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(54) **Electric energy collecting mechanism for exercise apparatuses**

(57) An electric energy collecting mechanism includes two or more exercise apparatuses each having an electric generator for generating an electric energy, and each having an energy storing device for storing the electric energy generated by the electric generator, and each having an output terminal, a converting device is

coupled to the output terminals of the exercise apparatuses for receiving the electric energy from the energy storing devices and for converting the electric energy to an alternate current, and an electric reservoir is coupled to the converting device for receiving the alternate current from the converting device and for supplying the collected electric energy to energize the other electric facilities.

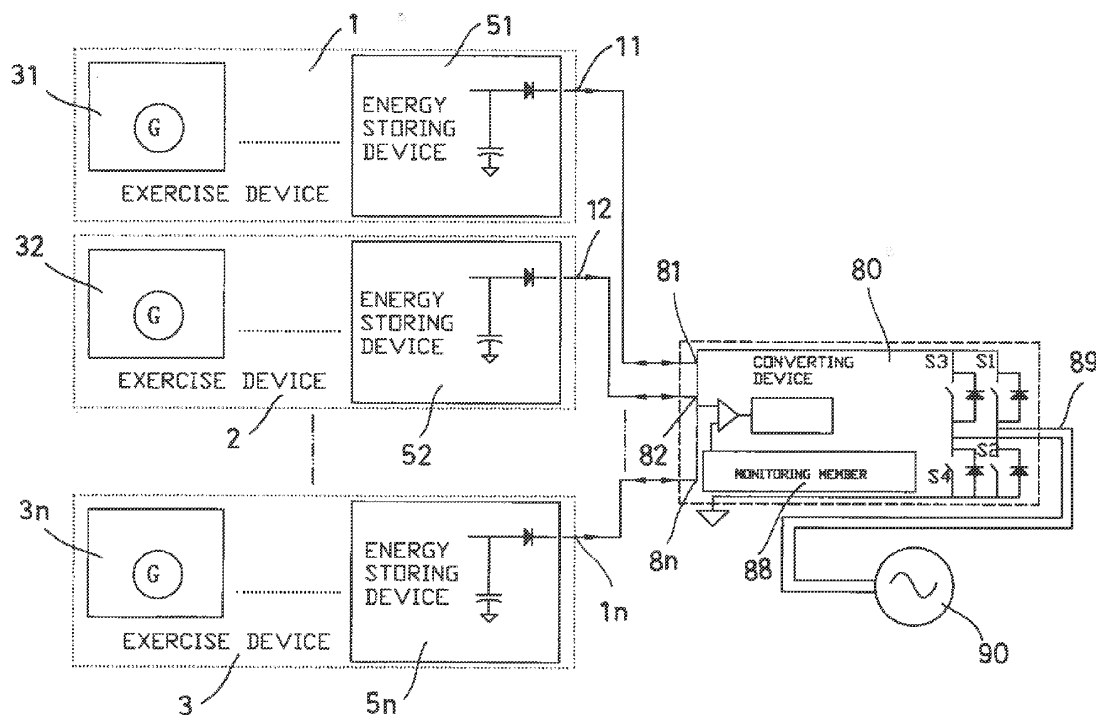


FIG. 3

Description

[0001] The present invention relates to an electric energy collecting mechanism, and more particularly to an electric energy collecting mechanism for coupling to one or more exercise apparatuses and for collecting or gathering the electricity or electric energy or power generated by the exercise apparatuses and/or for supplying the collected or gathered electricity or electric energy or power to energize the other electric parts or elements of the other electric facilities.

[0002] Typical exercise apparatuses, such as the cycling mechanisms, or the riding simulating mechanisms, the stepping or riding mechanisms, the elliptical exercising mechanisms, the treadmill or jogging mechanisms, the rowing mechanisms, or the like may comprise an electric energy generating mechanism or device for generating the electric energy to energize the other electric parts or elements.

[0003] For example, U.S. Patent No. 5,192,255 to Dalebout et al., U.S. Patent No. 5,279,528 to Dalebout et al., U.S. Patent No. 5,431,612 to Holden, U.S. Patent No. 5,626,538 to Dalebout et al., U.S. Patent No. 5,662,557 to Watterson et al., U.S. Patent No. 5,690,410 to Lin, and U.S. Patent Application Publication No. US 2006/0232988 A1 to Wang et al. disclose several of the typical exercise apparatuses, such as the cycling mechanisms or the riding simulating mechanisms or the treadmill or jogging mechanisms each also comprising an electric energy generating mechanism or device operated or actuated by the users to generate the electric energy and to supply the generated electric energy to energize the other electric parts or elements.

[0004] However, normally, the electric energy generated by the typical exercise apparatuses may only be used to energize the electric parts or elements of the same typical exercise apparatuses only, but may not be used or collected or gathered to energize the other electric parts or elements of the other typical exercise apparatuses, such that the electric energy generated by the typical exercise apparatuses may not be suitably used.

[0005] The present invention has arisen to mitigate and/or obviate the afore-described disadvantages of the conventional electric energy generating mechanisms for the exercising devices.

[0006] The primary objective of the present invention is to provide an electric energy collecting mechanism for coupling to one or more exercise apparatuses and for collecting or gathering the electricity or electric energy or power generated by the exercise apparatuses and/or for supplying the collected or gathered electricity or electric energy or power to energize the other electric parts or elements of the other electric facilities.

[0007] In accordance with one aspect of the invention, there is provided an electric energy collecting mechanism comprising a first exercise apparatus and at least one second exercise apparatus each including an electric generator for generating an electric energy, and each

including an energy storing device for storing the electric energy generated by the electric generator, and each including an output terminal, a converting device coupled to the output terminals of the first and the second exercise apparatuses for receiving the electric energy from the energy storing devices and for converting the electric energy to an alternate current, and an electric reservoir coupled to the converting device for receiving the alternate current from the converting device.

[0008] The first exercise apparatus and at least one second exercise apparatus each include an input mechanism to be actuated by a user, and an output mechanism coupled to the input mechanism and coupled to the electric generator so as to actuate the electric generator to generate the electric energy.

[0009] The converting device includes an energy monitoring member for monitoring the electric energy from the energy storing devices. The first exercise apparatus and at least one second exercise apparatus each include a rectifier coupled to the electric generator for converting the electric energy to a direct current.

[0010] The first exercise apparatus and at least one second exercise apparatus each include a voltage detector and a current detector coupled to the rectifier for detecting the electric energy from the rectifier.

[0011] The first exercise apparatus and at least one second exercise apparatus each include a control device coupled to the voltage detector and the current detector. The control devices each include a setting member to be operated by the user, and the control devices each include a displaying member.

[0012] The first exercise apparatus and at least one second exercise apparatus each include a controlling member coupled to the current detector and coupled to the energy storing device.

[0013] Further objectives and advantages of the present invention will become apparent from a careful reading of the detailed description provided hereinbelow, with appropriate reference to the accompanying drawings.

FIG. 1 is a block diagram illustrating a simplified arrangement of an electric energy collecting mechanism in accordance with the present invention;

FIG. 2 is another block diagram illustrating a general arrangement of the electric energy collecting mechanism;

FIG. 3 is a further block diagram illustrating another arrangement of the electric energy collecting mechanism;

FIG. 4 is a still further block diagram illustrating a detail arrangement of an exercise apparatus for coupling to the electric energy collecting mechanism; and

FIG. 5 is a still further block diagram similar to FIG. 3, illustrating the other arrangement of the electric energy collecting mechanism.

[0014] Referring to the drawings, and initially to FIGS. 1-3, an electric energy collecting mechanism in accordance with the present invention comprises one or more exercise apparatuses 1, 2, ... n, each including an electric generator 31, 32, ... 3n (FIG. 3) for generating an electric energy, and each including an output terminal 11, 12, ... 1n coupled to a respective inlet terminal 81, 82, ... 8n of a transforming or converting device 80 which is provided for collecting or gathering the electricity or electric energy or power generated by the exercise apparatuses 1, 2, ... n, and/or for converting the electricity or electric energy or power to an alternate current and for supplying the collected or gathered electricity or electric energy or power to an electric reservoir 90 from an outlet terminal 89 which may then be used to energize the other electric parts or elements of the other electric facilities (not shown) or the like.

[0015] As shown in FIG. 4, the exercise apparatuses 1, 2, ... n, each include an input mechanism 13 to be actuated or operated by the user 10 in order to move or actuate or operate an output mechanism 14, in which the output mechanism 14 is connected or coupled to the input mechanism 13 and connected or coupled to the electric generator 31, 32, ... 3n (FIG. 3) so as to actuate or operate the electric generator 31, 32, ... 3n to generate the electricity or electric energy or power, the electric generator 31, 32, ... 3n are then connected or coupled to a rectifier 15 which may convert the electricity or electric energy or power generated by the electric generator 31, 32, ... 3n of the exercise apparatuses 1, 2, ... n to a direct current, the rectifier 15 is then connected or coupled to a voltage detector 16 and a current detector 17 for sensing or detecting the electricity or electric energy or power from the rectifier 15.

[0016] The voltage detector 16 and the current detector 17 are then connected or coupled to a control device 40 which includes a setting member 41 to be actuated or operated by the user 10 in order to choose or select or set the exercise apparatus 1, 2, ... n operating conditions for the user 10, such as the resistance, the torsion, or the power applied or offered by the exercise apparatus 1, 2, ... n, and the control device 40 includes a displayer or a displaying member 42 for showing or displaying the information of the control device 40. The current detector 17 is further connected or coupled to a switching or controlling member 18 which is then connected or coupled to an energy storing device 51, 52, ... 5n, and the energy storing device 51, 52, ... 5n may be used to store the electric energy from the rectifier 15 and the electric generator 31, 32, ... 3n of the exercise apparatuses 1, 2, ... n, and/or to supply the electric energy to energize the other electric parts or elements of the exercise apparatus 1, 2, ... n.

[0017] The controlling or switching member 18 may be used to switch or control the electric energy from the rectifier 15 to the energy storing device 51, 52, ... 5n for allowing the electric energy from the rectifier 15 to be temporarily stored in the energy storing device 51, 52, ...

5n. The electric energy stored in the energy storing device 51, 52, ... 5n may then be supplied to the transforming or converting device 80 when the electric energy stored or collected in the energy storing device 51, 52, ... 5n is large enough to be supplied to the transforming or converting device 80; i.e., the energy storing device 51, 52, ... 5n may temporarily store the electric energy and may then supply the stored electric energy to the transforming or converting device 80 when the electric energy stored or collected in the energy storing device 51, 52, ... 5n is large enough.

[0018] As also shown in FIGS. 3 and 4, the transforming or converting device 80 includes an energy monitoring member 88 for monitoring and controlling the electric energy and for actuating or operating the transforming or converting device 80 to convert the electric energy to an alternate current and then to supply the converted electric energy to the electric reservoir 90 from the outlet terminal 89, such that the electricity or electric energy or power generated by the exercise apparatuses 1, 2, ... n may be collected or gathered in the energy storing device 51, 52, ... 5n and may be converted to the alternate current and then may be supplied to the electric reservoir 90 for further use.

[0019] In operation, as shown in FIGS. 2-4, the electric generator 31, 32, ... 3n of the exercise apparatuses 1, 2, ... n may be actuated or operated by the user 10 to generate the electric energy which may then be rectified by the rectifier 15 to a direct current, the rectified direct current may then be gathered or stored or collected in the energy storing device 51, 52, ... 5n, and then may be converted to the alternate current and then may be supplied to the electric reservoir 90 for further use. As shown in FIG. 3, the transforming or converting device 80 may include a number of inlet terminals 81, 82, ... 8n for connecting or coupling to the output terminals 11, 12, ... 1n of the exercise apparatuses 1, 2, ... n respectively. Alternatively, as shown in FIG. 5, the output terminals 11, 12, ... 1n of the exercise apparatuses 1, 2, ... n may also be connected or coupled to a single inlet terminal 81 of the transforming or converting device 80.

[0020] Accordingly, the electric energy collecting mechanism in accordance with the present invention may be used for coupling to one or more exercise apparatuses and for collecting or gathering the electricity or electric energy or power generated by the exercise apparatuses and/or for supplying the collected or gathered electricity or electric energy or power to energize the other electric parts or elements of the other electric facilities.

[0021] Although this invention has been described with a certain degree of particularity, it is to be understood that the present disclosure has been made by way of example only and that numerous changes in the detailed construction and the combination and arrangement of parts may be resorted to without departing from the spirit and scope of the invention as hereinafter claimed.

Claims

1. An electric energy collecting mechanism comprising:
 - a first exercise apparatus and at least one second exercise apparatus each including an electric generator for generating an electric energy, and each including an energy storing device for storing the electric energy generated by said electric generator, and each including an output terminal,
 - a converting device coupled to said output terminals of said first and said at least one second exercise apparatuses for receiving the electric energy from said energy storing devices and for converting the electric energy to an alternate current, and
 - an electric reservoir coupled to said converting device for receiving the alternate current from said converting device.
2. The electric energy collecting mechanism as claimed in claim 1, wherein said converting device includes an energy monitoring member for monitoring the electric energy from said energy storing devices.
3. The electric energy collecting mechanism as claimed in claim 1, wherein said first exercise apparatus and at least one second exercise apparatus each include an input mechanism to be actuated by a user, and an output mechanism coupled to said input mechanism and coupled to said electric generator so as to actuate said electric generator to generate the electric energy.
4. The electric energy collecting mechanism as claimed in claim 1, wherein said first exercise apparatus and at least one second exercise apparatus each include a rectifier coupled to said electric generator for converting the electric energy to a direct current.
5. The electric energy collecting mechanism as claimed in claim 4, wherein said first exercise apparatus and at least one second exercise apparatus each include a voltage detector and a current detector coupled to said rectifier for detecting the electric energy from said rectifier.
6. The electric energy collecting mechanism as claimed in claim 5, wherein said first exercise apparatus and at least one second exercise apparatus each include a control device coupled to said voltage detector and said current detector.
7. The electric energy collecting mechanism as claimed in claim 6, wherein said control devices each include a setting member to be operated by the user.
8. The electric energy collecting mechanism as claimed in claim 6, wherein said control devices each include a displaying member.
9. The electric energy collecting mechanism as claimed in claim 5, wherein said first exercise apparatus and at least one second exercise apparatus each include a controlling member coupled to said current detector and coupled to said energy storing device.

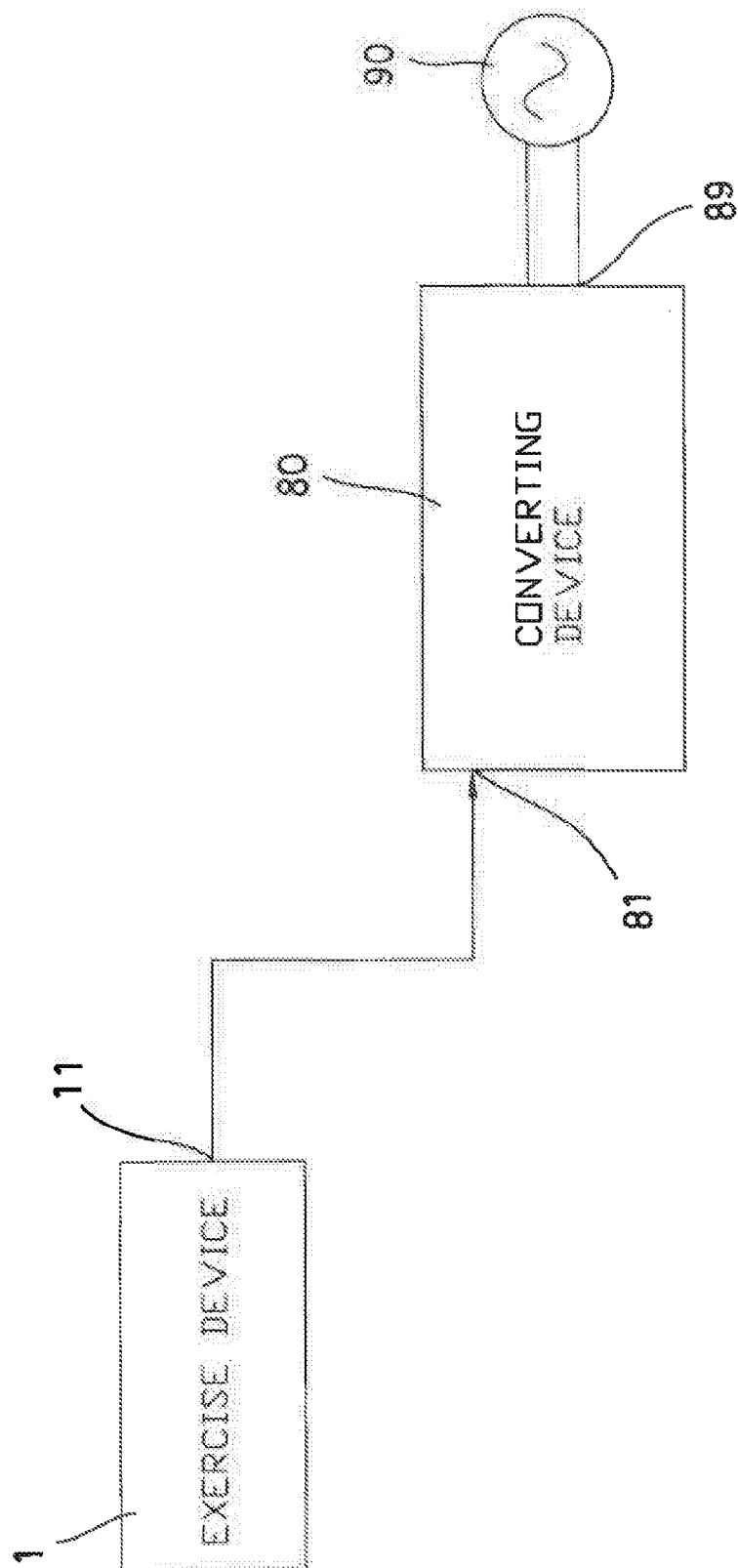


FIG. 1

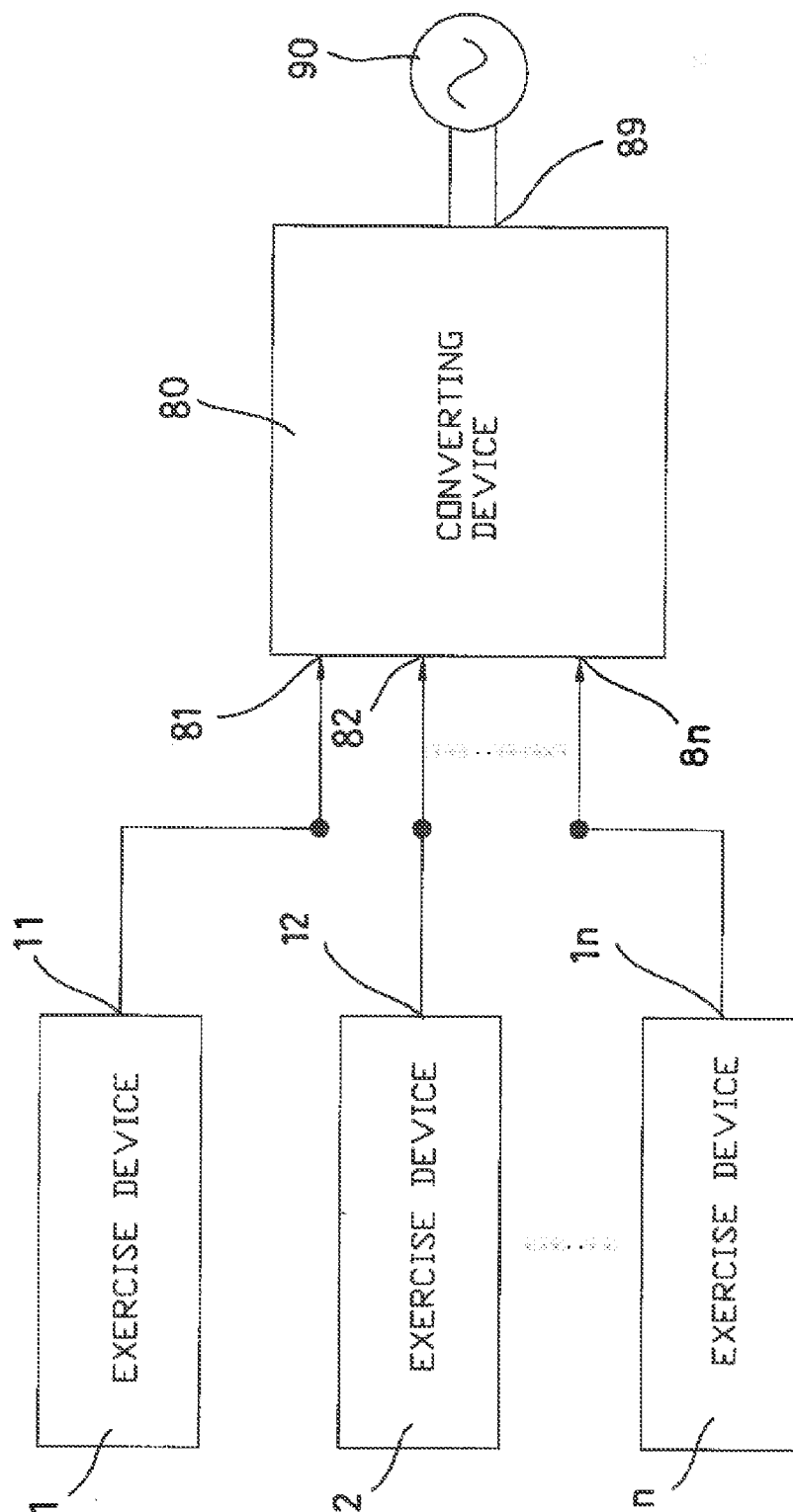


FIG. 2

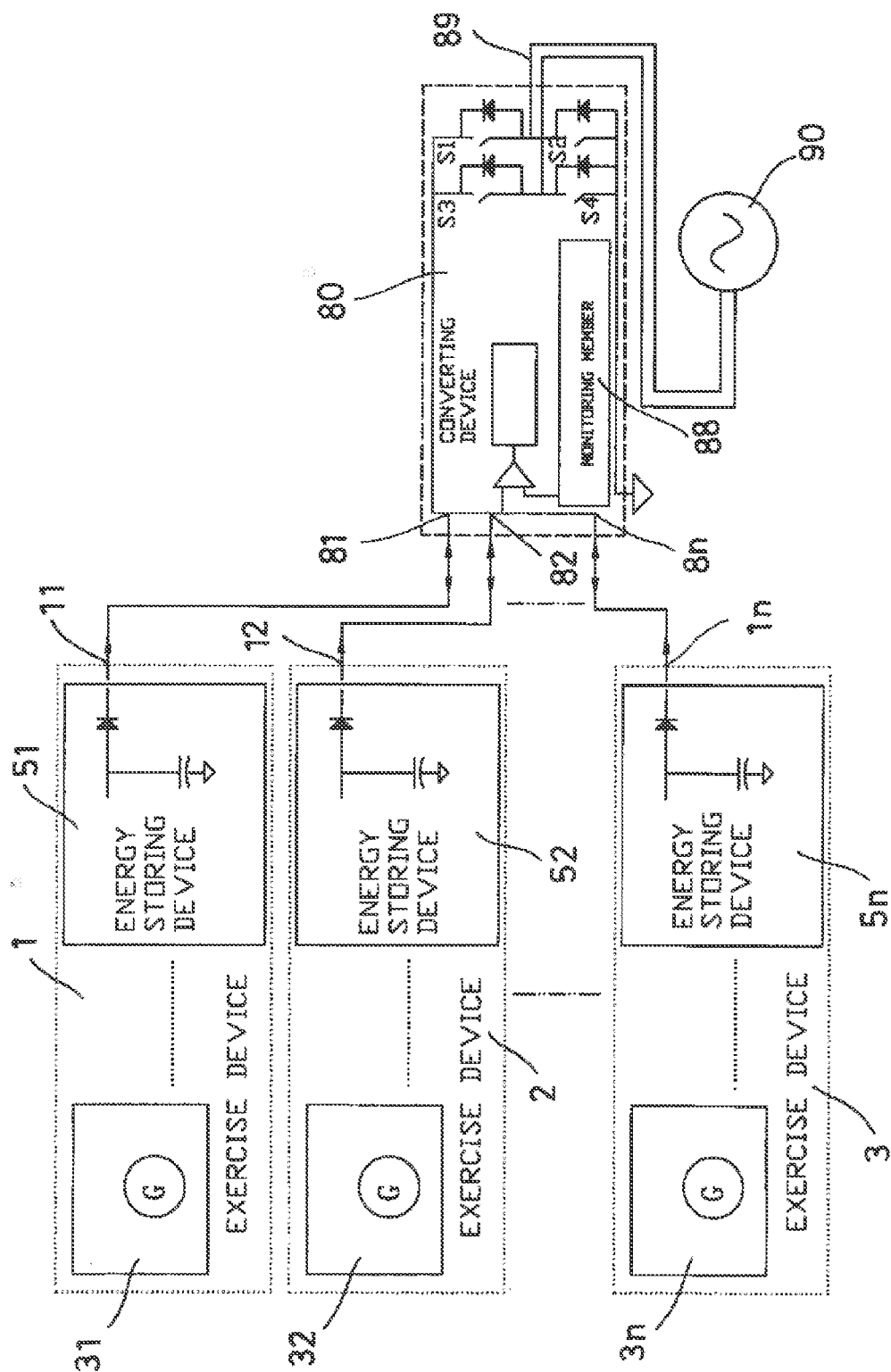


FIG. 3

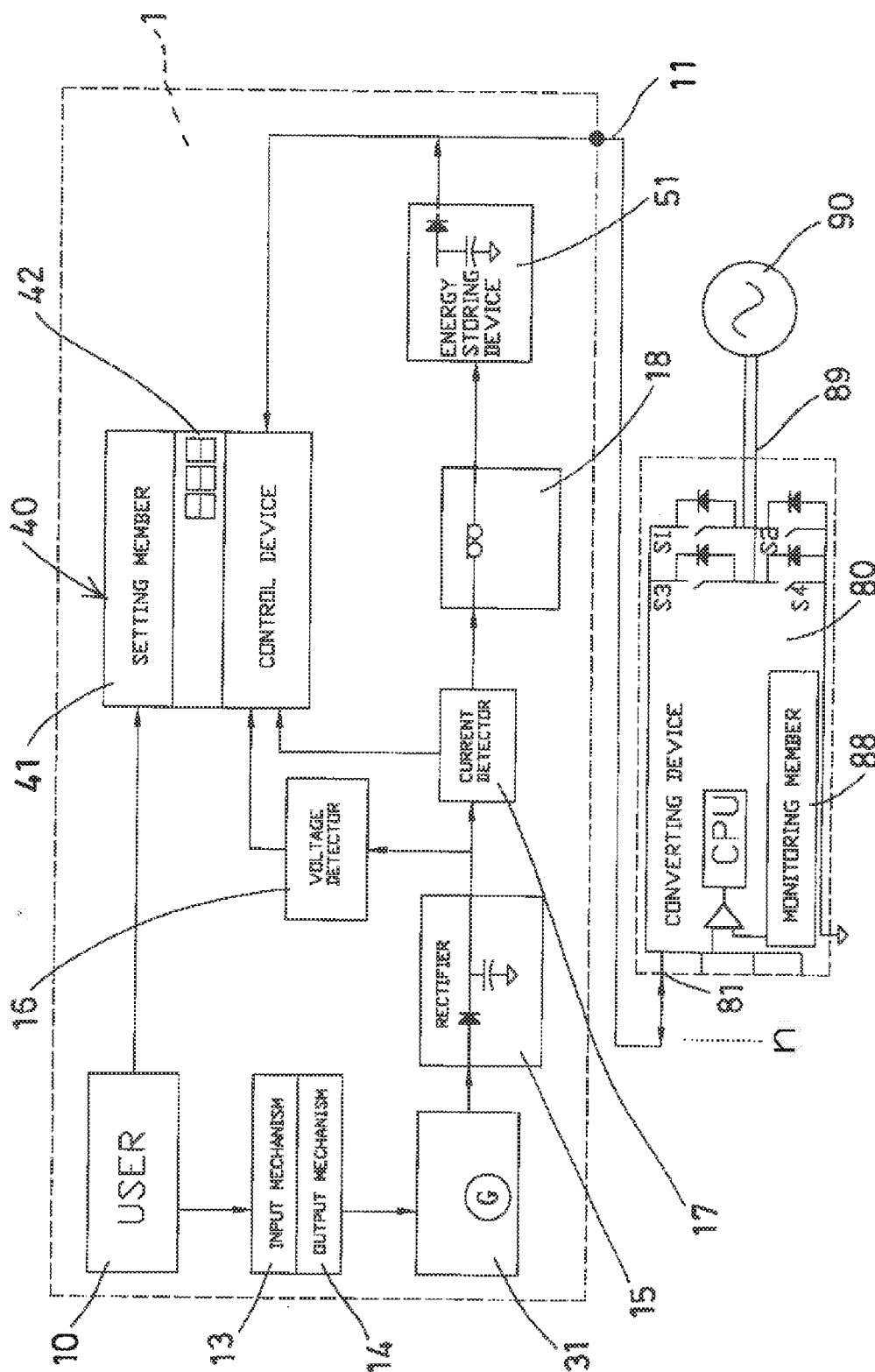


FIG. 4

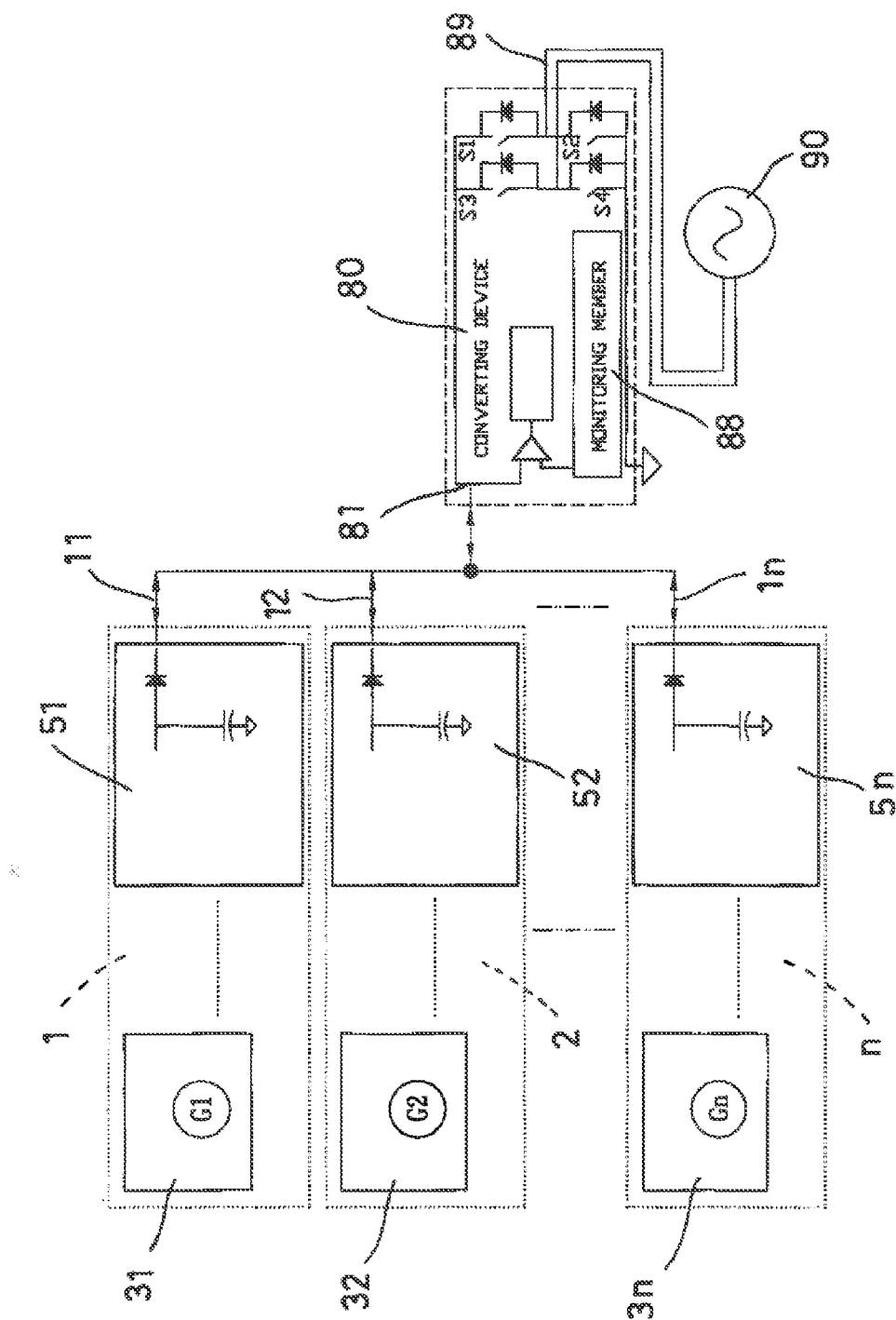


FIG. 5



EUROPEAN SEARCH REPORT

Application Number
EP 11 17 8054

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 2010/197461 A1 (CZARNECKI DEREK J [US]) 5 August 2010 (2010-08-05) * paragraph [0002] - paragraph [0041]; figures 1-13 *	1-9	INV. H02N11/00 A63B24/00 A63B21/005
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			TECHNICAL FIELDS SEARCHED (IPC)
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The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 3 July 2012	Examiner Oelschläger, Holger
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			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 11 17 8054

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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03-07-2012

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