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(54) **TREATMENT COUCH WITH SAFETY IMPROVEMENT**

(57) The invention provides a treatment couch (1) comprising a support base (2) for supporting on the ground, a treatment platform (3) for the patient, a lifting system (4) with at least one lifting arm (5, 8) for moving the treatment platform (3), and a safety system (14) for preventing clamping of body parts. The support base (2), the treatment platform (3) and the at least one lifting arm (5, 8) are electrically isolated from each other. The safety

system (14) is configured for detecting a change in an electrical capacitance (C_{co}) associated with at least one of the support base (2), the treatment platform (3) and the at least one lifting arm (5, 8), and for generating a safety alert signal when at least one electrical capacitance (C_{co}) associated with at least one of the support base (2), the treatment platform (3) and the at least one lifting arm (5, 8) changes.

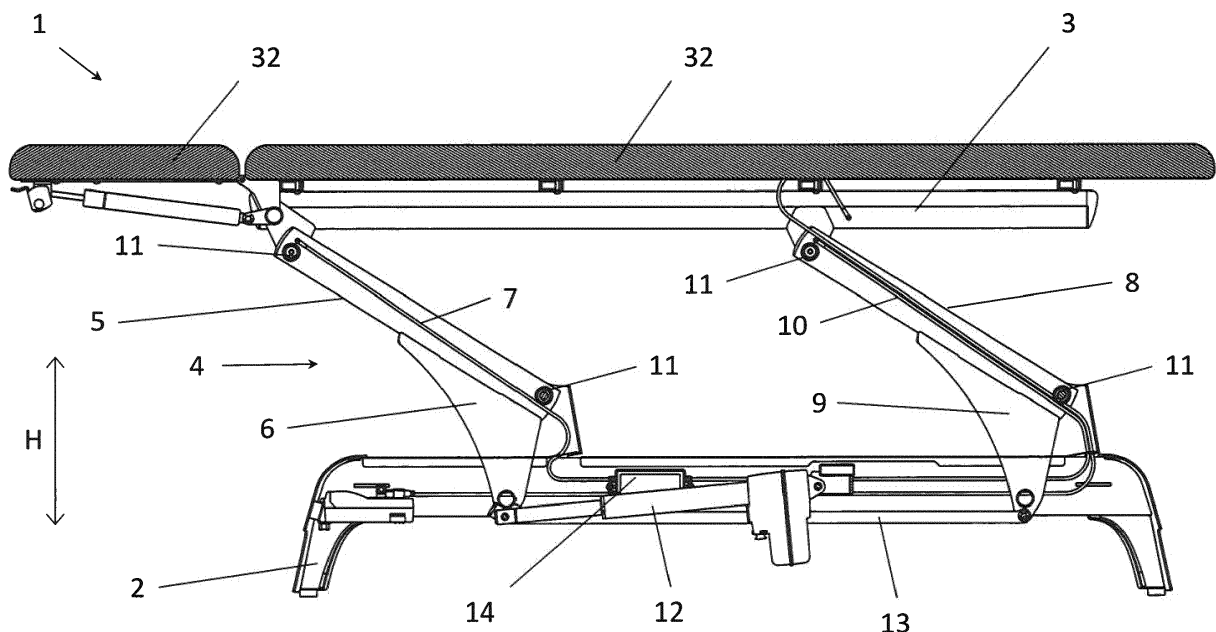


FIG. 1

Description**Technical field**

5 **[0001]** The present invention relates to a treatment couch comprising a safety system for preventing clamping of body parts or other objects between the support base, the treatment platform and the one or more lifting arms of the treatment couch while treatment platform is being moved with respect to the support base of the treatment couch.

Background art

10 **[0002]** A treatment couch having a safety system for preventing clamping of body parts or other objects between the support base, the treatment platform and the lifting arms of the treatment couch is for example known from WO 03/088885 A1. The safety system of this treatment couch comprises a plurality of infrared emitters and detectors. If a body part or another object passes through an infrared beam going from one of the emitters to one of the detectors, the body part or the object is detected and the movement of the treatment platform with respect to the support base is stopped.

15 **[0003]** A treatment couch having such a safety system has however several disadvantages. One disadvantage is that body parts or other objects, may still pass between the infrared beams and as such go undetected. For example if the body part or object is small enough to pass between the infrared beams. This may be improved by increasing the amount of emitters and detectors, but this has the disadvantage that the safety system becomes more complex and consumes more energy. Another disadvantage is that body parts or other objects may be detected along the entire length of the infrared beams, even if there is not necessarily a direct danger for clamping of the body part or object. In such case the movement of the treatment platform with respect to the support base is stopped without it being really necessary.

Disclosure of the invention

25 **[0004]** It is an aim of the present invention to provide a treatment couch with a safety system which is safer to operate.

[0005] This aim is achieved according to the invention with a treatment couch showing the technical characteristics of the first independent claim.

30 **[0006]** Therefore, the present invention provides a treatment couch for use in physiotherapeutic treatment of a patient. The treatment couch comprises a support base for supporting the treatment couch on the ground. The treatment couch comprises a treatment platform for supporting the patient. The treatment couch comprises a lifting system for moving the treatment platform with respect to the support base in a height direction. The lifting system comprises at least one lifting arm. The at least one lifting arm is tiltably connected to the support base and to the treatment platform in such a way that tilting of the at least one lifting arm moves the treatment platform with respect to the support base in the height direction. The treatment couch comprises a safety system for preventing clamping of body parts or other objects between the support base, the treatment platform and/or the at least one lifting arm. The support base, the treatment platform and the at least one lifting arm are electrically isolated from each other. The safety system is configured for detecting a change in an electrical capacitance associated with at least one of the support base, the treatment platform and the at least one lifting arm. The safety system is configured for generating a safety alert signal when at least one electrical capacitance associated with at least one of the support base, the treatment platform and the at least one lifting arm changes.

40 **[0007]** The treatment couch according to the present invention offers the advantage that the support base, the treatment platform and/or the at least one lifting arm are monitored in their entirety for contact with a body part or another object, such that no such contact goes undetected. This improves the safety of the treatment couch according to the present invention. The treatment couch according to the present invention also requires the monitoring of only a limited number of components of the treatment couch for contact with a body part or another object, which reduces the complexity and energy consumption of the treatment couch.

45 **[0008]** In an embodiment of the treatment couch according to the present invention the safety system is configured for detecting a change in an electrical capacitance associated with the support base, the treatment platform and the at least one lifting arm. The safety system is configured for generating a safety alert signal when at least one electrical capacitance associated with the support base, the treatment platform and the at least one lifting arm changes.

50 **[0009]** This embodiment offers the advantage that the safety system is monitoring the support base, the treatment platform and the at least one lifting arm, and that contact of a body part or another object with any of these components can be detected by the safety system. This improves the safety of the treatment couch according to the present invention without improving the complexity too much since it only requires the monitoring of a limited number of components.

55 **[0010]** In an embodiment of the treatment couch according to the present invention the safety system is configured for detecting a change in an electrical capacitance associated with at least one of the support base, the treatment platform and the at least one lifting arm during movement of the treatment platform with respect to the support base in the height

direction. Preferably, the safety system is configured for detecting a change in an electrical capacitance associated with at least one of the support base, the treatment platform and the at least one lifting arm during movement of the treatment platform towards the support base in the height direction.

[0011] This embodiment offers the advantage that the safety system is only actively monitoring the support base, the treatment platform and/or the at least one lifting arm for contact with a body part or another object when the lifting system is moving the treatment platform with respect to the support base in the height direction. This reduces energy consumption of the treatment couch according to the present invention. This also prevents safety alert signals being generated under circumstances where there is no risk of clamping of a body part or another object between the support base, the treatment platform and the at least one lifting arm.

[0012] In an embodiment of the treatment couch according to the present invention the safety system is configured for detecting a change in an electrical capacitance associated with at least one of the support base, the treatment platform and the at least one lifting arm when the treatment platform is below a predetermined distance above the support base in the height direction.

[0013] This embodiment offers the advantage that the safety system is only actively monitoring the support base, the treatment platform and/or the at least one lifting arm for contact with a body part or another object when the treatment platform is sufficiently close to the support base that there is a risk of clamping of the body part or object between the support base, the treatment platform and/or the at least one lifting arm. This reduces energy consumption of the treatment couch according to the present invention. This also prevents safety alert signals being generated under circumstances where there is no risk of clamping of body parts between the support base, the treatment platform and the at least one lifting arm.

[0014] In an embodiment of the treatment couch according to the present invention the lifting system comprises at least one actuator for driving the tilting of the at least one lifting arm, wherein the safety system is operably connected to the at least one actuator, and wherein the safety system is configured for stopping the at least one actuator when the safety alert signal is generated.

[0015] This embodiment offers the advantage that the movement of the treatment platform with respect to the support base in the height direction is stopped when a safety alert signal is generated after contact of a body part or another object with the support base, the treatment platform or the at least one lifting arm. This further improves the safety of the treatment couch according to the present invention, since injuries or damage caused by the further movement of the treatment platform may be avoided in this way.

[0016] In an embodiment of the treatment couch according to the present invention the safety system is configured for activating the at least one actuator for a predetermined time period for moving the treatment platform upwards with respect to the support base in the height direction after the at least one actuator has been stopped by the safety system when the safety alert signal is generated.

[0017] This embodiment offers the advantage that a body part or other object which has possibly been clamped between the treatment platform, the support base and the at least one lifting arm is released by the upward movement of the treatment platform with respect the support base in the height direction after contact of the body part or object with the support base, the treatment platform or the at least one lifting arm has been detected. This further improves the safety of the treatment couch according to the present invention.

[0018] In an embodiment of the treatment couch according to the present invention the at least one lifting arm is connected to the support base and to the treatment platform by means of a hinges in an electrically insulating material for electrically isolating the support base, the treatment platform and the at least one lifting arm from each other. Preferably, the electrically insulating material is a plastic.

[0019] In an embodiment of the treatment couch according to the present invention the safety system comprises a voltage application circuit comprising an AC power supply and a fixed capacitor having a predetermined electrical capacitance. A first pole of the power supply is electrically connected to a first terminal of the fixed capacitor. A second terminal of the fixed capacitor is electrically connected to at least one of the support base, the treatment platform and the at least one lifting arm. A second pole of the power supply is electrically connected to a component of the treatment couch which is electrically connected to a ground potential. The safety system further comprises a voltage detection circuit and a control unit. The voltage detection circuit is configured for detecting a change in a voltage signal over the fixed capacitor. An input of the voltage detection circuit is electrically connected to the second terminal of the fixed capacitor. An output of the voltage detection circuit is electrically connected to the control unit. The control unit is configured for generating the safety alert signal when the change in the voltage signal detected by the voltage detection circuit is outside of a predetermined range.

[0020] In an embodiment of the treatment couch according to the present invention the second terminal of the fixed capacitor is electrically connected to the support base, the treatment platform and the at least one lifting arm.

[0021] In an embodiment of the treatment couch according to the present invention one of the support base, the treatment platform and the at least one lifting arm is the component of the treatment couch which is electrically connected to the ground potential and to the second pole of the power supply. The second terminal of the fixed capacitor is electrically

connected to at least one of the support base, the treatment platform and the at least one lifting arm which is not connected to the ground potential.

[0022] In an embodiment of the treatment couch according to the present invention the support base is the component of the treatment couch which is electrically connected to the ground potential.

[0023] In an embodiment of the treatment couch according to the present invention the voltage detection circuit is configured for full-wave rectification and RMS peak detection of the voltage signal at the input of the voltage detection circuit.

[0024] In an embodiment of the treatment couch according to the present invention the voltage detection circuit is further configured for filtering low frequency noise and high frequency noise from the voltage signal at the input of the voltage detection circuit.

Brief description of the drawings

[0025] The invention will be further elucidated by means of the following description and the appended figures.

Figure 1 shows a treatment couch according to an embodiment of the present invention.

Figure 2 shows the treatment couch according to Figure 1 with a hand contacting the treatment platform.

Figure 3 shows a schematic representation of the voltage application circuit of the safety system of a treatment couch according to an embodiment of the present invention.

Figure 4 shows a schematic representation of the voltage application circuit of the safety system of a treatment couch according to an embodiment of the present invention.

Figure 5 shows a schematic representation of the voltage detection circuit of the safety system of a treatment couch according to an embodiment of the present invention.

Modes for carrying out the invention

[0026] The present invention will be described with respect to particular embodiments and with reference to certain drawings but the invention is not limited thereto but only by the claims. The drawings described are only schematic and are non-limiting. In the drawings, the size of some of the elements may be exaggerated and not drawn on scale for illustrative purposes. The dimensions and the relative dimensions do not necessarily correspond to actual reductions to practice of the invention.

[0027] Furthermore, the terms first, second, third and the like in the description and in the claims, are used for distinguishing between similar elements and not necessarily for describing a sequential or chronological order. The terms are interchangeable under appropriate circumstances and the embodiments of the invention can operate in other sequences than described or illustrated herein.

[0028] Moreover, the terms top, bottom, over, under and the like in the description and the claims are used for descriptive purposes and not necessarily for describing relative positions. The terms so used are interchangeable under appropriate circumstances and the embodiments of the invention described herein can operate in other orientations than described or illustrated herein.

[0029] The term "comprising", used in the claims, should not be interpreted as being restricted to the means listed thereafter; it does not exclude other elements or steps. It needs to be interpreted as specifying the presence of the stated features, integers, steps or components as referred to, but does not preclude the presence or addition of one or more other features, integers, steps or components, or groups thereof. Thus, the scope of the expression "a device comprising means A and B" should not be limited to devices consisting only of components A and B. It means that with respect to the present invention, the only relevant components of the device are A and B.

[0030] Figure 1 shows a side view of a treatment couch 1 according to an embodiment of the present invention. At the bottom, the treatment couch 1 comprises a support base 2 by means of which the treatment couch 1 supports on the ground. At the top, the treatment couch 1 comprises a treatment platform 3 for supporting a patient on the treatment couch 1. The treatment platform 3 is provided with pillows 32 for the comfort of the patient.

[0031] Between the treatment platform 3 and the support base 2 the treatment couch 1 comprises a lifting system 4 with a first lifting arm 5 and a second lifting arm 8 for moving the treatment platform 3 with respect to the support base 2 in the height direction H. The lifting arms 5, 8 are tiltably connected to the support base 2 at their lower end and to the treatment platform 3 at their upper end by means of hinges 11. In this way, the tilting of the lifting arms 5, 8 with respect to the support base 2 moves the treatment platform 3 with respect to the support base 2 in the height direction H. Thereby, the treatment platform 3 remains horizontal since the treatment platform 3 is tiltably connected to the lifting arms 5, 8. In the embodiment of the treatment couch 1 shown in Figure 1, two lifting arms 5, 8 are used which are arranged parallel to each other, and form as such a parallelogram. It should however be clear to the skilled person that the lifting system 4 may also be implemented with more or less lifting arms 5, 8 and/or by using a different arrangement of the lifting arms

5, 8, such as for example a trapezoid arrangement or a scissor arrangement.

[0032] The lifting system 4 further comprises an actuator 12 for driving the tilting of the lifting arms 5, 8. The actuator 12 is connected to the lifting arms 5, 8 via actuator connector 13 which connects to flanges 6, 9 on the lifting arms 5, 8. This configuration allows a single actuator 12 to drive the tilting of both lifting arms 5, 8 simultaneously. It is however

also possible to use one or more actuators for driving a single lifting arm 5, 8.

[0033] The treatment couch 1 also comprises a safety system 14 for preventing body parts or other objects from getting clamped between the support base 2, the treatment platform 3 and/or the lifting arms 5, 8 during the movement of the treatment platform 3 with respect to the support base 2 in the height direction H. Such a situation is for example shown in Figure 2, where a hand 31 is contacting the treatment platform 3 and at risk of being clamped between the treatment platform 3 and the first lifting arm 5.

[0034] To be able to detect a body part or another object contacting the support base 2, the treatment platform 3 or the lifting arms 5, 8, the safety system 14 monitors the electrical capacitance C_{co} associated with the support base 2, the treatment platform 3 and the lifting arms 5, 8 for changes which are caused by said contact. If such a change is detected the safety system 14 generates a safety alert signal. In response to the safety alert signal, the safety system 14 instructs the actuator 12 of the lifting system 4, to which it is operably connected, to stop the movement of the treatment platform 3 with respect to the support base 2 in the height direction H, in order to prevent clamping of the body part or the object which is contacting the support base 2, the treatment platform 3 or one of the lifting arms 5, 8. Once the movement of the treatment platform 3 has been stopped, the safety system 14 may instruct the actuator 12 of the lifting system 4 to move the treatment platform 3 for a predetermined period of time in the direction opposite of the direction in which it was moving before the contact with the body part or the object, in order to unclamp the body part or the object which was clamped when contacting the support base 2, the treatment platform 3 and/or one of the lifting arms 5, 8. The safety system 14 may also take other actions in response to the safety alert signal, such as for example sounding an alarm signal.

[0035] For treatment couches 1 having a single lifting arm 5, 8 or a plurality of lifting arms 5, 8 which are arranged substantially parallel to each other, such as the treatment couch 1 of Figure 1, the risk of clamping a body part or another object between the support base 2, the treatment platform 3 and/or the lifting arms 5, 8 when moving the treatment platform 3 with respect to the support base 2 in the height direction H mainly occurs when the treatment platform 3 is moving towards the support base 2 and increases when the treatment platform 3 moves closer to the support base 2. Therefore, it is beneficial to only activate the safety system 14 when the treatment platform 3 is moving towards the support base 2 in the height direction H and/or when the treatment platform 3 is below a predetermined distance above the support base 2 in the height direction H.

[0036] The safety system 14 comprises a voltage application circuit 15, of which the working principle will be explained by means of the simplified presentation of Figure 3. The voltage application circuit 15 comprises an AC power supply 16 and a fixed capacitor C_{fix} having a predetermined electrical capacitance C_{fix} . The fixed capacitor C_{fix} is connected in series with a "couch" capacitor C_{co} formed by the support base 2, the treatment platform 3 and the lifting arms 5, 8. If the AC power supply applies an AC voltage signal to the fixed capacitor C_{fix} and the couch capacitor C_{co} , then a change in the voltage signal over the fixed capacitor C_{fix} indicates a change in the electrical capacitor C_{co} caused by the contact of a body part or another object with the support base 2, the treatment platform 3 and/or the lifting arms 5, 8, since the fixed capacitor C_{fix} has a fixed predetermined electrical capacitance C_{fix} .

[0037] In the embodiment of the treatment couch 1 of Figure 1, the voltage application circuit 15, as can be seen in Figures 1 and 4, is formed by electrically connecting a first pole 17 of the power supply 16 to a first terminal 19 of the fixed capacitor C_{fix} . A second terminal 20 of the fixed capacitor C_{fix} is electrically connected to the treatment platform 3 by means of electrical wire 33, to the first lifting arm 5 by means of electrical wire 7, and to the second lifting arm 8 by means of electrical wire 10, which electrical wires 7, 10, 33 can be seen in Figure 1. A second pole 18 of the power supply 16 is electrically connected to the support base 2. The support base 2 is electrically connected to a ground potential G, as can be seen in Figure 4. The support base 2, the treatment platform 3 and the lifting arms 5, 8 are also electrically isolated from each other. Therefore, the hinges 11 connecting the lifting arms 5, 8 to the support base 2 and to the treatment platform 3 are made of an electrically insulating material, for example in a plastic material. In this configuration, the couch capacitor C_{co} is made up of the electrical capacitor formed between the treatment platform 3 and the support base 2, the electrical capacitor formed between the first lifting arm 5 and the support base 2, and the electrical capacitor formed between the second lifting arm 8 and the support base 2, all arranged in parallel. In this configuration the support base 2 is thus used as a reference and not itself monitored by the safety system 14 for contact with a body part or another object. It should however be clear to the skilled person that other components of the treatment couch 1 may be used as the reference at ground potential G, such that the support base 2 may also be monitored by the safety system 14 for contact with a body part or another object.

[0038] If a hand 31 is then for example contacting the treatment platform 3 and at risk of being clamped between the treatment platform 3 and the first lifting arm 5, such as shown in Figure 2, a further branch is formed in the voltage application circuit 15 parallel to the couch capacitor C_{co} , as illustrated in Figure 4. This branch comprises an electrical

capacitance C_h associated with the hand 31 contacting the treatment platform 3. This further branch changes the electrical capacitance in series with the fixed capacitor C_{fix} , such that the voltage signal over the fixed capacitor C_{fix} changes and the contact of the hand 31 with the treatment platform 3 is detected.

[0039] The change in the voltage signal over the fixed capacitor C_{fix} is measured by means of a voltage detection circuit 21 of which the input 22 is connected to the second terminal 20 of the fixed capacitor C_{fix} , as can be seen in Figure 4. The voltage detection circuit 21 is configured for converting the AC voltage signal over the fixed capacitor C_{fix} to a DC voltage signal quantifying the change in the AC voltage signal over the fixed capacitor C_{fix} .

[0040] Therefore, the voltage detection circuit 21, as schematically represented in Figure 5, comprises a passive low pass filter 24 for filtering out the 50/60Hz line frequency which will not affect the high frequency. The passive low pass filter 24 is followed by an active high pass filter 25 to eliminate all noise coming from the AC power supply 16. The active high pass filter 25 is followed by an active low pass filter 26 to further reduce the low frequency noise. The active low pass filter 26 is followed by a full bridge rectifier 27 to convert the AC voltage signal to a pulsating DC voltage signal. The full bridge rectifier 27 is followed by an RMS peak detector 28 to get an averaged DC signal. The RMS peak detector 28 is followed by an integrator 29 for filtering out the remaining small AC ripple.

References

1	treatment couch	20	second terminal
2	support base	21	voltage detection circuit
3	treatment platform	22	input
4	lifting system	23	output
5	first lifting arm	24	passive low pass filter
6	flange	25	active high pass filter
7	electrical wire	26	active low pass filter
8	second lifting arm	27	full bridge rectifier
9	flange	28	RMS peak detector
10	electrical wire	29	integrator
11	hinge	30	control unit
12	actuator	31	hand
13	actuator connector	32	pillow
14	safety system	33	electrical wire
15	voltage application circuit	C_{fix}	fixed capacitor
16	AC power supply	C_{co}	electrical capacitance couch
17	first pole	C_h	electrical capacitance hand
18	second pole	G	ground potential
19	first terminal	H	height direction

Claims

1. A treatment couch (1) for use in physiotherapeutic treatment of a patient, wherein the treatment couch (1) comprises:

a support base (2) for supporting the treatment couch (1) on the ground;

a treatment platform (3) for supporting the patient; and

a lifting system (4) for moving the treatment platform (3) with respect to the support base (2) in a height direction (H), wherein the lifting system (4) comprises at least one lifting arm (5, 8) which is tiltably connected to the support base (2) and to the treatment platform (3) in such a way that tilting of the at least one lifting arm (5, 8) moves the treatment platform (3) with respect to the support base (2) in the height direction (H);

a safety system (14) for preventing clamping of body parts or other objects between the support base (2), the treatment platform (3) and/or the at least one lifting arm (5, 8),

characterised in that the support base (2), the treatment platform (3) and the at least one lifting arm (5, 8) are electrically isolated from each other, and

in that the safety system (14) is configured for detecting a change in an electrical capacitance (C_{co}) associated with at least one of the support base (2), the treatment platform (3) and the at least one lifting arm (5, 8), and for generating a safety alert signal when at least one electrical capacitance (C_{co}) associated with at least one of the support base (2), the treatment platform (3) and the at least one lifting arm (5, 8) changes.

2. The treatment couch (1) according to claim 1, wherein the safety system (14) is configured for detecting a change in an electrical capacitance (C_{co}) associated with the support base (2), the treatment platform (3) and the at least one lifting arm (5, 8), and for generating a safety alert signal when at least one electrical capacitance (C_{co}) associated with the support base (2), the treatment platform (3) and the at least one lifting arm (5, 8) changes.
3. The treatment couch (1) according to claim 1 or 2, wherein the safety system (14) is configured for detecting a change in an electrical capacitance (C_{co}) associated with at least one of the support base (2), the treatment platform (3) and the at least one lifting arm (5, 8) during movement of the treatment platform (3) with respect to the support base (2) in the height direction (H).
4. The treatment couch (1) according to any one of the claims 1-3, wherein the safety system (14) is configured for detecting a change in an electrical capacitance (C_{co}) associated with at least one of the support base (2), the treatment platform (3) and the at least one lifting arm (5, 8) when the treatment platform (3) is below a predetermined distance above the support base (2) in the height direction (H).
5. The treatment couch (1) according to any one of the claims 1-4, wherein the lifting system (4) comprises at least one actuator (12) for driving the tilting of the at least one lifting arm (5, 8), wherein the safety system (14) is operably connected to the at least one actuator (12), and wherein the safety system (14) is configured for stopping the at least one actuator (12) when the safety alert signal is generated.
6. The treatment couch (1) according to claim 5, wherein the safety system (14) is configured for activating the at least one actuator (12) for a predetermined time period for moving the treatment platform (3) upwards with respect to the support base (2) in the height direction (H) after the at least one actuator (12) has been stopped by the safety system (14) when the safety alert signal is generated.
7. The treatment couch (1) according to any one of the claims 1-6, wherein the at least one lifting arm (5, 8) is connected to the support base (2) and to the treatment platform (3) by means of a hinges (11) in an electrically insulating material, preferably a plastic material, for electrically isolating the support base (2), the treatment platform (3) and the at least one lifting arm (5, 8) from each other.
8. The treatment couch (1) according to any one of the claims 1-7, wherein the safety system (14) comprises a voltage application circuit (15) comprising an AC power supply (16) and a fixed capacitor (C_{fix}) having a predetermined electrical capacitance, wherein a first pole (17) of the power supply (16) is electrically connected to a first terminal (19) of the fixed capacitor (C_{fix}), wherein a second terminal (20) of the fixed capacitor (C_{fix}) is electrically connected to at least one of the support base (2), the treatment platform (3) and the at least one lifting arm (5, 8), wherein a second pole (18) of the power supply (16) is electrically connected to a component of the treatment couch (1) which is electrically connected to a ground potential (G), wherein the safety system (14) further comprises a voltage detection circuit (21) and a control unit (30), wherein the voltage detection circuit (21) is configured for detecting a change in a voltage signal over the fixed capacitor (C_{fix}), wherein an input (22) of the voltage detection circuit (21) is electrically connected to the second terminal (20) of the fixed capacitor (C_{fix}), wherein an output (23) of the voltage detection circuit (21) is electrically connected to the control unit (30), wherein the control unit (30) is configured for generating the safety alert signal when the change in the voltage signal detected by the voltage detection circuit (21) is outside of a predetermined range.
9. The treatment couch (1) according to claim 8, wherein the second terminal (20) of the fixed capacitor (C_{fix}) is electrically connected to the support base (2), the treatment platform (3) and the at least one lifting arm (5, 8).
10. The treatment couch (1) according to claim 8, wherein one of the support base (2), the treatment platform (3) and the at least one lifting arm (5, 8) is the component of the treatment couch (1) which is electrically connected to the ground potential (G) and to the second pole (18) of the power supply (16), and wherein the second terminal (20) of the fixed capacitor (C_{fix}) is electrically connected to at least one of the support base (2), the treatment platform (3) and the at least one lifting arm (5, 8) which is not connected to the ground potential (G).
11. The treatment couch (1) according to claim 10, wherein the support base (2) is the component of the treatment couch (1) which is electrically connected to the ground potential (G).
12. The treatment couch (1) according to any one of the claims 8-11, wherein the voltage detection circuit (21) is configured for full-wave rectification and RMS peak detection of the voltage signal at the input (22) of the voltage

detection circuit (21).

13. The treatment couch (1) according to any one of the claims 8-12, wherein the voltage detection circuit (21) is further configured for filtering low frequency noise and high frequency noise from the voltage signal at the input (22) of the voltage detection circuit (21).

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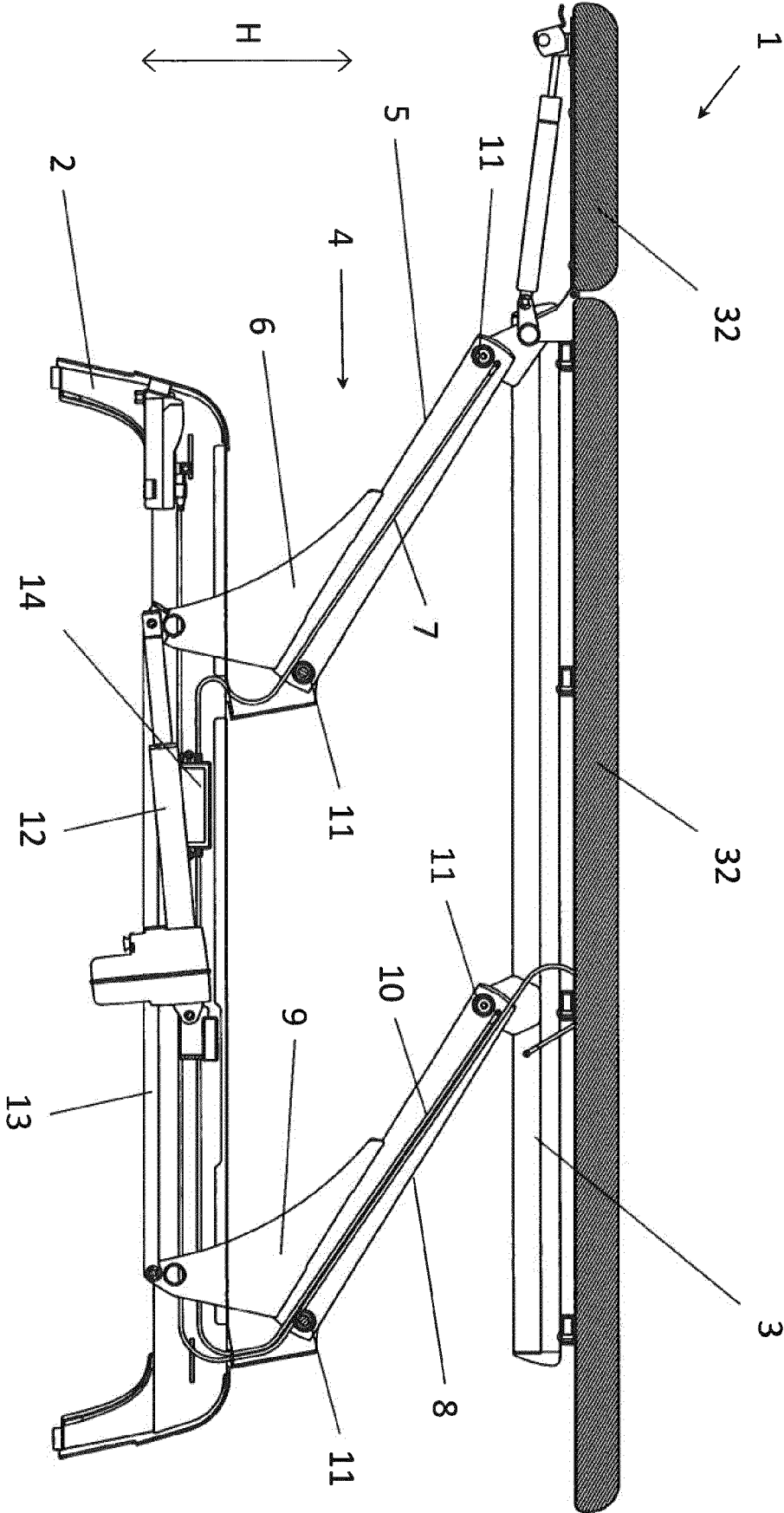


FIG. 1

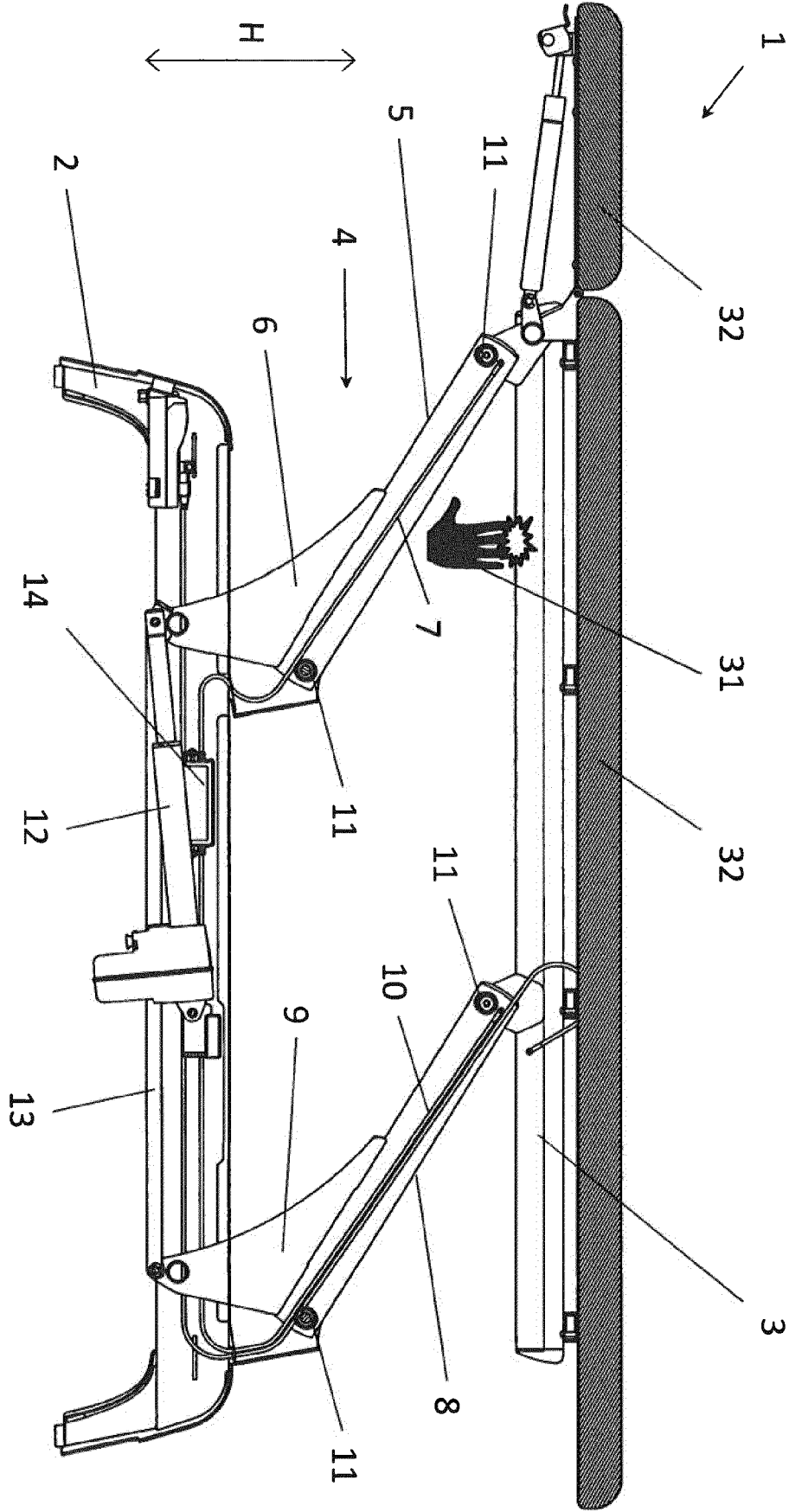


FIG. 2

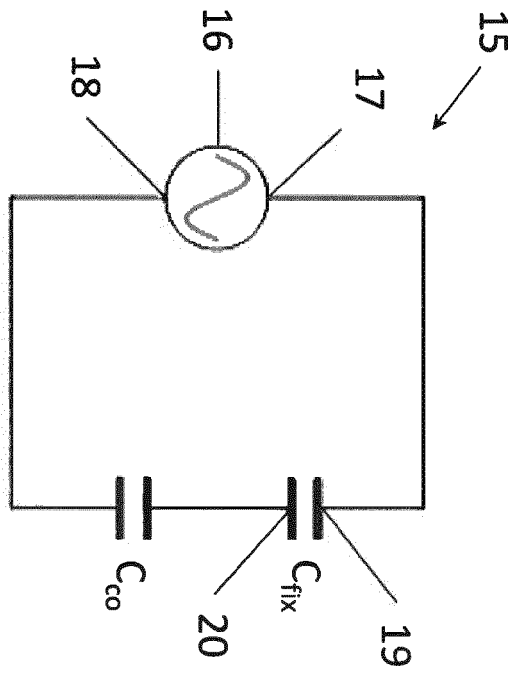


FIG. 3

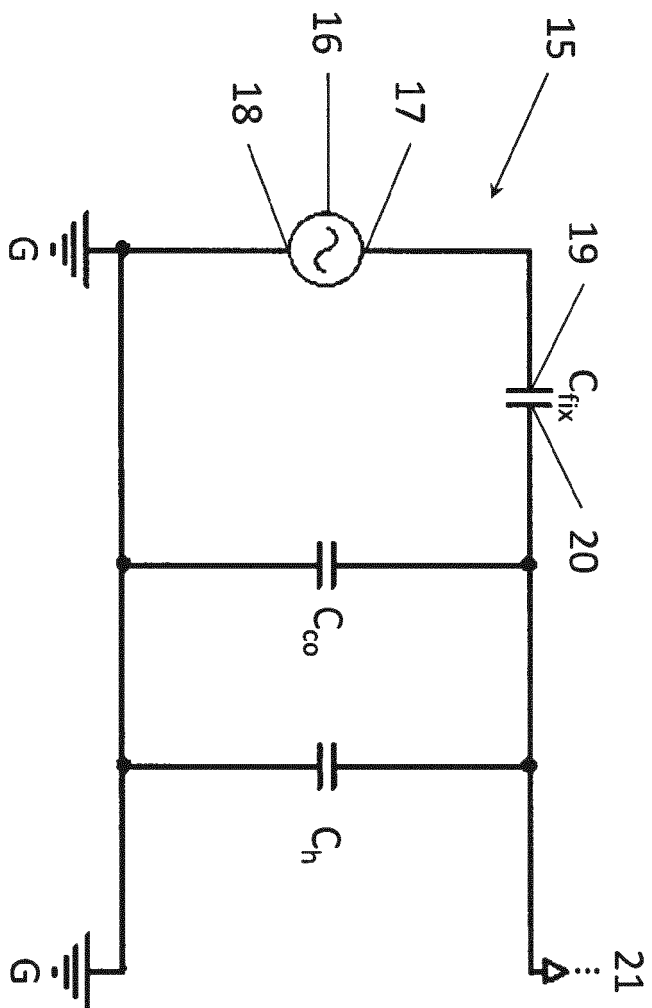


FIG. 4

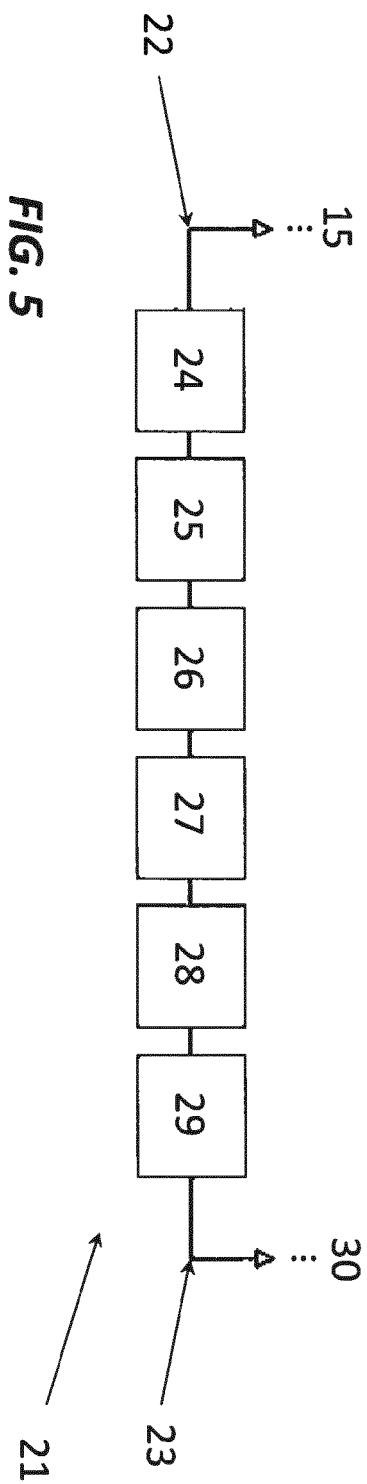


FIG. 5



EUROPEAN SEARCH REPORT

Application Number
EP 18 18 9007

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	US 5 774 915 A (SCOTT GERALD R [US] ET AL) 7 July 1998 (1998-07-07) * column 3, line 57 - line 62 * * column 7, line 60 - column 8, line 55 * * figures 1-9, 40, 49B *	1-13	INV. A61G13/10
A	SE 519 289 C2 (ARTEKTRON AB [SE]) 11 February 2003 (2003-02-11) * abstract *	1-13	
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			A61G
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 4 February 2019	Examiner Ong, Hong Djien
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5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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