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3,224,765

EXERCISING MACHINE AND BRAKE

Filed Nov. 8, 1962

2 Sheets-Sheet 1

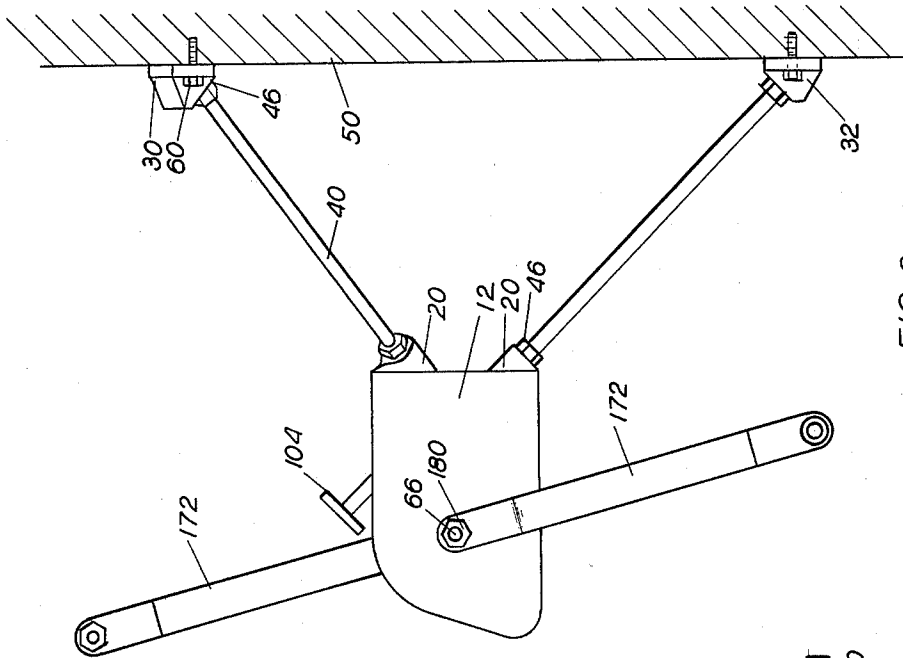


FIG. 2

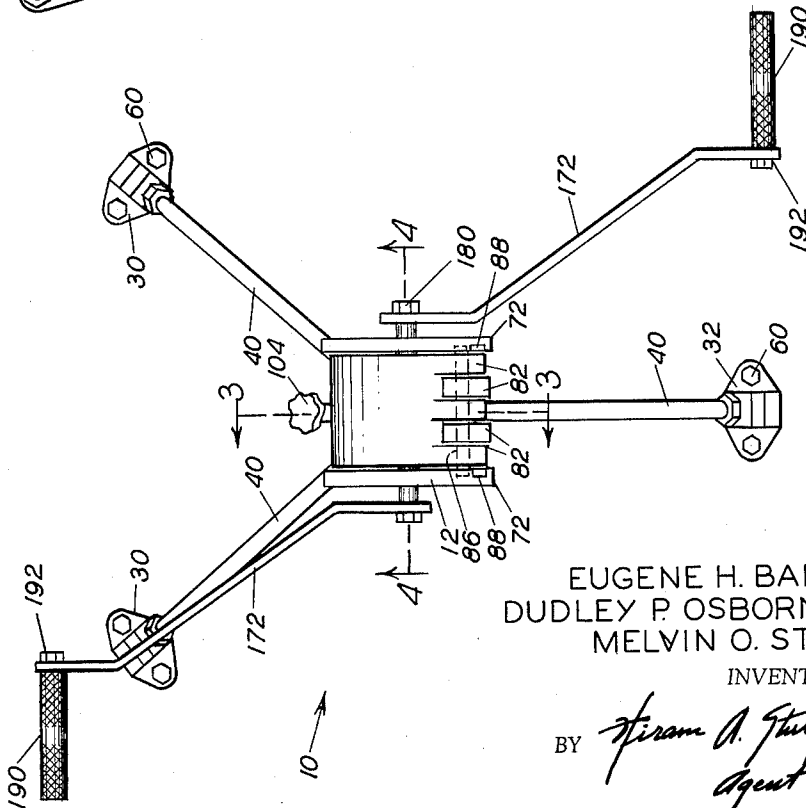


FIG. 1

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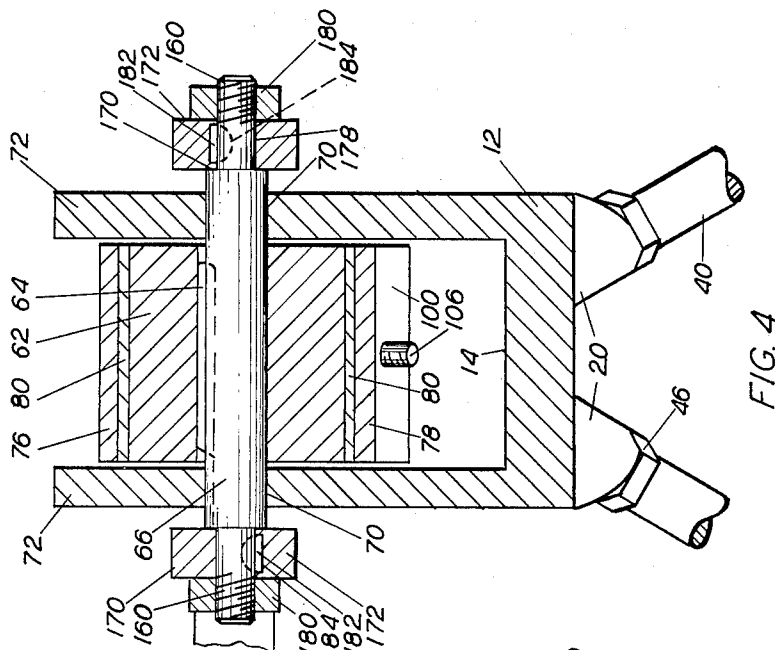


FIG. 4

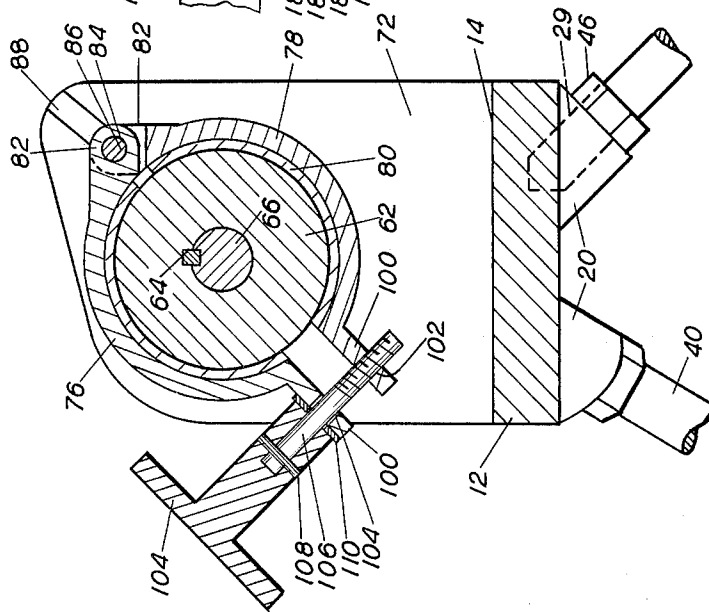


FIG. 3

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EXERCISING MACHINE AND BRAKE

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2 Claims. (Cl. 272-79)

This is a continuation-in-part of application Serial No. 148,146, filed October 27, 1961.

This invention relates to exercising machines and more particularly it is an object of this invention to provide an exercising machine which will exercise a maximum number of the muscles of the body, effectively, and with a machine of minimum cost.

A further object is to provide a machine with which muscles are exercised by rotating a drum against the resistance of a brake, and in which the resistance of the brake can be varied to provide a heavy resistance for the exercise of wrestlers, weight lifters, and similar athletes, and can be adjusted for a lighter resistance for the exercise of swimmers and athletes whose skill depends largely on speed.

A further object is to provide a machine as described which is attachable to a wall whereby it does not occupy needed floor space and is thereby very securely anchored so as to be stable even when used vigorously.

A further object is to provide a machine which an operator can use while standing up so that arms, legs, and other muscles are exercised in the process of rotating crank handles against the resistance of a brake.

A particular object of the invention is to provide an exercising machine providing the concept of an improved braking mechanism superior to that of our earlier machine as defined in patent application Serial No. 148,146, filed October 27, 1961, and titled, Exercising Machine.

It is an object to provide a braking mechanism for an exercising machine of this type which is much smoother in its operation and which applies an even pressure at all points of rotation.

A further object is to provide a braking mechanism which will apply an even pressure whether the brake drum is rotated clockwise or counterclockwise, and which will apply in equal pressure when the brake drum is rotated clockwise as when it is rotated counterclockwise.

A particular objective is to provide a braking mechanism which is smoother in its operation and the brake band will not tend to grab at the brake drum to a greater extent in certain rotational positions than in other rotational positions, as was a characteristic of the machine of our earlier patent application above mentioned.

It is desirable for the user to have constant exercise in order to work up with more and more resistance for the application ultimately of his maximum pressure at each workout.

If the braking mechanism causes rotation to be suddenly hard at what can be called "hard spot" and too easy at other places, a jerkiness of action occurs which detracts from the even flow of a workout to the application of maximum pressure.

This is especially important for a highly competitive man such as a wrestler or a shot-put man who wants to work the exerciser up to his maximum. It is important for such an athlete to build up gradually a tremendous pressure against a smooth even resistance for maximum effectiveness in his workout.

Other and further objects and advantages of the present invention will be apparent from the following detailed description, drawings and claims, the scope of the invention not being limited to the drawings themselves as the drawings are only for the purpose of illustrating a way in which the principles of this invention can be applied.

2

Other embodiments of the invention utilizing the same or equivalent principles may be used and structural changes may be made as desired by those skilled in the art without departing from the purview of the appended claims.

In the drawings:

FIGURE 1 is a frontal elevation of the exercising machine of this invention shown as it would be attached to a wall, the wall not being shown.

FIGURE 2 is a side elevation of the machine of FIGURE 1 shown as attached to a wall.

FIGURE 3 is a sectional view taken along the line 3-3 of FIGURE 1.

FIGURE 4 is a sectional view taken along the line 4-4 of FIGURE 1.

The exercising machine of this invention is generally indicated at 10 in FIGURES 1 and 2, and has a body member 12, which latter, is hollow for providing an internal recess 14 as best seen in FIGURE 4.

The body member 12 has rearwardly protruding projections 20 which are disposed two at the top of the rearward side of the body member 10 and one at the bottom of the rearward side of the body member 10.

Each projection 20 has a threaded bore 29 therein as best seen in FIGURE 3. The bores 29 are directed respectively in three directions toward two upper feet 30 and one lower foot 32 respectively, which latter, are disposed at the corners of a triangular configuration.

Each foot piece 30 and 32 is provided with a bore not shown, these bores being threaded and believed not needing illustration as they are similar to the bores 29 of the projections 20 and are in alignment therewith whereby the projections 20 and the feet 30 and 32 are adapted to receive opposite ends of each of three legs 40, which are preferably two upper legs 40, and one lower leg 40.

The ends of each leg 40 are threaded for receiving nuts 46 which tightly engage the respective projections 20 or feet 30 or 32 in order to hold the legs 40 firmly in place, since the threaded ends of the legs 40 are threaded to the bores of the projections 20 and feet 30.

The feet 30 are suitably secured to a wall surface 50 such as by any suitable means and bolts 60 are shown attaching the feet 30 to the wall 50.

Within the recess 14 of the body member 12, a brake drum 62 is provided and is keyed by a key 64 to a shaft 66, which latter, is rotatably received in shaft openings 70 which are aligned with each other and which extend through respective outstanding sides 72 of the body member 12.

As best shown in FIGURE 3, a hinged brake band of two half circular bands 76 and 78 are each provided with brake lining 80 and positioned around the brake drum 62.

The bands 76 and 78 are formed with intermeshing fingers 82 each of which have a transverse bore 84 for receiving a hinge pin 86 whereby the said bands are able to swing outwardly or inwardly against the drum 62.

The hinge pin 86 is parallel with the brake drum shaft 66 and extends outwardly from each side of the said bands and into recesses 88, one of which latter is formed on the inner surface of each outstanding side 72 of the body 12 whereby the bands 76 and 78 are held from turning with the drum 62.

The recesses 88 extend upwardly and out the top of the sides so that on assembling the invention and having the bands 76 and 78 swung apart, they may be positioned over the drum 62 by sliding the hinge pin 86 down the slots or recesses 88.

As best shown by FIGURE 3, each said brake band is provided with a radially extended ear 100 opposite the described hinge fingers 82. The ears 100 are spaced apart and in near parallelism with each other. The ear

of the band 78 is provided with a bore 104 for receiving therethrough an inner threaded end of an adjustment knob 104.

The knob 104 is bored out for receiving one end of a threaded shaft 106 which is held to the knob by a transverse pin 108 and a washer 110 is positioned on the shaft 106 between the ear 100 and the body of the said knob to protect the parts from wear.

In this manner, the brake bands 76 and 78 may be tightened together around the drum 62 by turning the knob 104 whereby any desired braking force may be obtained.

Referring to FIGURE 4, it will be seen that the brake drum shaft 66 has threaded outer end portions 160 which are of lesser diameter for providing a shoulder 170 at each end against which the inner end of an arm 172 is received.

There are two arms 172 and the inner end of each has an opening 178 therethrough for receiving the threaded respective end 160 of the shaft 66 and the inner end of each arm 172 is held in place thereon by one of two nuts 180.

As shown by FIGURE 4, the arms 172 are further fastened to the shaft 66 by semicircular keys 182 positioned in aligned keyways 184 formed in the shaft 66 and arms 172.

Referring to FIGURE 1, outermost ends of the arms 172 are provided with sleeve handles 190 rotatably secured thereto by bolts 192. The arms 172 are offset outwardly from the exercising machine 10 a distance convenient to being grasped at the handles 190 by an athlete.

As thus described, it will be seen that when a person desiring to exercise adjusts the knob 104 so that the brake assembly comprising the brake bands 76 and 78, brake lining 80, and brake drum 62, is set for a desired resistance, then the operator stands with his feet on the floor, with his weight resting on the balls of his feet and leans toward the machine pushing upwardly and rotating the arms 172 as will give effective exercise to substantially all of the muscles of the body.

As thus described, it will be clear that this invention has provided an exercising machine fulfilling the objects above set forth.

From the foregoing description, it is thought to be obvious that an exercising machine constructed in accordance with my invention is particularly well adapted for use, by reason of the convenience and facility with which it may be assembled and operated, and it will also be obvious that my invention can be changed and modified without departing from the principles and spirit thereof, and for this reason, I do not wish to be understood as limiting myself to the precise arrangement and formation of the several parts herein shown in carrying out my invention in practice, except as claimed.

We claim:

1. An exercising machine comprising a body portion, a brake drum shaft rotatably mounted in said body portion, a brake drum mounted on and fixed to said brake drum shaft for rotation therewith, a brake band means disposed about said brake drum, adjustable means operably correlated with said brake band means for drawing said brake band means tightly around said brake drum to resist rotation thereof comprising a threaded shaft, threaded means cooperative with said threaded shaft and engageable with one side of said brake band, means for causing relative rotation of said threaded means and said threaded shaft for moving said threaded shaft linearly of itself during such relative rotation, and means on said threaded shaft for preventing linear motion of said shaft

with respect to the other side of said brake band during said relative rotation, arms suitably fixed to the respective ends of said brake drum shaft for imparting rotation thereto, handles disposed at the outer ends of said arms, said handles each being rotatably mounted on respective handle shafts connected to said arms and extending in parallelism with said brake drum shaft, whereby an operator by holding said handles in his hands can rotate said brake drum against said resistance for providing effective exercise, said brake band means having generally radially outwardly extending end portions at ends of said main band portion, said brake band means comprising two main portions, ends of which overlap on a side of said brake drum which is approximately diametrically opposite the said outwardly extending ends of said brake band means, an elongated hinge pin disposed through the overlapping ends of said two brake band sections, said hinge pin being disposed in parallelism with said brake drum shaft, and means mounted on said body portion and receiving ends of said hinge pin for preventing orbital movement of said hinge pin about said brake drum shaft, said brake band means including the provision of said band end portions being sufficiently rigid as to apply a continuous pressure against said brake drum for a given adjustment of said adjustable means without any substantial bending of said brake band means such as would cause an uneven pressure against said brake drum, whereby the pressure on said brake drum is smooth and continuously uniform, the outwardly extending ends of said brake band means as well as said means for drawing said brake band means tightly around said brake drum all being unconnected with said body portion except through said hinge pin, whereby the parts are free floating with respect to said body portion for assisting in the application of equal pressure on said brake drum at all times during rotation thereof.

2. The construction of claim 1 in which said means on said body portion for preventing said orbital rotation of said hinge pin comprises the provision on said body portion of oppositely disposed spaced apart walls receiving therebetween said brake drum, said walls having recesses therein extending from the exterior thereof inwardly toward said brake drum shaft, the ends of said hinge pin being received respectively in said recesses, and the walls of said recesses preventing orbital rotation of said hinge pin about said brake drum shaft, said recess having openings opening toward the outer side of said brake drum and respectively spaced for receiving ends of said hinge pin therethrough during movement of said hinge pin laterally of itself for quick and easy assembly.

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