(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 1 331 025 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
30.07.2003 Bulletin 2003/31

(51) Int Cl.[7]: **A63B 24/00**, A63B 22/00

(21) Application number: **02023910.9**

(22) Date of filing: **24.10.2002**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR IE IT LI LU MC NL PT SE SK TR
Designated Extension States:
AL LT LV MK RO SI

(30) Priority: **23.01.2002 CN 02101206**

(71) Applicant: **Chang, Huang-Tung**
Ho-Mei Town, Chang-Hua Hsien (TW)

(72) Inventor: **Chang, Huang-Tung**
Ho-Mei Town, Chang-Hua Hsien (TW)

(74) Representative:
Winter, Brandl, Fürniss, Hübner, Röss, Kaiser, Polte Partnerschaft
Patent- und Rechtsanwaltskanzlei
Alois-Steinecker-Strasse 22
85354 Freising (DE)

(54) Interactive device for exercise with music and speech

(57) An interactive device for interactively operating music and speech with moving frequencies of exercisers comprises a sensor for sensing the moving frequency of the exerciser, and converting the frequency as signals for outputting; and the sensor is installed to a moving range of the exerciser which has a sector area; and a speech rhythm system for receiving the frequency signal from the sensor; the speech rhythm system; and for displaying music and speech according to the received signals in the speech rhythm system. The device is used with an exercise machine. The speech rhythm system includes a data microprocessor, an audio frequency output device, a built in music IC device, a speech device, a display and a plurality of adjust switches. The data microprocessor sets the moving frequency of the exerciser is based on the rhythm of the music IC.

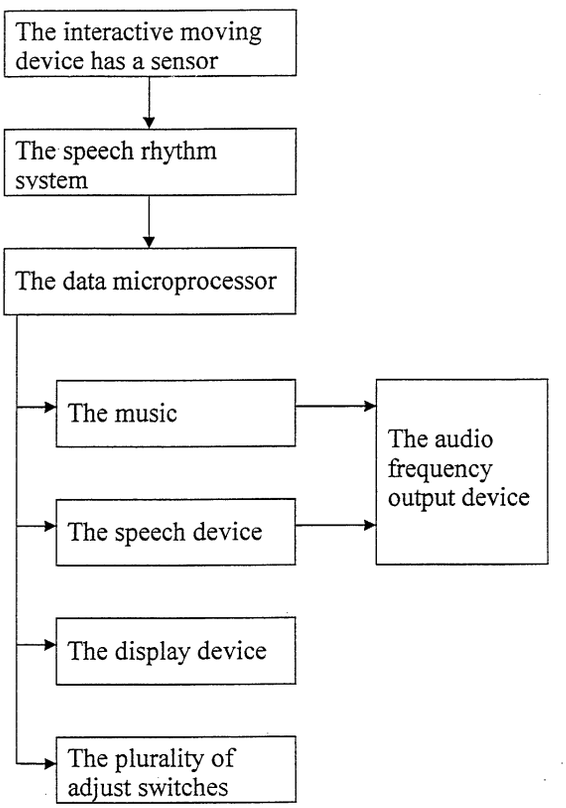

FIG3

EP 1 331 025 A1

Description

BACKGROUND OF THE INVENTION

[0001] The present invention relates to exercise machines, and particularly to an interactive device for interactively operating music and speech with moving frequencies of exercisers.

[0002] The exercise machines are popular machines used in home or other physical training places. However, the prior art design is dull, which only provides the function of training human body, but lack of some amusement designs so that the user feel dull as the user uses the exercise machine. Thereby, there is a demand for a novel design which can improve the defects in the prior art.

SUMMARY OF THE INVENTION

[0003] Accordingly, the primary object of the present invention is to provide an interactive device for interactively operating music and speech with moving frequencies of exercisers, the device comprises a sensor for sensing the moving frequency of the exerciser, and converting the frequency as signals for outputting; and the sensor is installed to a moving range of the exerciser which has a sector area; and a speech rhythm system for receiving the frequency signal from the sensor; the speech rhythm system; and for displaying music and speech according to the received signals in the speech rhythm system. The device is used with an exercise machine. The speech rhythm system includes a data microprocessor, an audio frequency output device, a built in music IC device, a speech device, a display and a plurality of adjust switches. The data microprocessor sets the moving frequency of the exerciser is based on the rhythm of the music IC so that the rhythm of the music from the music IC is controlled by the moving frequency of the exerciser.

[0004] The various objects and advantages of the present invention will be more readily understood from the following detailed description when read in conjunction with the appended drawing.

BRIEF DESCRIPTION OF THE DRAWINGS

[0005]

Fig. 1 is a schematic view showing the installation of a sensor in the present invention.

Fig. 2 is a schematic view showing that the sensor of the present invention is installed to a sector area.

Fig. 3 is a system diagram of the speech rhythm system of the present invention.

Fig. 4 shows one embodiment of the present invention which is installed to a running machine.

Fig. 5 shows one embodiment of the present invention which is installed to a horse-like machine.

Fig. 6 is a lateral view of Fig. 5.

Fig. 7 shows one embodiment of the present invention which is installed to a boxing testing machine.

Fig. 8 shows one the present invention of the present invention which is installed to the health treading path machine.

Fig. 9 shows one the present invention of the present invention which is installed to a rhythm pedal.

Fig. 10 shows one the present invention of the present invention which is used to a waist exercise machine.

Fig. 11 shows one embodiment that the present invention is used to a treading exercise machine.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0006] The object of the present invention is to design an interactive music and device for the different exercise machines which circularly move around an axial center or move forwards and backwards repeatedly, or move upwards and downwards reciprocally, such as treading machines, elliptical moving machines, bicycles, elastic beds, etc. The interactive moving device has a sensor 10 and a speech rhythm system 20. The sensor 10 receive the moving frequency and then transfers the frequency to the speech rhythm system 20. The sensor 1 is installed at a maximum swinging area A of an action linkage 200 of the axial center 100 (or a circle area B of the action linkage 200) for getting a correct frequency, as shown in Figs. 1 and 2. The speech rhythm system 20 includes a data microprocessor 21, an audio frequency output device 22, a built in music IC device 23, a speech device 24, a display device 25, a plurality of adjust switches 26, etc.

[0007] The data microprocessor 21 is a multi-functional processor having the functions of selecting songs in an music IC 23 for matching the action of exercisers; informing the exercisers to act quickly or slowly when the speech device 24 changes songs; speeding the frequency of the exercise by a strong rhythm when frequency of exercise is too slow, and vice versa; setting that the exercises can adjust the rhythm of the music by the action of the exercisers.

[0008] The audio frequency output device 22 serves to transmit the rhythm of the music IC 23 and the sound of the speech device 24.

[0009] The music IC 23 is built with many songs.

[0010] The speech device 24 is recorded with many speech sections used in singing.

[0011] The display device 25 can display the exercise time interval, times of action, scores, consuming heat value, etc.

[0012] The plurality of adjust switches 26 include song selection buttons, time interval setting buttons, action times setting buttons, audio output buttons, score estimation buttons, data clear buttons, etc.

[0013] By above element, the speech rhythm system 20 of the present invention can adjust the rhythm of emitting music according to the frequency of the exerciser. Moreover, by the emission of the speech rhythm system 20, the exercise, music and amusement are combined to present a perfect effect.

[0014] Furthermore, referring to Figs. 3 and 4, it is illustrated that the running machine 30 is used with the present invention. The running machine 30 is installed with the speech rhythm system 20 and the sensor 10 of the present invention. The sensor 10 is installed on a running belt 31. The speech rhythm system 20 is installed in an instrument controller 32. The moving signal received by the sensor 10 is transferred to the data microprocessor 21 in the speech rhythm system 20. Then the speech rhythm system 20 will enter into other steps with the setting of the adjust switches 26. The audio frequency output device 22 can output rhythm according to the frequency of the exerciser by the song selection of the music IC 23.

[0015] Moreover, the user may select to actuate the speech device 24 so that the speech device 24 emits speech based on the received signal of the data microprocessor 21 for informing the exerciser to adjust the frequency of exercise.

[0016] Moreover, the rhythm can be controlled according to the frequency of the action. The emitting songs can be set by pushing buttons. Each time the sensor 10 is touched, a rhythm is emitted. The speed of the rhythm is controlled by the exercisers. The scores displayed on the display 25 are decided by the matching of the frequency of the action of the exerciser and the rhythm of the music.

[0017] Referring to Figs. 3, 4, and 5, the present invention is used in a horse-like exercising machine 40 which includes a front support rod 41,a rear support rod 42, a cushion support rod 43, a handle rod 44, a linkage 45 and a damper 46. One end of the sensor 10 is connected to the data microprocessor 21 of the speech rhythm system 20 at a lower end of the rear support rod 42. The speech rhythm system 20 and the music IC 23 are same as the above mentioned embodiments, while the music recorded in the music IC 23 can be changed to suit different conditions.

[0018] When the sensor 10 sensed the frequency from the linkage 45, the signal is transferred to the data microprocessor 21 of the speech rhythm system 20. Then the speech rhythm system 20 executes its functions according to the settings of the adjust switches 26. The data microprocessor 21 enters into the song selection of the built in music IC device 23 according to the amount of the received data so that the emitting music frequency can be matched to the action frequency of the exercisers.

[0019] If the user selects to actuate speech device 24, then during changing music, the speech device 24 will determine the speech to be emitted based on the signals of the data microprocessor 21 so as to inform the user to quick or slow his (or their) actions.

[0020] Moreover, the rhythm can be controlled by the exerciser. When the sensor 10 is touched, the rhythm recorded i the music IC 23 will be emitted. Further, scores are decided by the matching of the frequency of the action of the exerciser and the rhythm of the music.

[0021] The embodiments that the present invention used in other exercise machines are similar to above said embodiments and thus the details will not be described further.

[0022] Furthermore, referring to Figs. 3 and 7, the present invention is used to a boxing test machine 50 which includes a main support frame 51. The main frame 51 is installed with the speech rhythm system 20 and a transversal support frame 52 at an upper side thereof. The distal end of the transversal support frame 52 has a sensor 10, an elastomer 53 and a boxing bag 54. One end of the sensor 10 is connected to the speech rhythm system 20.

[0023] When the boxing bag 54 is collided, the elastomer 53 above the bag will vibrate, and the vibration signal is transferred to the speech rhythm system 20 through the sensor 10. The data microprocessor 21 of the speech rhythm system 20 will execute necessary steps according to the vibration frequency with the setting in the adjust switches 26. Then the data microprocessor 21 will select songs in the built in music IC device 23 according to the amount of the receiving data. Moreover, the speech device 24 can be actuated to emit preset speech which is based on the condition of the boxing exerciser or based on the vibration of the elastomer.

[0024] Furthermore, with reference to Figs. 3 and 8, the present invention can be used a health walking path machine 60. The machine 60 has a base one end of which has a main body 61 which is installed with a speech rhythm system 20. A top of the main body 60 has a controller 62. The controller 62 is installed with a plurality of adjust switches 26 which is connected to the circuit of the speech rhythm system 20. The platform of the base is installed with a plurality of trading sensor 10. A bottom of the treading sensor 10 is firmly secured with two plates. An elastomer is formed between the two plates. Normally, the two plates are separated and the top of the plate at a lower end is connected to a touching plate which is connected to the speech rhythm system 20 by conductive wires. The sensor 10 serves to sense the vibration of the machine 60. With the setting of the adjust switches 26 of the speech rhythm system 20 so as to play music or speech. When the upper plate is pressed so that the elastomer is reduced, then the upper plate will contact the touching plate at the upper surface of the lower plate so as to conduct. When the pressure disappears, the two plates will restore to the original position. The path in the machine has a plurality of nose portions which have different sizes and distributes on the different part of the path and the sensor 10 may be formed with a plurality of sub-sensors which have different colors.

[0025] When the user operates the health walking path machine 60, the nose portion being treaded can be determined by the color of the sub-sensor 10.

[0026] Referring to Fig. 3 and 9, it is illustrated that the present invention is used to a rhythm pedal. The pedal 70 has a U shape and a top thereof is installed with a sensor 10. One end of the sensor 10 is connected to the data microprocessor 21 of the speech rhythm system 20 at a lateral side of the pedal of sensing the treading frequency of the user.

[0027] Referring to Figs. 3 and 10, it is illustrated that the present invention is installed to a waist moving machine. A front end of the base 81 of the waist moving machine 80 is installed with a handle rod 82. An instrument panel 83 is installed on the handle rod 82. A rear end of the base 81 is pivoted with a cambered transversal rod 84. Two ends of the transversal rod 84 have pedals 85. The sensor 10 is installed to the rear end of the base 81. When the transversal rod 84 moves leftwards and rearwards or spirally, the sensor 10 will be touched and then moved. The speech rhythm system 20 is installed to the control instrument panel. One end of the data microprocessor 21 is electrically connected to the sensor 10. When one pedal 85 is treaded, one pedal 85 will move circularly. The transversal rod 84 will touch the sensor 10 intermittently. The sensor 10 will receive the moving frequency and then transfers signal to the data microprocessor 21. Thereby, by the adjust switches 26 of the speech rhythm system 20, the speech rhythm system 20 or the speech device 24 can play necessary music or speech.

[0028] Referring to Figs. 3 and 11, it is illustrated that the present invention is installed to a treading exercise machine 90. In one longitudinal tube 91 of the machine 90 has a speech rhythm system 20 of the present invention. Two sides of the upper end of the tube 91 are extended with posts 92. End face of the post 92 has the sensor 10 for receiving the frequency of the pedal 93 of the end face 921 of the post 92 so as to transfer signals to the microprocessor 21 of the speech rhythm system 20. With the settings of the switches 26 of the speech rhythm system 20 at the top of the tube 92, the step of emitting music or speech can be performed, however, these steps are identical to above said embodiments, and thus the details will not be described here.

[0029] The present invention is thus described, it will be obvious that the same may be varied in many ways. Such variations are not to be regarded as a departure from the spirit and scope of the present invention, and all such modifications as would be obvious to one skilled in the art are intended to be included within the scope of the following claims.

Claims

1. An interactive device for interactively operating music and speech with moving frequencies of exercisers, the device comprising:

   a sensor for sensing the moving frequency of the exerciser, and converting the frequency into frequency signals for outputting; and the sensor being installed in a moving range of the exerciser which has a sector area;
   a speech rhythm system for receiving the frequency signal from the sensor; the speech rhythm system; and for displaying music and speech according to the received signals in the speech rhythm system.

2. The device as claimed in claim 1, wherein the device is used with an exercise machine which circularly move around an axial center or move forwards and backwards repeatedly, or move upwards and downwards reciprocally.

3. The device as claimed in claim 1, wherein the exercise machine is selected from one of a group containing a running machine, a treading machine, an elliptical orbit exercise machine; a health treading machine; a boxing training machine, a rhythm treading plate, a waist exercise machine, a horse-like exercise machine, and an elastic bed.

4. The device as claimed in claim 1, wherein the speech rhythm system includes a data microprocessor, an audio frequency output device, a built in music IC device, a speech device, a display and a plurality of adjust switches.

5. The device as claimed in claim 3, wherein the audio frequency output device serves to output the music from the music IC and the speech from the speech device; the display displays the exercise time, moving frequency and times; scores, and consumed heats; the adjust switches include song selection buttons, time interval setting buttons, action times setting buttons, audio output buttons, score estimation buttons, data clear buttons; and the data microprocessor serves to play music according to the moving frequency of the exerciser in a preset time internal;

   wherein the data microprocessor sets the moving frequency of the exerciser is based on the rhythm of the music IC so that the rhythm of the music from the music IC is controlled by the moving frequency of the exerciser.

6. The device as claimed in claim 4, wherein data microprocessor actuate the score estimation button which estimate scores according to the moving frequency of the exercisers.

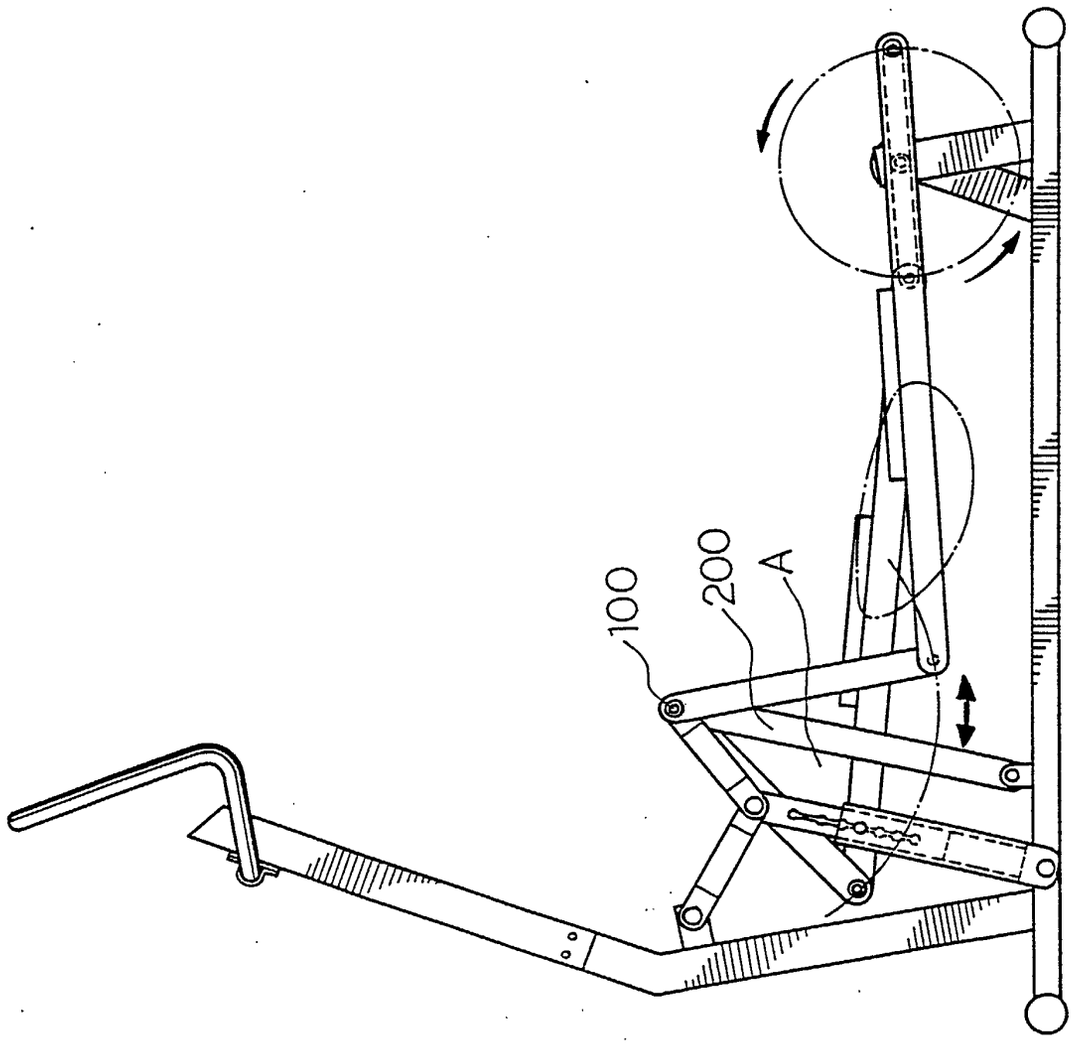

FIG 1

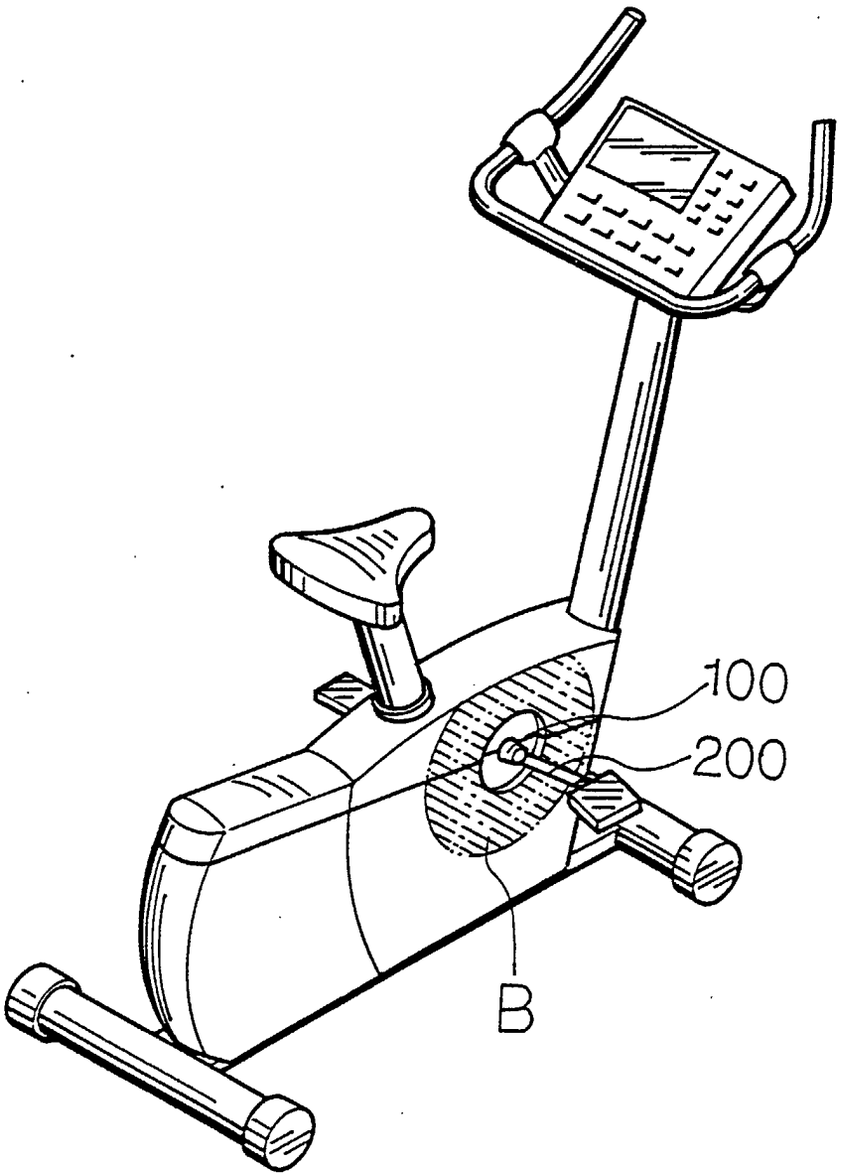

FIG2

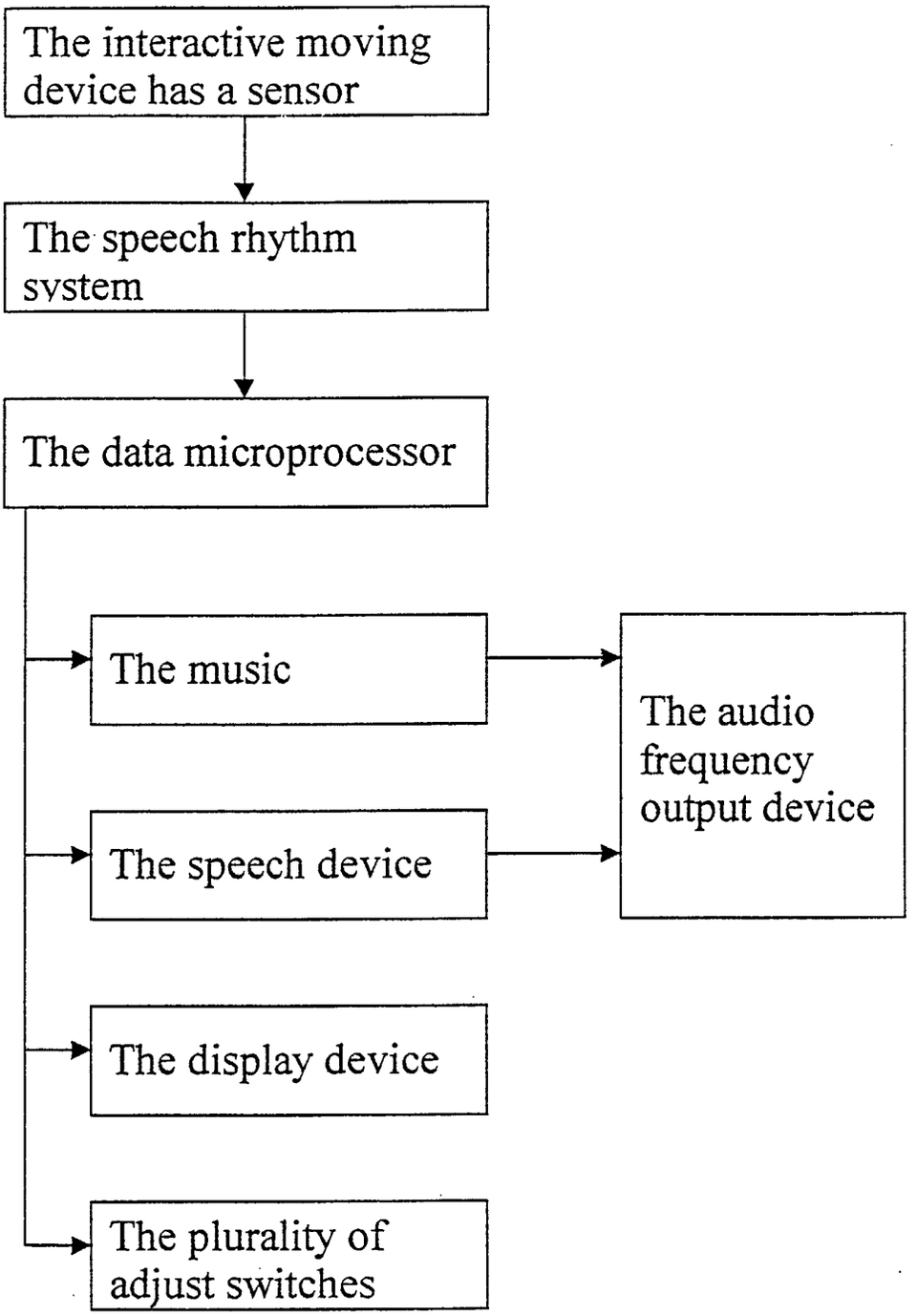
The interactive moving device has a sensor
The speech rhythm system
The data microprocessor
The music
The speech device
The display device
The plurality of adjust switches
The audio frequency output device

FIG3

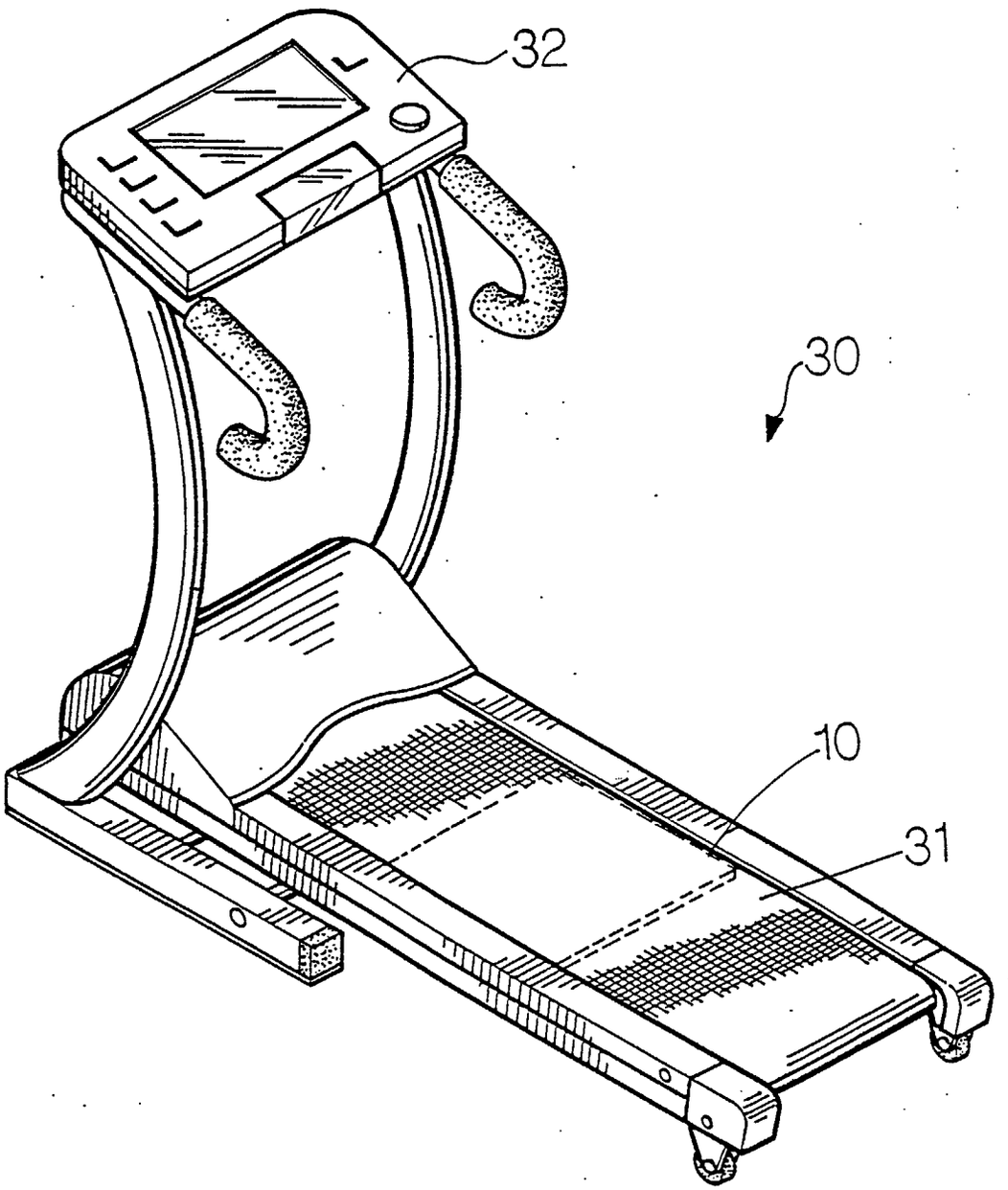

FIG4

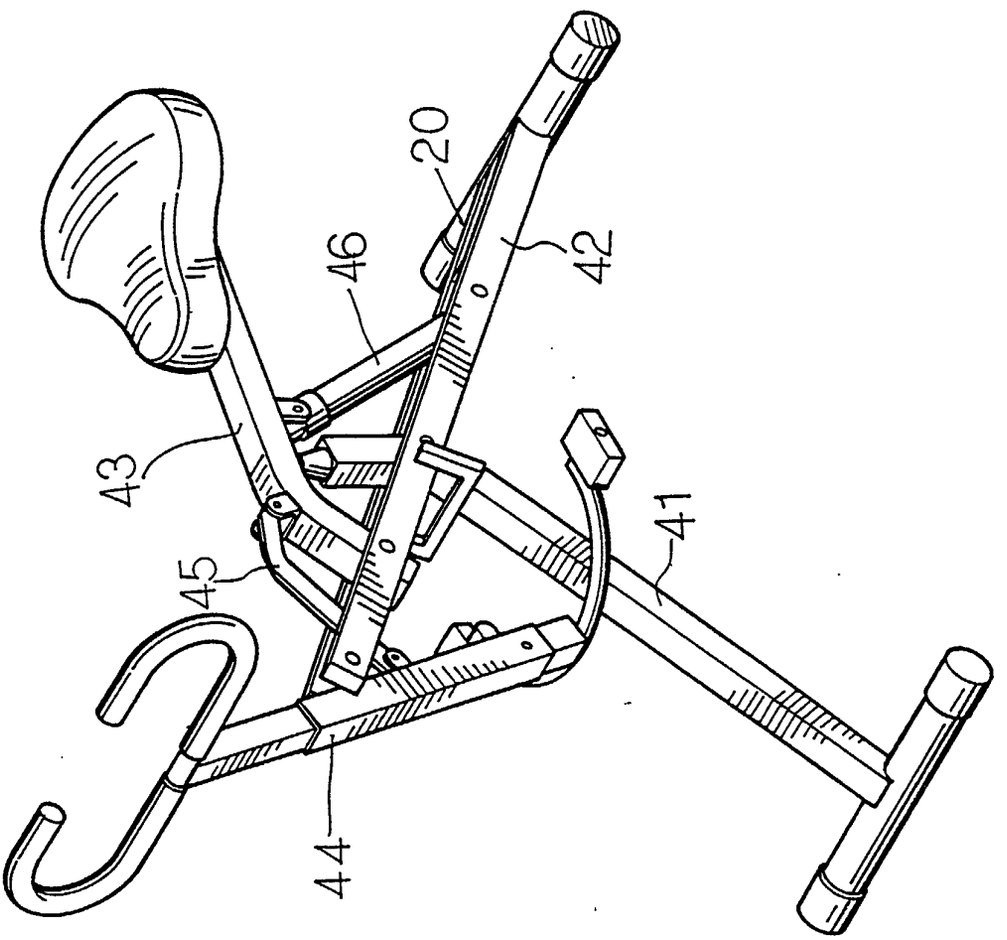

FIG5

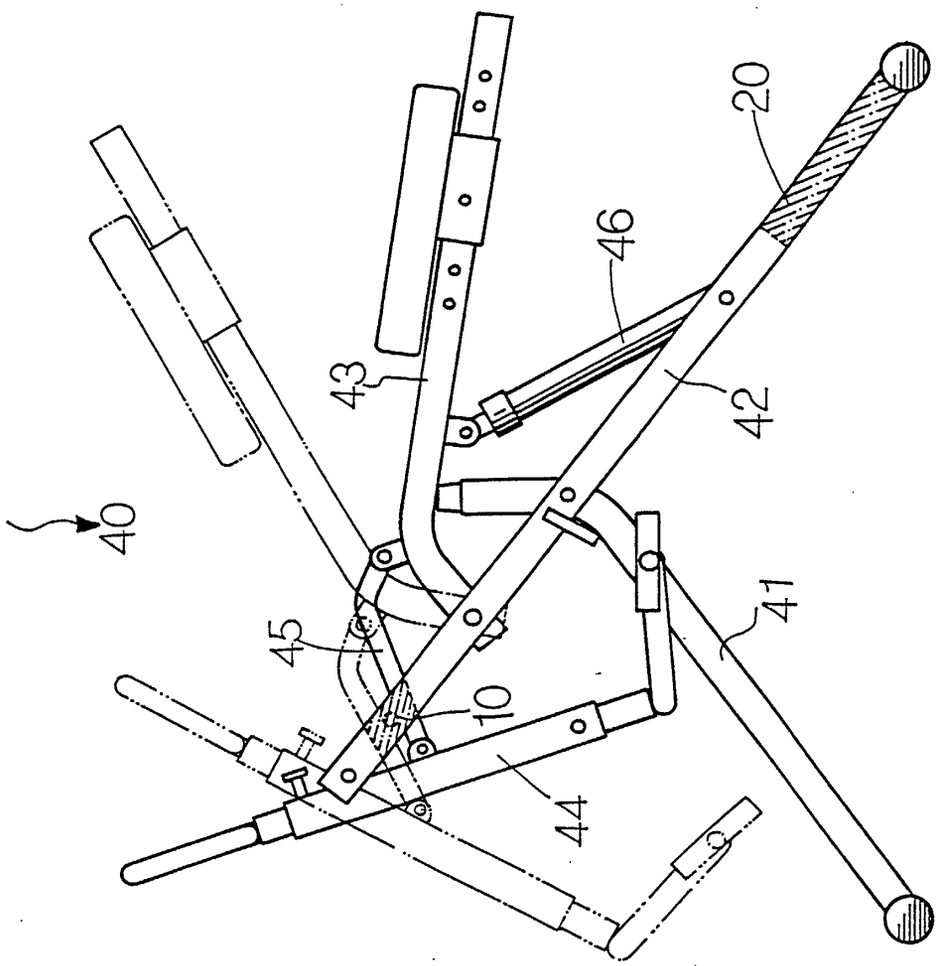

FIG6

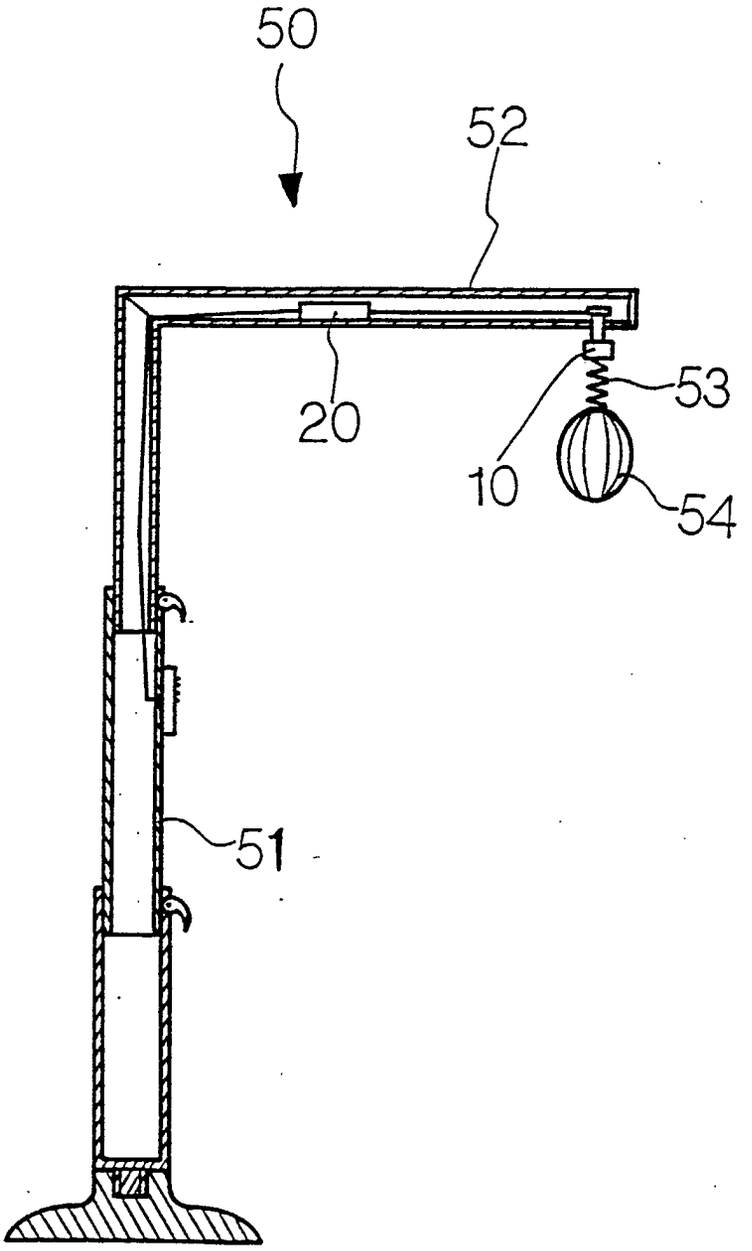

FIG7

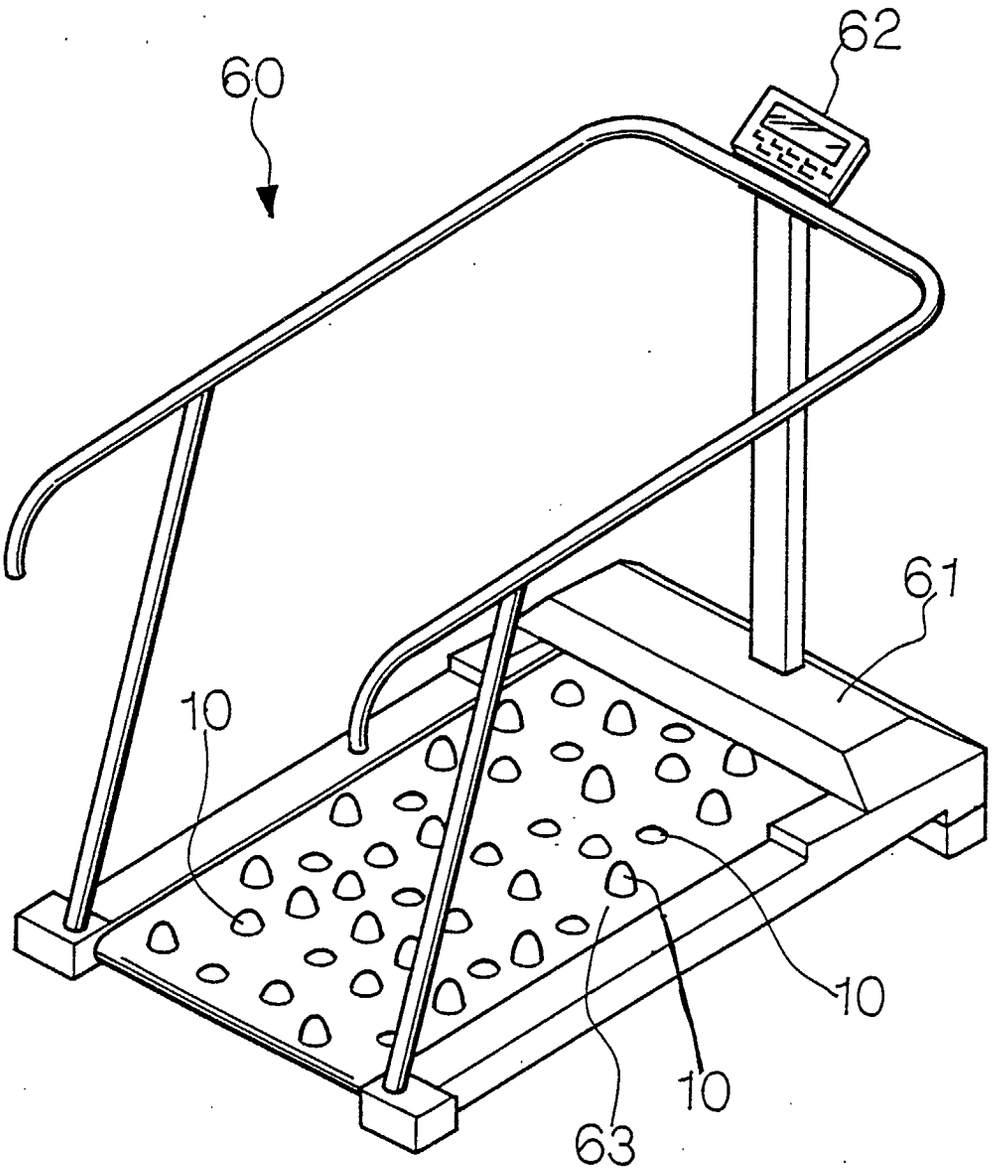

FIG8

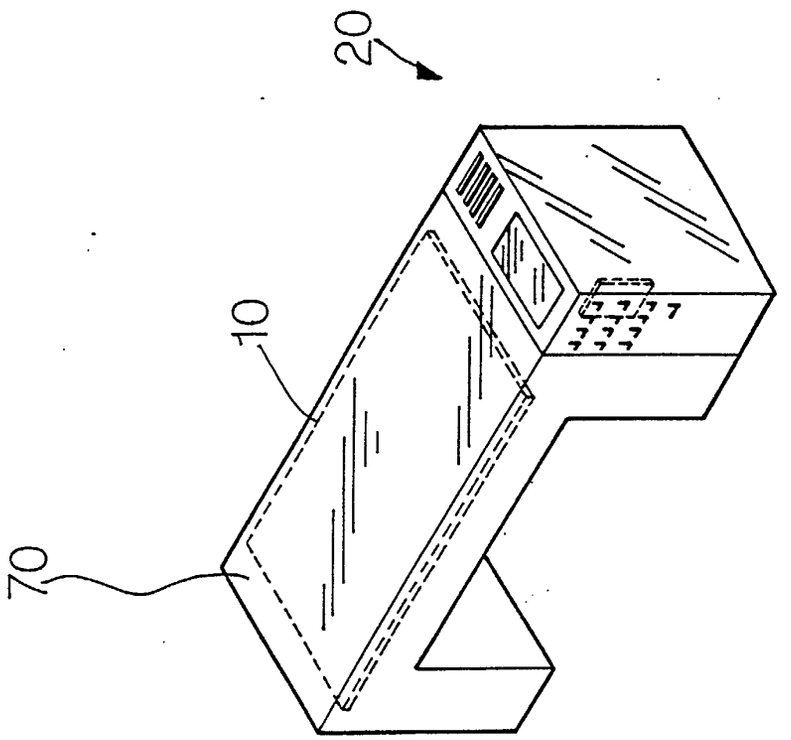

FIG9

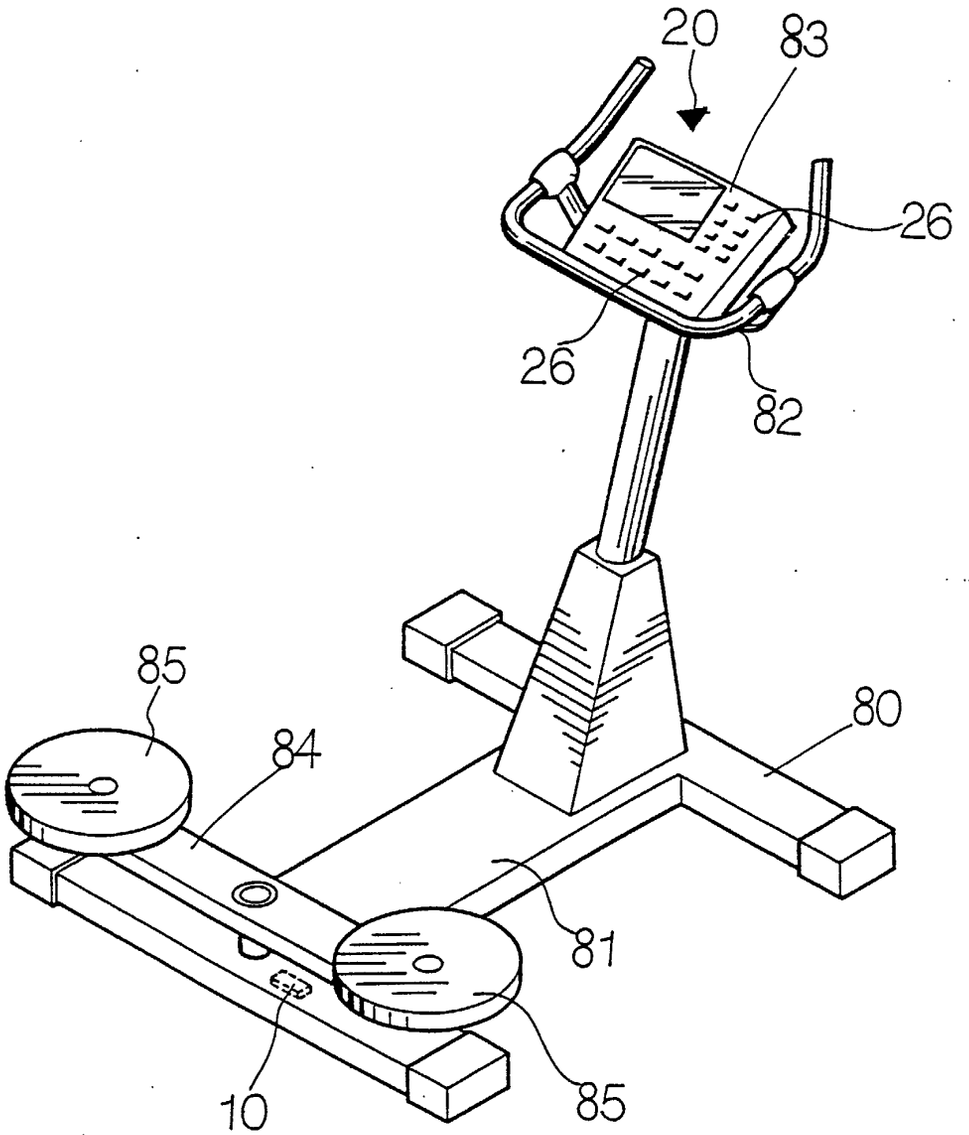

FIG 10

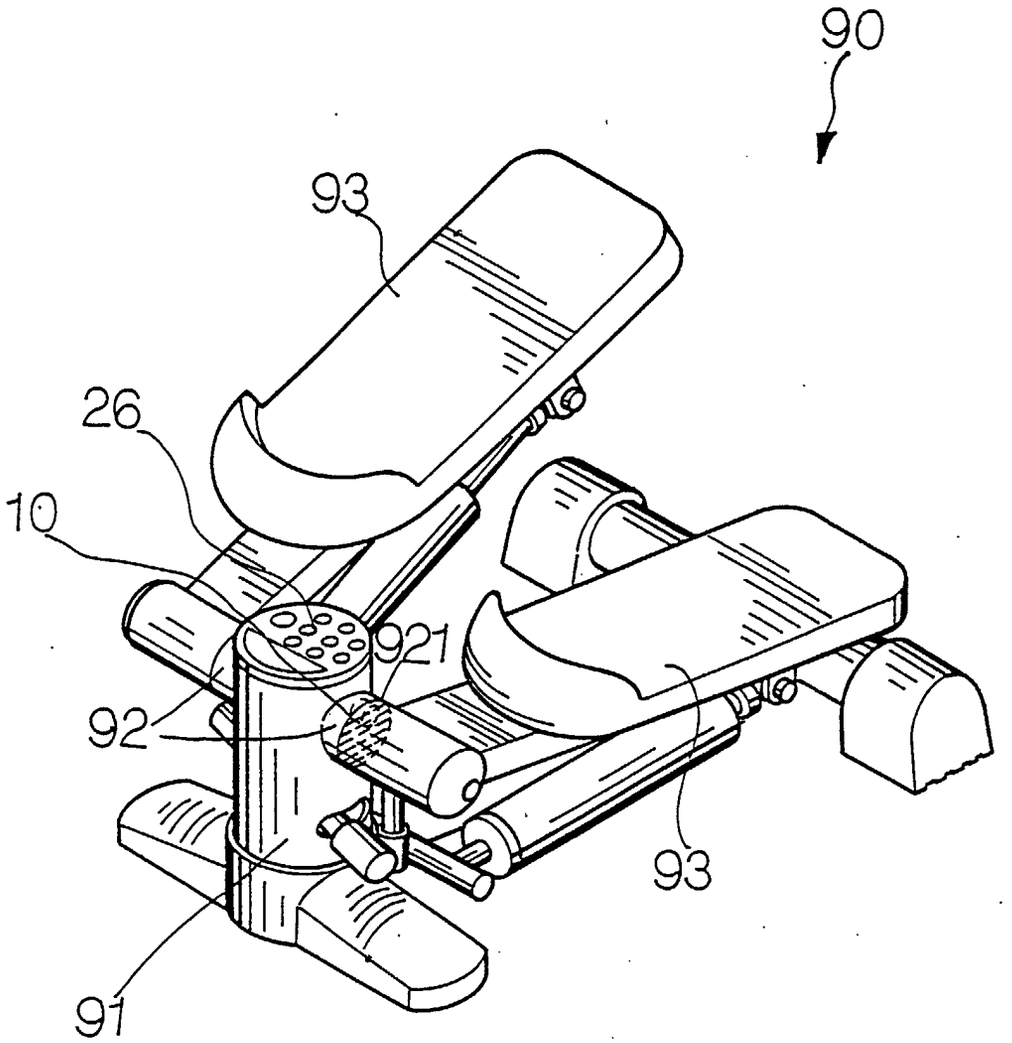

FIG11

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 02 02 3910

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	US 6 152 856 A (BACON BRUCE R ET AL) 28 November 2000 (2000-11-28) * the whole document * ---	1-6	A63B24/00 A63B22/00
X	WO 01 03777 A (ICON HEALTH & FITNESS INC) 18 January 2001 (2001-01-18) * the whole document * ---	1-6	
X	US 5 137 501 A (MERTESDORF FRANK L) 11 August 1992 (1992-08-11) * the whole document * ---	1-6	
X	US 5 830 107 A (BRIGLIADORO GEORGE R) 3 November 1998 (1998-11-03) * the whole document * -----	1-6	

TECHNICAL FIELDS SEARCHED (Int.Cl.7)

A63B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	28 March 2003	Millward, R

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 02 02 3910

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

28-03-2003

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 6152856 A	28-11-2000	AU 3283497 A	26-11-1997
		EP 0958002 A1	24-11-1999
		JP 2000510013 T	08-08-2000
		WO 9741925 A1	13-11-1997
		AU 5591298 A	27-11-1998
		EP 0998336 A1	10-05-2000
		JP 2001523140 T	20-11-2001
		WO 9850121 A1	12-11-1998
WO 0103777 A	18-01-2001	US 6312363 B1	06-11-2001
		BR 0012260 A	09-04-2002
		CN 1368896 T	11-09-2002
		EP 1194188 A1	10-04-2002
		WO 0103777 A1	18-01-2001
		US 2002165067 A1	07-11-2002
		US 6458060 B1	01-10-2002
		US 2002022551 A1	21-02-2002
		US 2002002103 A1	03-01-2002
		US 2002045519 A1	18-04-2002
US 5137501 A	11-08-1992	DE 3722468 A1	19-01-1989
		DE 3729691 A1	23-03-1989
		DE 3807241 A1	14-09-1989
		DE 3871957 D1	16-07-1992
		WO 8900064 A1	12-01-1989
		EP 0371042 A1	06-06-1990
		JP 2503996 T	22-11-1990
US 5830107 A	03-11-1998	NONE	

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82