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(54) VERSATILE AIR CONDITIONER

(57) An air conditioner (10) is described. The air conditioner comprises an air inlet, a fan for forming an air flow and an air outlet. The air conditioner further comprises a booster fan connector (20) provided at the air outlet configured to connect to a detachable booster fan (18). Hereby it is obtained that a detachable booster fan (18) can be attached and detached to/ from the air conditioner whereby the use of the booster fan can be made more versatile.

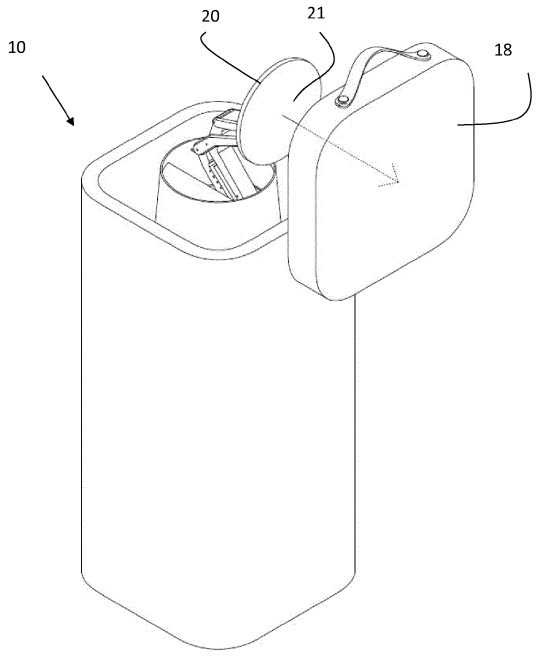

Fig. 1b

EP 4 517 200 A1

Description

TECHNICAL FIELD

[0001] The invention relates to an air-conditioner. In particular the invention relates to an air-conditioner provided with a booster fan.

BACKGROUND

[0002] Air conditioning is a collective expression for conditioning (treating) air into a desired state. Thus, an air-conditioner can be used to treat air and can also be termed air treatment device. The treating can comprise heating the air during cold periods, cooling the air during warmer periods or for cleaning/purifying the air if it contains unwanted particles. The treating can also comprise to humidify or to dehumidify air. In general, an air conditioner has an air inlet some air treatment component and an air outlet.

[0003] Typically, the final output from the air-conditioner is conditioned air blown into a room or some other space. It is typically desired that the air is delivered at low noise, in a sufficient amount and also the process of delivering air should be energy efficient.

[0004] In particular devices such as air purifiers, air humidifiers, air conditioners for cooling/heating etc. works by drawing in the surrounding air through an inlet and treating it with regards to e.g., purity, humidity and temperature. These platforms benefit from having a good air distribution of the ejected air for a more even and efficient treatment of the air in the surrounding area.

[0005] Nowadays it is becoming more common for air treatment devices such as air purifiers to have an axial fan on top of the platform which act as a booster (booster fan) to increase the air distribution of the platform. For example, EP 3967940 describes an air purifier having such a booster fan.

[0006] There is a constant desire to improve air conditioners and similar devices. Hence, there exists a need for an improved air conditioner.

SUMMARY

[0007] It is an object of the present invention to provide an improved air conditioner. In particular it is an object of the present invention to provide an improved air conditioner provided with a booster fan.

[0008] These objects and or others are obtained by an air conditioner as set out in the appended claims.

[0009] In accordance with the invention an air conditioner is provided. The air conditioner comprises an air inlet, a fan for forming an air flow and an air outlet. The air conditioner further comprises a booster fan connector provided at the air outlet configured to connect to a detachable booster fan. Hereby it is obtained that a detachable booster fan can be attached and detached to/ from the air conditioner whereby the use of the booster fan can be made more versatile. The booster fan can be used to boost and redirect the air flow from the air conditioner when attached to the air conditioner and also serve as a separate fan when detached from the air conditioner.

[0010] The booster fan connector can be formed in different manners. In accordance with one embodiment the booster fan connector comprises a magnet for connecting to the detachable booster fan via a magnetic force. In accordance with another embodiment the booster fan connector comprises a snap fit element for connecting to the detachable booster fan via a snap fit connection.

[0011] In accordance with one embodiment, the booster fan connector comprises a power outlet configured to provide power to a detachable booster fan. Hereby the detachable booster fan can be powered by the air conditioner in an easy and user-friendly manner.

[0012] In accordance with one embodiment, the booster fan connector comprises a tiltable arrangement. Hereby the booster fan can be positioned in different positions when attached to the air conditioner whereby the air output from the air conditioner can be redirected into a desired direction by the booster fan.

[0013] In accordance with one embodiment, the booster fan connector comprises a communication interface configured to connect to a detachable booster fan. Hereby control signals can be communicated to the booster fan from the air conditioner. For example, the speed of the booster fan can be controlled via signaling over the communication interface.

[0014] In one mode of operation a detachable booster fan is connected to the booster fan connector. The booster fan can comprise a power inlet for providing power to the booster fan. In accordance with one embodiment, the booster fan comprises a power inlet configured to mate with the power outlet of the booster fan connector. Hereby the booster fan can be powered directly when attached to the air conditioner without the need for additional connections to be attached. In accordance with one embodiment, the booster fan comprises a battery. Hereby the booster fan can be powered when detached from the air conditioner without the need for a separate power connection for powering the booster fan when in a detached mode of operation. In accordance with one embodiment, the booster fan comprises a handle. Hereby the booster fan can be easily attached or detached and also carried around when detached.

[0015] The air conditioner as described herein can for example be an air-purifier.

BRIEF DESCRIPTION OF THE DRAWINGS

[0016] The invention will now be described in more detail, by way of example, and with reference to the accompanying drawings, in which:

Figs. 1a and 1b are views in perspective of an air

conditioner having a booster fan,

Figs. 2a and 2b are side views of an air conditioner, and

Fig. 3 is another side view of the air conditioner of Figs 2a and 2b.

DETAILED DESCRIPTION

[0017] The invention will now be described more fully hereinafter with reference to the accompanying drawings, in which certain embodiments of the invention are shown. The invention may, however, be embodied in many different forms and should not be construed as limited to the embodiments set forth herein; rather, these embodiments are provided by way of example so that this disclosure will be thorough and complete, and will fully convey the scope of the invention to those skilled in the art. For example, like or similar components of different embodiments can be exchanged between different embodiments. Some components can be omitted from different embodiments. Also, some components typically used in an air conditioner have been omitted to more clearly show the invention. Like numbers refer to like elements throughout the description.

[0018] In Fig. 1a, a view in perspective of an air conditioner 10 is shown. The air conditioner 10 comprises an air inlet 12. The air inlet can for example be located at the bottom side of the air conditioner 10 or at the sides thereof or both. Inside the air conditioner 10, a fan 14 for forming an air flow is located Further an air outlet 16 is provided. The air conditioner 10 can also be provided with a booster fan 18 for example as described in EP 3967940. The booster fan can typically be an axial fan.

[0019] As can be seen in Fig. 1b, the booster fan 18 can be detached from the air-conditioner 10. Hereby the use of the booster 18 fan can be made more versatile and the booster fan can be located at used disconnected from the air-conditioner in a detached mode of operation. Thus, the air conditioner 10 can be provided with a connector 20 for connecting to the booster fan 18 such that the booster fan can be detached from the air conditioner 10. The booster fan connector 20 can in accordance with one embodiment be formed by a magnet 21 for connecting to the detachable booster fan 18 via a magnetic force. Thus, the booster fan 18 can be used both in an attached state of operation with the booster fan 18 connected to the air conditioner 10 and in a detached mode of operation with the booster fan 18 disconnected from the air conditioner 10.

[0020] In accordance with another embodiment the booster fan connector 20 can be formed by a snap fit element for connecting to the detachable booster fan via a snap fit connection. Other similar means for connecting the booster fan to the air conditioner in a detachable manner can also be envisaged.

[0021] In Fig. 2a, a side view of an air conditioner 10 provided with a detachable booster fan 18 is depicted. In accordance with the embodiment of Fig. 2a, the booster fan connector 20 comprises a tiltable arrangement 19. The tiltable arrangement 19 is provided to allow for the booster fan to be positioned in different positions (angles) in relation to the air outlet 16 so that air can be blown in a selected angle from the air conditioner 10. The tiltable arrangement 19 can be configured in different manners. For example, the tiltable arrangement 19 can be formed as a foldable mechanism that can allow for the tiltable arrangement 19 to be folded into the top section of air conditioner 10 in one state and to be expandable and tilted in another state. Thus, in a retracted state the tiltable arrangement 19 can be fully retracted into the air conditioner and in an expanded state the tiltable arrangement 19 can be tilted in different angles such as shown in Figs. 1 - 3. In accordance with some embodiments the tiltable arrangement 19 can be set in any desired angle such as 0 degrees or 45 degrees or 90 degrees in relation the top surface of the air conditioner 10.

[0022] In Fig. 2b, the detachable booster fan 18 is seen detached from the state the tiltable arrangement 19. The detachable booster fan 18 can be provided with a handle 22 for easier detachment of the detachable booster fan 18. Also, the booster fan 18 can comprise a power inlet 24 allowing for charging or powering the booster fan 18 when detached form the air conditioner 10. The booster fan can also comprise a battery 27 or similar device that can power the booster fan 18 when detached from the air conditioner and when there is no power supplied via the power inlet 24.

[0023] Also, the booster fan connector 20 can comprise a power outlet 26 configured to provide power to a detachable booster fan 18. In accordance with some embodiments, the booster fan power inlet 24 is configured to mate with the power outlet 26 of the booster fan connector. Also, there can be two separate power inlets 24, one that connects to the power outlet 26 of the booster fan connector and one that can be connected to a separate power outlet for example via a cord or similar.

[0024] In addition, the booster fan connector 20 can comprise a communication interface 28 configured to connect to a detachable booster fan 18 so that the booster fan 18 can be controlled by a controller of the air conditioner. For example, the speed of the booster fan 18 can then be controlled directly by the air conditioner 10.

[0025] In Fig. 3, another side view of the air conditioner 10 is shown. In the view of Fig. 3, the tiltable arrangement 19 is set in another angle than in Fig. 2a of about 45 degrees. Also, the connector 20 is provided with a snap fit element 29 to connect to the detachable booster fan 18 instead of or as a supplement to a magnetic connector.

[0026] The air conditioner as set out above allows for a more versatile use of the booster fan and can enable a better air distribution from the air conditioner which is typically important when the air conditioner is an air purifier.

Claims

1. An air conditioner (10) comprising:

   - an air inlet (12),
   - a fan (14) for forming an air flow,
   - an air outlet (16), and further comprising
   - a booster fan connector (20) provided at the air outlet configured to connect to a detachable booster fan.

2. The air conditioner (10) according to claim 1, wherein the booster fan connector (20) comprises a magnet (21) for connecting to the detachable booster fan via a magnetic force.

3. The air conditioner (10) according to claim 1, wherein the booster fan connector (20) comprises a snap fit element (29) for connecting to the detachable booster fan via a snap fit connection.

4. The air conditioner (10) according to any one of claims 1 - 3, wherein the booster fan connector (20) comprises a power outlet (26) configured to provide power to a detachable booster fan.

5. The air conditioner (10) according to anyone of claims 1 - 4, wherein the booster fan connector (20) comprises a tiltable arrangement (19).

6. The air conditioner (10) according to anyone of claims 1 - 5, wherein the booster fan connector (20) comprises a communication interface (28) configured to connect to a detachable booster fan.

7. The air conditioner (10) according to anyone of claims 1 - 6, further comprising a detachable booster fan (18) connected to the booster fan connector (20).

8. The air conditioner (10) according to claim 7, wherein the booster fan (18) comprises a power inlet (24).

9. The air conditioner (10) according to any one of claims 7 -8, wherein the booster fan (18) comprise a power inlet (24) configured to mate with the power outlet of the booster fan connector.

10. The air conditioner (10) according to any one of claims 7 -9, wherein booster fan comprises a battery (27).

11. The air conditioner (10) according to any one of claims 7 -10, wherein booster fan comprises a handle (22).

12. The air conditioner (10) according to anyone of claims 1 - 11, wherein the air conditioner is an air-purifier.

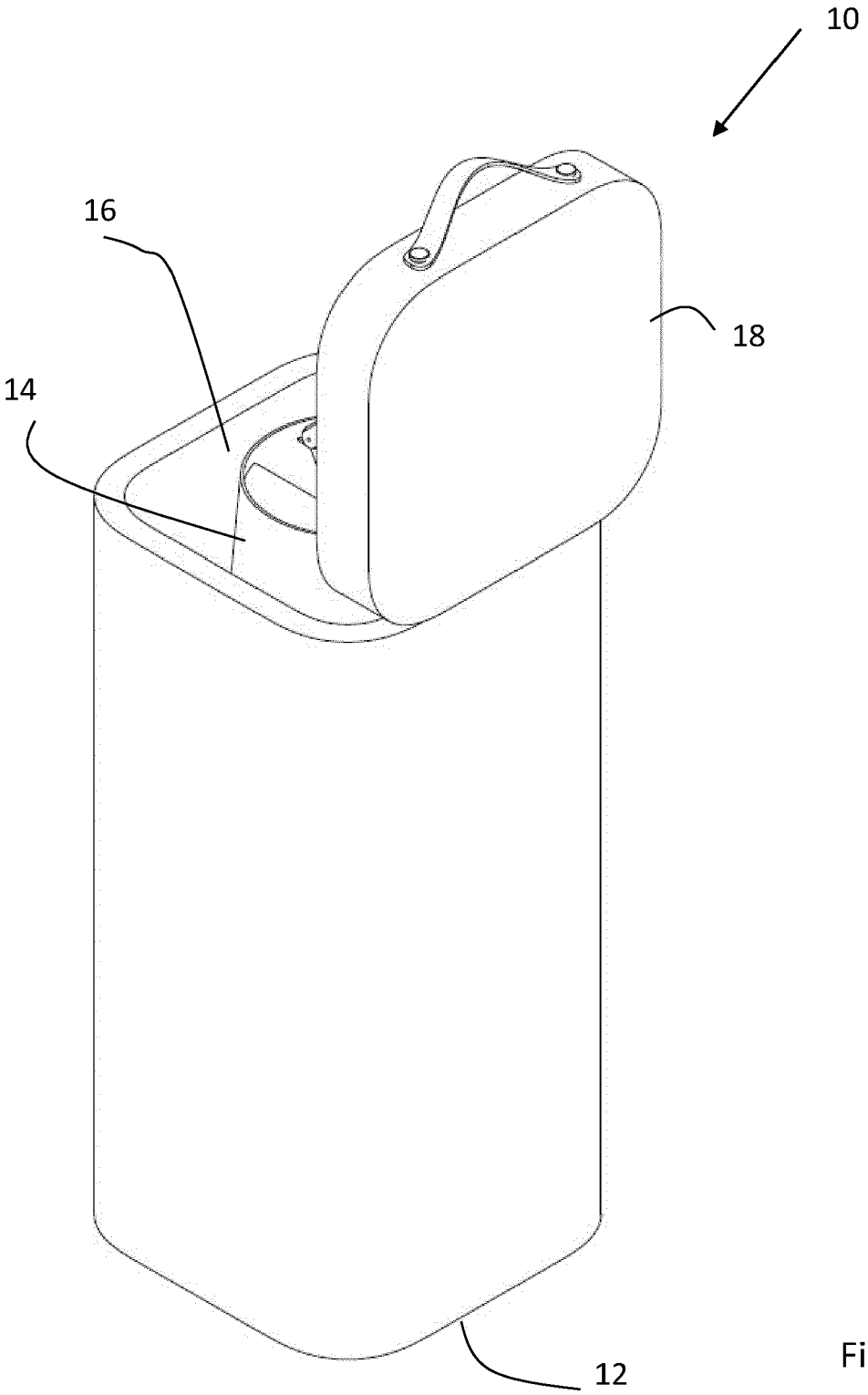

Fig. 1a

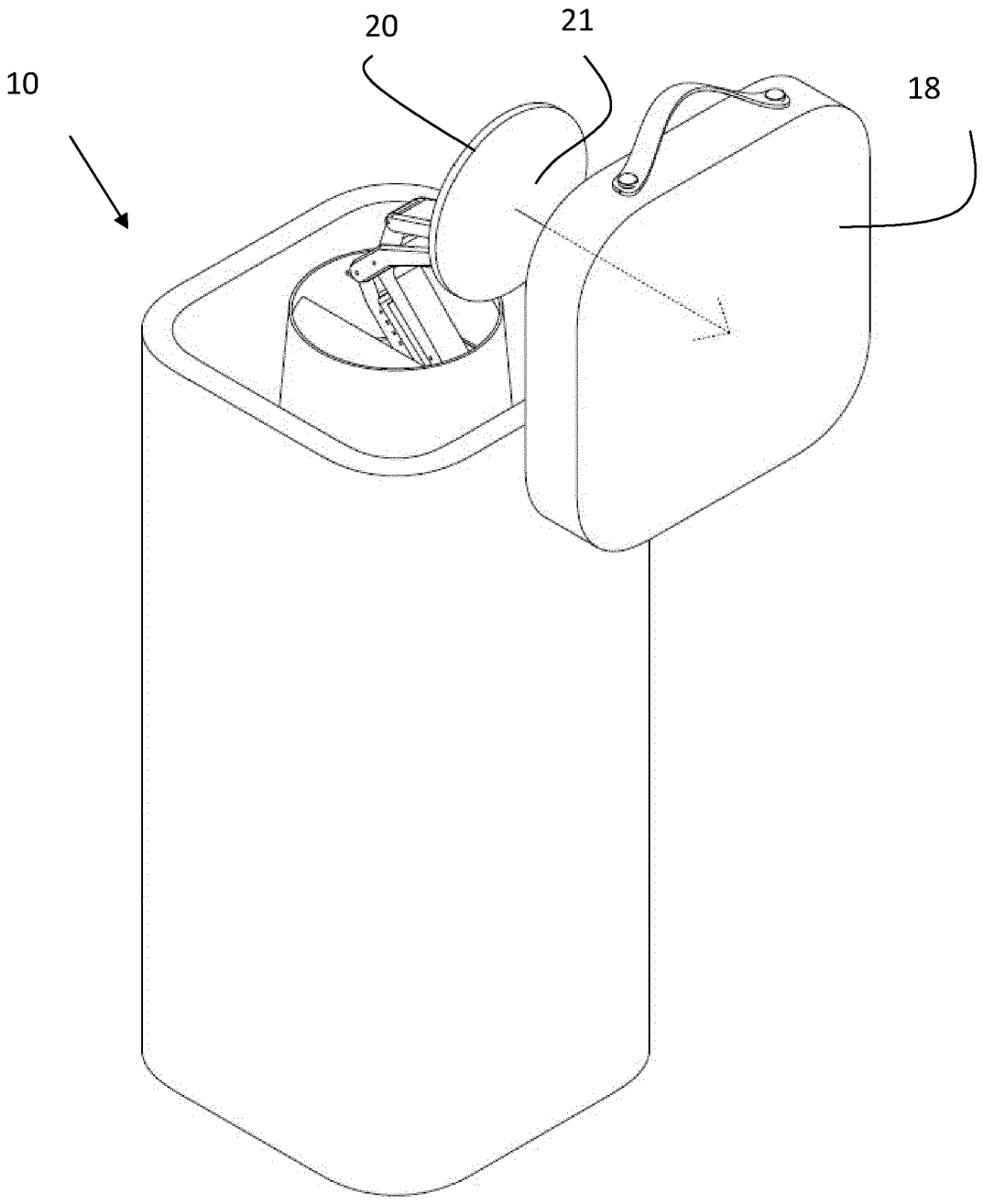

Fig. 1b

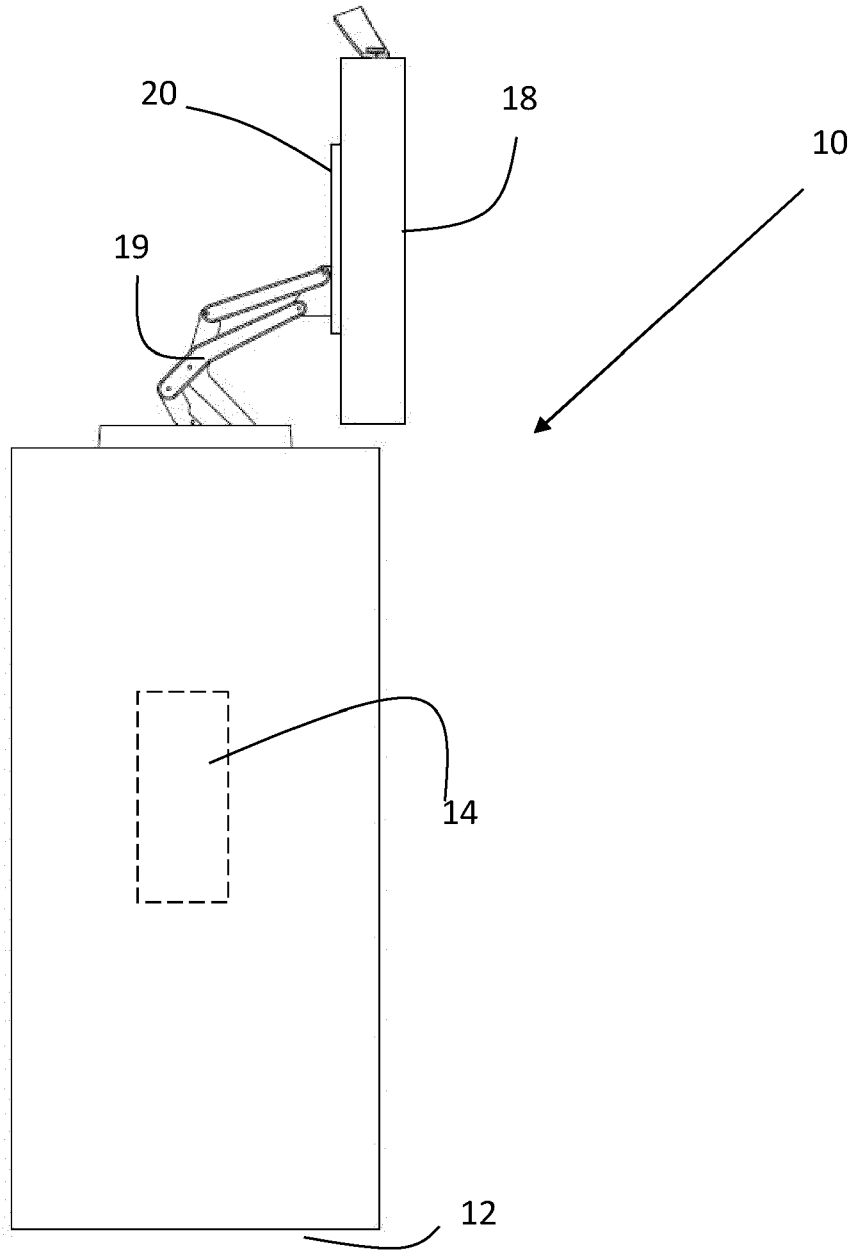

Fig. 2a

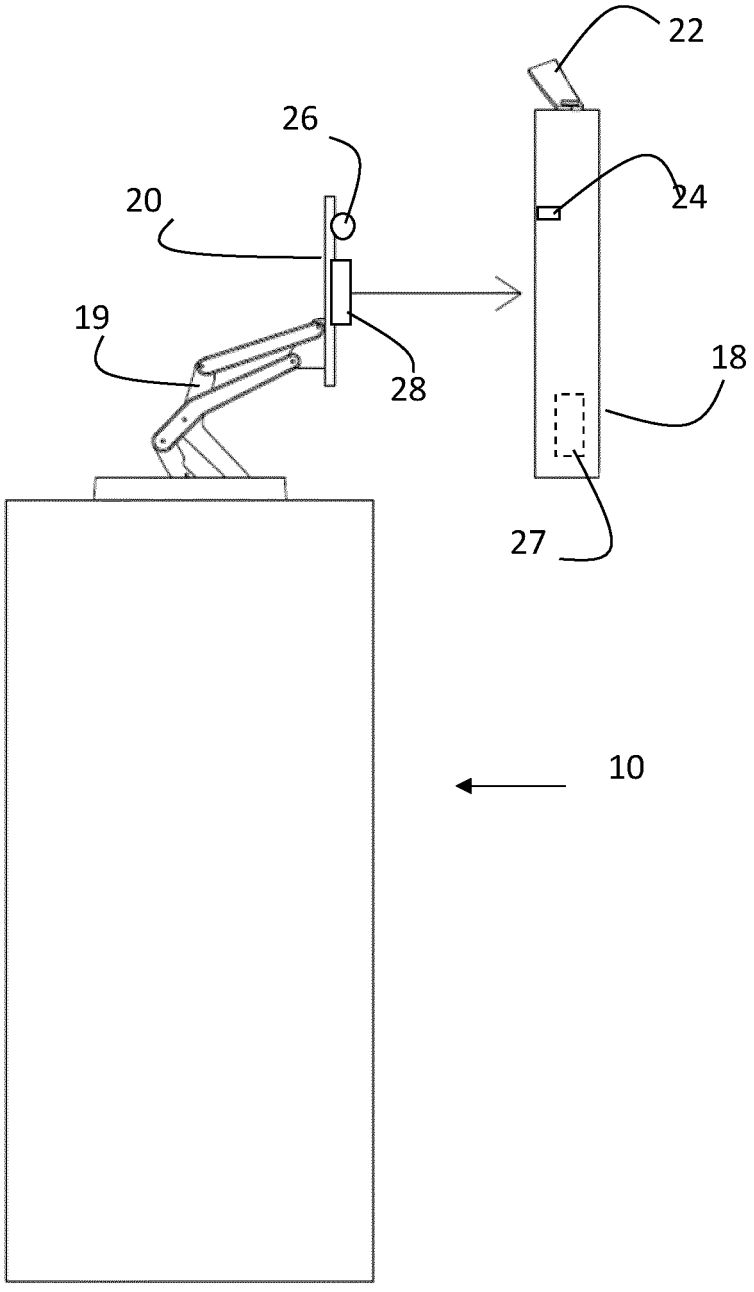

Fig. 2b

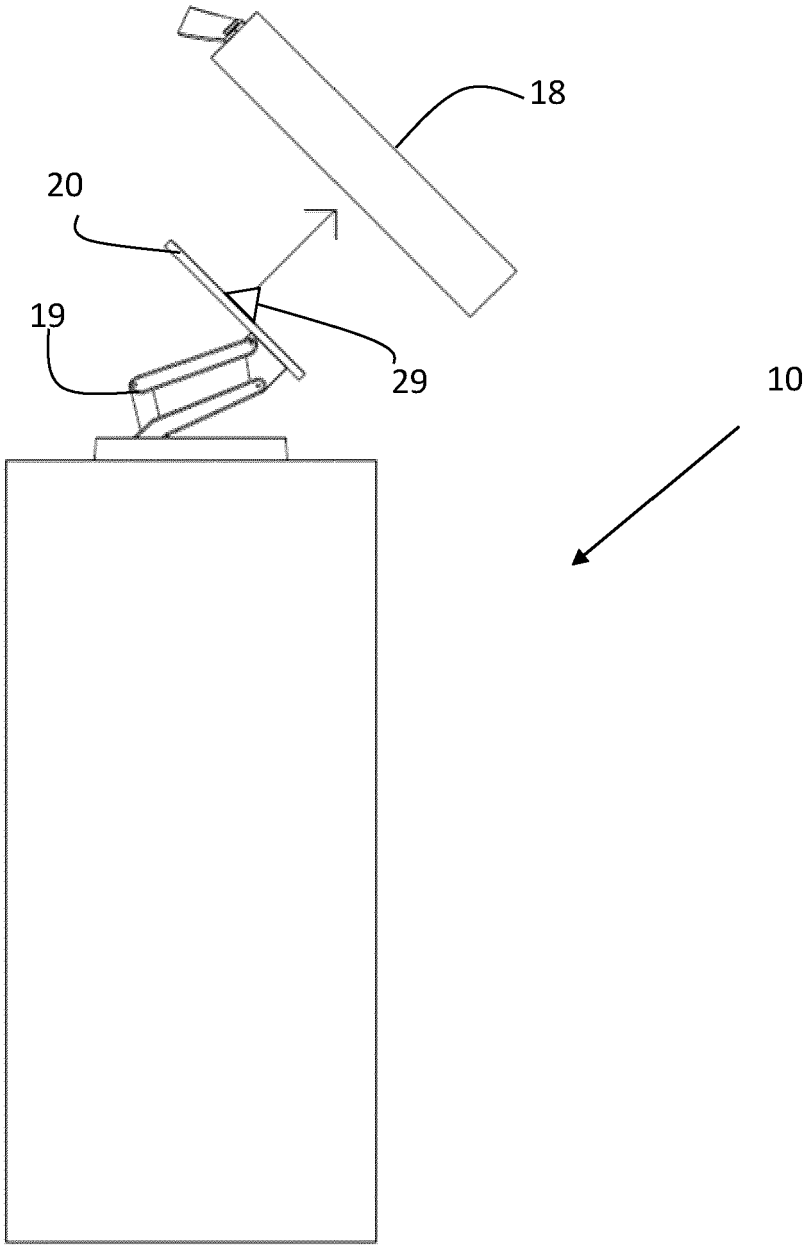

Fig. 3

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EUROPEAN SEARCH REPORT

Application Number
EP 24 18 4849

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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
Munich	3 December 2024	Mattias Grenbäck

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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