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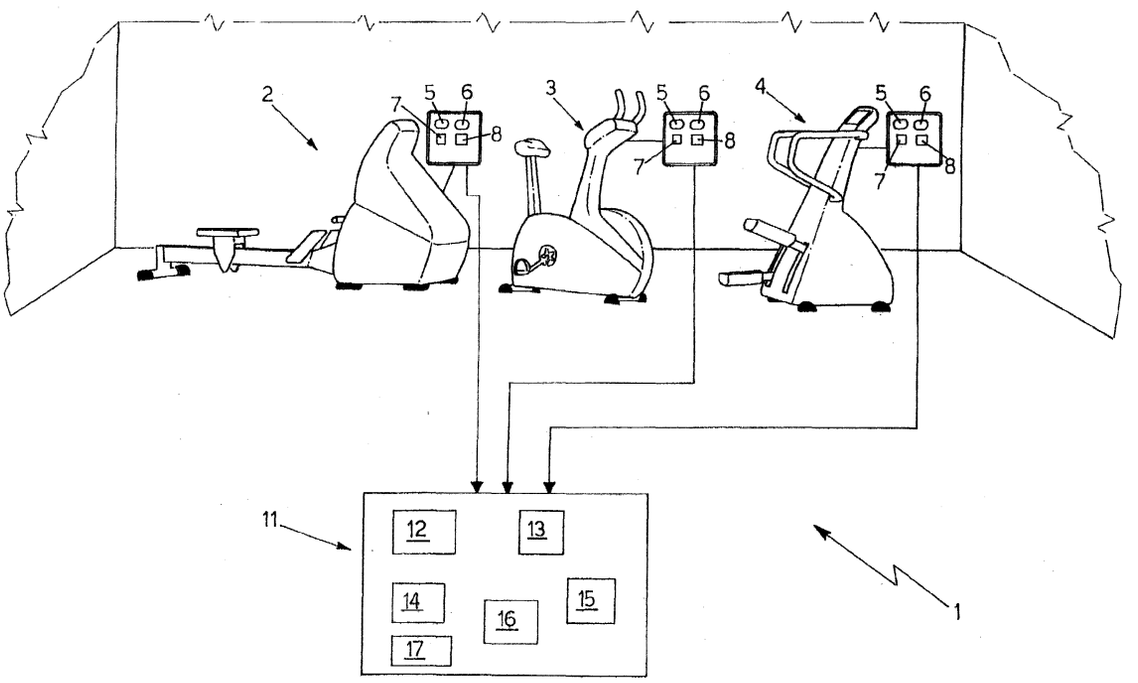
## (54) Improved gymnasium

(57) The gymnasium (1) has a number of fixtures for performing a series of physical exercises, and each of which has a device (7) for recognizing a biometric print of the user, such as a fingerprint, a voiceprint, or an eye-print based on analysis of the user's iris.

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## Description

**[0001]** The present invention relates to an improved gymnasium, and in particular to a gymnasium enabling identification and programmed training of the user.

**[0002]** As is known, a gymnasium is a room in which a number of exercise fixtures are variously arranged. In actual use, the user's training program is either not defined at all, in which case, the fixtures are used at random, or is defined by the user or by an instructor, normally on the basis of the user's physical parameters and attendance, but is hardly ever actually conformed with for lack of control. In some gymnasiums, payment is either periodic (e.g. so much a month, regardless of attendance) or is related to use of the fixtures, the user being issued a prepaid card authorizing use of a given fixture, which obviously lends itself to a certain amount of abuse in the form of card lending. In any case, regardless of how payment is made, there is no way of identifying the user and no control over the training program. Another important point to note is that, if not conducted properly, i.e. if not related to the user's physical requirements and attendance, any training program may result in serious physical disorders of the user.

**[0003]** It is an object of the present invention to provide an improved gymnasium designed to eliminate the aforementioned drawbacks.

**[0004]** In particular, the gymnasium according to the present invention provides for foolproof user identification and for defining, controlling and memorizing the training program of each user. Unmistakable identification of the user also enables the establishment of an efficient payment system.

**[0005]** According to the present invention, there is provided an improved gymnasium comprising a number of fixtures for performing a series of physical exercises, and characterized in that said fixtures each comprise a device for recognizing a biometric print of the user, such as a fingerprint, a voiceprint, or an eyeprint based on analysis of the user's iris.

**[0006]** The present invention will be described with reference to the accompanying drawing, which shows a nonlimiting embodiment of a gymnasium indicated as a whole by 1, and comprising a number of exercise fixtures, e.g. a rower 2, an exercise bicycle 3, a stepper 4, etc.

**[0007]** Each fixture comprises:

a number of sensors 5 for determining physical parameters of the user while operating the fixture, e. g. heartbeat by means of a cariofrequency meter, etc.;

a number of fixture operation mode sensors 6;

a user detection and recognition device 7, e.g. for recognizing a biometric print of the user, such as a fingerprint, voiceprint, or eyeprint (by analysis of the user's iris); and

a device 8 for indicating the user-assigned training program, any training program corrections while operating the fixture, any training program performance errors, and an alarm in the event of malfunctioning of the fixture or physical disorders of the user detected by sensors 5.

**[0008]** Device 8 may be acoustic and/or defined by a display. Gymnasium 1 also comprises an electronic central control unit 11 connected to all the exercise fixtures and for exchanging data relative to the recommended training program, fixture operation mode, detected physical user parameters, training program performance errors and any alarm signals.

**[0009]** Electronic central control unit 11 comprises a data processing block 12; a memory block 13 in which all the data relative to the user is memorized as it occurs; a comparing block 14, e.g. for comparing the training program actually being performed with the recommended program; a data display block 15; a user data printout block 16; and a data entry block 17.

**[0010]** In actual use, the instructor compiles a user file indicating particulars such as sex; age; build; normal and stressed heartbeat; musculature; any physical disorders, such as a herniated disk, etc.; user goals; attendance; etc. On the basis of the above data, the instructor draws up a recommended training program substantially indicating the type of equipment to use and. in what sequence; recommended attendance; the equipment and exercises to be avoided; exercise sequence fixture by fixture, etc. All the above data is entered, of course, into electronic central control unit 11 by means of block 17, and the training program recommended by the instructor is memorized in block 13. Basic training programs for various types of users may also be stored in memory block 13 and corrected to meet specific user requirements. The recommended training program fee and payment terms may also be indicated. By means of device 7, the user's biometric print is then taken and memorized together with the recommended training program.

**[0011]** Once all the above data is memorized, the user simply submits his or her biometric print for identification to enable operation of the recommended equipment and commence the training program. That is, on identifying the user, device 7 of any one of the fixtures retrieves the user's recommended training program data from memory block 13 and, by means of device 8, indicates the sequence in which the equipment is to be used. The user then proceeds to and is identified on the first fixture in the sequence, which, on the basis of the recommended training program, indicates, by means of device 8, the sequence in which the exercises are to be performed. In the course of the exercises, sensors 6 check they are being performed according to the set training program in terms of sequence, number and time, so that any performance errors can be indicated and taken into account either on the next fixture or at the next training session. At the same time, sensors 5 control the user's

physical parameters under stress, so that, in the event of any deviation from the set normal parameters, the training session can be stopped, or changes can be made to the exercise sequence on that particular fixture and/or the next fixtures; in either of which cases, the changes to the training program are indicated. Measuring the user's physical parameters also provides, as a function of the basic training programs stored in block 13, for adjusting subsequent training sessions as a function of the frequency of the sessions.

**[0012]** Once the exercise sequence on the first fixture is completed, device 8 on the first fixture indicates the next fixture and the time lapse (rest) to be allowed between the two. At the end of the training session, central control unit 11, on the basis of all the data collected during the session and recorded in the user file, works out a recommended training program and day for the next session, which may be printed in block 16. The training program may, obviously, also be altered in block 17 before commencing the session, to accommodate the time available to the user and any temporary physical conditions.

**[0013]** The advantages of the present invention will be clear from the foregoing description.

**[0014]** In particular, it provides for a gymnasium restricted solely to users identified on the basis of biometric prints; by means of the various fixtures, central control unit 11 guides the user through the recommended training program and provides for updating the program both during and between sessions; and, finally, users, or rather the users' physical parameters, are supervised throughout the session.

## Claims

1. An improved gymnasium comprising a number of fixtures for performing a series of physical exercises, and **characterized in that** said fixtures each comprise a device (7) for recognizing a biometric print of the user, such as a fingerprint, a voiceprint, or an eyeprint based on analysis of the user's iris.

2. A gymnasium as claimed in Claim 1, **characterized in that** recognition of the biometric print enables operation of said fixture.

3. A gymnasium as claimed in Claim 2, **characterized by** comprising a memory block (13) in which a recommended user training program is stored; and in that, upon recognition of the biometric print, an acoustic and/or visual indicator device (8) informs the user of said training program, which substantially comprises the sequence in which said fixtures are to be used, the sequence and set time of the exercises on each fixture, and the rest time to be allowed between one said fixture and the next.

4. A gymnasium as claimed in Claim 3, **characterized in that** each of said fixtures comprises a number of sensors (6) for determining the operating mode of said fixture during the training session.

5. A gymnasium as claimed in Claim 4, **characterized by** comprising a comparing block (14) for comparing the operating mode of said fixture with the operating mode indicated in the recommended training program, so as to indicate to the user, by means of said indicator device (8), any errors in performance of the recommended training program.

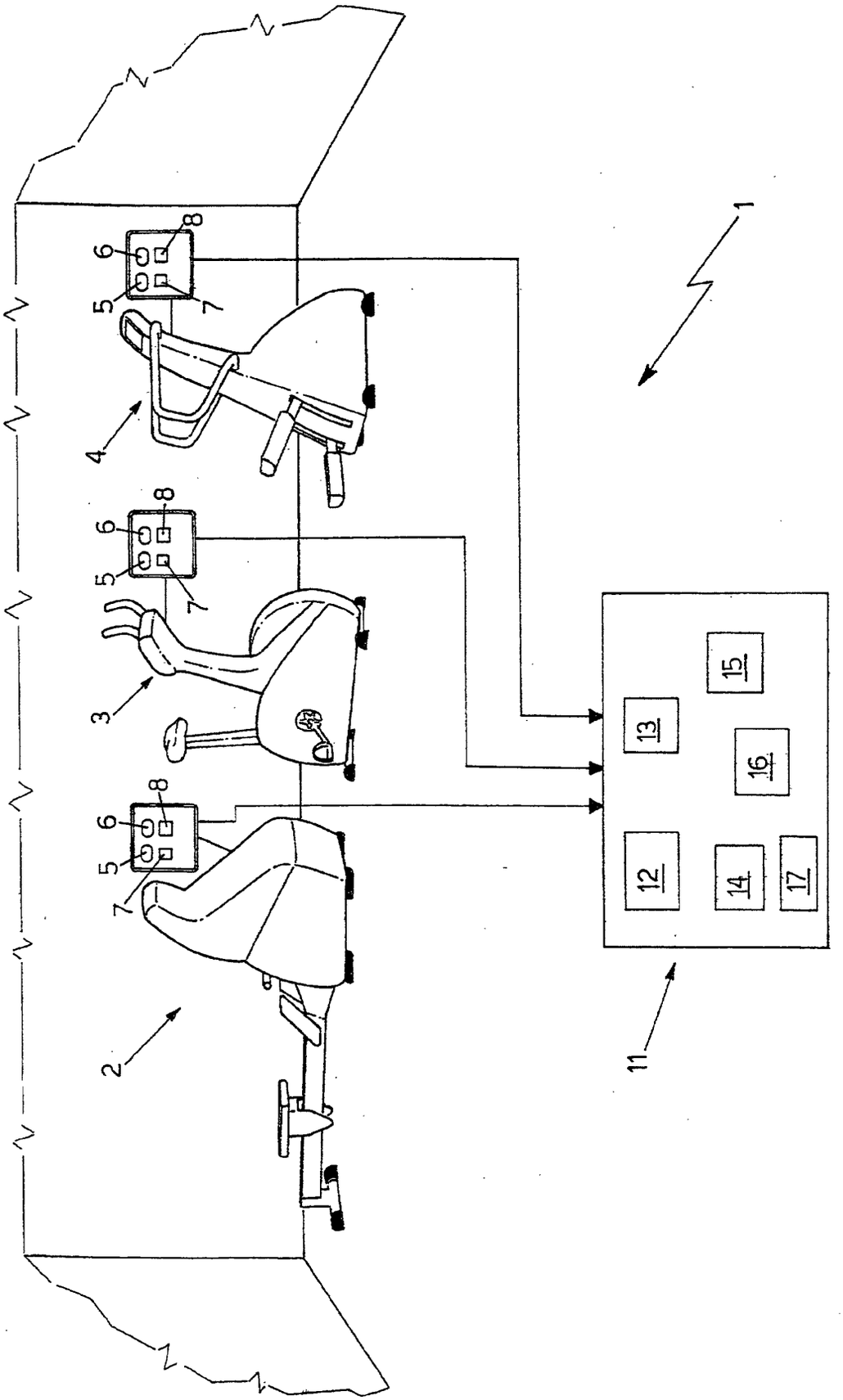
6. A gymnasium as claimed in Claim 5, **characterized in that** each of said fixtures comprises a number of sensors (5) for determining physical parameters of the user, so that, during the session, in the event said physical parameters deviate from set normal parameters, the session can be stopped, or changes can be made to the training program, and the detected physical parameters and changes to the training program can be indicated to the user by means of said indicator device (8).

7. A gymnasium as claimed in the foregoing Claims, **characterized by** comprising an electronic central control unit (11) connected to said fixtures and having a data processing block (12), said memory block (13), said comparing block (14), and a data entry block (17).

8. A gymnasium as claimed in Claim 7, **characterized in that** said central control unit (11) comprises a data display block (15).

9. A gymnasium as claimed in Claim 7 and/or 8, **characterized in that** said central control unit (11) comprises a user data printout block (16).

10. A gymnasium as claimed in any one of Claims 7 to 9, **characterized in that** said memory block (13) stores a user file which, in addition to a series of user particulars (e.g. age, sex, musculature, any disorders and other physical parameters), also contains the recommended training program and the program actually performed by the user, even session by session.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# EUROPEAN SEARCH REPORT

Application Number
EP 01 10 6967

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G07C
G07F
G06F
G06K
A63B
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The present search report has been drawn up for all claims

| Place of search | Date of completion of the search | Examiner |
|---|---|---|
| THE HAGUE | 3 July 2001 | Meyl, D |

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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A : technological background
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Application Number
EP 01 10 6967

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| Place of search | Date of completion of the search | Examiner |
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| THE HAGUE | 3 July 2001 | Meyl, D |

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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A : technological background
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D : document cited in the application
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