apparatus fo FIG. 10,

FIG. 13 is a schematic plan view of the two clogs of the apparatus of FIG. 10,

FIG. 14 is a view in perspective of a variation of the clog,

FIGS. 15 and 16 are views in perspective showing the possible uses of variations of the apparatus, i.e., clogs having snow and water ski shape,

FIG. 17 is a view in perspective on a larger scale of a clog used in the apparatus of FIG. 15,

FIGS. 17a, 17b, 17c, and 17d are cross-sectional views taken along the lines a-a', b-b', c-c', and d-d' of FIG. 17,

FIG. 17e is a detailed view of the clog of FIG. 17 on a larger scale, and

FIG. 17f is a vertical cross-sectional view of FIG. 17e.

## DESCRIPTION OF THE PREFERRED EMBODIMENT

The apparatus shown in FIG. 1 has a fastening device in the form of a pulley 4 attached by a swivel 3 to a strap 2 which is itself extended by a strap 17 buckled onto a post 1. A main cable 5 is passed over the pulley 4 and has at its ends two intermediate pulleys 6 and 62. Each of these pulleys, which is preferably identical to the pulley 4, has a swivel 3a (FIG. 5) fastened to a tubular block-slide in which is passed the end of the cable 5 locked in the groove in the slide, so that it is thus possible to give a variable useful length to the cable. Pulley 6 has an auxiliary cable 7 equipped with snap-hooks 9 at its ends fastened to handles 10. Each handle 10 (FIG. 2) is of triangular shape and comprises three grips 11 of different thicknesses. These grips 11, anatomical in shape, correspond to the hand of a man, of a woman, and a child, so that the same grip is suitable for users of different sizes.

As is seen in FIG. 6, the holding device, universal in type, comprises a band 2 which is attached by one end to the ring of the swivel 3 and which has at its other end a snap-hook 16 especially intended for receiving the two rings 17a of the extension strap 17, shown in FIG. 7, with which the device can effectively be equipped for fastening to an object of a certain thickness forming an axis, such as the post 1. This same device can also be used (as shown in FIG. 6) for attaching the pulley by wedging the strap under a door 19 or between a door and its framework. A stop 18 is passed through the loop of the band 2 in order to form a bulge which does not pass through the opening. It is noted that it is also possible to form a loop in the strap 2 by passing the snap-hook 16 through the ring of the swivel 3, and that the snap-hook 16 or the ring which carries it can also be fastened directly to a fixed point.

The pulley 6a has an auxiliary cable 8 equipped at its ends with snap-hooks 12 fastened to straps 13 which permanently loop "eightwise." Each strap 13 (FIG. 3) has a block-slide 14 permitting the length of the free part of the loop to be adjusted in order to adapt it to the foot of the user, once the strap is placed in position. On FIGS. 4, 4a, and 4b the three standard arrange-

ments of the strap 13 are shown on the foot of a user, the passage from one to the other of these arrangements being carried out automatically and instantaneously by mere slipping of the strap on itself, according to the changes of direction of the user.

In one variation, the ends of one of the auxiliary cables 7 or 8 can also be fastened to the rings 20a of a mouthpiece 21 (FIG. 9).

The apparatus described can be used in many ways, one of which is shown in FIG. 1. The simultaneous harnessing of the four limbs of the user favors movements in all useful directions, without modifying this harnessing, nor its fastening. The user can move without difficulty from a leg movement to an arm movement or to a combined movement. He can place himself facing forward, backward or sideways to carry out this movement. He can also combine exercises in the standing position with other exercises lying or sitting down. The four limbs as well as the body work in coordination and in opposition, simultaneously, if so desired. In addition, according to the desire of the user, the limbs can either work easily or strongly, or in a controlled association of suppleness and strength. The apparatus permits use in the home as well as outside, individually or in a group. Its method of use favors its role as an instrument for learning a sport and for sports practice.

In a variation illustrated by FIGS. 10 to 13, the apparatus is intended more particularly for ski training and has two clogs 22 joined by a coupling device 23. As is seen in FIG. 11, the lower face of each clog 22 has two facets 22a forming a constant external salient angle of about 220° with respect to a central ridge 22b. This central ridge and the lateral ridges 22c are equipped with corners. The front end of the clog shows a raised curve 22e, and rings 22f (intended to permit the fastening of the clog directly to the snap-hook of cable 8) are seen at the two ends of the clogs.

As is seen in FIGS. 12 and 13, the coupling device 23 has a shackle 23a made of round steel rod, the two parallel legs of which are threaded into tubes 22d going through the clogs along the longitudinal axis of the latter. The two legs of the shackle are joined at the back by a removable cross-piece 23b which has end rings in which the said legs are threaded, with knurled nuts 23c holding the whole assembly together. At the front, the two legs form a point at 60° ended by a fastening ring 23d. The clogs 22 can slide freely along the legs of the shackle 23a on the rectilinear part of these legs which may have, for instance, a length of 60 cm. The point has, for example, a length of 18 cm. The clogs can also turn around the legs which are separated from each other by about 17 cm.

The anchoring ring 23d can be fixed to the ground by any adequate means. It is among other means possible to use for this purpose a nail or a peg driven into the ground as shown on 23f (FIG. 12). It is also possible to use an anchoring device with suction discs, cords or hooks, the whole being preferably adjusted so that the shackles can turn freely on an axle passing through the ring 23d.

Finally, the coupling device can easily be dismounted, the cross-piece 23b can be detached after removal of the knurled nuts and the clogs can then be withdrawn from the rods.

In the method of use shown in FIG. 11, the clogs 22 have a heelpiece 24 and an X-shaped rod strap 24a

attached removably at 24c to the heelpiece and to the clogs.

The apparatus equipped with clogs shown in FIG. 11 can be used (as is shown in FIG. 10) for ski practice. The coupling device is fastened to the ground by a peg, as is shown in FIG. 12, and the clogs worn by the user (as shown in FIG. 11) are attached to the ends of the auxiliary cable 8 by rings 22f from their back ends. The user holds ski poles equipped with handles 10a to which are attached the ends of the auxiliary cable 7 can then do many exercises using skiing techniques.

It is noted that the free play around the shackle 23a is sufficient to ensure the longitudinal and axial independence of the clogs which permits ensuring a correct attitude of the feet during the movement without compromising the maintenance of a strict parallelism. The peg 23f also determines the center around which the pivoting of the skis should take place during a simulation of turning on skis (FIG. 12). It is noted that the user is not necessarily harnessed to the cables 7 and 8. In the same way, at a later stage, when the habit of parallelism is acquired, it is possible to do without the coupling device.

Since the clogs are equipped with a central bottom ridge permitting maneuvering like ice skates, the user can, on a slippery floor, carry out a complete range of exercises which he will be able to do successively with the apparatus without clogs, with the apparatus equipped with coupled clogs or not, or with the clogs only, coupled or not. The apparatus thus permits passing from physical training, directly to the preparation, then to the practice of skiing.

The use of clogs with double facets permits, owing to the inclination of the latter, carrying out on the spot, as an exercise, and with adequate muscular adaptation, movements exactly imitating those which can only be carried out on the ground and at full speed with ordinary skis. The harness permits the exact control of the movements and the maintenance of a perfect balance, whether the sticks are used or not. As a variation, the clogs can have an orthopedic sole which will be recommended for use with bare feet.

In a clog variation shown in FIG. 14, the clog has a flat upper face with hollows in which stops 25 are located for fastening a small cord 24b serving for securing the clog on the foot. In one method of utilization, the user can have the ankle directly attached to the auxiliary cable 8 by means of a strap 13 equipped with a ring; in order to protect the bare foot from the small cord, this strap rests on a protecting band in position around the ankle and crossed on the instep. This same clog can be worn with shoes.

In a variation shown in FIG. 15, the clogs 27 have the approximate shape of snow skis and can be used directly on snow. In this variation, a coupling device for the clogs has two saddle-bows 27 in the form of hoops, the branches of which are equipped with slides 28 housed in the hollow guides 29 fixed longitudinally on the clogs.

The guides 29 shown in cross-section in FIG. 17f are equipped at one end with a lock 30 (FIG. 17e) which, once in position, prevents any freeing of the saddle-bow, the latter, however, remaining free to move axially along the guide slot for a limited length.

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As in seen in FIG. 17a, the lower face of the clog 26 has two facets 26a situated between a central ridge 26b and two lateral ridges 26c. The front end, which is curved upwards 26d equipped with a ring 26e, has two facets 26a forming a reentrant angle (FIG. 17a). A little in front of the foot, these two facets are in line (FIG. 17b). Further back, they form a salient angle which is accentuated toward the back (FIGS. 17c and 17d). The facets 26a are thus generally helicoidal in shape.

In addition, the clog has a heelpiece 32 and foot-holding straps 31 and 33. The heelpiece 32 is placed behind the half-length of the ski and the lateral ridges 26c in preference extend further back than the central ridge in order to increase the lift of the back of the clog.

In a variation shown in FIG. 16, the clogs have the shape of water skis which are buoyant in order to permit the use of the apparatus either at home, or on water, with a view to learning this sport. On water, the clog can also be used singly. It is noted that the pulley 4, over which the main cable 5 passes, can be attached to a fixed support (peg) or to a moving connection (a

motor boat, for instance).

It will be noted that it is because of the inherent characteristics and the special arrangement of devices in conformity with the invention that a system is obtained which permits passing directly from the simple exercise to training, then to the practice of the sport, or vice-versa, by means of the same apparatus. It is this same arrangement which permits carrying out in one single sequence and with no idle time an almost unlimited series of movements in all directions without having to modify either the harness to the apparatus or the fixing point of the latter.

It is obvious that minor changes may be made in the form and construction of the invention without departing from the material spirit thereof. It is not, however, desired to confine the invention to the exact form herein shown and described, but it is desired to include all such as properly come within the scope claimed.

The invention having been thus described, what is claimed as new and desired to secure by Letters Patent is:

1. An exerciser device, having in combination, a pulley and means of fastening it to a fixed point, a main cable passing over this pulley and having a snap hook fastened to each end, two intermediate pulleys equipped with swivels attached to the said snap hooks, and an auxiliary cable passing over each of the intermediate pulleys, each one of said auxiliary cables being equipped at each end thereof with a first means on each end of the auxiliary cable to permit gripping by the upper limbs of a user and alternately pulled by a user during an exercise program and the other of said auxiliary cable being equipped with a second means for engagement by the lower limbs of a user and alternately pulled by a user during an exercise program, the first means having handles to be grasped by a user, and the second means having straps which may be wrapped around his ankles, the straps being looped and being equipped with wedging parts permitting the suppression play,

the second means having an auxiliary cable connecting device, said device having a universal endpiece composed of a strap having at one end a swivel fixed to an associated pulley, said strap having at its center a bulge permitting fastening by wedging, and having at its other end a ring and a snap-hook, each one of said handles being made of a triangular rigid frame on which are fastened said handles which are of different thicknesses.

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