

## [54] EXERCISE AND MASSAGING APPARATUS

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[51] Int. Cl.<sup>2</sup> .... **A61H 11/00**

[58] Field of Search ..... 128/57, 58, 63, 56, 24 R,  
128/24.2

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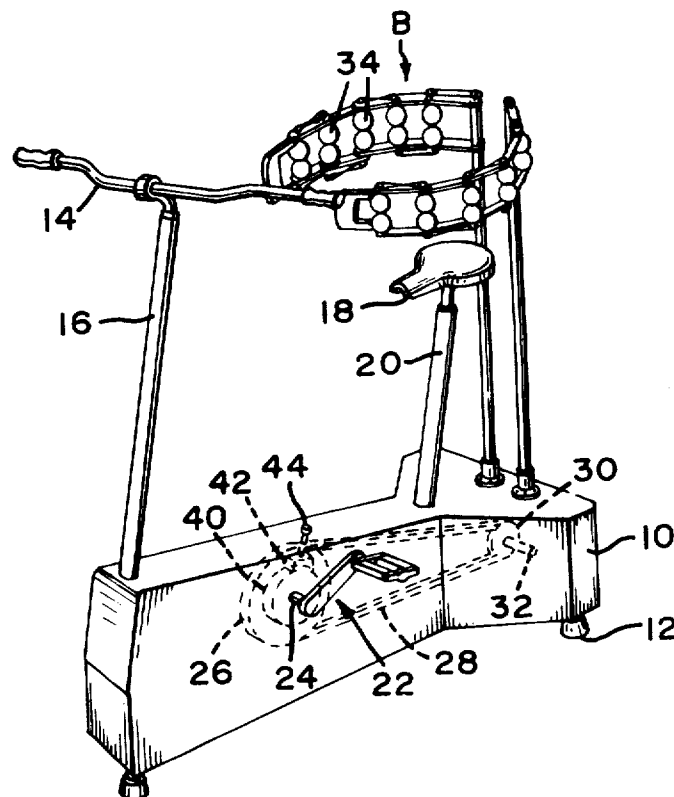
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Primary Examiner—Lawrence W. Trapp

### [57] ABSTRACT

An exercise and massaging apparatus comprises a support structure, motive means coupled to the support structure for being operated by a person, and a massaging element driven by the motive means and engaging a body portion of the person. The belt is provided with massaging elements which rotate in substantially stationary position against the body of the person, whereby the rotation and massaging action obtained is a function of the effort expended by the person operating the motive means.

**9 Claims, 9 Drawing Figures**



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FIG. 1

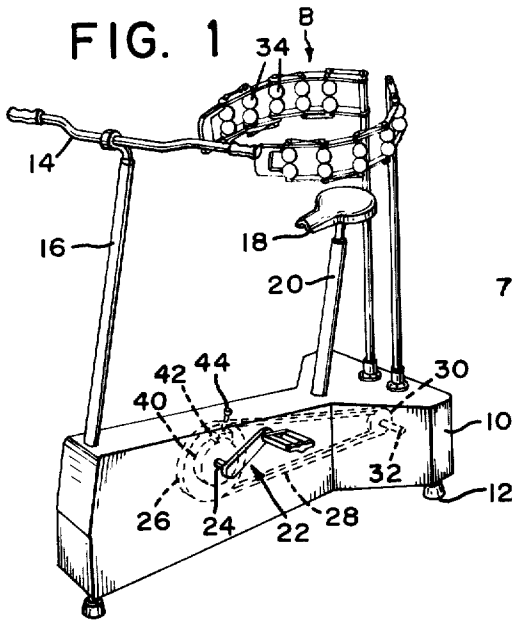


FIG. 3

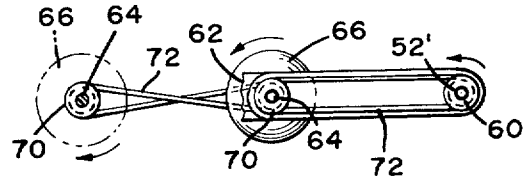


FIG. 2

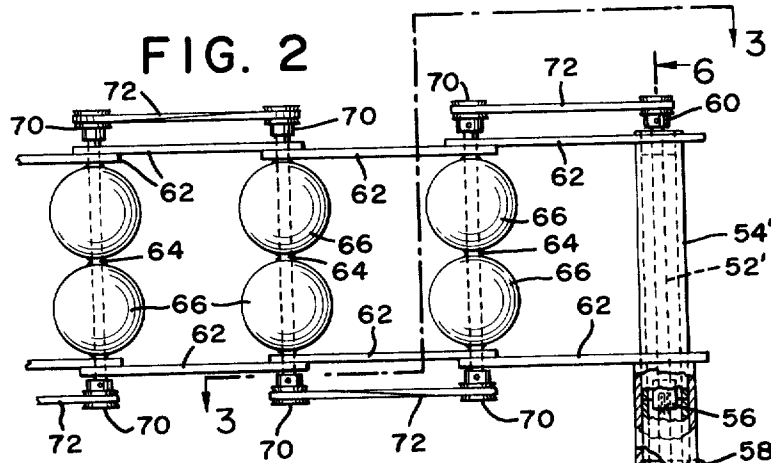
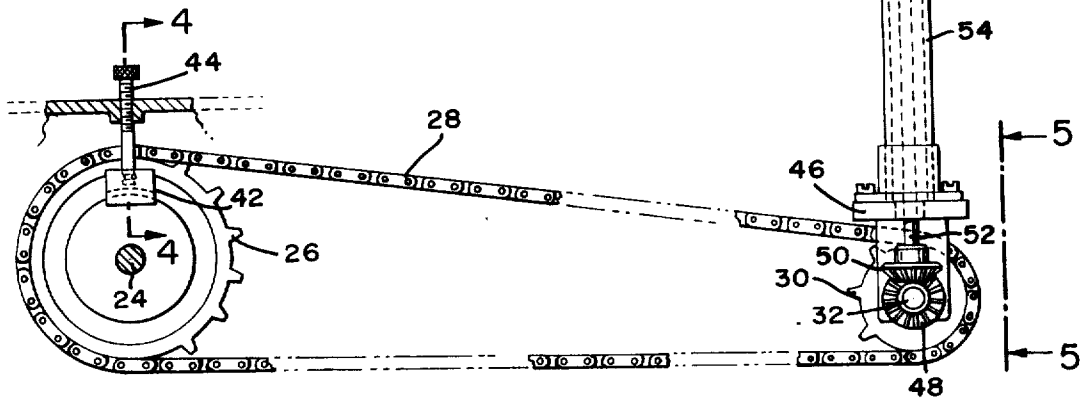
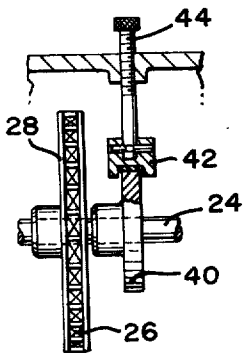


FIG. 4



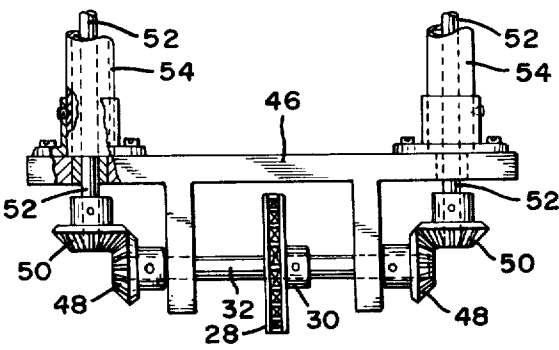


FIG. 5

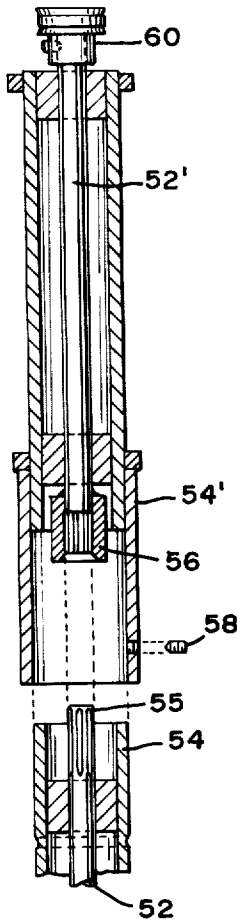


FIG. 6

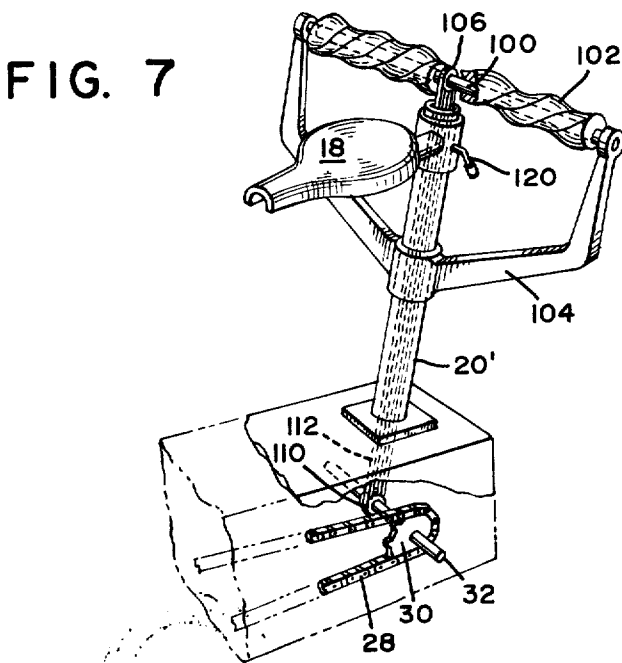


FIG. 7

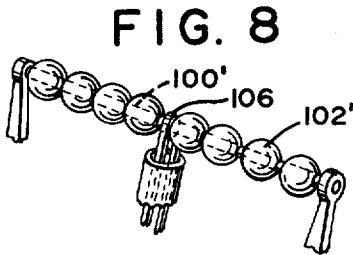
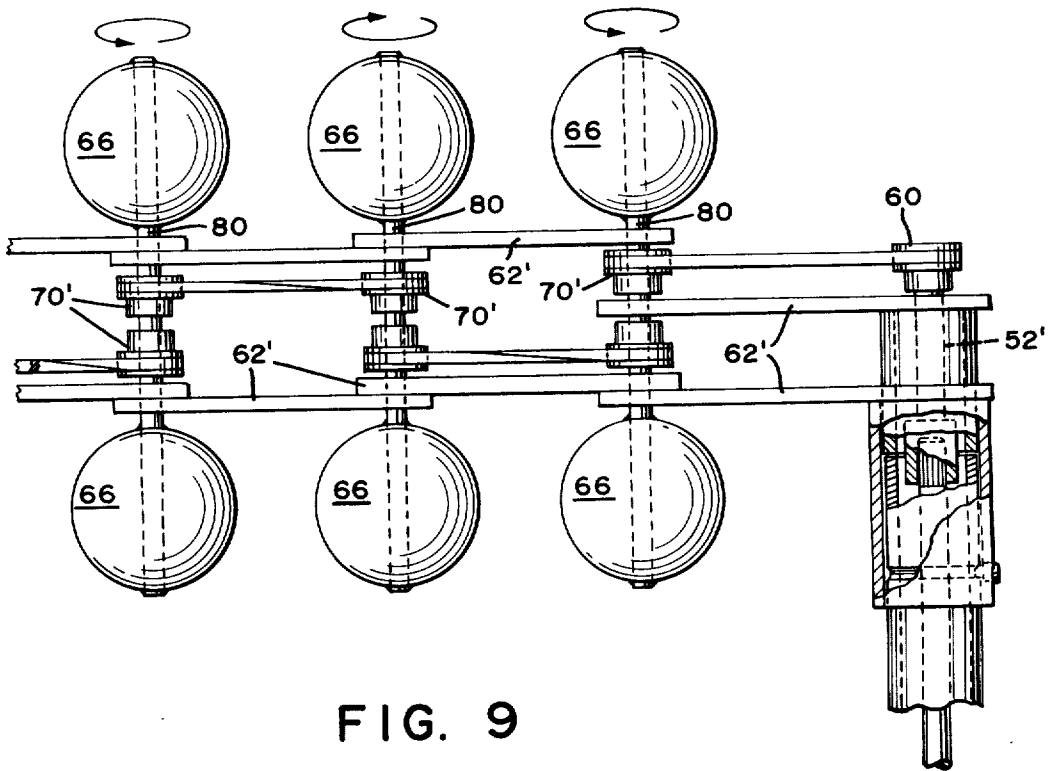


FIG. 8



## EXERCISE AND MASSAGING APPARATUS

## SUMMARY OF THE INVENTION

This invention is related to exercise and massaging apparatus as previously disclosed by me in U.S. Pat. No. 3,670,723 dated June 20, 1972 entitled, "Massaging Device Driven By Exercise Apparatus;" U.S. Pat. No. 3,727,608 dated Apr. 17, 1973 entitled, "Massaging Device Driven By Exercise Apparatus;" U.S. Pat. No. 3,777,745 dated Dec. 11, 1973 entitled, "Exercise And Massaging Apparatus," and pending application Ser. No. 405,406 filed Oct. 11, 1973 entitled, "Exercise And Massaging Apparatus" now U.S. Pat. No. 3,861,382 dated Jan. 21, 1975.

The above referenced patents and pending application disclose an exercise apparatus which is combined with a massaging means so that a person operating the particular apparatus for the purpose of subjecting himself to exercise receives simultaneously a massage. The intensity of the massaging action is directly related to the muscular effort expended by the person during such exercise. The exercise apparatus, typically, comprises a bicycle or a rowing-type apparatus, and a massaging means which, as shown previously, preferably includes resilient roller means and/or a massaging belt.

The present invention discloses a very similar exercise and massaging apparatus in the form of a bicycle in combination with massaging means rotating in substantially stationary position about fixed centers. The mechanical coupling between the exercise apparatus and the massaging instrumentality is so constructed that responsive to the motive effort expended by the user, the massaging elements are caused to undergo rotation.

Specific features of the present invention will be more clearly apparent from the following description when taken in conjunction with the accompanying drawings.

## BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of a preferred embodiment of the present invention;

FIG. 2 is a side elevational view, partly in section, revealing certain constructional features of the invention;

FIG. 3 is a sectional view along line 3—3 in FIG. 2;

FIG. 4 is a sectional view along line 4—4 in FIG. 2;

FIG. 5 is an elevational view along line 5—5 in FIG. 2;

FIG. 6 is a sectional view along line 6—6 in FIG. 2;

FIG. 7 is a perspective view of an additional feature which may be incorporated in the embodiment shown in FIG. 1;

FIG. 8 is an alternative embodiment of the massaging instrumentality shown in FIG. 7, and

FIG. 9 is an elevational view of a portion shown also in FIG. 2, but depicting a slight modification.

## DETAILED DESCRIPTION OF THE INVENTION

Referring now to the figures and FIG. 1 in particular and for the sake of simplicity identifying only the most important components, there is shown a support 10 which rests on a floor, not shown, by a set of feet 12. The support 10 supports in elevated position a handle bar 14 by means of a tube 16, and a seat 18 elevated from the support 10 by means of a telescoping tube arrangement 20. In addition, there is provided a set of

foot pedals 22 of the bicycle type which are mounted upon a rotatable shaft 24 having a sprocket gear 26 secured thereupon. Rotation of the shaft 24 responsive to the operation of the foot pedals 22 is transmitted via a sprocket chain 28 to a sprocket gear 30 affixed upon a shaft 32. The rotation of the shaft 32 is transmitted via a mechanism, which will be described in connection with the other figures, to a belt B which is fitted with a plurality of massaging elements 34. The belt B is adapted to be fastened around the waist of the user sitting on the seat 18 and can be closed by Velcro fastening means or other suitable buckle means for adjustably closing the belt around the waist or torso of the particular person. Responsive to the rotation of the pedal shaft 24 and shaft 32, the massaging elements 34 rotate to provide the massaging action desired, which action, of course, is directly responsive to the expenditure of muscle power, that is, operation of the pedals.

The detailed mechanisms for accomplishing the above massaging action will be more clearly evident from FIGS. 2 through 6. Referring now to these figures, and FIGS. 2 and 4 in particular, the sprocket gear 26 is mounted upon the shaft 24 which is supported in the support 10 by suitable bearing means, not shown. The shaft 24 carries also a further wheel 40 whose rim is engaged by a friction block 42 urged into engagement with the wheel 40 by an adjustable screw means 44. The purpose of this friction arrangement is, of course, to provide an adjustment of the muscular effort required by the person operating the exercise apparatus. As seen in FIG. 2, the sprocket chain 28 transmits the motion imparted to shaft 24 and gear 26 to the gear 30 which is affixed to the shaft 32. The shaft 32, as more clearly evident from FIG. 5, is supported in a frame 46 which is a part of the support 10, FIG. 1. The ends of the shaft 32 are provided with a set of miter gears 48 which mesh with a corresponding set of miter gears 50, the latter being affixed to respective vertical belt drive shafts 52. It will be observed that the shafts 52 rotate about a respective vertical axis in response to the operation of the pedal mechanism 22. The shafts 52 are enclosed in a suitable sleeve or tubing 54 provided with bearing means. The purpose of the vertical shafts is to transmit the rotation upward to the massaging belt B. As shown in FIG. 6, each shaft 52 is splined at 55 and such splined end meshes with a sleeve 56 which is welded to the upper portion 52' of the respective vertical shaft. The lower shafts 52 and upper shafts 52' are adapted to be telescoped into each other. Sleeves 54 and 54' and a set screw 58 are used to retain the shafts in assembled relation.

The upper end of each of the shafts 52' is fitted with a pulley 60, the rotation of the respective pulleys 60 being, of course, responsive to the operation of the pedal mechanism. The sleeve portion 54', as clearly seen in FIG. 2, supports also a respective half of the massaging belt B. The belt comprises a set of links 62 which pivot for adjustment about spaced parallel cross shafts 64 to provide for the necessary adjustment of the belt. The links provide journalling of the cross shafts.

As clearly seen in FIGS. 2 and 3 each of the cross shafts has affixed thereto massaging elements 66 which, in the preferred embodiment, are rubber or plastic spherical elements bonded to the respective cross shafts by suitable bonding material, such as epoxy resin, etc. In a preferred embodiment the massaging elements are relatively firm in order to minimize distur-

tion in order to permit each massaging element to roll over the body surface with which it is in contact.

Each of the cross shafts is fitted furthermore with a pair of pulleys 70, one pulley at each end, and all of the pulleys are interconnected by flexible endless belts 72 to provide rotation to all of the shafts from the respective pulleys 60 mounted to the vertical belt drive shaft combination 52 and 52'. In order to maintain the belt stationary around the body portion engaged by it, it is advantageous that adjacent shafts rotate in opposite direction relative to each other and, therefore, the endless belts transmitting rotation to adjacent shafts are crossed as clearly seen in FIG. 3. Therefore, adjacent shafts and their massaging elements are rotating in opposite direction.

FIG. 9 discloses a slightly modified arrangement. The cross shafts 80 are substantially identical with the shafts 64 in FIGS. 2 and 3, however, the massaging elements 66 are fastened to the cross shafts 80 at the end of the shafts whereas the pulleys 70' and the links 62' are located toward the center of the respective shafts. The counterrotation of the adjacent sets of massaging elements is indicated by the circular arrows. It will be apparent that the construction shown in FIGS. 1 and 2 and FIG. 9, insofar as the belt is concerned, is a matter of choice or expediency. As previously explained, both belt halves, each being driven from its respective vertical shaft assembly, are fastened around the waist or torso of the person using this exercise bicycle and the pressure with which the massaging elements engage the wearer's body is adjustable by means of suitable belt fastening means as are well known to those skilled in the art.

In order to maintain a massaging action against the back of the person, either independently or in combination with the arrangement shown in FIGS. 1 through 6, there can be provided a horizontally disposed shaft 100, FIG. 7, or shaft 100', see FIG. 8. The shaft 100, FIG. 7, is covered with a helically shaped massaging element 102, whereas the shaft 100', FIG. 8, has affixed thereto a plurality of massaging elements 102' which may be similar in construction to the spherical elements 66 of FIG. 2. The shaft 100 is retained in a fork 104 secured to the support tubing 20'. In order to rotate the shaft 100 or the shaft 100', there is provided a pulley 106 which receives rotation from the shaft 32 by means of an additional pulley 110 secured to the shaft 32 and an endless flexible belt 112. In this manner the motion of the shaft 32 is transmitted to the shaft 100, FIG. 7, or to the shaft 100' in FIG. 8 for providing the additional massaging action.

It shall be noted that the seat 18 is adjustable in height along the tubing 20' by means of an adjusting mechanism 120 which is known.

In summary then, the present exercise apparatus provides the plurality of massaging elements adapted to engage in substantially stationary position the waist, torso or some other part of the person using the present apparatus and these massaging elements undergo a rotating motion for providing a massaging action in response to the physical effort of the person receiving such massaging action. It will be understood, of course, that the exercise apparatus may be provided with various gear shift mechanisms in order to vary the physical effort required. In addition, timing means, speedometer and odometer means may be attached as is well known to those skilled in the art. Furthermore, the effort of the

person required for rotating the pedals may be aided by power means.

Finally, while the apparatus shown is in the form of a bicycle exercise device, it shall clearly be understood that rowing-type apparatus as shown in my previous patents, or other physical exercise apparatus may be provided in conjunction with massaging elements of the present configuration.

While there has been described and illustrated a preferred embodiment of the present invention and certain modifications thereof, it will be apparent to those skilled in the art that various changes and modifications may be made therein without deviating from the broad principle of the invention which shall be limited only by the scope of the appended claims.

What is claimed is:

1. An exercise and massaging apparatus for use by a person comprising: a support structure;

motive means coupled to said structure for being operated by the person;

a massaging belt for being worn by the person and said belt including a plurality of massaging elements mounted upon rotatable shafts supported by said belt, and

means coupling said motive means to said shafts for causing said massaging elements to rotate in substantially stationary position responsive to the operation of said motive means.

2. An exercise and massaging apparatus as set forth in claim 1, said shafts being aligned substantially parallel, each shaft mounting at least one massaging element, and means coupled for causing neighboring shafts to be driven in opposing rotational direction.

3. An exercise and massaging apparatus as set forth in claim 2, said motive means when operated providing rotational motion.

4. An exercise and massaging apparatus as set forth in claim 3, said belt comprising pivotally mounted links and said shafts being journaled in said links.

5. An exercise and massaging apparatus as set forth in claim 3, said elements being bonded to said respective shafts.

6. An exercise and massaging apparatus as set forth in claim 1, said support structure supporting a handle bar and a seat to provide the general configuration of a stationary bicycle, said motive means comprising a set of foot pedals, said massaging belt comprising two halves, and said means coupling separately coupling the elements of each half to said motive means.

7. An exercise and massaging apparatus for use by a person comprising:

a support structure in the shape of a bicycle including a seat for use by the person;

motive means coupled to said structure for being operated by the person;

massaging means disposed for engaging a body portion of the person occupying said seat and operating said motive means, and

means coupling said motive means to said massaging means for causing said massaging means to undergo rotation in substantially stationary position responsive to the operation of said motive means.

8. An exercise and massaging apparatus as set forth in claim 7, said massaging means including at least one massaging element affixed to a rotatable shaft, and said means coupling causing said shaft to undergo rotation

9. An exercise and massaging apparatus for use by a person as set forth in claim 7, said massaging means being disposed behind said seat for engaging the back of the person.

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