June 27, 1950 T. S. BENICE 2,512,911

EXERCISER

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Fig. 1.

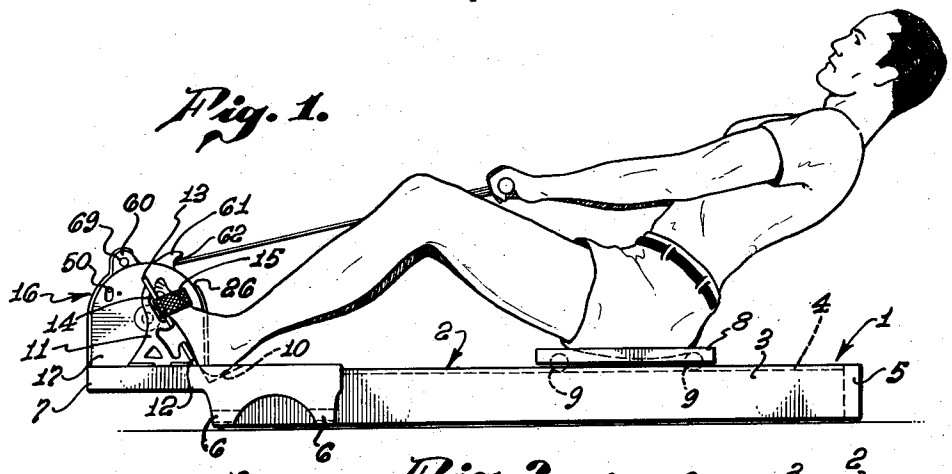


Fig. 2.

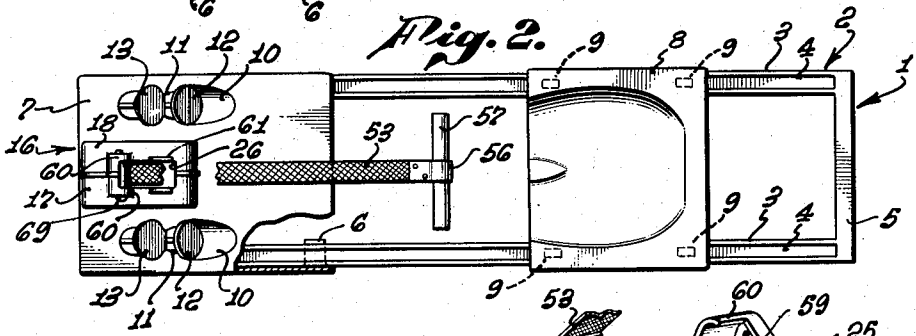
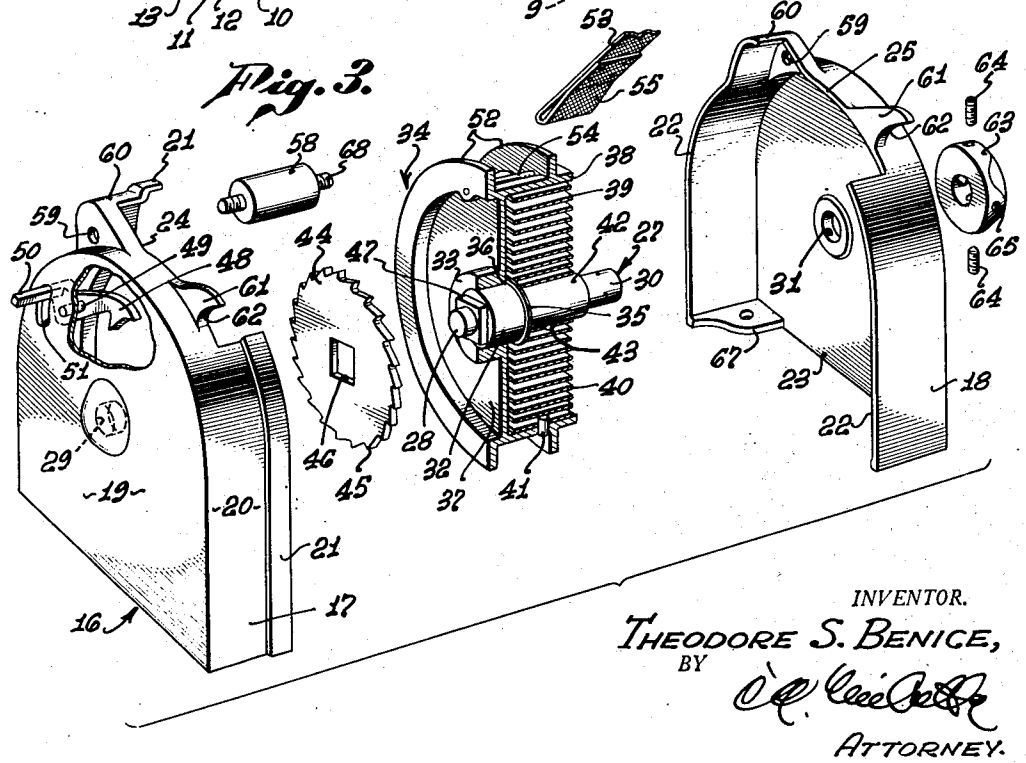


Fig. 3.



INVENTOR.
THEODORE S. BENICE,
BY
ATTORNEY.

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EXERCISER

Theodore S. Benice, Los Angeles, Calif.

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5 Claims. (Cl. 272—79)

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This invention relates to an improved exerciser especially designed for simulating a rowing action.

Some prior proposed exercisers of the rowing machine type usually were installed in a gymnasium where the exercising machine could be permanently fixed to a floor. These machines were usually rather large and bulky and unsuitable for use in a home. Other proposed exercisers which were purportedly designed for use in a home were bulky, heavy in weight, required a relatively large storage space, and in general were difficult to handle in a home where they could not be fixedly and permanently located. Generally, the prior proposed exercisers included a complex arrangement of ropes, a drum, and springs in which the parts were worn out in a relatively short time. Such exercisers were generally awkward and inconvenient to set up in a home for exercising.

The primary object of this invention is to design and provide an improved exerciser for simulating rowing action which is of simple, light-weight construction, is attractive in appearance, and is especially suitable for use in a home because of its ready portability and because it is capable of being easily stored in a minimum of space.

An object of this invention is to provide an improved exerciser for simulating rowing action whereby physical development is provided of the muscles in the legs, body and arms of the person using the exerciser.

Another object of this invention is to design an improved exerciser of the rowing type wherein the tensioning means may be adjusted for varying its tension or resistance given to the rowing action according to the desire of the person using the exerciser.

A further object of this invention is to design and provide an improved light-weight exerciser of rowing type which is of compact, simple construction, and is easy and inexpensive to manufacture.

This invention contemplates an exerciser of the type described above comprising a minimum of parts which are assembled in a novel and simple manner.

Generally speaking, this invention contemplates an exerciser for simulating rowing action wherein an elongated base is provided with spaced tracks for guiding a movable seat thereon, and a split housing is mounted centrally at one end of the base for supporting therewithin tensioning means, one end of which is interlocked with a

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normally non-rotatable shaft and the other end of which may extend through an aperture in the housing for connection to a handle so that when a person using the exerciser draws or pulls the handle toward him the pulling action will be resisted by the tensioning means in the housing.

Other objects and advantages of this invention will be readily apparent from the following description of the drawings.

In the drawings:

Fig. 1 is a side elevation of an exerciser embodying this invention.

Fig. 2 is a top view of the exerciser shown in Fig. 1.

Fig. 3 is a perspective view of the housing and elements contained within the housing of the exerciser shown in Fig. 1, the rotatable drum and enclosed spiral spring being shown in half-section.

Referring particularly to Fig. 1, the exerciser generally indicated at 1 for simulating rowing action comprises an elongated base 2, including spaced, longitudinally extending tracks 3 made of any suitable material such as a light-weight wood. Each track 3 is formed with a groove 4 in the top edge of the track. At one end the tracks may be joined by a transverse member 5 secured thereto in any suitable manner, as by screws, not shown. At the other end, each track 3 may be received within recesses formed by inwardly turned J-shaped spaced brackets 6, depending downwardly from the sides of a general rectangular-shaped base plate 7.

A seat 8 is provided with rollers 9 adapted to be accommodated within the grooves 4 for providing rolling guided movement of the seat on the tracks 3.

The base plate 7 may be made of any suitable light-weight metal and is preferably cast of an aluminum alloy. At each side of plate 7 and in the upper surface thereof may be formed heel-receiving recesses 10 inclined downwardly for comfortably accommodating the heel of a foot of the person using the exerciser. In alignment with each recess 10 is an upstanding pedestal 11 carrying inclined heel and toe plates 12 and 13 respectively, for supporting a foot of the person exercising.

The pedestals 11 are provided with a slot 14 formed beneath the toe plates 13 to accommodate an adjustable foot-retaining strap 15.

A housing 16 is secured to the base plate 7 between the pedestals 11 and adjacent the end of the base plate 7 for accommodating the resistance or tension means used in this exerciser. The

housing 16 may be longitudinally separated into generally U-shaped housing portions 17 and 18 arranged to meet along a parting line parallel to the plane of the end walls. The housing portion 17 comprises an end wall 19 having a general semi-circular upper portion and having integrally formed therewith an inwardly directed marginal side flange 20. The flange 20 is provided with an outwardly offset portion 21 which is adapted to overlie the marginal edges of a similar inwardly directed side flange 22 formed on the other housing portion 18. The housing portion 18 includes an end wall 23 corresponding in shape to the end wall 19 of the housing portion 17.

The inwardly directed side flanges 20 and 22 are cut away as at 24 and 25, respectively, adjacent the top of the housing portions in order to provide an aperture 26 opening in the direction of the opposite end of the exerciser when the housing portions 17 and 18 are in assembly.

A normally non-rotatable stepped shaft, generally indicated at 27, is supported transversely of the housing 16 by journaling of one end 28 within a bore or trunnion 29 formed within a centrally thickened portion provided on the end wall 19. The other end 30 projects through journal port 31 centrally formed in the end wall 23 in alignment with the trunnion 29.

Adjacent end 28, the shaft 27 is provided with an enlarged shoulder 32 over which is sleeved for rotation thereon a hub 33 of a hollow rotatable drum 34. An annular stop flange 35 extends radially outwardly at the inner extremity of shoulder 32 to afford positioning of the drum 34 on the shoulder 32 by abutment as at 36.

The drum 34 is provided with an annular web 37 extending radially outwardly from the inner margin of the hub 33 for supporting a circumferential rim or flanged face 38. The face 38 defines with the web 37 a generally cup-shaped chamber 39 within which is contained a continuous spiral resilient tension spring 40. The spring 40 may be formed of any suitable spring metal and is secured at its outer circumference to the rim 38 by a stud or pin 41. The innermost turn of the spiral spring 40 encircles a reduced shoulder 42 formed on the shaft 27, and the inner end of the spring 40 may be secured to the shaft 27 by a stud 43 extending through an aligned port or opening in the end of the spring.

Means for resisting rotation of the normally non-rotating shaft 27 and for adjusting the tension of the spring 40 is provided by a ratchet wheel 44 having a series of circumferentially arranged teeth 45. The ratchet wheel 44 is provided with a central polygonal opening 46 which is slidable over a corresponding polygonal portion 47 formed on the shaft 27 between the enlarged shoulder 32 and the end 28. The teeth 45 of the ratchet wheel are engageable by a manually actuatable gravity dog or pawl 48 pivotally mounted at 49 on the end wall 19. The pawl 48 is provided with an outwardly extending arm 50 which projects through a curved slot 51 in the end wall 19 for permitting manual release of the pawl with the ratchet wheel.

The drum 34 is provided with upstanding, spaced radially, outwardly extending flanges 52 formed on the flanged face 38 for containing and guiding belt means 53 wound around the drum 34 between the flanges 52. The belt means 53 may be made of any suitable strip-like material, preferably a web-like fabric having relatively great strength. One end of the belt means 53 is secured to the drum 34 by a pin 54 projecting through a loop 55 formed in the end of the belt means 53. The other end of the belt means 53 extends outwardly through the aperture 26 and is provided with an end loop 56 through which is secured a handle 57.

Means for reducing wear on the belt means 53 and for guiding the belt means as it is withdrawn and returned through the aperture 26 is provided by a freely rotatable roller 58 carried on a shaft 68 having ends extending through aligned ports 59 formed in side walls of curved raised portions 60 formed at the top of the housing portions 17 and 18. The raised portions 60 accommodate the roller 58. The ends of shaft 68 are threaded for engagement with cap nuts 69 outwardly of ports 59 for securing the housing portions 17 and 18 in assembled relationship at the top thereof.

Forwardly directed lugs 61 having a curved edge 62 are provided at each side of the aperture 26 for engaging and holding the handle 57 when the exerciser is not in use.

The end 30 of the shaft 27 projects through the opening 31 and therebeyond for reception within a capstan 63 which is provided with diametrically opposite setscrews 64 which may be tightened for securing the capstan on the shaft 27 and for restricting lateral play of the shaft 27 within the housing 16. The capstan 63 is also provided with diametrically opposite ports 65 into which an adjusting rod or pin may be inserted for rotating the shaft when the pawl 48 is released from engagement with the ratchet wheel in order to vary the tension of spring 40. When the shaft 27 is rotated by means of such a rod, while the handle 57 is in engagement with the lugs 61, it is readily understood that since the ends of the spring are secured one to a normally non-rotating member and the other to a normally rotating member, the tension in the spring may be varied according to the desire of the person using the exerciser.

Assembly of the housing and the elements therewithin is simply and readily performed as follows: the housing portion 17 may be secured to the base plate 7 by means of bolt and nut assemblies extending through the base plate and gusset members 67 formed in each corner of the housing portion. The drum 34 and the spring 40 contained within the chamber 39 may be assembled on the shaft 27, the ratchet wheel 44 may then be positioned on the polygonal portion 47 and the ratchet wheel, shaft, drum, and spring may be inserted within the housing portion 17 so that the end 28 of the shaft is accommodated within the trunnion 29. The gravity dog is lifted during this operation to permit its engagement with the teeth 45 of the ratchet wheel. The housing portion 18 may then be placed in position with the end 30 of the shaft 27 received through the journal port 31. The housing portion 18 may then be secured to the base plate by means of nut and bolt assemblies extending through gussets 67 and the base plate. When the housing portion 18 is moved into position, the shaft 68 carrying the roller 58 is held in alignment with the apertures 59 so that when the housing is assembled the shaft 68 will have its ends projecting through said apertures and the cap nuts 69 on the ends of shaft 58 may be drawn tight. It should be noted that when the housing is assembled there is a minimum of lateral play of the shaft and the rotatable member

34 carried on the shaft because of the abutment of the ratchet wheel against the end wall 19, the abutment of the hub 38 with the ratchet wheel and positioning or stop flange 35, and the abutment of the reduced shoulder 42 with the raised annular wear portion surrounding the opening 31 in end wall 23.

In operation, the person using the exerciser places himself on the slidable seat 8 and secures his feet by the adjustable straps 15 against the pedestals 11. He may then grasp the handle 57, draw himself toward the housing 16 by his legs and then push against the pedestals 11 with his legs and at the same time simulate a rowing action by pulling his arms toward him, withdrawing the belt means from the aperture 26, rotating the drum 34 and tensioning the spring 40.

The exerciser described above comprises a minimum of parts and is assembled in a novel manner. It should be noted that the arrangement of the various elements within the housing provides a small compact, efficient exerciser. Since the housing 16 is relatively narrow and is aligned with the longitudinal axis of the base, ample space is provided on each side of the housing for the foot support means. Obviously the compactness of this arrangement permits the foot support means to be moved toward the end of the base plate if desired and thus the length of the exerciser base may be of minimum length in order to accommodate persons having relatively long legs.

Adjustment of the tension of spring 40 may be readily made by holding shaft 27 against rotation by an adjusting rod inserted in ports 65 while the gravity pawl 48 is released, and then rotating shaft 27 under control of the adjusting rod until the desired tension is obtained. The resistance to the rowing action may thus be varied depending upon the condition of the person using the exerciser.

It should also be noted that the exerciser is of light weight and readily portable and movable. Since the housing is compact and small, the exerciser may be readily stored in a closet without occupying valuable storage space, by setting it upright against a wall. The end face of the housing may be provided with a small lug adjacent the top of the housing so that if desired the exerciser may be held in an upright position by itself by contact of the lug and the end edge of the base plate with the floor.

It will be readily understood by those skilled in the art that the exerciser described above is by way of example only and that other modifications and changes may be made without departing from the spirit of the invention which is intended to be limited only by the claims appended hereto.

I claim:

1. An improved exerciser comprising: a pair of spaced longitudinally extending track members provided with recessed trackways; a base plate including recesses for receiving ends of said track members and holding the same in spaced parallel relation, connecting said track members; a pair of generally U-shaped housing portions, each provided with a substantially flat end wall and a side flange, said flanges being arranged to meet along a parting line parallel to the plane of said end walls attached to the base plate with said end walls parallel to the track members; a normally non-rotatable stepped shaft having one end journaled in a trunnion formed in the end wall of one housing portion and a reduced end extending through a journal port in the parallel and spaced end wall of the opposing housing portion outwardly extending stop flange carried by the shaft; a hollow drum provided with a flanged face, journaled on the shaft on one side of the stop flange, said flanged face extending over the shaft on the other side of the stop flange; a continuous resilient spring positioned within the drum and connected to said shaft and drum; a polygonal section formed in the shaft adjacent the drum journaled thereon; a ratchet wheel carried by the polygonal section and spacing the drum from the end wall of the housing portion; a manually actuatable pawl carried by the end wall of the housing portion for engagement with the ratchet; a capstan carried by the reduced end of said shaft exteriorly of the housing portion for manually imparting rotation to said shaft; an aperture formed in the housing above the face of said drum; belt means carried by the drum and extending through said aperture; and a heel-receiving socket formed in the base plate on either side of the housing and a foot rest carried by the base plate in cooperative relation with each of said heel-receiving sockets.

2. An improved exerciser comprising: a pair of spaced longitudinally extending track members; a base plate connecting the ends of the track members; a pair of generally U-shaped housing portions, attached to the base plate with said end walls parallel to the track members; a normally non-rotatable stepped shaft having one end journaled in a trunnion formed in the end wall of one housing portion and a reduced end extending through a journal port in the parallel and spaced end wall of the opposing housing portion; outwardly extending stop flange carried by the shaft; a hollow drum provided with a flanged face journaled on the shaft on one side of the stop flange, said flanged face extending over the shaft on the other side of the stop flange; a continuous resilient spring positioned within the drum and connected to said shaft and drum; a polygonal section formed in the shaft adjacent the drum journaled thereon; a ratchet wheel carried by the polygonal section and spacing the drum from the end wall of the housing portion; a manually actuatable pawl carried by the end wall of the housing portion for engagement with the ratchet; a capstan carried by the reduced end of said shaft exteriorly of the housing portion for manually imparting rotation to said shaft; an aperture formed in the housing above the face of said drum; and belt means carried by the drum and extending through said aperture.

3. An improved exerciser comprising: a pair of spaced longitudinally extending track members; a base plate connecting the ends of the track members; a pair of generally U-shaped housing portions, each provided with a substantially flat end wall and a side flange, said flanges being arranged to meet along a parting line parallel to the plane of said end walls; a normally non-rotatable stepped shaft having one end journaled in a trunion formed in the end wall of one housing portion and a reduced end extending through a journal port in the parallel and spaced end wall of the opposing housing portion; outwardly extending stop flange carried by the shaft; a hollow drum provided with a flanged face journaled on the shaft on one side of the stop flange, said flanged face extending over the shaft on the other side of the stop flange; a continuous resilient spring positioned within the drum and connected to said shaft and drum; a polygonal sec-

tion formed in the shaft adjacent the drum journaled thereon; a ratchet wheel carried by the polygonal section and spacing the drum from the end wall of the housing portion; a manually actuatable pawl carried by the end wall of the housing portion for engagement with the ratchet; an aperture formed in the housing above the face of said drum; and belt means carried by the drum and extending through said aperture.

4. An improved exerciser comprising: a pair of spaced longitudinally extending track members; a base plate connecting the ends of the track members; a pair of generally U-shaped housing portions; attached to the base plate with said end walls parallel to the track members; a normally non-rotatable stepped shaft having one end journaled in a trunnion formed in the end wall of one housing portion and a reduced end extending through a journal port in the parallel and spaced end wall of the opposing housing portion; outwardly extending stop flange carried by the shaft; a hollow drum provided with a flanged face journaled on the shaft on one side of the stop flange, said flanged face extending over the shaft on the other side of the stop flange; a continuous resilient spring positioned within the drum and connected to said shaft and drum; a ratchet wheel attached to the shaft and spacing the drum from the end wall of the housing portion; a manually actuatable pawl carried by the end wall of the housing portion for engagement with the ratchet; an aperture formed in the housing above the face of said drum; and belt means carried by the drum and extending through said aperture.

5. An improved exerciser comprising: a pair of generally U-shaped housing portions, each provided with a substantially flat end wall and a side flange, said flanges being arranged to meet along a parting line parallel to the plane of said end walls; a normally non-rotatable stepped shaft having one end journaled in a trunnion formed in the end wall of one housing portion and a reduced end extending through a journal port in the parallel and spaced end wall of the opposing housing portion; outwardly extending stop flange carried by the shaft; a hollow drum provided with a flanged face journaled on the shaft on one side of the stop flange, said flanged face extending over the shaft on the other side of the stop flange; a continuous resilient spring positioned within the drum and connected to said shaft and drum; a ratchet wheel attached to the shaft and spacing the drum from the end wall of the housing portion; a manually actuatable pawl carried by the end wall of the housing portion for engagement with the ratchet; an aperture formed in the housing above the face of said drum; and belt means carried by the drum and extending through said aperture.

THEODORE S. BENICE.

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