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CA 2709142 A1 2011/01/27

(21) 2 709 142

(12) DEMANDE DE BREVET CANADIEN
CANADIAN PATENT APPLICATION

(13) A1

(22) Date de dépôt/Filing Date: 2010/07/07

(41) Mise à la disp. pub./Open to Public Insp.: 2011/01/27

(30) Priorités/Priorities: 2009/07/27 (GB0912979.2); 2009/11/04 (GB0919328.5)

(51) Cl.Int./Int.Cl. *A63B 22/18* (2006.01), *A63B 22/00* (2006.01)

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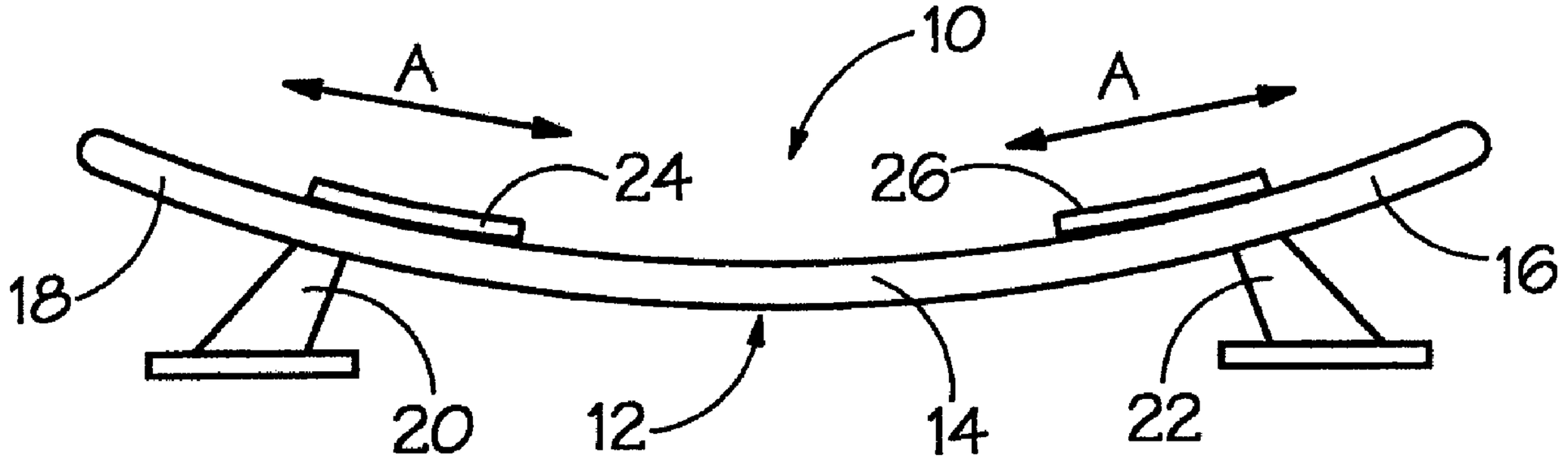
(54) Titre : APPAREIL D'EXERCICE
(54) Title: EXERCISE APPARATUS



(57) Abrégé/Abstract:
The present invention provides for an exercise apparatus comprising a pair of support-plates such as foot plates arranged for reciprocal motion along adjacent and parallel paths of travel which can be defined by an associated, and preferably gently concave, track serving to present a support surface for supporting the said support-plates and along-which the support-plates move during the reciprocal motion; the support surface further serving to define the paths of travel, and wherein the support surface further defines, at least in part, a slope for the paths of travel and wherein weight means can be provided to be moved by way of the footplate and so as to offer resistance to the movement of plates over the said track.

ABSTRACT

The present invention provides for an exercise apparatus comprising a pair of support-plates such as foot plates arranged for reciprocal motion along adjacent and parallel paths of travel which can be defined by an associated, and preferably gently concave, track serving to present a support surface for supporting the said support-plates and along-which the support-plates move during the reciprocal motion; the support surface further serving to define the paths of travel, and wherein the support surface further defines, at least in part, a slope for the paths of travel and wherein weight means can be provided to be moved by way of the footplate and so as to offer resistance to the movement of plates over the said track.

EXERCISE APPARATUS

The present invention relates to exercise apparatus.

Various forms of exercise apparatus are commonly known for use in exercising various parts of the human body, for example, for enhanced level of fitness and body toning.

Known forms of exercise apparatus for exercising the human legs and comprising a wide variety of generally complex apparatus is commonly available in public and private gymnasiums.

However, it has also become more popular recently to exercise within a domestic environment for possibly more efficient, time-saving and cost effective exercise routines.

However, much of the known apparatus is not appropriate for the domestic environment and can prove to be unnecessarily complex and bulky such that the known apparatus is not readily stored in a space-saving and tidy manner when not in use.

Further, various forms of leg exercise apparatus include frame structures which are not readily disassembled and can prove unsightly when stored and indeed when used, within a domestic environment.

The present invention seeks to provide for leg exercise apparatus having advantages over known such apparatus.

In particular, the present invention seeks to provide for leg apparatus which is relatively simple in structure and operation, whilst nevertheless enhancing the nature of the exercise routines available to different users and which, as a further advantage, can prove relatively compact and easily stored when not in use.

According to a first aspect of the present invention, there is provided exercise apparatus comprising a pair of support-plates arranged for reciprocal motion along adjacent and parallel paths of travel, means for presenting a support surface for supporting the said support-plates and along-which the support-plates move during the reciprocal motion; the support surface further serving to define the paths of travel, and wherein the support surface further defines, at least in part, a slope for the paths of travel.

Advantageously, through the provision of the support means for the support-plates and which serve to define the paths of travel and over which the support-plates move, a particularly compact and simple exercise apparatus can be provided which, as will be discussed in further detail below, readily allows for further adaption so as to allow for varied and enhanced exercise routines as required by a user.

Advantageously, the slope can comprise a curved slope and /or further, a slope can extend from a central portion at least upwardly towards one end of the path of travel.

As a further advantage, the slope can comprise sloped regions extending upwardly from the central portion of the path of travel to each of the respective ends of the path of travel.

The slope exhibited by the paths of travel can then advantageously exhibit a shallow concave form.

The means presenting a support surface advantageously can include means for defining a track along which the support-plates are arranged to move.

Of course, it should be appreciated that any appropriate bearing, bearing surface, wheel or castor means can be provided as required to allow for travel of the support-plates over the support surface.

Indeed, this support surface can be provided as part of one or more tracks for receiving an engagement formation of the support-plates or for presenting an engagement formation to be received within the support-plates.

Advantageously, separate tracks can be provided for each of the support-plates and which can comprise respective sets of rails.

Preferably, of course, such rails will extend in a generally parallel configuration.

The apparatus can further include means for resisting motion of each support-plate in a direction up the said slope.

Said means for resisting such motion can rely on resilience, friction and/or, as referred to below, the effect of gravity.

In one particular arrangement, each support-plate can be arranged to, at least temporarily, engage with a weight-portion of the apparatus in a manner so as to at least partially raise the weight during at least part of its movement along the paths of travel.

In particular, the said weight-arrangement can be arranged to also move along at least part of the said path of travel and can likewise be provided for engagement with the said track defining the paths of travel.

In particular, separate weight-arrangements can be provided at each end of each of the paths of travel of each of the support-plates. In this manner, four separate weight-arrangements would therefore be provided.

As will be appreciated, the weight-arrangements can be arranged for releasable engagement with the support-plates so as to be moved thereby only during movement of the support-plates over part of the paths of travel.

Any such weight-arrangements can be arranged to abut the support-plates or engage therewith by means of extension arms.

Advantageously, each weight-arrangement can be arranged to be engaged with the support-plate during its movement up the slope.

Yet further, the support-plate can be arranged to be disengaged from the weight-arrangement for part of the movement downward slope.

Of course, means can be provided within the apparatus so as to arrest the downward-slope movement of the weight-arrangement in this manner, the stroke of reciprocal movement provided for the or each weight-arrangement therefore far less than the potential stroke movement of each support-plate along the paths of travel.

Each weight-arrangement can then be arranged for reciprocal movement at an end region of the paths of travel.

Of course, the weight-arrangement can itself be arranged so as to readily vary the weight against which the user works during the exercise routine and so the weight-arrangement can include a set of readily stackable weights.

In addition, or as an alternative, the weight-arrangement can include at least one container arranged for receiving liquid or particulate matter for increasing and/or vary the weight thereof.

As noted above, means other than a weight arrangement can be provided for resisting the motion of the support-plates and, whether frictional and/or resilient, an appropriate number and location of such alternative arrangements can be provided in place of the weight arrangements described above.

As will be appreciated, the support-plates can comprise respective left and right footplates. The apparatus can also include handle bar and/or hand grip means arranged to be gripped by a user when standing on the footplates.

As a further feature, each of the support-plates can be moved relative to the paths of travel so as to vary the angle of inclination of the support-plates thereto.

Yet further, the distance of separation between the support-plates and the track can be varied and, if required, some form of elliptical motion can be achieved between the footplate and the track during travel over the path of motion.

Allowing for such change in orientation of the support-plates advantageously serves to further enhance the range of exercise routines that are available by way of the apparatus.

In order to enhance the controlled relative movement of the footplate with respect to the said support surface, each footplate can be actively coupled to resilient and/or pivotal mounting means as required.

As a further feature of the invention, the apparatus can include handle bar and/or hand grip means provided in the region of one end of the paths of travel and arranged to be gripped by a user when kneeling on the support-plates.

The support plates can therefore be configured as knee plates.

As should be appreciated, the handlebar and hand grips mentioned above can be removable and adjustable so as to vary the orientation and/or position thereof.

The invention is described further hereinafter, by way of example only, with reference to the accompanying drawings in which:

Fig. 1 is a schematic side view of exercise apparatus according to one embodiment the present invention;

Fig. 2 is a schematic plan view of the apparatus of Fig. 1;

Fig. 3 is a schematic side view of exercise apparatus according to another embodiment of the present invention;

Fig. 4 is a further view of the apparatus of Fig. 3 illustrating its change in configuration when in use;

Fig. 5 is a schematic plan view of the embodiment of Fig. 4;

Fig. 6 is a schematic representation of exercise apparatus according to another embodiment of the present invention;

Fig. 7 is a schematic representation of exercise apparatus according to still another embodiment of the present invention;

Fig. 8 is a perspective view of exercise apparatus according to yet a further embodiment of the present invention;

Fig. 9 is a side view of the embodiment of Fig. 8; and

Figs 10 and 11 are rear and front side perspective views of a yet further embodiment of the present invention.

Turning first to Fig. 1 there is illustrated, in side view, schematic representation of exercise apparatus according to one embodiment of the present invention.

As will be appreciated, the apparatus is arranged for exercising a user's legs and so it is only the operative elements relevant thereto that are illustrated.

That is, the apparatus schematically represented in Fig. 1 will also generally include some form of support means to be gripped by a users hands but, for clarity, this is not illustrated the drawings.

Fig. 1 illustrates leg exercise apparatus 10 comprising longitudinally shallow concave support member 12 having a central region 14 adjacent upwardly curved end regions 16, 18.

The apparatus 10 is arranged to be used when located on a floor and so includes stabilizing leg arrangements 20, 22.

A pair of support-plates 24, 26 is mounted to the support surface 12, and generally engaged therewith in a moveable manner so as to allow for reciprocal motion along the shallow convex track in the direction of arrows A.

In the illustrated embodiment the maximum stroke for each of the support-plates 24, 26 along the path of travel comprises the full length of the support 12.

It should therefore be appreciated that the support 12 serves to define a path of travel for each of the footplates 24, 26 and this is illustrated with reference to Fig. 2.

Here there is provided a plan view of the apparatus of Fig. 1 from which it can be seen that the support 12 effectively defines two tracks 12A, 12B which in turn serve to define adjacent and parallel longitudinal paths of travel for each of the footplates 24, 26. While in the illustrated embodiment the common support defines the two tracks 12A, 12B, it should of course be appreciated that separate support means can serve to define the respective tracks 12A, 12B.

During an exercise routine, a user places each of their feet on a respective one of the footplates 24, 26 and then urges the footplates 24, 26 backwards and forwards so as to slide the footplates along each of the respective tracks 12A, 12B and ideally along the full extent of the tracks 12A, 12B as indicated by arrows B in Fig. 2. Such movement is generally in an opposite manner so that one footplate travels forwards, the other travels backwards. Thus, as the footplate 24 moves towards the left end of the track 12B as illustrated in Fig. 2, the footplate 26 moves towards the track 12A as illustrated in Fig. 2.

During such an exercise routine, the user's torso generally remains stationary above the central portion 14 of the support 12.

The provision of the shallow concave support 12 defining the tracks 12A, 12B serves to allow for a particularly compact construction which readily allows for ease of storage.

It should of course be appreciated that the invention is not restricted of details of the embodiment illustrated with reference to Figs. 1 and 2 insofar as any form of, even partially, sloped surface can be provided as required.

Turning now to Fig. 3, there is provided a similar schematic side elevational view of leg exercise apparatus according to another embodiment of the present invention.

The shallow concave form of the apparatus of Fig. 3 is similar to that of Figs. 1 and 2 insofar as similar parallel adjacent tracks are provided by way of a support 28, having upwardly curved end regions 30, 34 at which there is provided a weight-arrangement 32, 36.

In further detail the weight-arrangement 32 comprises a support plate upon which can be stacked a plurality of weight elements 38 operatively coupled by way of an arm 40

to a buffer 42 which is arranged to engage with one of the footplates as will be described further below.

The weight-arrangement 36 associated with the end 34 of the support 28, likewise includes a support means and related stack of weight elements 44 connected by way of an arm 46 to a buffer 48 arranged for engagement with one of the footplates as will again be described further below.

The provision of the weight-arrangements 38, 44 serves to increase the amount of work expended by a user during an exercise routine. As the movement of each of a pair of footplates 50, 52 approaches the end of its stroke, the respective footplate 50 and 52 engage, by way of the buffers 42, 48, with the weight-arrangements 32, 36 so as to move the weight elements 38, 44 in an outward but importantly also upward, manner. Such movement of the weight elements 38, 44 serves to increase the amount of work required by the user during an exercise routine, which amount can of course be varied by stacking the appropriate number of weight elements 38, 44 within each arrangement 32, 36.

In one particular embodiment, such weight-arrangements 32, 36 are provided towards the end of each of the tracks such that, once each footplate has started to return down the slope of the track, it disengages from the respective buffer 42, 48 of the weight-arrangements 32, 36 such that the weight does not then serve to assist the downward movement of the footplate along the slope.

Arresting means are therefore advantageously provided for limiting the reciprocal scope of movement of each of the weight-arrangements 32, 36 and which arresting means can also be arranged so as to slow the movement of the weight-arrangement 32, 36 down the slope presented by each of the end regions 30, 34 of the support 28.

Of course, it should be appreciated that the invention is not restricted to the details of the foregoing embodiment insofar as any appropriate means for seeking to resist the

movement of each of the footplates 50, 52 up each of the slopes can be provided as required and whether relying on frictional resistance or resilient resistance. The illustrated examples employing the stacked weights comprise only one of many possibilities.

The embodiment of Fig. 3 is illustrated further with reference to Fig. 4 where it can be seen that each of the footplates 50, 52 has moved along the path of travel to the extreme end of each of its strokes and thereby moved its respective weight-arrangement outwardly and upward as part of an enhanced exercise routine.

Turning now to Fig. 5, there is provided a plan view of the apparatus of Fig. 4 to further illustrate the provision of the pair of weight-arrangements 38A, 44A, associated arms 40A; 46A and buffers 42A; 48A associated therewith one track, whereas a similar pair of weight-arrangements 38B; 44B and respective arms 40B, 48B and buffers 42B; 48B are likewise illustrated for the other of the two tracks.

Thus, in this embodiment, four separate means for resisting motion of the footplates 50, 52 are provided, one at each end of the paths of travel such that, whether moving forward or backwards, the movement of each footplate 50, 52 in an up-slope direction serves to work against the additional resistance identified by each respective weight-arrangement.

Turning now Fig. 6, there is provided a further schematic illustration of an embodiment of the present invention in use and wherein a support arrangement 54 is formed as a tubular track configuration and in which each of the pairs of weight-arrangements 56, 58 serve to engage with the footplates by means of similar tubular support arms having buffers at the ends thereof.

Turning finally to Fig. 7 there is illustrated an embodiment of the present invention in which each of the footplates is arranged to pivot relative to each of the support tracks so as to vary the angle of inclination thereto.

Such pivoting can be achieved in a coupled and resilient manner so as, if required, to allow for possible elliptical motion of the footplate during progress on its path of travel. Any appropriate support coupling means can be provided and, in addition to allowing for the change of inclination of the footplate with regard to each of the support tracks, the distance of separation of the footplate from each of the tracks can likewise be varied.

The support tracks 60 and related footplates 62, 64 can thereby allow for a further range of exercises to be undertaken as illustrated schematically in Fig. 7.

Turning now to Fig. 8 there is provided a perspective view of exercise apparatus according to yet another embodiment of the present invention.

The exercise apparatus 66 according to the Fig. 8 embodiment comprises a substantially tubular frame member presenting substantially parallel tubular tracks 68, 70 extending between frame floor supports 72, 74 provided at the respective end regions of the tracks 68, 70.

Extending upwardly at one end of the apparatus defined by the floor support 72 is an upstanding handlebar arrangement 76 which is arranged to present handgrips to be engaged by a user of the apparatus 66 when standing on the apparatus.

As will be appreciated from the subsequent discussion, the position or orientation and/or height of the handlebar extension 76 can be varied as required and indeed, the handlebar arrangement 76 can be completely removed from the apparatus 66 if required.

At the end of the apparatus remote from the upstanding handlebar arrangement 76 are a pair of laterally extending handgrips 78, 80 whose position and/or orientation can

likewise be varied as required and again, can indeed be releasably mounted on the frame of the apparatus 66.

As should likewise be appreciated from the subsequent discussion of this embodiment of the present invention, the handgrips 78, 80 are arranged to be gripped when the user is kneeling on the apparatus and this particular embodiment of the present invention is therefore really adaptable insofar as it can comprise means for presenting leg exercise apparatus and/or abdomen or core-muscle exercising apparatus.

Of course, it should be appreciated that the various forms and configuration of handlebars and handgrips illustrated within the embodiment of Fig. 8, can of course be incorporated into the earlier embodiments of the present invention as discussed in relation to the previous drawings.

Supported in a secure but moveable manner on each of the tracks 68, 70 is a respective pair of support plates 84, 82 arranged for simple motion along the longitudinal extent of the respective tracks 68, 70.

As will be appreciated from the provision of the various handlebar and handgrip arrangements 76, 78, 80, the support plates 82, 84 can function as footplates and/or knee plates/supports as required.

Associated with each of the support plates 82, 84 is a respective pair of weights 86, 88 and whose reciprocal motion can, as required, likewise be guided by the respective tracks 68, 70 and which are arranged to engage with the support-plates 82, 84 so as to be moved thereby during the passage of the support plates 82, 84 along the tracks.

The configuration of the weights 86, 88 and their relationship with the footplates 82 as illustrated further by reference to Fig. 9 which comprises a side view of the apparatus of Fig. 8.

Here it can be appreciated that each of the weights 86, 88 is supported by means of a respective extension arm 87, 89 which extends in the direction of the support-plate 82.

Each of the weights 86, 88 can comprise a set mass or, preferably, can comprise a receptical arranged to receive a selective quantity of fluid or particulate matter which serves to enhance the weight thereof. Indeed, a plurality of such weights can be provided and, by means of respective engagement formations can be arranged to be stacked on the weights 86, 88 illustrated in Fig. 9 so as to yet further increase the amount of weight removed by the user of the apparatus when moving the support-plates 82, 84.

As with the earlier described embodiments of the present invention, a variety of configurations can be provided when considering the manner in which the weights 86, 88 engage with the support plate 82 to be moved thereby.

That is, and referring in particular to Fig. 9, when the support-plate 82 is caused to move to the left within Fig. 9 the support-plate 82 can be arranged to abut or engage with the weight 86 and/or its extension arm 87 so as to likewise move the weight 86 to the left as in the figure but, at the same time, an engagement between the support plate 82 and the weight 88 and its extension arm 89 can be released so that the weight 88 remains in the position indicated in Fig. 9. Then, as the support-plate 82 moves back down the shallow concave track to the right in the drawing back to its position as shown in Fig. 9, the weight 86 likewise moves back downwardly until such time as the central position indicated in Fig. 9 is reached whereby the engagement between the weight 86 and its extension arm 87 with the support-plate 82 is released and the support-plate 82 then engages, by way of the extension arm 89, with the weight 88 so as to work against the resistance offered by weight as the support-plate 82 is moved further to the right in Fig. 9 and up the shallow concave track 68.

Of course, as an alternative, the support-plate 82 can be retained in engagement with both of the weights 86, 88 during its full extent of travel back and forth along the track

68. Yet further, either one of the weights 86, 88 and/or its respective extension arm 87, 89 can be releasably engaged to the apparatus so as to be removed therefrom such that, during the required exercise routine, the user only has to work against the resistance offered one of the weights 86, 88 illustrated in Fig. 9.

It will of course be appreciated that the embodiment illustrated with reference to Figs. 8 and 9 provides a compact form of the apparatus. However, if required, somewhat longer extension arms 87, 89 can be provided so as to increase the separation between the weights 86, 88 and the support-plate 82 and this can serve to increase the height through which each of the weights 86, 88 moves so as to thereby increase the amount of work undertaken by a user during an exercise routine. As mentioned above, and during a leg-exercise routine, the user stands on the support-plates 82 which therefore function as footplates and, for added stability, the user can grip the upper regions of the upwardly extending handlebar arrangement 76 so as to perform a leg-exercise routine in a stable and secure manner. If, as an alternative, the user wishes to exercise their abdominal and core muscles, they can kneel on the support- plates 82, 84 in a direction generally facing the handgrips 78, 80 which are of course gripped by the user's hands as the user exercises their abdominal/core muscles in moving the "knee-plates" 82, 84 back and forth, i.e. left-right directions as illustrated in Fig. 9 along the shallow concave tracks 68, 70. Again, the exercise weight arrangements 86, 88 can be included or removed as required as indeed can the upstanding handlebar arrangement 76 which is arranged to be releasably mounted to the exercise apparatus.

A wide variety of exercises can therefore be performed by way of the simple and compact apparatus illustrated in Figs. 8 and 9. And, through adoption of weighting arrangements 86, 88 that can be "charged" with liquid or particulate material as required, a wide variety of weights can be provided for various exercise routines.

However, it should be appreciated that the weighting arrangements as illustrated in Figs. 8 and 9 can likewise be supplemented, or replaced by another appropriate form of

resistance inducing means such as is discussed in relation to the preceding embodiments and employing frictional, rather than gravitational resistance.

Turning now to Figs 10 and 11, there are provided rear and front side-perspective views of exercise apparatus 90 according to yet another embodiment of the present invention. As will be appreciated, the overall configuration is somewhat similar to the embodiment illustrated in Fig 8 in that it shares a cradle-frame 92 forming a base unit upon which foot-rests and associated weights are movably mounted. At one end of the cradle-frame 92 is provided and upstanding support 94 at the upper end of which is provided a variety of hand-rest/handlebar arrangements 96 – 102. Two sets of such arrangements are illustrated with the first comprising a simple static central handlebar arrangement 96. The second arrangement comprises a pair of left/right elongate handgrips 98, 100 illustrated in the figures as extending in a substantially upwardly direction. A particular feature of this embodiment of the invention is the manner by which the handgrips 98, 100 are totally connected to the upstanding support 94. The pivotal connection comprises a barrel connector 102 which allows for reciprocal pivotal motion of each of the handgrips 98, 100 independently of each other. If required, biasing means can be included within the barrel connector 102 such that this pivotal motion can be influenced by, or performed against, such biasing. Yet further, the barrel connector 102 allows for pivotal adjustment of the "at rest" position of the handgrips 98, 100. That in Figs 10 and 11, the "at rest" position of the handgrips 98 and 100 is substantially vertical so as to allow for a "back-and- fourth" reciprocal movement about the barrel connector 102 as the use of slides the foot rest in an automated manner when using the apparatus facing 80 handlebar arrangements.

As and when required, the handgrips 98, 100 can be rotated as if a single unit by means of the barrel connector 102 and so as to extend in a substantially horizontal direction when "at rest" and so as to allow for "up-and-down" movement by the user when performing a different exercise routine which, for example, could comprise the user facing in an opposite direction to that noted above.

Of course, it should be appreciated that the invention is not restricted to the details of the foregoing embodiments.

As noted, any appropriate means for resisting the upward motion of the support-plates up each respective slope can be provided and any appropriate form of track/support arrangement can be provided for defining the extent, and configuration, of the paths of travel. Of course, the various features illustrated in relation to the different embodiments can be combined and any appropriate manner and combination as required.

Claims

1. Exercise apparatus comprising a pair of support-plates arranged for reciprocal motion along adjacent and parallel paths of travel, means for presenting a support surface for supporting the said support-plates and along-which the support-plates move during the reciprocal motion; the support surface further serving to define the paths of travel, and wherein the support surface further defines, at least in part, a slope for the paths of travel.

2. Apparatus as claimed in Claim 1, wherein the said slope comprises a curved slope.

3. Apparatus as claimed in Claim 1 or 2, wherein the slope extends from a central portion at least upwardly towards one end of the path of travel.

4. Apparatus as claimed in Claim 3, wherein the slope comprises sloped regions extending upwardly from the central portion of the path of travel to each of the respective ends of the path of travel.

5. Apparatus as claimed in any one or more of the preceding claims, wherein the means presenting a support surface includes means for defining a track along which the support-plates are arranged to move.

6. Apparatus as claimed in any one or more of the preceding claims, wherein the said support surface is provided as part of one or more tracks for receiving an engagement formation of the support-plates or for presenting an engagement formation to be received within the support-plates.

7. Apparatus as claimed in Claim 6, wherein separate tracks are provided for each of the support-plates and which comprise respective sets of rails.

8. Apparatus as claimed in any one or more of the preceding claims and including means for resisting motion of each support-plate in a direction up the said slope.

9. Apparatus as claimed in Claim 8, wherein the said means for resisting such motion relies on one or more of resilience, friction and/or, the effect of gravity.

10. Apparatus as claimed in Claim 8 or 9, wherein each support-plate is arranged to, at least temporarily, engage with a weight-portion of the apparatus in a manner to at least partially raise the weight during at least part of its movement along the paths of travel.

11. Apparatus as claimed in Claim 10, wherein the said weight-portion is arranged also to move along at least part of the said path of travel and can likewise be provided for engagement with the said track defining the path of travel.

12. Apparatus of claims in Claim 10 or 11, wherein the weight-portion is arranged for releasable engagement with the support-plates so as to be moved thereby only during movement of the support-plates over part of the paths of travel.

13. Apparatus as claimed in Claim 10, 11 or 12, wherein the said weight-portion is arranged to abut the support-plates or engage therewith by means of connection/extension arms.

14. Apparatus as claimed in any one or more of Claims 10-13, wherein each weight-portion is arranged to be engaged with the support-plate during its movement up the slope.

15. Apparatus as claimed in any one or more of Claims 10-14, wherein the support-plate is arranged to be disengaged from the weight-arrangement for part of the movement downward slope.

16. Apparatus as claimed in any one or more of Claims 10-15, wherein the weight-portion comprises a weight having an engagement formation for facilitating the stacking of a plurality of weights.

17. Apparatus as claimed in any one or more of the preceding claims and including handle bar and/or hand grip means arranged to be gripped by a user when standing on the footplates.

18. Apparatus as claimed in Claim 17, wherein the handlebar and/or hand grip means are pivotally mounted to the apparatus.

19. Apparatus as claimed in Claim 18, wherein they handlebar and/or hand grip means are pivotally mounted in a resilient manner.

20. Apparatus as claimed in Claim 18 or 19, wherein they handlebar and/or hand grip means can be rotated to different positions prior to use or as part of an exercise routine.

21. Apparatus as claimed in any one or more of the preceding claims, wherein each of the support-plates can be moved relative to the paths of travel so as to vary the angle of inclination of the support-plates thereto.

22. Apparatus as claimed in any one or more of the preceding claims, wherein the distance and/or position between the support-plates and a track can be varied and, if

required, some form of elliptical motion can be achieved between the footplate and the track during travel over the path of motion.

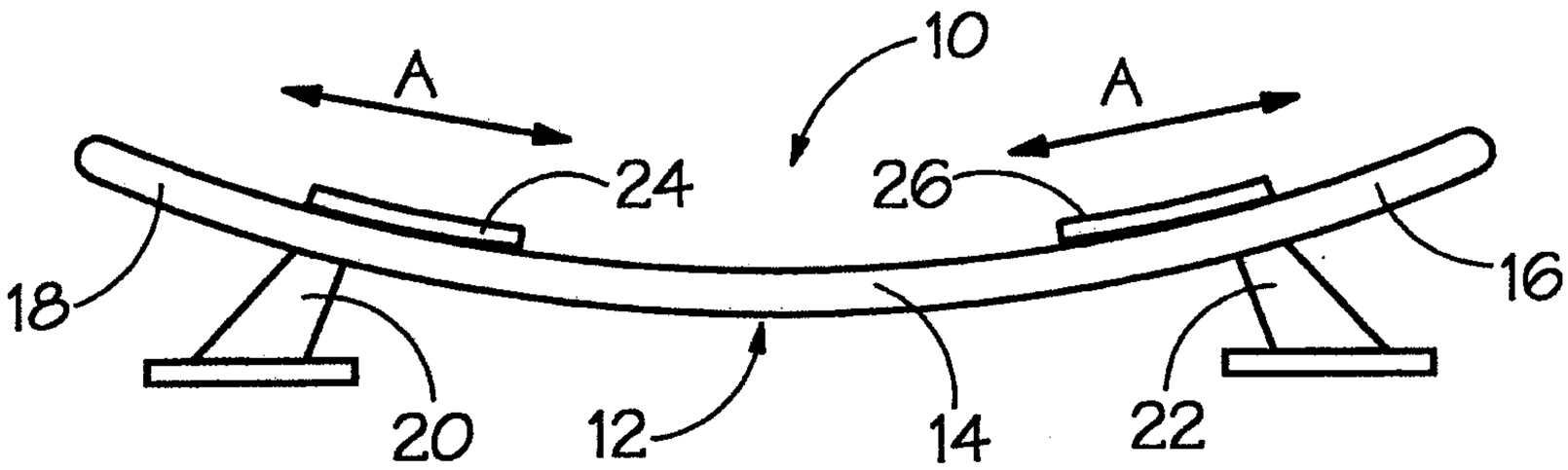


FIG.1.

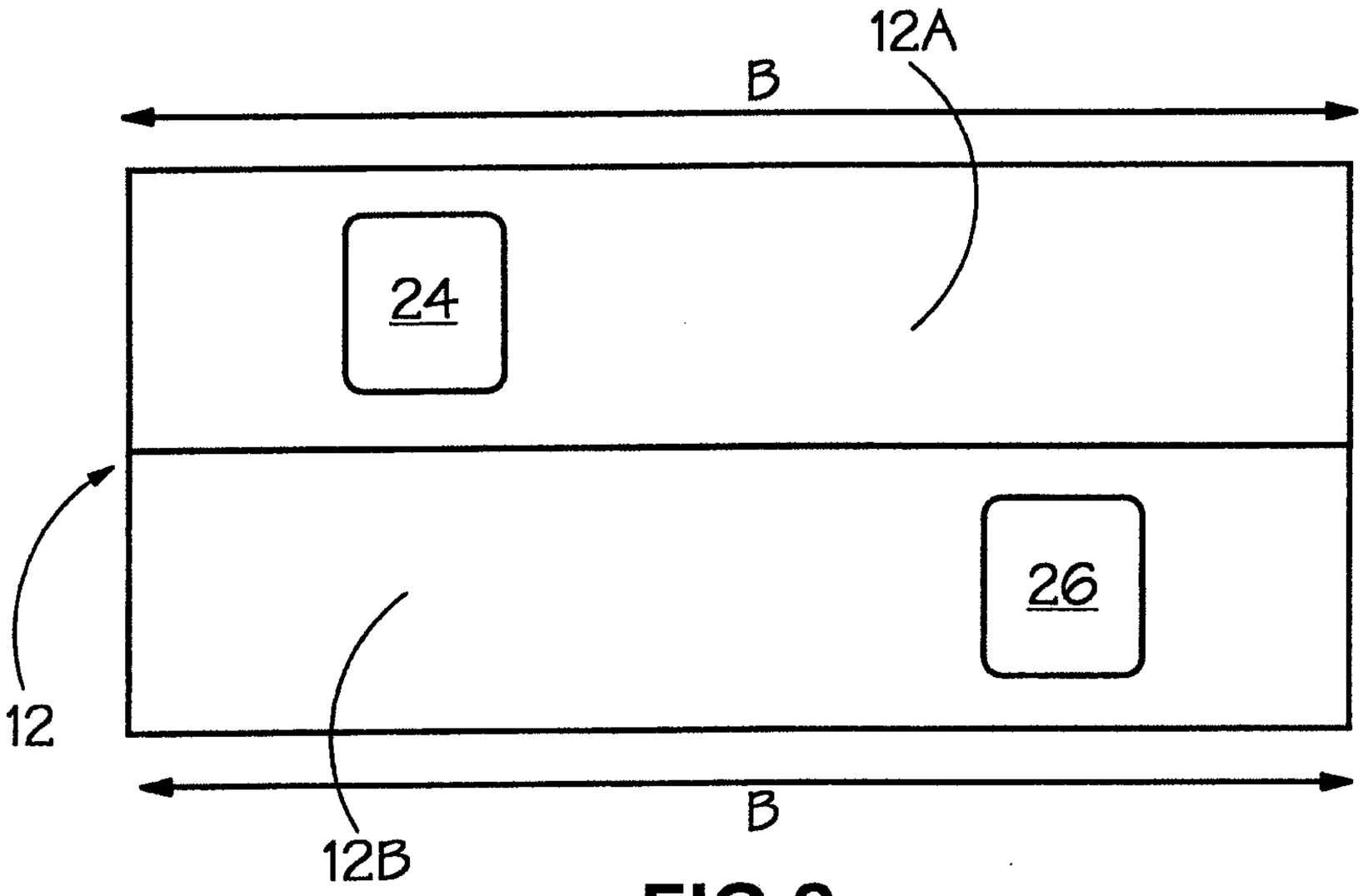


FIG.2.

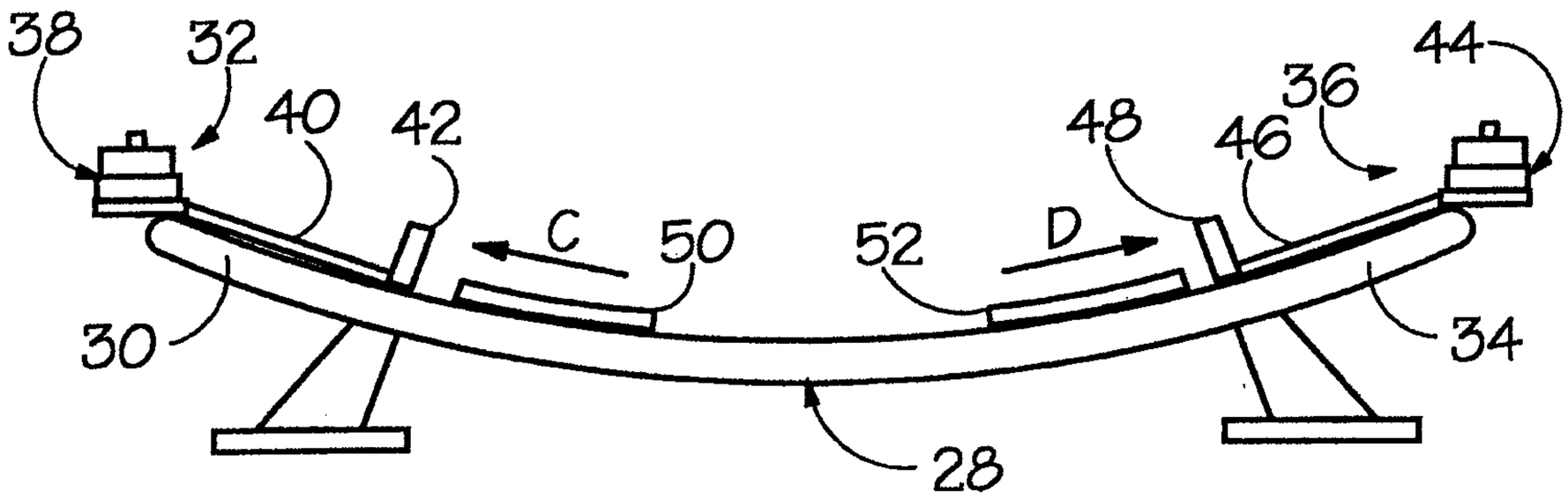


FIG.3.

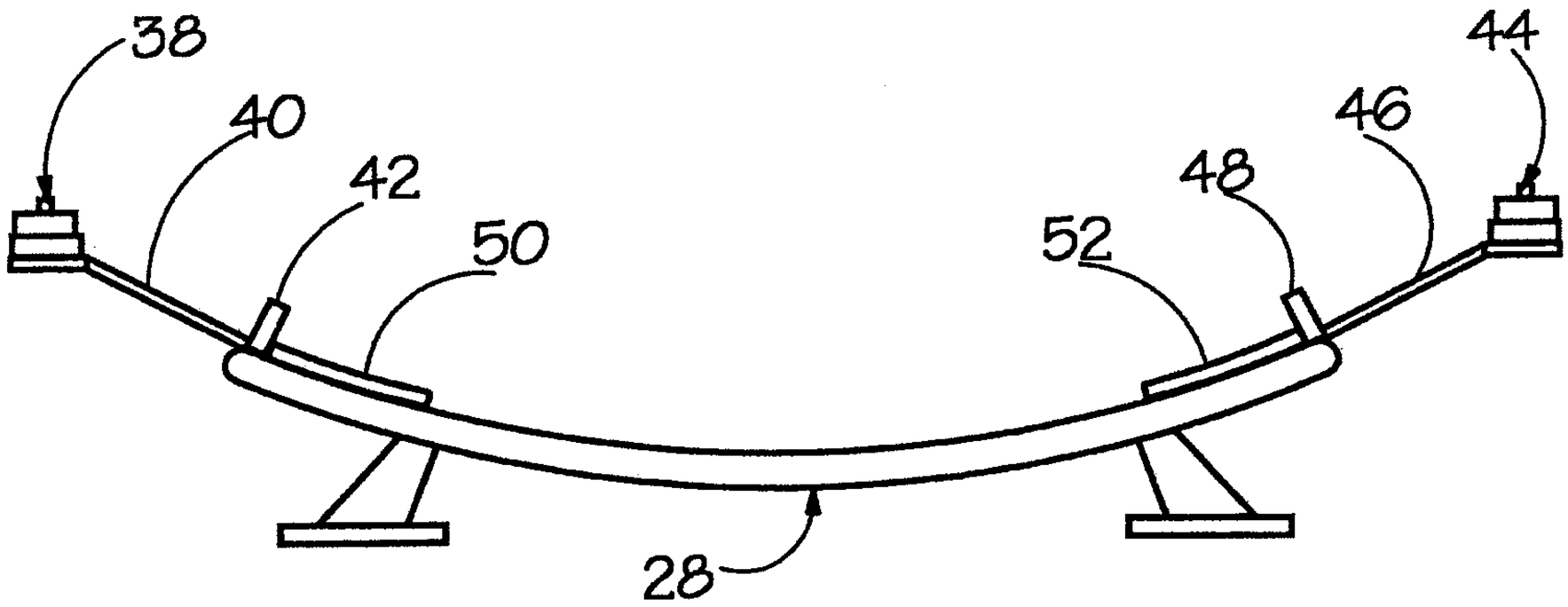

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FIG.4.

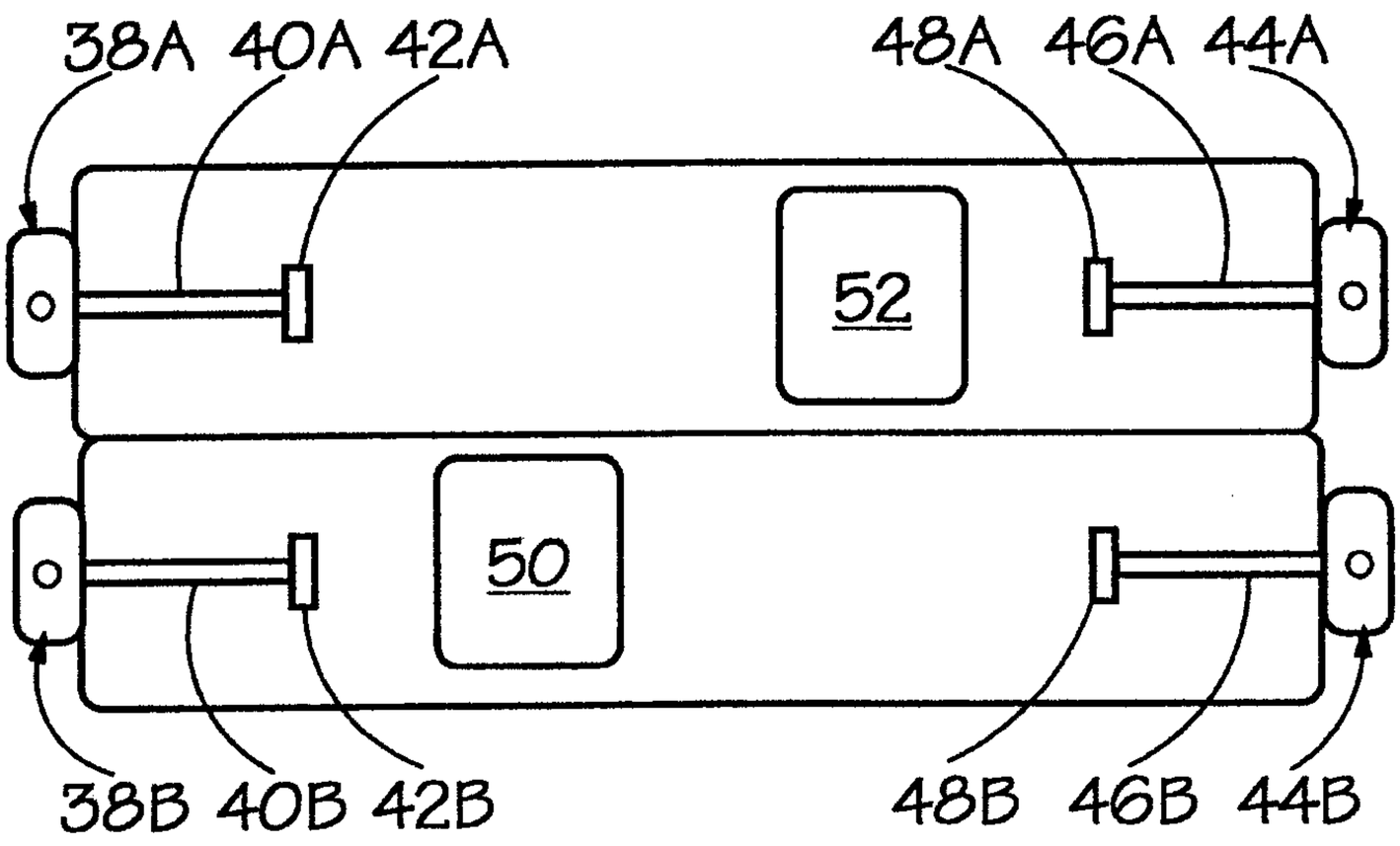

38A 40A 42A
48A 46A 44A
52
50
38B 40B 42B
48B 46B 44B

FIG.5.

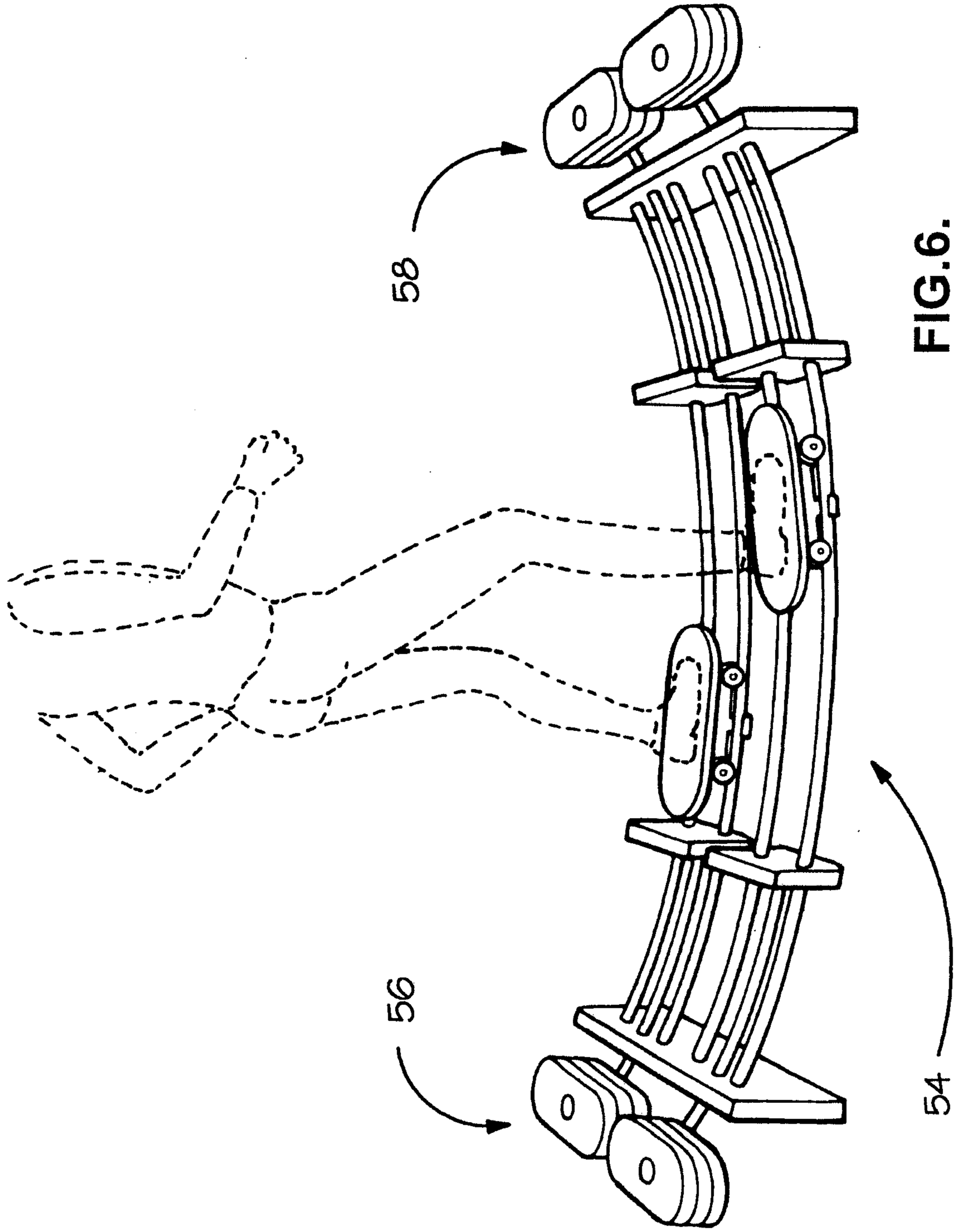


FIG.6.

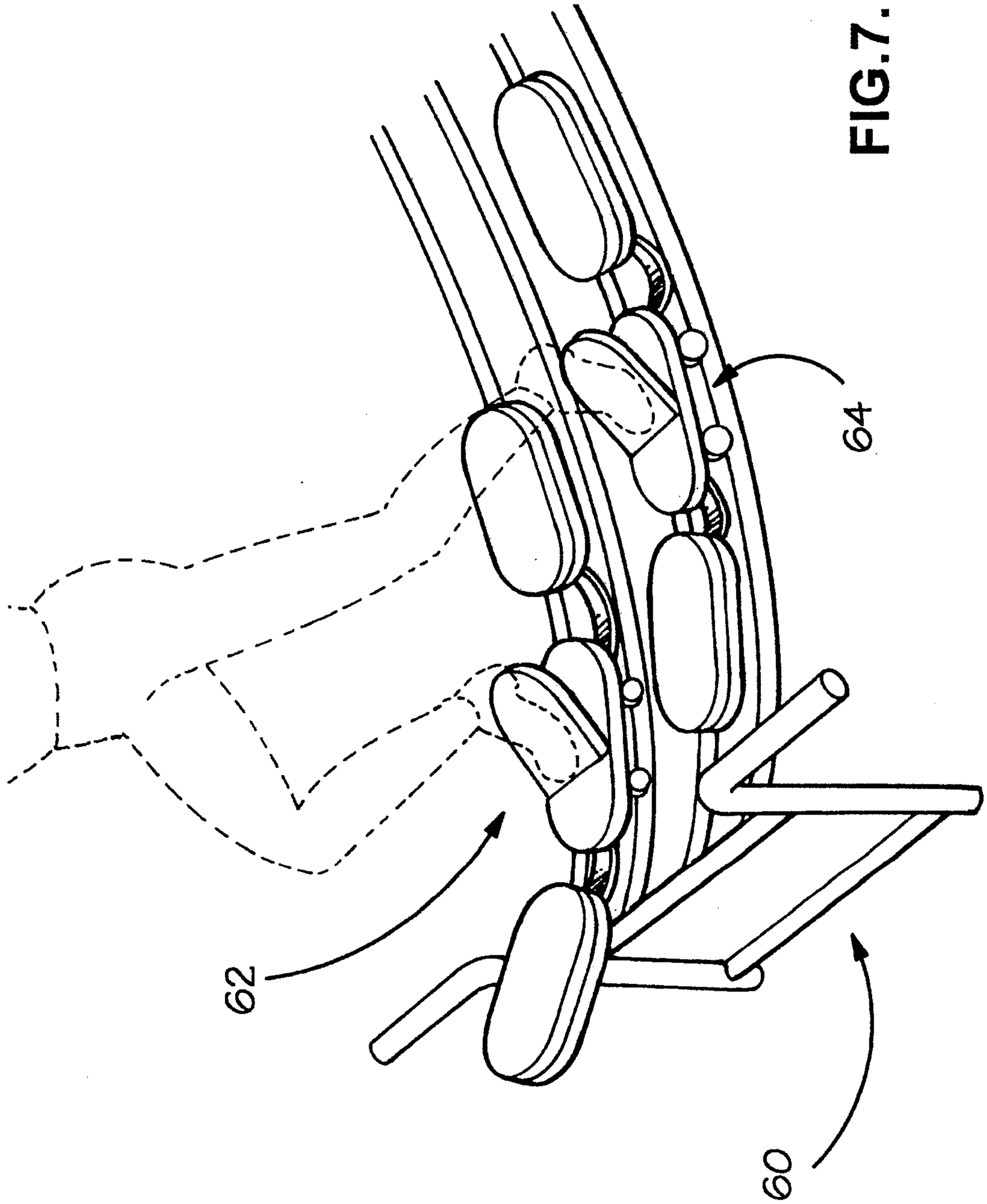


FIG.7.

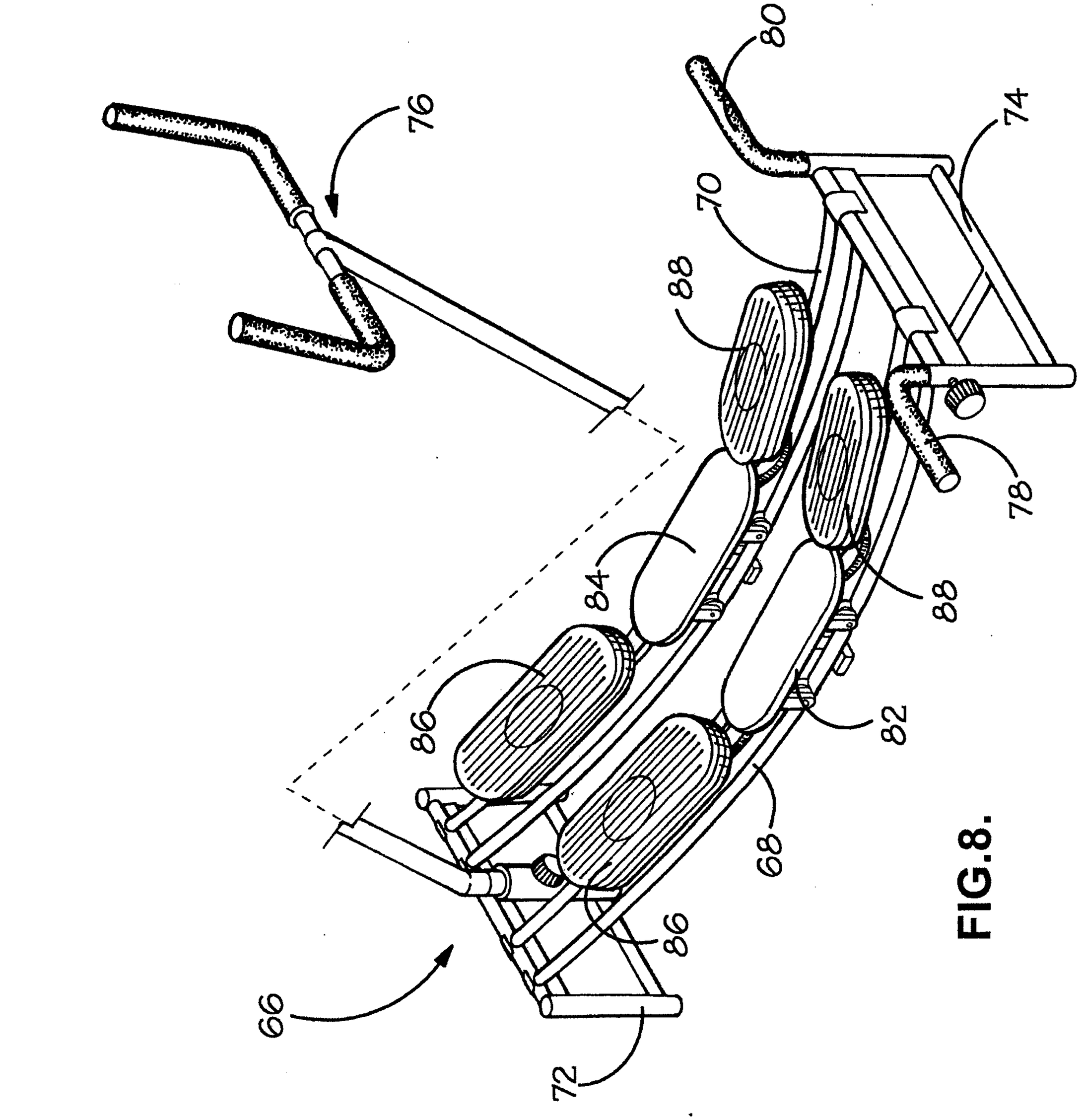


FIG.8.

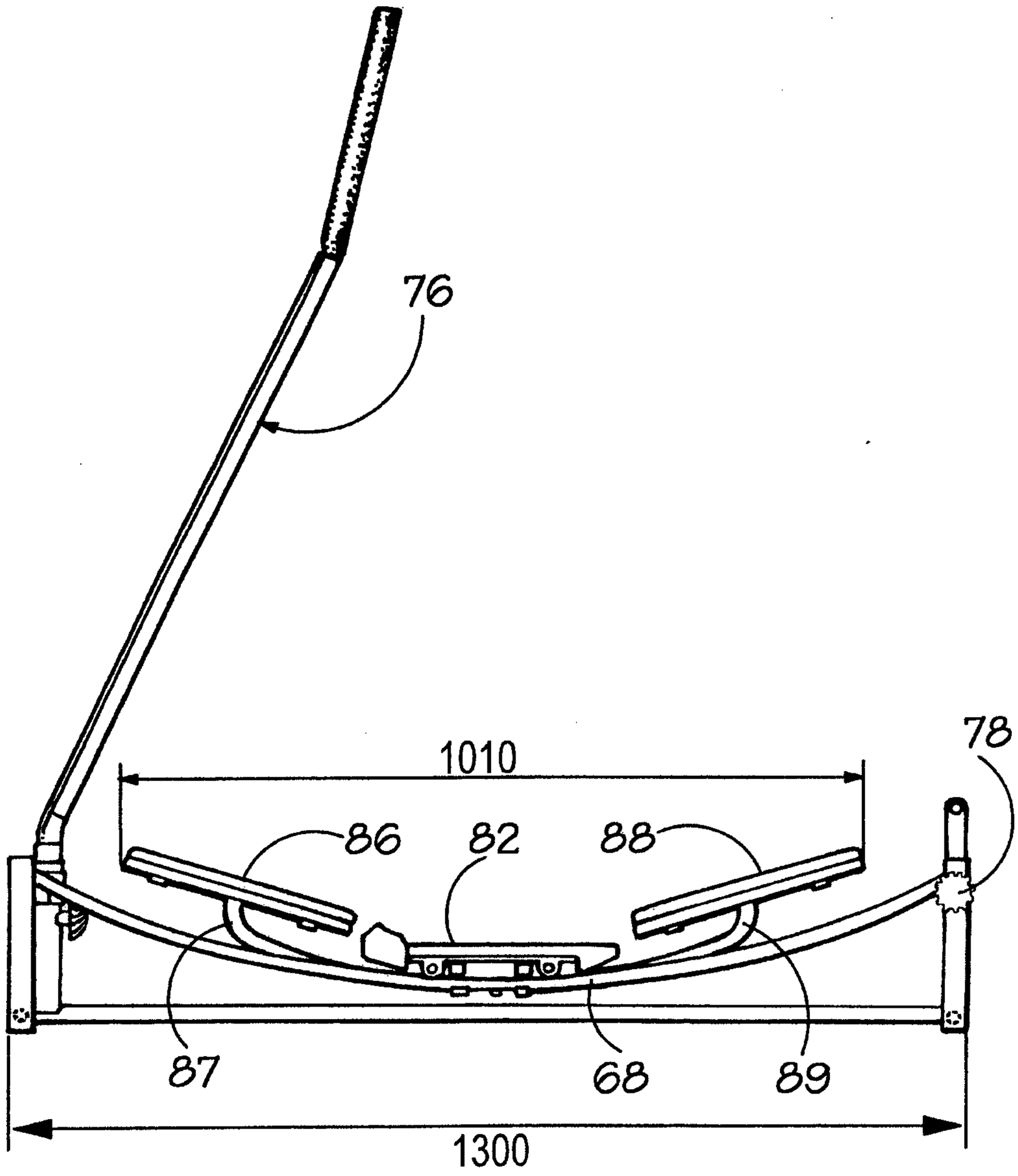


FIG.9.

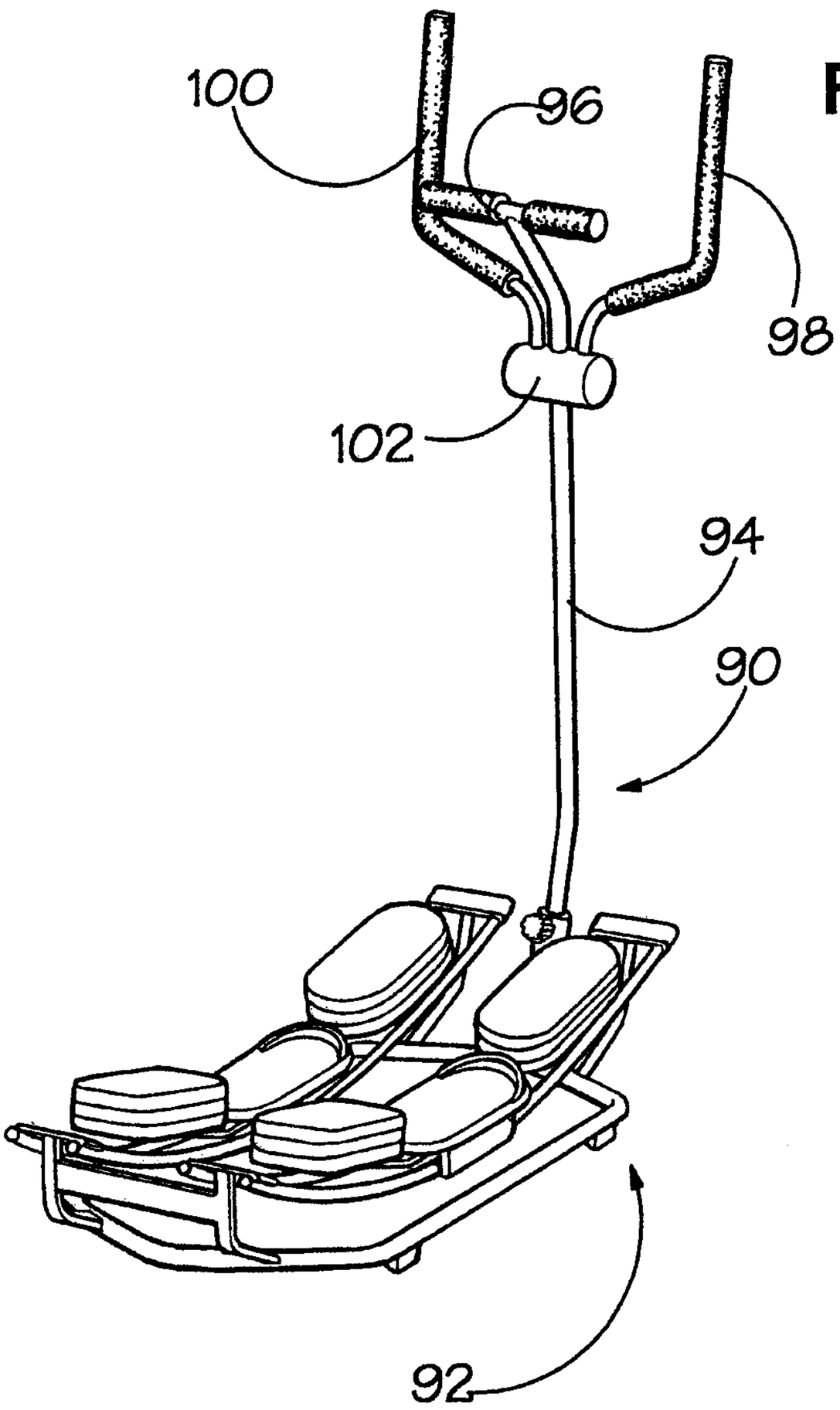


FIG.10.

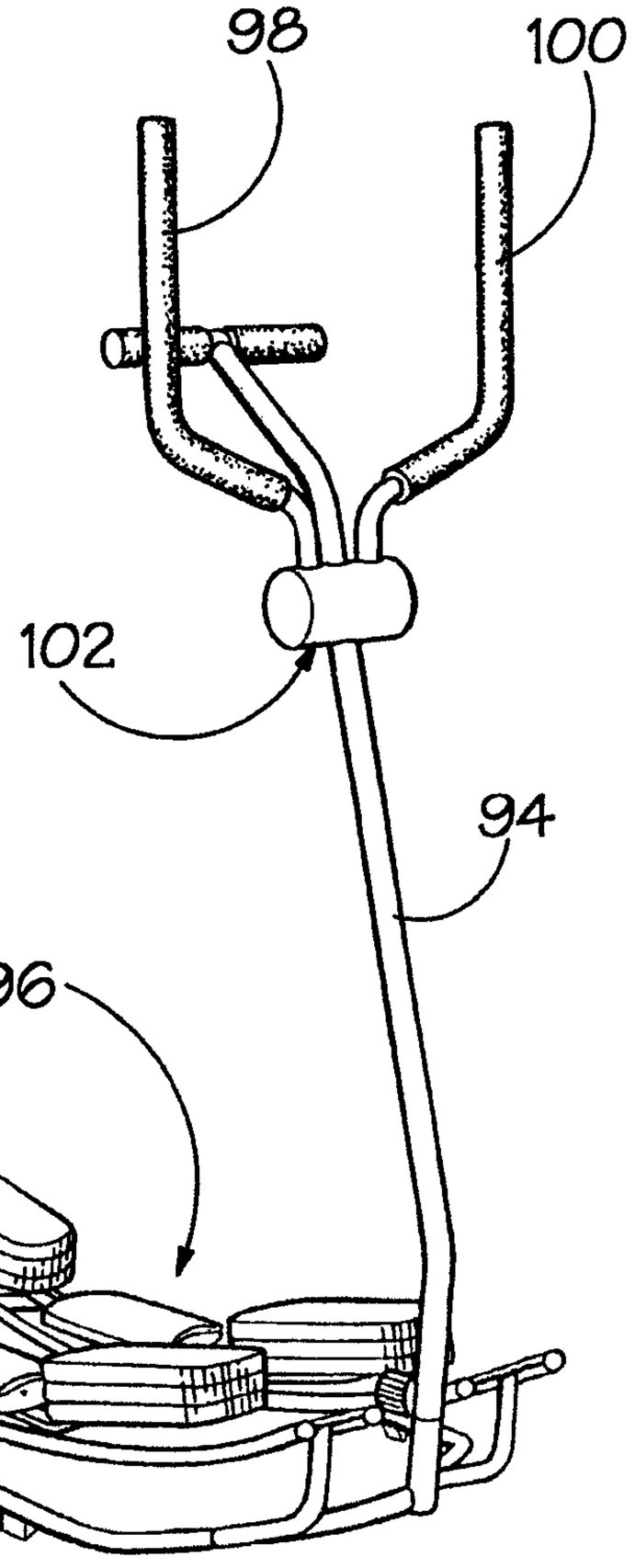
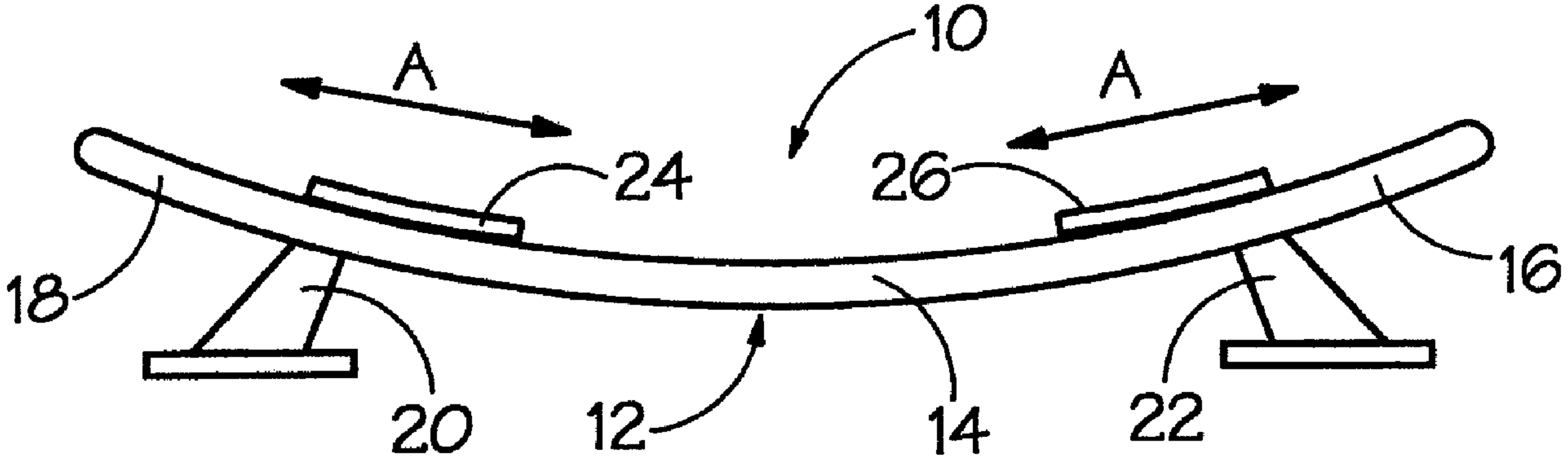


FIG.11.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