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(54) CONTROL UNIT FOR AN ELECTROMECHANICAL OVEN AND OVEN

(57) The invention concerns a control unit (10) for an electromechanical oven comprising:
a first control element (2) and a second control element (4) and
a splitting unit (20),
wherein one of the first control element (2) and the second control element (4) being a knob (12) and the other being a ring selector (14) concentrically arranged around the knob (12), wherein the knob (12) is connected to a first converter (30) and the ring selector (14) is connected to a second converter (32) , wherein the splitting unit is arranged between the first and second control element (2, 4) on one side and the first and second converter (30, 32) on the other side

The invention further concerns an oven with the control unit (10) .

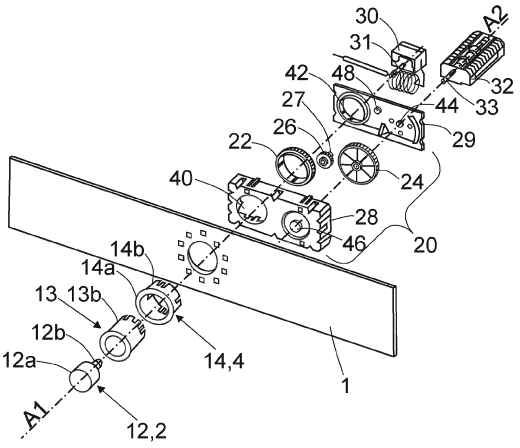

Fig.3

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Description

[0001] The invention is directed to a control unit for an electromechanical oven and an oven.

BACKGROUND OF THE INVENTION

[0002] Typical ovens, either standalone appliance or build in appliance, are provided with a casing, a muffle for preparing food and have a control panel having to control knobs, for controlling the heating of the food inside the oven. Such a panel is shown in FIG1. The panel 1 is provided with a first control element 2, which is a knob 12' that can be turned for selecting either a functionality, for example the selective activation of one or more heating elements or a fan, or a temperature. The panel 1 is further provided with a second control element 4, which is a further knob 14' that can be turned, for selecting the other of functionality or temperature. The knob 12' and the further knob 14' might be either designed as knobs protruding permanently from the panel or as push-in push out buttons which protrude only in use of the oven.

[0003] There is a need for a more modern design of the control panel and an oven and thus a space saving arrangement of the control elements is necessary.

[0004] The object of the invention is solved by the features according to claim 1 and claim 15. Particular embodiments are disclosed in the depending claims and throughout the description.

SUMMARY OF THE INVENTION

[0005] According to the invention, the control unit for an electromechanical oven comprises:

> a first control element and a second control element and a splitting unit,
> wherein one of the first control element and the second control element being a knob and the other being a ring selector concentrically arranged around the knob,
> wherein the knob is connected to a first converter and the ring selector is connected to a second converter, wherein the splitting unit is arranged between the first and second control element on one side and the first and second converter on the other side. If the control unit is attached to a panel or control panel only the knob and the ring selector are accessible. Splitter unit and first and second converter are arranged on the back side or second side of the panel.

[0006] The control element are now arranged concentrically, while the first and second converter are arranged separately from each other. The first and the second converter are electromechanical components which convert a rotating movement or predetermined rotational position of the respective control element into an electrical signal.

[0007] According to one embodiment, the splitting unit comprises a gear set, wherein in particular the gear set is arranged in a box.

[0008] According to one embodiment, wherein the splitting unit is provided as bearing for one or more gears of the gear set.

[0009] According to one embodiment, the knob is connected by a first axis to the first converter. In particular, the knob and the first converter are arranged in an on axis configuration. According to one embodiment, the ring selector is connected over the gear set to a second axis to the second converter. The second axis is different from the first axis. In particular the first and the second axis are parallel to each other and the first and the second axis are spaced apart from each other.

[0010] According to one embodiment, the gear set comprises at least a first gear and a second gear, wherein the second gear is arranged on the second axis and/or the first gear is arranged on the first axis.

[0011] According to one embodiment, the gear set comprises a third gear interconnecting the first gear and the second gear.

[0012] According to one embodiment, the splitting unit comprises a box, in particular a box with a cover.

[0013] According to one embodiment, the third gear being integrally formed with an axle and/or the box forming bearing for the third gear. The box or cover might from a bearing by providing a ring shaped protrusion.

[0014] According to one embodiment, the first and the second converter are placed side by side, in particular at the same distance from the splitting unit. The distance is in particular a distance in the direction of the first axis.

[0015] According to one embodiment, the first gear is provided with a ring shape for concentrically attaching to the back side of the ring selector.

[0016] According to one embodiment, a design ring is placed between the knob and the ring selector.

[0017] According to one embodiment, the knob and the ring selector are provided with a push button mechanism.

[0018] According to one embodiment, the first control element selects a heating temperature and the second control element selects a heating function of the oven. Such a heating function might be for example top heating, bottom heating, hot air or convection heating or a combination thereof.

[0019] According to the invention an oven with a control unit comprising a casing, a muffle and one or more heating elements and/or cooking functions, the oven being provided with a panel, wherein the first and second control element are arranged with this panel, in particular arranged in the center of the panel. The control unit is provided according to one of the above embodiments.

BRIEF DESCRIPTION OF THE DRAWINGS

[0020] The various aspects of the invention, including its particular features and advantages, will be readily understood from the following detailed description and the

accompanying drawings, in which:

FIG 1 shows a panel with control unit according to prior art

FIG 2 shows a panel with control unit according to the invention

FIG 3 shows an exploded view of an embodiment of the control unit,

FIG 4 shows an embodiment of the splitting unit and

FIG 5 shows a view from the backside of the control unit.

[0021] FIG 2 shows an embodiment of the control unit 10 being connected to a panel 1. The control unit is provided with or comprises a first control element 2 and a second control element 4. In the present embodiment the first control element 2 is provided as central knob 12 and second control element 4 is provided as ring selector which is concentrically arranged around the knob 12. However, the second control element could as well be the knob and the first control element the ring selector.

[0022] The knob 12 as well as the ring selector 14 are designed to control a function or a temperature of an oven by turning the knob or the ring selector to a designated position and thus switching to a function or temperature by means of the converters being electromechanical components. In particular, the knob 12 and the ring selector 14 might be provided each with a push-in push-out mechanism, such that the knob 12 and the ring selector 14 might be both in a protruding position, only the knob 12 is in a protruding position or non-of them is in a protruding position.

[0023] FIG 3 shows an exploded view of the control unit and the position of panel 1.

[0024] Knob 12 is located on a first axis A1 and is provided with a handling part 12a with axis pin 12b directed to a back side. The ring selector 14 has a flat surface located in a handling part 14a of the ring selector 14 and a flange 14b protruding to an back side. In between the ring selector 14 and the knob 12, there is shown an optional design ring 13. The design ring 13 is as well provided with a protruding flange 13b. This design ring 13 might be fixed with the knob 12 or with the ring selector 14. The flanges 13b, 14b as well as the axis pin 12b are designated to pass through a hole in the panel 1.

[0025] On the back side of the panel 1 there is arranged the splitting unit 20. The splitting unit 20 comprises a box 28 and a cover 29 for closing the box 20. Inside the box 28, a gear set is arranged. The gear set comprises at least a first gear 22 and a second gear 24. The first gear 22 is arranged on the axis A1 and the second gear 24 is arranged on the second axis A2. The first and the second axis A1, A2 are arranged parallel to each other and spaced apart from each other.

[0026] The first gear 22 is provided as ring, such that an axis from the knob 12 extending to the first converter 30 and a matching axis 31 of the first converter extending to the knob 12 may pass, in particular centrally through the first gear 22 without contacting this first gear 22. This axis from the knob 12 to the first converter 30 extends through opposing holes 40, 42 in the box 28 and the cover 29.

[0027] The first gear 22 is attached to the flange 14b of the ring selector 14 and is fixed regarding a circumferential direction. The first gear 22 engages with the second gear 24 by means of a third gear 26. Thus the third gear 26 is arranged between the first gear 22 and the second gear 24.

[0028] The second gear 24 is connected to the second converter 32 by means of an axis A2. The axis from the second gear 24 to the second converter 32 passes through another hole 44 in the cover 29, wherein a part the box 28 opposing this hole might be provided as bearing 46. In particular the second converter 32 is provided with an axis pin 33.

[0029] The third bearing 26 engages with the first bearing 22 and the second bearing 24 as shown as well in FIG 4. The third bearing 26 is arranges between the first bearing 22 and the second bearing 24. The third bearing 26 may be provided with an integral axle 27, wherein the cover 29 or alternatively the box 28 serves as bearing 48 for the axle 27 of the of the third bearing 26.

[0030] FIG 5 shows the panel 1 with the control unit 10 from the back side. The first converter 30 and the second converter 32 are arranged side by side. Those converters are arranged at a back side of the splitting unit 20 comprising the box 28 and the cover 29. Those converters are arranged at a same distance from the splitting unit 20, however a placement at different distances would be as well possible.

[0031] It should be noted that the description and drawings merely illustrate the principles of the proposed control unit. Those skilled in the art will be able to implement various arrangements that, although not explicitly described or shown herein, embody the principles of the invention.

List of reference numerals

[0032]

1	panel
2	first control element
4	second control element
10	control unit
12	knob
12a	handling part
12b	axis pin
12’	knob
13	design ring
13b	flange
14	ring selector

14a handling part
14b flange
14' further knob

20 splitting unit
22 first gear
24 second gear
26 third gear
27 axle
28 box
29 cover

30 first converter
31 first converter axis
32 second converter
33 second converter axis

40 through hole
42 through hole
44 through hole
46 bearing
48 bearing

A1 first axis
A2 second axis

Claims

1. Control unit (10) for an electromechanical oven comprising:

a first control element (2) and a second control element (4) and a splitting unit (20),
wherein one of the first control element (2) and the second control element (4) being a knob (12) and the other being a ring selector (14) concentrically arranged around the knob (12),
wherein the knob (12) is connected to a first converter (30) and the ring selector (14) is connected to a second converter (32), wherein the splitting unit (20) is arranged between the first and second control element (2, 4) on one side and the first and second converter (30, 32) on the other side.

2. Control unit (10) according to claim 1, wherein the splitting unit (20) comprises a gear set, wherein in particular the gear set is arranged in a box (28).

3. Control unit (10) according to claim 2, wherein the splitting unit (20) is provided as bearing for one or more gears of the gear set.

4. Control unit (10) according one of the preceding claims, wherein the knob (12) is connected by a first axis (A1) to the first converter (30), in particular the knob (12) is in an on-axis configuration with the first converter (30).

5. Control unit (10) according to one of the preceding claims, wherein the ring selector (14) is connected over the gear set to a second axis (A2) different from the first axis (A1) to the second converter (32), wherein in particular the second axis (A2) is parallel to the first axis (A1) and the second axis (A2) is spaced apart from the first axis (A1).

6. Control unit (10) according to one of the preceding claims, wherein the gear set comprises at least a first gear (22) and a second gear (24), wherein the second gear (24) is arranged on the second axis (A2) and/or the first gear (22) is arranged on the first axis (A1).

7. Control unit (10) according to one of the preceding claims, wherein the gear set comprises a third gear (26) interconnecting the first gear (22) and the second gear (24).

8. Control unit (10) according to one of the preceding claims, wherein the splitting unit (20) comprises a box (28), in particular a box (28) with a cover (29).

9. Control unit (10) according to one of the preceding claims, the third gear (26) being integrally formed with an axle (27) and/or the box (28) forming a bearing for the third gear (26).

10. Control unit (10) according to one of the preceding claims, wherein the first and the second converter (30, 32) are placed side by side, in particular at the same distance from the splitting unit (20).

11. Control unit (10) according to one of the preceding claims, wherein the first gear (22) is provided with a ring shape for concentrically attaching to the back side of the ring selector (14).

12. Control unit (10) according to one of the preceding claims, wherein between the knob (12) and the ring selector (14) a design ring (13) is placed.

13. Control unit (10) according to one of the preceding claims, wherein the knob (12) and the ring selector (14) are provided with a push button mechanism.

14. Control unit (10) according to one of the preceding claims, wherein the first control element (2) selects a heating temperature and the second control element (4) selects a heating function.

15. Oven with a Control unit (10) according to any of the preceding claims, comprising a casing, a muffle and one or more heating elements and/or cooking functions, the oven being provided with a panel (1),

wherein the first and second control element are arranged with this panel (1), in particular arranged in the center of the panel (1).

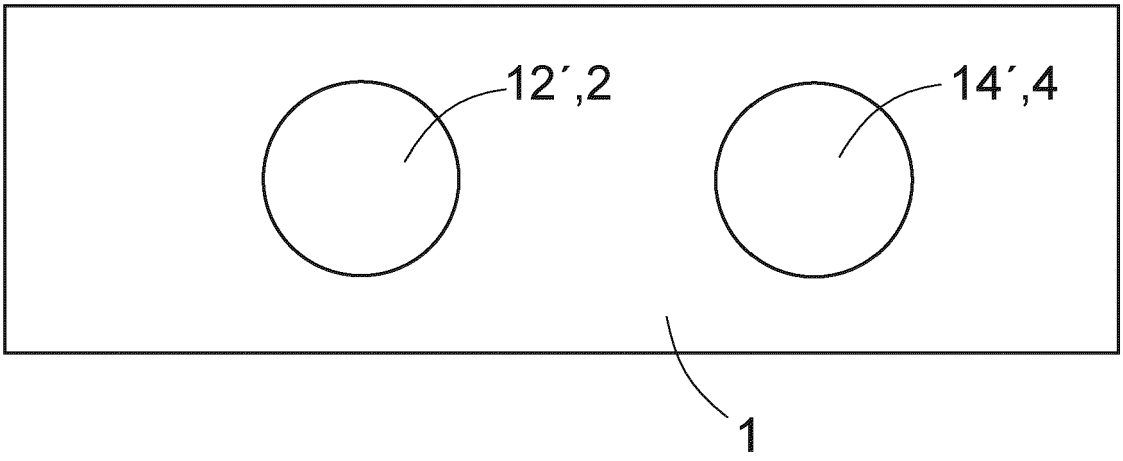


Fig.1

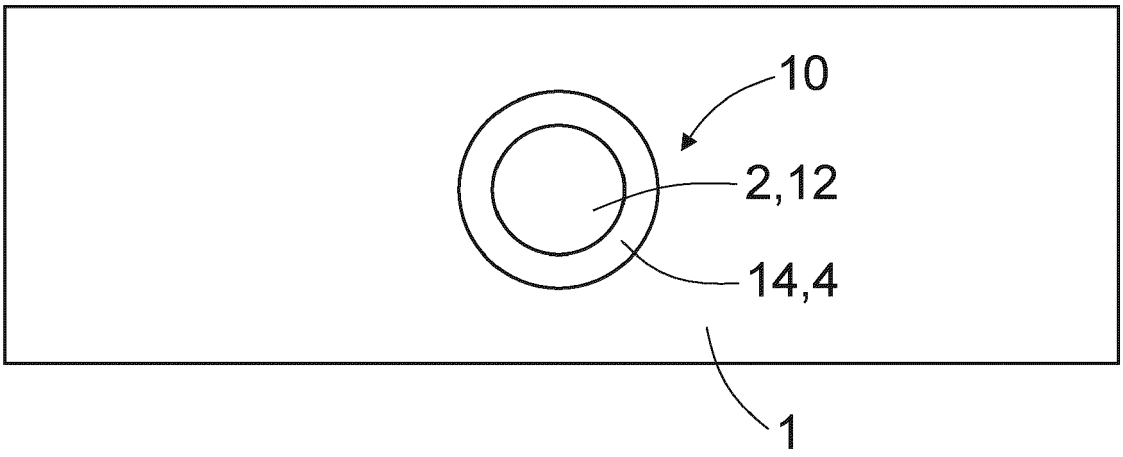
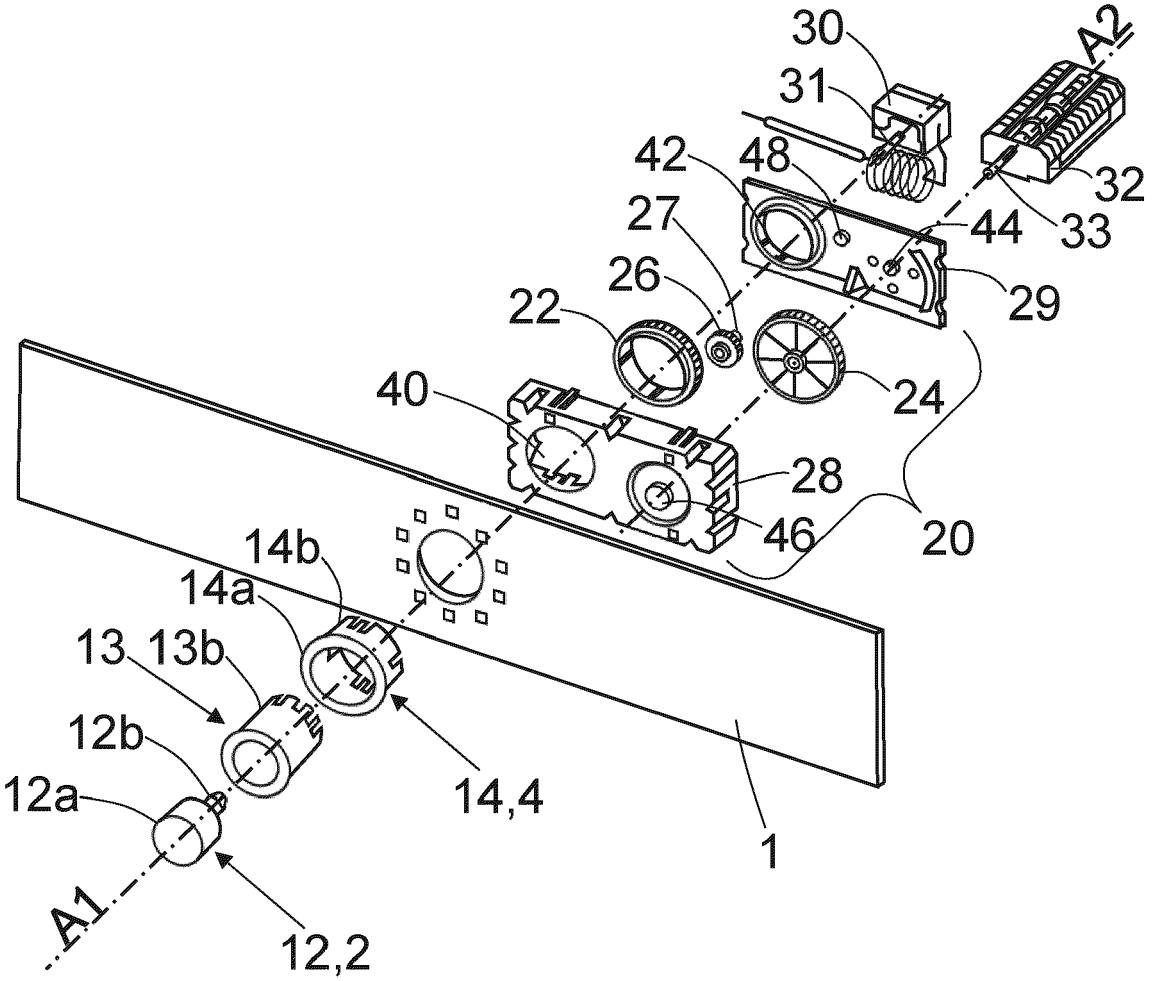


Fig.2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A2
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44
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22
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46
20
14b
14a
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13b
12b
12a
14,4
1
A1
12,2

Fig.3

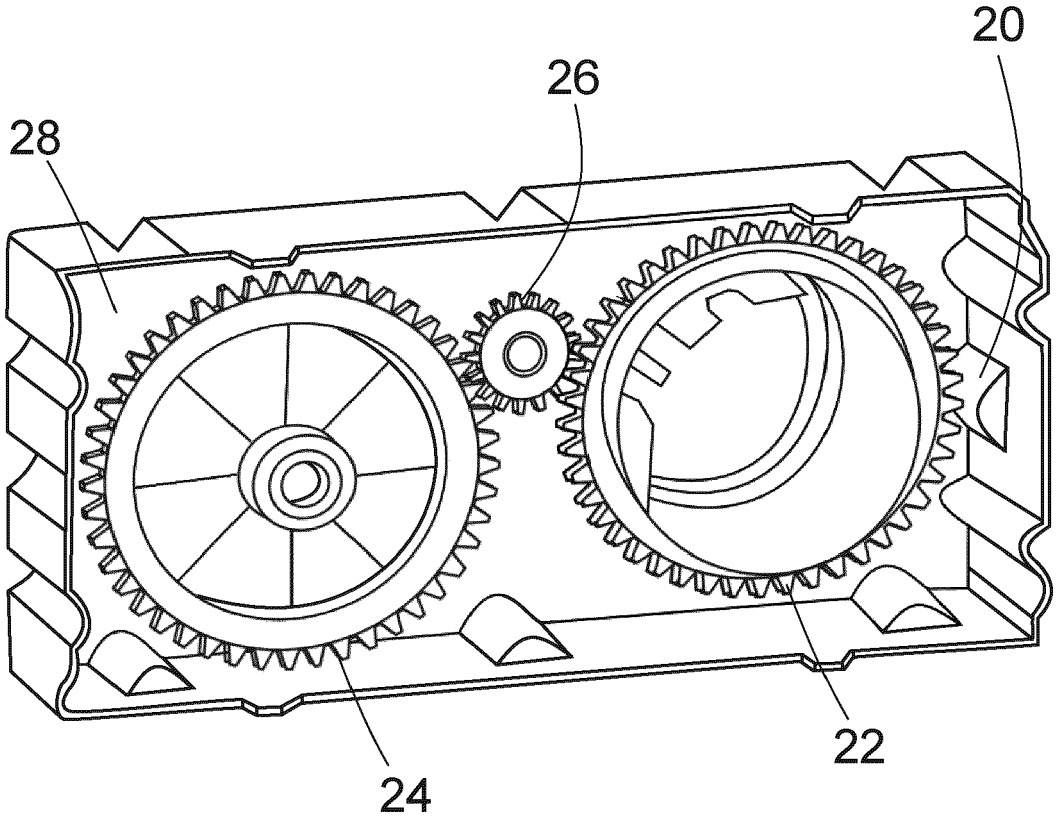

Fig.4

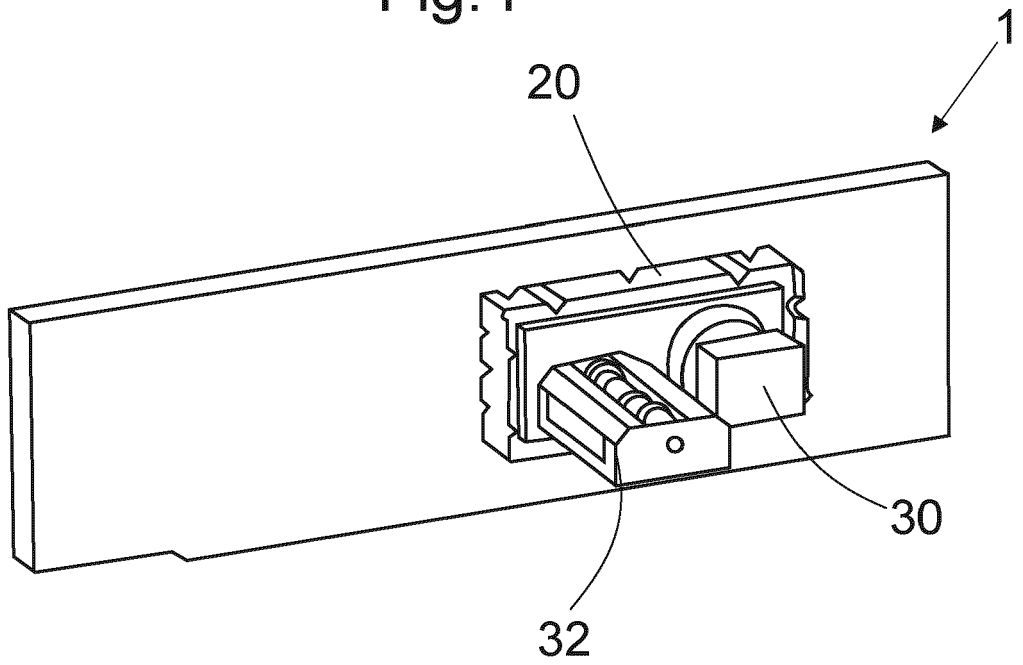

Fig.5

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EUROPEAN SEARCH REPORT

Application Number
EP 21 16 0066

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A	US 2016/333991 A1 (EDINGER BENJAMIN [US] ET AL) 17 November 2016 (2016-11-17) * figures *	1-15	
A	WO 2010/134040 A1 (ELTEK SPA [IT]; GADINI COSTANZO [IT]; COLOMBO PAOLO [IT]) 25 November 2010 (2010-11-25) * figure 3 *	1-15	
A	US 2018/238550 A1 (HA YEONSIK [KR] ET AL) 23 August 2018 (2018-08-23) * figure 5 *	1-15	
A	US 8 664 551 B2 (NAKAJIMA HIROKATSU [JP]; CHAEN SATORU [JP] ET AL.) 4 March 2014 (2014-03-04) * figures 1-4 *	1-15	TECHNICAL FIELDS SEARCHED (IPC) F24C G05G H01H

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	30 July 2021	Adant, Vincent

CATEGORY OF CITED DOCUMENTS

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