(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 3 779 303 A1

(12) EUROPEAN PATENT APPLICATION
published in accordance with Art. 153(4) EPC

(43) Date of publication:
17.02.2021 Bulletin 2021/07

(21) Application number: **18933487.3**

(22) Date of filing: **27.12.2018**

(51) Int Cl.:
F24F 11/65 *(2018.01)*

(86) International application number:
PCT/CN2018/124424

(87) International publication number:
WO 2020/052166 (19.03.2020 Gazette 2020/12)

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME
Designated Validation States:
KH MA MD TN

(30) Priority: **12.09.2018 CN 201811064412**

(71) Applicant: **Gree Electric Appliances, Inc. of Zhuhai**
Zhuhai, Guangdong 519070 (CN)

(72) Inventors:
- **HAN, Xue**
  Zhuhai City, Guangdong 519070 (CN)
- **ZHANG, Xin**
  Zhuhai City, Guangdong 519070 (CN)
- **WANG, Huijun**
  Zhuhai City, Guangdong 519070 (CN)
- **MAO, Yuehui**
  Zhuhai City, Guangdong 519070 (CN)

(74) Representative: **Appleyard Lees IP LLP**
15 Clare Road
Halifax HX1 2HY (GB)

(54) METHOD, SYSTEM, AND DEVICE FOR CONTROLLING AIR OUTPUT MODE OF AIR CONDITIONER

(57) A method, a system, and a device for controlling an air exiting mode of an air conditioner are disclosed. The method includes: receiving an air conditioner control instruction configured to set the air exiting mode of the air conditioner, and transmitting augmented reality information corresponding to the air exiting mode to an augmented reality terminal, rendering, by the augmented reality terminal according to the augmented reality information, an augmented reality scene of an environment where the air conditioner is located. The present invention solves a technical problem in the related technology that a user could not intuitively feel an air exiting effect of the air exiting mode of the air conditioner.

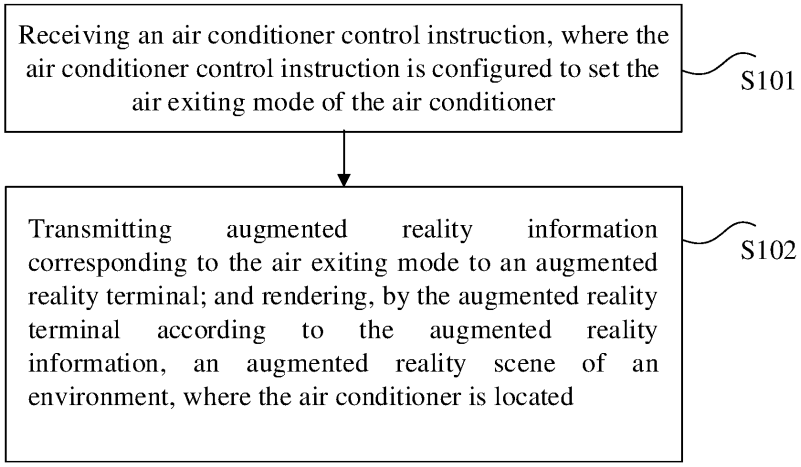

FIG. 1

EP 3 779 303 A1

Description

TECHNICAL FIELD

[0001] The present invention relates to a field of smart home appliance, and more particularly relates to a method, a system and a device for controlling an air exiting mode of an air conditioner.

BACKGROUND

[0002] With a development of technology, an air exiting mode of an air conditioner also becomes diverse. However, most of the air exiting modes cannot be intuitively felt by a user. On another hand, when faced with a variety of air exiting modes of the air conditioner, the user cannot intuitively determine an air exiting effect of the air exiting mode, which disables the user to make a corresponding choice, thus resulting in a reduction in user's experience of using the air conditioner.

[0003] In view of the above-mentioned problem, no effective solution has been proposed yet.

SUMMARY

[0004] The embodiments of the present invention provide a method, a system, and a device for controlling an air exiting mode of an air conditioner, so as to at least solve a technical problem in the related technology that a user cannot intuitively feel an air exiting effect of the air exiting mode of the air conditioner.

[0005] According to an aspect of the embodiments of the present invention, a method for controlling an air exiting mode of an air conditioner is provided and includes: receiving an air conditioner control instruction, the air conditioner control instruction being configured to set the air exiting mode of the air conditioner; transmitting augmented reality information corresponding to the air exiting mode to an augmented reality terminal; and rendering, by the augmented reality terminal according to the augmented reality information, an augmented reality scene of an environment, where the air conditioner is located.

[0006] Optionally, the method further includes: determining a scene layout of the environment, where the air conditioner is located; acquiring a scene element in the augmented reality information corresponding to the air exiting mode of the air conditioner; and based on an augmented reality algorithm, rendering the scene layout by using the scene element in the augmented reality information corresponding to the air exiting mode of the air conditioner, and obtaining an augmented reality scene corresponding to the air exiting mode.

[0007] Optionally, the scene element comprises at least one of an image, audio, and a video.

[0008] Optionally, the method further includes: determining air composition information, an air speed, and an air speed change in the augmented reality information corresponding to the exiting mode according to the air exiting mode of the air conditioner; and controlling the air conditioner to blow air according to the air composition information, the air speed, and the air speed change in the augmented reality information corresponding to the air exiting mode.

[0009] Optionally, the method further includes: determining air humidity information in corresponding augmented reality information according to the air exiting mode of the air conditioner; and controlling the air conditioner to adjust air humidity of a current environment according to the air humidity information in the augmented reality information corresponding to the air exiting mode.

[0010] According to another aspect of the embodiment of the present invention, a system for controlling an air exiting mode of an air conditioner is further provided, including: an air conditioner, configured to receive an air conditioner control instruction and transmit augmented reality information corresponding to the air exiting mode to an augmented reality terminal, the air conditioner control instruction being configured to set the air exiting mode of the air conditioner, and an augmented reality terminal, configured to receive the augmented reality information corresponding to the air exiting mode transmitted by the air conditioner, and configured to render an augmented reality scene of an environment where the air conditioner is located according to the augmented reality information.

[0011] Optionally, the air conditioner is configured to determine air composition information in corresponding augmented reality information according to the air exiting mode of the air conditioner, and the air conditioner further comprises an air processing device, arranged at an air outlet of the air conditioner, and configured to control composition information of exiting air of the air conditioner according to the air composition information in the corresponding augmented reality information.

[0012] Optionally, the air conditioner is configured to determine smell information in corresponding augmented reality information according to the air exiting mode of the air conditioner, and the air conditioner further comprises a smell processing device, arranged at an air outlet of the air conditioner, and configured to adjust a smell of exiting air of the air conditioner according to the smell information in the corresponding augmented reality information.

[0013] Optionally, the air conditioner is configured to determine air speed change information in corresponding augmented reality information according to the air exiting mode of the air conditioner, and the air conditioner further comprises an air speed control device, arranged at an air outlet of the air conditioner, and configured to control an air speed according to air speed information or the air speed change information in the corresponding augmented reality information.

[0014] Optionally, the air conditioner further comprises: the air conditioner is further configured to determine air humidity information in corresponding augmented re-

ality information according to the air exiting mode of the air conditioner, and the air conditioner further comprises a humidity control device, arranged inside the air conditioner, and configured to adjust a humidity according to the air humidity information in the corresponding augmented reality information.

[0015] Optionally, the augmented reality terminal comprises a smart mobile terminal, and an augmented reality invention is installed in the smart mobile terminal.

[0016] Optionally, the augmented reality terminal further comprises one of an augmented reality helmet and a pair of augmented reality glasses.

[0017] Optionally, the system further comprises: in a case that the augmented reality terminal is an augmented reality helmet, and the smell processing device is arranged in the augmented reality helmet.

Optionally, the air conditioner is configured to determine a picture or a video in corresponding augmented reality information according to the air exiting mode of the air conditioner, and the air conditioner further comprises a projection device, arranged above the air conditioner, and configured to perform projection according to the picture or the video in the corresponding augmented reality information.

[0018] Optionally, the augmented reality terminal is further configured to render the augmented reality scene of the environment, where the air conditioner is located, and a projection of the projection device according to the augmented reality information.

[0019] According to another aspect of the embodiment of the present invention, a device for controlling an air exiting mode of an air conditioner is further provided, including: a receiving unit configured to receive an air conditioner control instruction, the air conditioner control instruction being configured to set the air exiting mode of the air conditioner; and a transmitting unit configured to transmit augmented reality information corresponding to the air exiting mode to an augmented reality terminal, the augmented reality terminal rendering an augmented reality scene of an environment where the air conditioner is located according to the augmented reality information.

[0020] According to another aspect of the embodiment of the present invention, a storage medium is further provided, and includes a program stored thereon, the program, when executed, controls a device where the storage medium is located to implement the method for controlling the air exiting mode of the air conditioner mentioned above.

[0021] According to another aspect of the embodiment of the present invention, a processor configured to execute a program is further provided. The program, when executed, implements the method for controlling the air exiting mode of the air conditioner mentioned above.

[0022] In the embodiments of the present invention, the air conditioner control instruction for setting the air exiting mode of the air conditioner is received, and the augmented reality information corresponding to the air exiting mode is transmitted to the augmented reality terminal, so that the augmented reality terminal renders the augmented reality scene of the environment where the air conditioner is located according to the augmented reality information, thereby solving the technical problem in the related technology that the user cannot intuitively feel the air exiting effect of the air exiting mode of the air conditioner.

BRIEF DESCRIPTION OF THE DRAWINGS

[0023] The drawings described herein are used to provide a further understanding of the invention and constitute a part of the invention. The exemplary embodiments and description of the invention are used to explain the invention, but do not constitute an improper limitation to the invention. In the drawings:

FIG. 1 is a schematic flowchart illustrating an optional method for controlling an air exiting mode of the air conditioner according to an embodiment of the present invention;

FIG. 2 is a schematic diagram illustrating an optional system for controlling the air exiting mode of the air conditioner according to an embodiment of the present invention;

FIG. 2a is a schematic diagram illustrating another optional system for controlling the air exiting mode of the air conditioner according to an embodiment of the present invention;

FIG. 3 is a schematic diagram illustrating another optional system for controlling the air exiting mode of the air conditioner according to an embodiment of the present invention;

FIG. 3a is a schematic diagram illustrating another optional system for controlling the air exiting mode of the air conditioner according to an embodiment of the present invention;

FIG. 4 is a schematic diagram illustrating another optional system for controlling the air exiting mode of the air conditioner according to an embodiment of the present invention;

FIG. 5 is a schematic diagram illustrating another optional system for controlling the air exiting mode of the air conditioner according to an embodiment of the present invention;

FIG. 6 is a schematic diagram illustrating another optional system for controlling the air exiting mode of the air conditioner according to an embodiment of the present invention;

FIG. 7 is a schematic diagram illustrating another optional system for controlling the air exiting mode of the air conditioner according to an embodiment of the present invention;

FIG. 8 is a schematic diagram illustrating an optional device for controlling the air exiting mode of the air conditioner according to an embodiment of the present invention.

DETAILED DESCRIPTION OF THE EMBODIMENTS

[0024] In order to make those skilled in the art better understand the solutions of the present invention, the technical solutions in the embodiments of the present invention will be clearly and completely described hereafter with reference to the drawings of the embodiments of the present invention. It is apparent that the described embodiments are only a part of the embodiments of the present invention, but not all of the embodiments. On the basis of the embodiments of the present invention, all other embodiments obtained without any creative work of the ordinary person skilled in the art shall fall within the protection scope of the present invention.

[0025] It should be specified that the terms "first", "second", etc. in the description, the claims and the drawings in the present invention are just used to distinguish similar objects, but not used to describe a specific order or an order of priority. It should be understood that such terms may be interchangeable under appropriate conditions, such that the embodiments of the present invention illustrated in the drawing or described herein can be implemented, for example, in a sequence other than the sequences illustrated or described herein. In addition, the terms "comprise", "have" and any variations thereof are intended to cover a non-exclusive inclusion. For example, a process, a method, a system, a product, or a device that includes a series of steps or units is not limited to those steps or units listed clearly, but may include other steps or units, which are not clearly listed, or which are inherent to such a process, a method, a product or a device.

First Embodiment

[0026] Before introducing the technical solutions of the embodiment of the present invention, an application scene of the technical solutions of the embodiments of the present invention is firstly explained. The method for controlling the air exiting mode of the air conditioner in the embodiments of the present invention is provided in the air conditioner, and can present different air exiting modes of the air conditioner to the user through augmented reality, so that the user can intuitively feel the effect of the air exiting mode of the air conditioner.

[0027] According to an embodiment of the present invention, a method for controlling the air exiting mode of the air conditioner is provided. As shown in FIG. 1, the method includes:

S101, receiving an air conditioner control instruction, where the air conditioner control instruction is configured to set the air exiting mode of the air conditioner; and

S102, transmitting augmented reality information corresponding to the air exiting mode to an augmented reality terminal; and rendering, by the augmented reality terminal according to the augmented reality information, an augmented reality scene of an environment, where the air conditioner is located.

[0028] In an optional application scene, the air conditioner control instruction can be transmitted by an air conditioner remote controller and is received; or the air conditioner control instruction can be transmitted by an analog remote controller application or an air conditioner control application in a preset smart mobile terminal and is received. The air conditioner control instruction is configured to set the air exiting mode of the air conditioner.

[0029] In the technical solutions of the embodiment of the present invention, each air exiting mode of the air conditioner corresponds to a different display effect of an augmented reality. For example, in a case that the air exiting mode of the air conditioner is "healthy wind", and when the user sets the air exiting mode of the air conditioner to be the "healthy wind", a forest environment is rendered in the room where the air conditioner is located, and includes plants and animals, as well as sounds of the animal, and composition of air at an air outlet of the air conditioner is adjusted to be similar to that in the forest, thus creating a feeling of walking in a park, and achieving a purpose of relaxation. It should be noted that the description above is only an example, but not intended to limit the technical solutions of the embodiment of the present invention.

[0030] Each air exiting mode has a corresponding display effect of an augmented reality. Therefore, there is augmented reality information corresponding to the effect of augmented reality of the air exiting mode. The augmented reality information is provided to the augmented reality terminal, so that the augmented reality terminal renders the augmented reality. Optionally, the augmented reality information corresponding to the air exiting mode is transmitted to the augmented reality terminal, so that the augmented reality terminal renders the augmented reality scene of the environment where the air conditioner is located according to the augmented reality information.

[0031] In the above display effect of the air exiting mode of the air conditioner, the displayed contents such as the picture, the audio, or the video or the like, is displayed through the augmented reality terminal. For example, the augmented reality terminal includes augmented reality glasses, an augmented reality helmet, and the like. The augmented reality terminal can also be a smart mobile terminal installed with an augmented reality application. The augmented reality terminal renders the augmented reality scene on the basis of the received augmented reality information corresponding to the air exiting mode transmitted by the air conditioner, and the picture or video of the environment where the air conditioner is located, and the picture or the video of the environment is obtained by the augmented reality terminal itself.

[0032] By means of the embodiments of the present invention, the air conditioner control instruction for setting

the air exiting mode of the air conditioner is received, and the augmented reality information corresponding to the air exiting mode is transmitted to the augmented reality terminal, so that the augmented reality terminal renders the augmented reality scene of the environment where the air conditioner is located according to the augmented reality information. The air exiting effect of the air exiting mode of the air conditioner can be intuitively presented to the user, which improves the user's experience, thereby solving the technical problem in the related technology that the user cannot intuitively feel the air exiting effect of the air exiting mode of the air conditioner.

[0033] As an optional implementation, in the embodiments of the present invention, the above method further includes but is not limited to: determining a scene layout of the environment where the air conditioner is located; acquiring a scene element in the augmented reality information corresponding to the air exiting mode of the air conditioner; and based on an augmented reality algorithm, rendering a scene layout by using the scene element in the augmented reality information corresponding to the air exiting mode of the air conditioner, to obtain the augmented reality scene corresponding to the air exiting mode.

[0034] Optionally, the scene layout of the current environment where the air conditioner is located is acquired, and the scene layout is configured to display an environment situation where the air conditioner is located, such as placement of an item in a room where the air conditioner is located, positions of a door and a window, and so on. The scene element in the augmented reality information corresponding to the air exiting mode is acquired, and the scene element includes but is not limited to an image, audio and a video. Based on the augmented reality algorithm, the scene layout is rendered by using the scene element, and then the augmented reality scene corresponding to the air exiting mode is obtained.

[0035] It should be noted that in an actual application scene, the augmented reality information further includes, but is not limited to, air composition information, air speed and air speed change information, and the like, and can also include air humidity information, smell information, and the like.

[0036] As an optional implementation, in the embodiments of the present invention, the scene element includes at least one of the image, the audio, and the video. The scene element is configured to constitute the augmented reality scene displayed on the augmented reality terminal, and configured to present different and various types of effects of the air exiting mode to the user, to improve the user's experience.

[0037] As an optional implementation, in the embodiments of the preset invention, the above method further includes but is not limited to: determining the air composition information, the air speed and the air speed change in corresponding augmented reality information according to the air exiting mode of the air conditioner; and controlling the air conditioner to blow air according to the air composition information, the air speed, and the air speed change in the augmented reality information corresponding to the air exiting mode.

[0038] Optionally, the augmented reality information includes data required to be displayed on the augmented reality terminal, and further includes air conditioner parameter data such as the air composition information, the air speed, and the air speed change and the like. The air conditioner parameter data are used to adjust the exiting air of the air conditioner. The air composition information includes composition information of air and smell information, such as composition of ozone O_3 in the air composition information, which is used to adjust an amount of the ozone. The smell information is used to control a liquid fragrance spraying device or a solid fragrance sealing device provided at the air outlet of the air conditioner to spray liquid fragrance, or to open the solid fragrance sealing device, when it is determined that smell of the exiting air from the air conditioner needs to be adjusted.

[0039] In an optional application scene, the air speed and the air speed change in the augmented reality information corresponding to the air exiting mode are determined according to the air exiting mode of the air conditioner, and then the air conditioner is controlled to blow air according to the air speed and the air speed change in the augmented reality information corresponding to the air exiting mode. The air speed is a wind power magnitude of the exiting air of the air conditioner, and the air speed change can include an exiting frequency of the exiting air of the air conditioner and a change range of the air speed. For example, the air exiting mode of the air conditioner is "summer wind". In this mode, when the user sets the air exiting mode of the air conditioner to be the "summer wind", a scene of a setting sun in a summer dusk including a scene such as a big tree, a sunset and a setting sun is rendered in the room through the augmented reality terminal. The air conditioner is configured to blow air with a certain frequency, providing the user with a feeling of enjoying cool under the tree.

[0040] After the smell information in the augmented reality information corresponding to the air exiting mode is obtained, the exiting air of the air conditioner is adjusted according to the smell information in the augmented reality information. Optionally, for example, when the air exiting mode of the air conditioner is "ocean wind", and in this mode, when the user sets the air exiting mode of the air conditioner to be the "summer wind", a beach environment is rendered in the room by the augmented reality terminal, and includes a scene such as a sea, a beach, a sailing boat, seagulls, or the like. The exiting air of the air conditioner is adjusted by an air processing device disposed at the air outlet of the air conditioner, so as to make the exiting air have a specific taste of sea wind, providing the user a feeling of sunbathing on the beach.

[0041] As an optional implementation, in the embodiments of the present invention, the above method further includes: determining air humidity information in corre-

sponding augmented reality information according to the air exiting mode of the air conditioner; and controlling the air conditioner to adjust air humidity of a current environment according to the air humidity information in the augmented reality information corresponding to the air exiting mode. Optionally, the augmented reality information corresponding to the air exiting mode of the air conditioner further includes the air humidity information used for controlling the air conditioner to adjust the air humidity of the current environment according to the air humidity information in the augmented reality information corresponding to the air exiting mode.

[0042] By means of the embodiments of the present invention, the air conditioner control instruction for setting the air exiting mode of the air conditioner is received, and the augmented reality information corresponding to the air exiting mode is transmitted to the augmented reality terminal, so that the augmented reality terminal renders the augmented reality scene of the environment where the air conditioner is located according to the augmented reality information. The air exiting effect of the air exiting mode of the air conditioner can be intuitively presented to the user, thus enhancing the user's experience, and further solving the technical problem in the related technology that the user cannot intuitively feel the air exiting effect of the air exiting mode of the air conditioner.

[0043] It shall be noted that the foregoing embodiments of the method have been described as a series of combinations of actions for convenience of the descriptions, but those skilled in the art shall appreciate that the present invention will not be limited to the described sequence of actions because some of the steps can be performed in a different sequence or concurrently according to the present invention. Moreover, those skilled in the art shall also appreciate that the embodiments described in the specification belong to preferred embodiments, and that the actions and modules related thereto will not be necessarily required for the invention.

[0044] By means of the descriptions of the implementation mode, those skilled in the art can clearly know that the method according to the embodiments can be realized by means of software and a necessary general hardware platform. Certainly, the method can also be realized by means of hardware. However, the former is a better implementation mode under many conditions. Based on this understanding, the technical solutions of the present invention can be substantially embodied in a form of a software product or parts contributing to the related technology can be embodied in a form of a software product, and the computer software product is stored in a storage medium such as a Read-Only Memory (ROM)/Random Access Memory (RAM), a magnetic disk and an optical disc, including a plurality of instructions enabling a terminal device which may be a mobile phone, a computer, a server or a network device to execute the method according to each embodiment of the present invention.

Second Embodiment

[0045] According to the embodiments of the present invention, a system for controlling an air exiting mode of an air conditioner is provided. As shown in FIG. 2, the system includes:

1. an air conditioner 10, configured to receive an air conditioner control instruction and transmit augmented reality information corresponding to the air exiting mode to an augmented reality terminal, the air conditioner control instruction being configured to set the air exiting mode of the air conditioner.
2. an augmented reality terminal 20, configured to receive the augmented reality information corresponding to the air exiting mode, which is transmitted by the air conditioner, and configured to render an augmented reality scene of an environment where the air conditioner is located according to the augmented reality information.

[0046] In an optional application scene, the air conditioner control instruction can be transmitted by an air conditioner remote controller and is received; or the air conditioner control instruction can be transmitted by an analog remote controller application or an air conditioner control application in the preset augmented reality terminal 20and is received. The air conditioner control instruction is configured to set the air exiting mode of the air conditioner.

[0047] In the technical solutions of the embodiment of the present invention, each air exiting mode of the air conditioner corresponds to a different display effect of an augmented reality. For example, in a case that the air exiting mode of the air conditioner 10 is "healthy wind", and when the user sets the air exiting mode of the air conditioner 10 to be the "healthy wind", a forest environment is rendered in the room where the air conditioner 10 is located, and includes plants and animals, as well as sounds of the animal, and composition of air at an air outlet 110 of the air conditioner is adjusted to be similar to that in the forest, thus creating a feeling of walking in a park, and achieving a purpose of relaxation. It should be noted that the description above is only an example, but not intended to limit the technical solutions of the embodiment of the present invention.

[0048] It should be noted that FIG. 2 shows a system for controlling an air exiting mode of an air conditioner, and the system includes a suspended air conditioner and the augmented reality terminal. FIG. 2a shows another system for controlling an air exiting mode of an air conditioner, and the system includes a floor-standing air conditioner and the augmented reality terminal. It should be noted that the styles of the air conditioner in the embodiments of the present invention will not limit the system for controlling the air exiting mode of the air conditioner in the embodiments of the present invention.

[0049] Each air exiting mode has a corresponding dis-

play effect of an augmented reality. Therefore, there is augmented reality information corresponding to the effect of augmented reality of the air exiting mode. The air conditioner 10 provides the augmented reality information for the augmented reality terminal 20, so that the augmented reality terminal renders the augmented reality. Optionally, the air conditioner 10 transmits the augmented reality information corresponding to the air exiting mode to the augmented reality terminal 20, so that the augmented reality terminal 20 renders the augmented reality scene of the environment where the air conditioner 10 is located according to the augmented reality information.

[0050] In the above display effect of the air exiting mode of the air conditioner 10, the displayed contents such as the picture, the audio, or the video or the like, is displayed through the augmented reality terminal 20. For example, the augmented reality terminal 10 includes augmented reality glasses, an augmented reality helmet, and the like. The augmented reality terminal 20 can also be a smart mobile terminal installed with an augmented reality application. The augmented reality terminal 20 renders the augmented reality scene on the basis of the received augmented reality information corresponding to the air exiting mode transmitted by the air conditioner 10, and the picture or video of the environment where the air conditioner 10 is located, and the picture or the video of the environment is obtained by the augmented reality terminal itself.

[0051] Optionally, the augmented reality information includes the data required to be display on the augmented reality terminal, and further includes air conditioner parameter data such as the air composition information, the air speed, and the air speed change and the like. The air conditioner parameter data are used to adjust the exiting air of the air conditioner. The air composition information includes composition information of the air and smell information.

[0052] By means of the embodiments of the present invention, the air conditioner control instruction for setting the air exiting mode of the air conditioner is received, and the augmented reality information corresponding to the air exiting mode is transmitted to the augmented reality terminal, so that the augmented reality terminal renders the augmented reality scene of the environment where the air conditioner is located according to the augmented reality information. The air exiting effect of the air exiting mode of the air conditioner can be intuitively presented to the user, which improves the user's experience, thereby solving the technical problem in the related technology that the user cannot intuitively feel the air exiting effect of the air exiting mode of the air conditioner.

[0053] As an optional implementation, as shown in FIG. 3, the air conditioner 10 determines the air composition information in corresponding augmented reality information according to the air exiting mode of the air conditioner. The air conditioner further includes an air processing device 101, arranged at the air outlet 110 of the air conditioner, and configured to control composition information of the exiting air of the air conditioner according to the air composition information in the corresponding augmented reality information. Optionally, for example, the air composition information includes the composition of ozone O_3, which is used to adjust the amount of the ozone. In addition, FIG.3a is a diagram illustrating a position of the air processing device 101 when the air conditioner 10 is a floor-standing air conditioner.

[0054] It should be noted that the position of the air processing device 101 is not limited to a position below the air outer of the air conditioner or a middle position of the air conditioner, which is shown in FIG. 3 and FIG. 3a, and the air processing device 101 can also be disposed at a side of or above the air outlet of the air conditioner. The above example is only an illustration of the air outlet of the embodiments of the present invention, and not intended to limit the position of the air processing device at the air outlet of the air conditioner.

[0055] As an optional implementation, as shown in FIG. 4, the air conditioner 10 determines the smell information in corresponding augmented reality information according to the air exiting mode of the air conditioner. The air conditioner further includes a smell processing device 102, arranged at the air outlet 110 of the air conditioner, and configured to adjust the smell of the exiting air of the air conditioner 10 according to the smell information in the corresponding augmented reality information. The smell information is used to control a liquid fragrance spraying device or a solid fragrance sealing device provided at the air outlet 110 of the air conditioner 10 to spray liquid fragrance, or to open the solid fragrance sealing device, when it is determined that smell of the exiting air from the air conditioner needs to be adjusted.

[0056] Optionally, for example, when the air exiting mode of the air conditioner is "ocean wind", and in this mode, when the user sets the air exiting mode of the air conditioner to be the "summer wind", a beach environment is rendered in the room by the augmented reality terminal, and includes a scene such as a sea, a beach, a sailing boat, seagulls, or the like. The exiting air of the air conditioner is adjusted by an air processing device disposed at the air outlet 110 of the air conditioner, so as to make the exiting air have a specific taste of sea wind, providing the user a feeling of sunbathing on the beach.

[0057] As an optional implementation, as shown in FIG. 5, the air conditioner 10 determines the air speed change information in the corresponding augmented reality information according to the air exiting mode of the air conditioner. The air conditioner 10 further includes an air speed control device 103, arranged at the air outlet 110 of the air conditioner, and configured to control the air speed according to air speed information or the air speed change information in corresponding augmented reality. Optionally, the air speed control device 103 can also be arranged inside the air conditioner 10, or be implemented by function of the air conditioner 10 itself.

[0058] Optionally, for example, the air exiting mode of the air conditioner is "summer wind". In this mode, when the user sets the air exiting mode of the air conditioner to be the "summer wind", a scene of a setting sun in a summer dusk including a scene such as a big tree, a sunset and a setting sun is rendered in the room through the augmented reality terminal. The air conditioner is configured to blow air with a certain frequency, providing the user with a feeling of enjoying cool under the tree.

[0059] As an optional implementation, as shown in FIG. 6, the air conditioner further comprises: the air conditioner 10 is further configured to determine air humidity information in corresponding augmented reality information according to the air exiting mode of the air conditioner, and the air conditioner 10 further includes a humidity control device 104, arranged inside the air conditioner, and configured to adjust the humidity according to the air humidity information in the corresponding augmented reality information.

[0060] As an optional implementation solution, in the embodiments of the present invention, the augmented reality terminal 20 includes a smart mobile terminal, and an augmented reality application is installed in the smart mobile terminal.

[0061] As an optional implementation, in the embodiments of the present invention, the augmented reality terminal 20 further includes one of an augmented reality helmet and a pair of augmented reality glasses.

[0062] As an optional implementation, in the embodiments of the present invention, the above system further includes in the case that the augmented reality terminal 20 is the augmented reality helmet, the smell processing device 102 is arranged inside the augmented reality helmet, and configured to directly present the smell corresponding to the air exiting mode of the air conditioner to the user, which increases the user's sense of immersion.

[0063] As an optional implementation, as shown in FIG. 7, the air conditioner 10 determines a picture or a video in corresponding augmented reality information according to the air exiting mode of the air conditioner, and the air conditioner further includes a projection device 105, arranged above the air conditioner, and configured to perform projection according to the picture or the video in the corresponding augmented reality information.

[0064] As an optional implementation, in the embodiments of the invention, the augmented reality terminal 20 is further configured to render the augmented reality scene of the environment, where the air conditioner 10 is located, and a projection of the projection device 105 according to the augmented reality information. In this embodiment, the augmented reality terminal 20 receives the augmented reality information data transmitted by the air conditioner 10, and based on the image capture function of the augmented reality terminal 20 itself, captures the image of the projection video of the projection device 105 of the air conditioner 10, and then renders the augmented reality scene according to the image of the projection video and the environment where the air conditioner 10 is located.

[0065] It should be noted that the air processing device 101, the smell processing device 102, the air speed control device 103, and the humidity control device 104 mentioned above can be integrated into a same device, or can be arbitrarily combined into a plurality of devices, which is not limited in the embodiments of the present invention.

[0066] By means of the embodiments of the system for controlling the air exiting mode of the air conditioner of the present invention, the air conditioner receives the air conditioner control instruction for setting the air exiting mode of the air conditioner, and transmits the augmented reality information corresponding to the air exiting mode to the augmented reality terminal, so that the augmented reality terminal renders the augmented reality scene of the environment where the air conditioner is located according to the augmented reality information. The air exiting effect of the air exiting mode of the air conditioner can be intuitively presented to the user, thus enhancing the user's experience, and further solving the technical problem in the related technology that the user cannot intuitively feel the air exiting effect of the air exiting mode of the air conditioner.

Third Embodiment

[0067] According to some embodiments of the present invention, a device for controlling an air exiting mode of an air conditioner is also provided for implementing the above methods for controlling the air exiting mode of the air conditioner mentioned. As shown in FIG. 8, the device includes:

1. a receiving unit 802 configured to receive an air conditioner control instruction, the air conditioner control instruction being configured to set the air exiting mode of the air conditioner;
2. a transmitting unit 804 configured to transmit augmented reality information corresponding to the air exiting mode to an augmented reality terminal, so that an augmented reality terminal renders an augmented reality scene of an environment where the air conditioner is located according to the augmented reality information.

[0068] Optionally, as for optional examples in this embodiment, reference can be made to the examples described in the foregoing first embodiment and the second embodiment, and the examples are not described in detail again in this embodiment.

Fourth Embodiment

[0069] According to some embodiments of the present invention, a storage medium is further provided. The storage medium includes a program stored thereon. When executed, the program controls a device where the stor-

age medium is located to implement the method for controlling the air exiting mode of the air conditioner mentioned above.

[0070] Optionally, in this embodiment, the storage medium is configured to store program codes for executing following steps:

S1, receiving an air conditioner control instruction, where the air conditioner control instruction is configured to set the air exiting mode of the air conditioner; and

S2, transmitting the augmented reality information corresponding to the air exiting mode to an augmented reality terminal; and rendering, by the augmented reality terminal according to the augmented reality information, an augmented reality scene of an environment, where the air conditioner is located.

[0071] Optionally, as for optional examples in this embodiment, reference may be made to the examples described in the foregoing first embodiment and the second embodiment, and the examples are not described in detail again in this embodiment.

[0072] Optionally, in this embodiment, the foregoing storage medium can include, but is not limited to various kinds of media such as a U disk, a Read-Only Memory (ROM), a Random Access Memory (RAM), a mobile hard disk, a magnetic disc or an optical disc, or the like, which can store the program codes.

Fifth Embodiment

[0073] An embodiment of the present invention further provides a processor, and the processor is configured to execute a program. When executed, the program implements the above method for controlling the air exiting mode of the air conditioner when the program runs.

[0074] Optionally, in this embodiment, the processor is configured to execute the program codes of following steps:

S1, receiving an air conditioner control instruction, where the air conditioner control instruction is configured to set the air exiting mode of the air conditioner; and

S2, transmitting augmented reality information corresponding to the air exiting mode to an augmented reality terminal; and rendering, by the augmented reality terminal according to the augmented reality information, an augmented reality scene of an environment, where the air conditioner is located.

[0075] Optionally, as for optional examples in this embodiment, reference may be made to the examples described in the foregoing first embodiment and the second embodiment, and the examples are not described in detail again in this embodiment.

[0076] The serial numbers of the embodiments of the present invention are only used for descriptions, but not represent a preference of the embodiments.

[0077] The integrated unit, if implemented in the form of a software function unit and sold or used as a standalone product, can be stored in a computer readable storage medium. Based on such understanding, the technical solution of the present disclosure can be technically embodied in the form of a software product, or part that contributes to the prior art can be embodied in the form of software product, or all or part of the technical solution can be embodied in the form of a software product. The computer software product is stored in a storage medium which includes a number of instructions for causing one computer device (which can be a personal computer, server or network device, etc.) to perform all or part of the steps of the methods described in various embodiments of the present disclosure. The foregoing storage medium includes various media capable of storing program codes, such as a U disk, a Read-Only Memory (ROM), a Random Access Memory (RAM), a removable hard disk, a magnetic disk, or an optical disk, and the like.

[0078] In the above-mentioned embodiments of the present invention, the description of each embodiment has its own focus. As for a part that is not described in detail in an embodiment, reference can be made to related description of other embodiments.

[0079] In the above embodiments of the present invention, descriptions of all embodiments are emphasized respectively, and parts in a certain embodiment, which are not described in detail, can refer to relevant descriptions of other embodiments.

[0080] In some embodiments provided by the present invention, it should be understood that the disclosed client can be implemented in other modes, and the embodiments of the devices described above are only illustrative. For example, division of the units is just division of logical functions, and there can be additional division modes during actual implementation. For example, a plurality of units or components may be combined or integrated into another system, or some features may be omitted or may be not executed. In addition, a displayed or discussed mutual coupling, a direct coupling, or a communication connection can be performed via an indirect coupling or a communication connection between some interfaces, units or modules, and can be in an electrical form or other forms.

[0081] The units described as separate parts can be physically separated or not, and the parts displayed as units can be physical units or not, that is, can be located at one place, or can be distributed to multiple units. Some or all of the units can be selected according to the actual requirements to achieve the purpose of the solution of the embodiment.

[0082] In addition, each function unit in each embodiment of the present disclosure can be integrated into one processing unit, or each unit can exist physically separately, or, two or more than two units can be integrated into one unit. The above integrated unit can be imple-

mented in the form of hardware or in the form of a software function unit.

[0083] Described are only preferred embodiments of the present disclosure, and it should be noted that various improvements and modifications can be made by those skilled in the art without departing from the principles of the present disclosure, and these improvements and modifications also should be considered as the protection scope of the present disclosure.

Industrial Applicability

[0084] By means of the embodiments of the present invention, the air conditioner control instruction for setting the air exiting mode of the air conditioner is received, and the augmented reality information corresponding to the air exiting mode is transmitted to the augmented reality terminal, so that the augmented reality terminal renders the augmented reality scene of the environment where the air conditioner is located according to the augmented reality information. The air exiting effect of the air exiting mode of the air conditioner can be intuitively presented to the user, thus enhancing the user's experience, and further solving the technical problem in the related technology that the user cannot intuitively feel the air exiting effect of the air exiting mode of the air conditioner.

Claims

1. A method for controlling an air exiting mode of an air conditioner , **characterized by** comprising:

   receiving an air conditioner control instruction, the air conditioner control instruction being configured to set the air exiting mode of the air conditioner;
   transmitting augmented reality information corresponding to the air exiting mode to an augmented reality terminal; and rendering, by the augmented reality terminal according to the augmented reality information, an augmented reality scene of an environment, where the air conditioner is located.

2. The method according to claim 1, wherein the method further comprises:

   determining a scene layout of the environment, where the air conditioner is located;
   acquiring a scene element in the augmented reality information corresponding to the air exiting mode of the air conditioner; and
   based on an augmented reality algorithm, rendering the scene layout by using the scene element in the augmented reality information corresponding to the air exiting mode of the air conditioner, and obtaining an augmented reality scene corresponding to the air exiting mode.

3. The method according to claim 2, wherein the scene element comprises at least one of an image, audio, and a video.

4. The method of claim 1, wherein the method further comprises:

   determining air composition information, an air speed, and an air speed change in the augmented reality information corresponding to the exiting mode according to the air exiting mode of the air conditioner; and
   controlling the air conditioner to blow air according to the air composition information, the air speed, and the air speed change in the augmented reality information corresponding to the air exiting mode.

5. The method of claim 1, wherein the method further comprises:

   determining air humidity information in corresponding augmented reality information according to the air exiting mode of the air conditioner; and
   controlling the air conditioner to adjust an air humidity of a current environment according to the air humidity information in the augmented reality information corresponding to the air exiting mode.

6. A system for controlling an air exiting mode of an air conditioner, **characterized by** comprising:

   the air conditioner, configured to receive an air conditioner control instruction and transmit augmented reality information corresponding to the air exiting mode to an augmented reality terminal, the air conditioner control instruction being configured to set the air exiting mode of the air conditioner, and
   an augmented reality terminal, configured to receive the augmented reality information corresponding to the air exiting mode transmitted by the air conditioner, and configured to render an augmented reality scene of an environment where the air conditioner is located according to the augmented reality information.

7. The system according to claim 6, wherein the air conditioner is configured to determine air composition information in corresponding augmented reality information according to the air exiting mode of the air conditioner, and the air conditioner further comprises an air processing device, arranged at an air outlet of the air conditioner, and configured to control

composition information of exiting air of the air conditioner according to the air composition information in the corresponding augmented reality information.

8. The system according to claim 6, wherein the air conditioner is configured to determine smell information in corresponding augmented reality information according to the air exiting mode of the air conditioner, and the air conditioner further comprises a smell processing device, arranged at an air outlet of the air conditioner, and configured to adjust a smell of exiting air of the air conditioner according to the smell information in the corresponding augmented reality information.

9. The system according to claim 6, wherein the air conditioner is configured to determine air speed change information in corresponding augmented reality information according to the air exiting mode of the air conditioner, and the air conditioner further comprises an air speed control device, arranged at an air outlet of the air conditioner, and configured to control an air speed according to air speed information or the air speed change information in the corresponding augmented reality information.

10. The system according to claim 6, wherein the air conditioner further comprises: the air conditioner is further configured to determine air humidity information in corresponding augmented reality information according to the air exiting mode of the air conditioner, and the air conditioner further comprises a humidity control device, arranged inside the air conditioner, and configured to adjust a humidity according to the air humidity information in the corresponding augmented reality information.

11. The system according to claim 6, wherein the augmented reality terminal comprises a smart mobile terminal, and an augmented reality application is installed in the smart mobile terminal.

12. The system according to claim 6, wherein the augmented reality terminal further comprises one of an augmented reality helmet and a pair of augmented reality glasses.

13. The system of claim 8, wherein the system further comprises:
in a case that the augmented reality terminal is an augmented reality helmet, and the smell processing device is arranged in the augmented reality helmet.

14. The system according to claim 6, wherein the air conditioner is configured to determine a picture or a video in corresponding augmented reality information according to the air exiting mode of the air conditioner, and the air conditioner further comprises a projection device, arranged above the air conditioner, and configured to perform projection according to the picture or the video in the corresponding augmented reality information.

15. The system according to claim 14, wherein the augmented reality terminal is further configured to render the augmented reality scene of the environment, where the air conditioner is located, and a projection of the projection device according to the augmented reality information.

16. A device for controlling an air exiting mode of an air conditioner, **characterized by** comprising:

a receiving unit configured to receive an air conditioner control instruction, the air conditioner control instruction being configured to set the air exiting mode of the air conditioner; and
a transmitting unit configured to transmit augmented reality information corresponding to the air exiting mode to an augmented reality terminal, the augmented reality terminal rendering an augmented reality scene of an environment where the air conditioner is located according to the augmented reality information.

17. A storage medium, **characterized by** comprising a program stored thereon, the program, when executed, controls a device where the storage medium is located to implement the method for controlling the air exiting mode of the air conditioner according to any one of claims 1 to 5.

18. A processor, configured to execute a program, **characterized in that**, the program, when executed, implements the method for controlling the air exiting mode of the air conditioner of any one of claims 1 to 5.

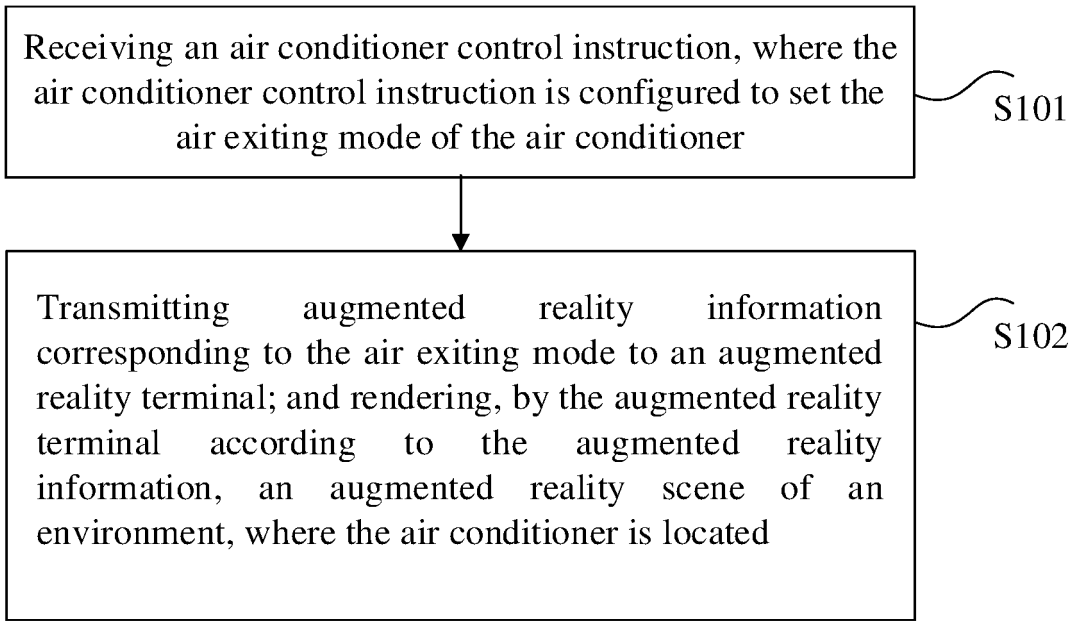
Receiving an air conditioner control instruction, where the air conditioner control instruction is configured to set the air exiting mode of the air conditioner
S101
Transmitting augmented reality information corresponding to the air exiting mode to an augmented reality terminal; and rendering, by the augmented reality terminal according to the augmented reality information, an augmented reality scene of an environment, where the air conditioner is located
S102

FIG. 1

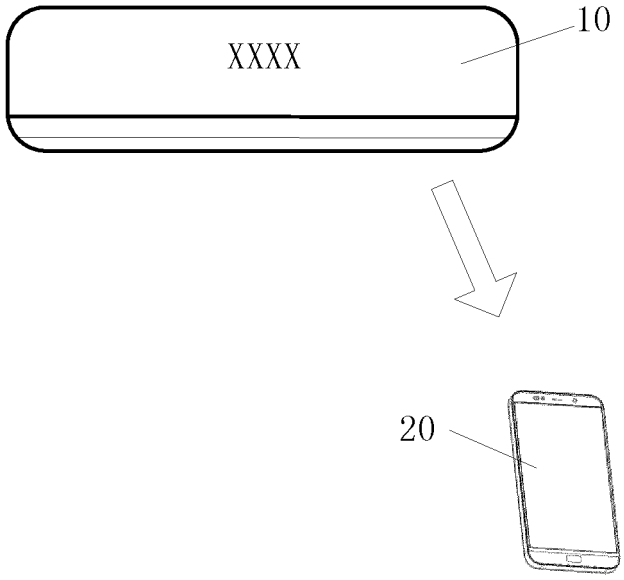

FIG. 2

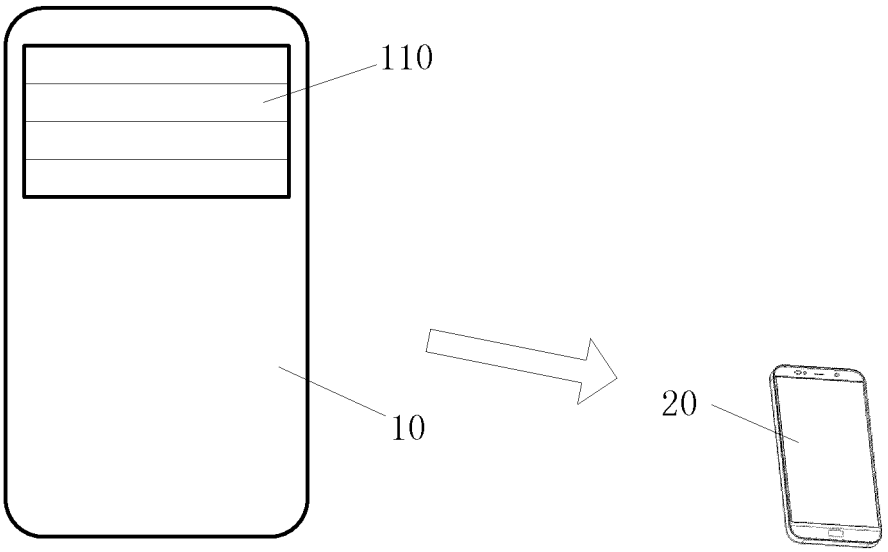

FIG. 2a

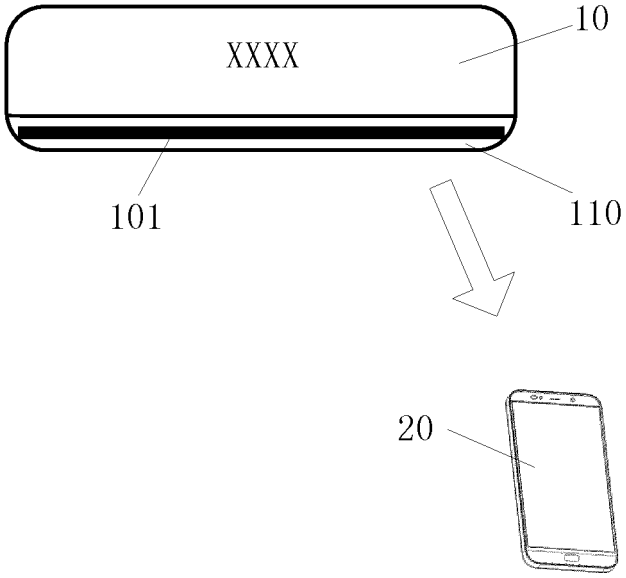

FIG. 3

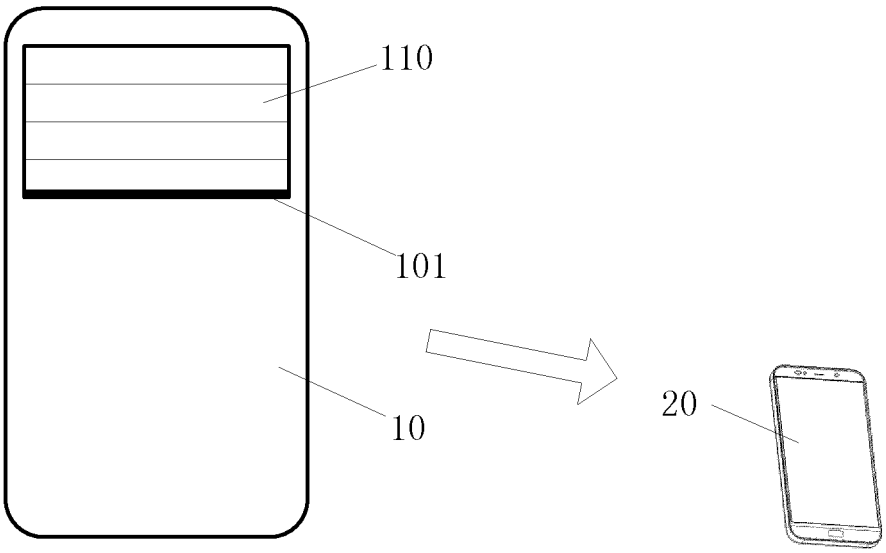

FIG. 3a

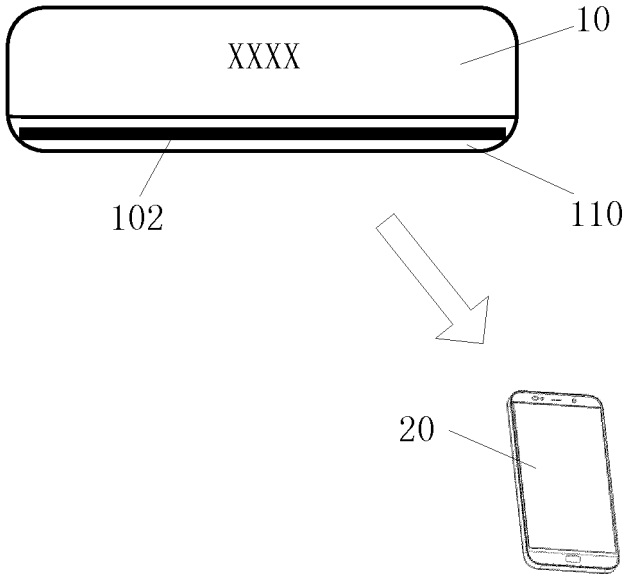

FIG. 4

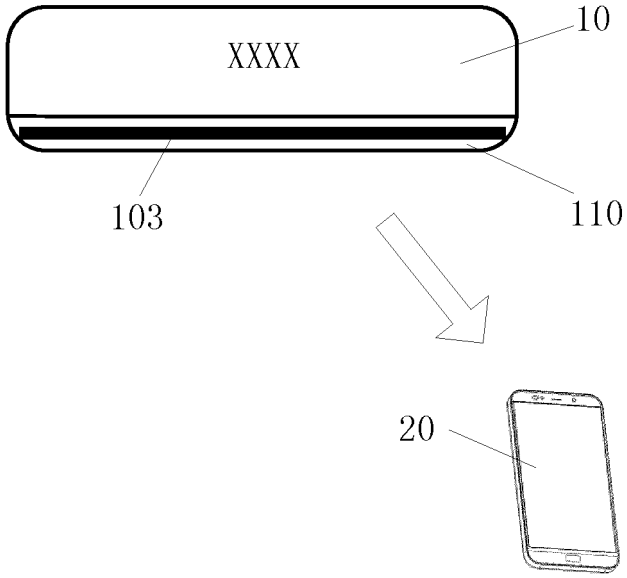

FIG. 5

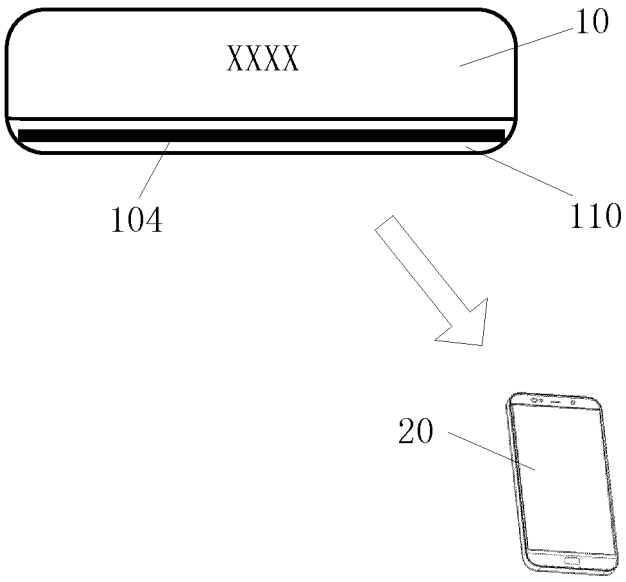

FIG. 6

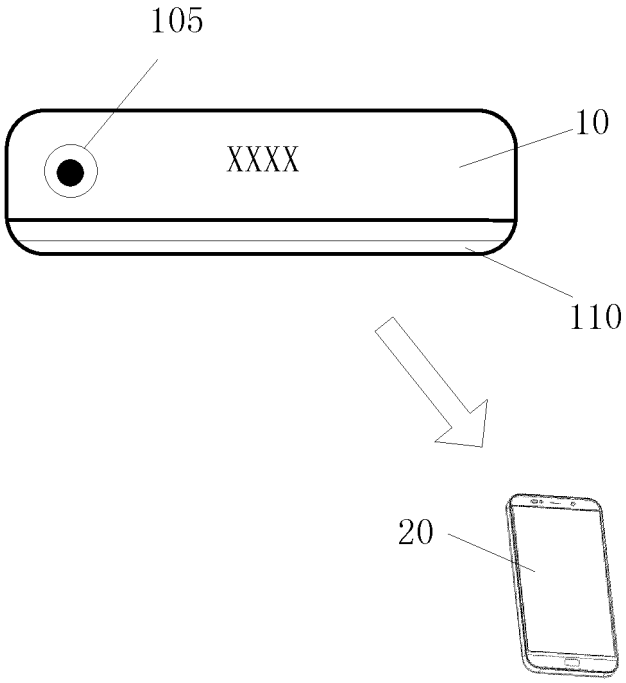

FIG. 7

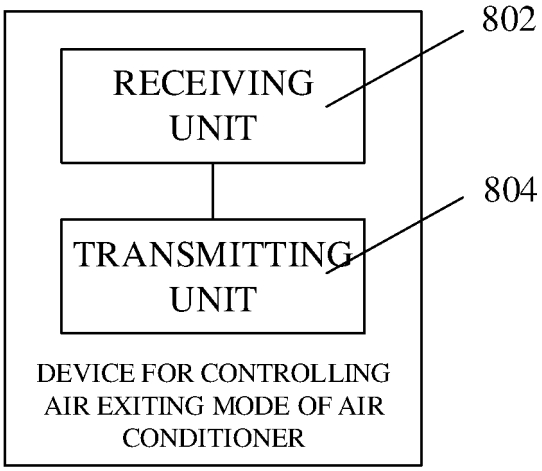
802
RECEIVING UNIT
804
TRANSMITTING UNIT
DEVICE FOR CONTROLLING AIR EXITING MODE OF AIR CONDITIONER

FIG. 8

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2018/124424

A. CLASSIFICATION OF SUBJECT MATTER

F24F 11/65(2018.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

F24F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

CNABS; CNTXT; VEN; USTXT; WOTXT; EPTXT; CNKI; SIPOABS; JPABS 韩雪, 张新, 王慧君, 毛跃辉, 增强现实, AR, 扩增现实, 场景, 渲染, 虚拟, 布局, 出风, 送风, 投影, 图片, 视频, 图像, 音频, augmented reality, air outlet, air supply+, scene?, layout

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	CN 107797661 A (GREE ELECTRIC APPLIANCES, INC. OF ZHUHAI) 13 March 2018 (2018-03-13) description, paragraphs 33-95, and figures 1-7	1, 6, 11, 12, 16-18
A	CN 104235996 A (GREE ELECTRIC APPLIANCES, INC. OF ZHUHAI) 24 December 2014 (2014-12-24) entire document	1-18
A	JP 2006194470 A (MITSUBISHI ELECTRIC CORPORATION) 27 July 2006 (2006-07-27) entire document	1-18

☐ Further documents are listed in the continuation of Box C. ☑ See patent family annex.

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
26 April 2019	**24 May 2019**
Name and mailing address of the ISA/CN **National Intellectual Property Administration, PRC (ISA/CN)** **No. 6, Xitucheng Road, Jimenqiao Haidian District, Beijing 100088** **China** Facsimile No. **(86-10)62019451**	Authorized officer Telephone No.

Form PCT/ISA/210 (second sheet) (January 2015)

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2018/124424

Patent document cited in search report	Publication date (day/month/year)	Patent family member(s)	Publication date (day/month/year)
CN 107797661 A	13 March 2018	None	
CN 104235996 A	24 December 2014	CN 104235996 B	14 November 2017
JP 2006194470 A	27 July 2006	None	

Form PCT/ISA/210 (patent family annex) (January 2015)