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(54) STORAGE BOX AND REFRIGERATOR HAVING THE SAME

(57) The present application discloses a storage box, comprising an enclosure, a storage box body, a pivot shaft connected to the enclosure and the storage box body, an elastic element disposed between the pivot shaft and the enclosure, and a locking device, wherein the elastic element always provides a driving force driving the storage box body to turn outwards the enclosure about the pivot shaft; the locking device comprises a locking portion disposed on the enclosure, and a fitting portion which is disposed on the storage box body and push-fitted with the locking portion. The storage box body can automatically turn without a handle being disposed, thereby expanding the space for storing items.





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Description

TECHNICAL FIELD

[0001] The present utility model relates to the technical field of refrigerating devices, and specifically to a storage box and a refrigerator having the same.

BACKGROUND

[0002] A refrigerator is a refrigerating device commonly used in daily life. The refrigerator usually stores many diverse items. To store some items that need to be isolated from other items, storage boxes are disposed in the refrigerator, and are provided with a pull handle to facilitate opening and closing the storage boxes.

[0003] However, the designed pull handles occupy partial space. Since the space available for placing the storage boxes in the refrigerator is certain, when the storage boxes are disposed in the refrigerator, the space available for storing items will be substantially reduced; when the user's hands are dirty, they might pollute the pull handles when the user opens the storage boxes, thereby affecting the overall appearance of the storage boxes, and providing an undesirable experience effect.

SUMMARY

[0004] To solve the problems in the prior art, the present utility model provides a storage box and a refrigerator having the same, to solve the problems in the prior art that the space for storing items is substantially reduced since the handle is provided on the storage box, and the handle is likely to be polluted when the storage box is opened.

[0005] To achieve the above object of the utility model, an embodiment provides a storage box, comprising an enclosure, a storage box body, a pivot shaft connected to the enclosure and the storage box body, the storage box further comprising:

an elastic element disposed between the pivot shaft and the enclosure, the elastic element always providing a driving force driving the storage box body to turn outwards the enclosure about the pivot shaft; a locking device comprising a locking portion and a fitting portion which is push-fitted with the locking portion, where one of the locking portion and the fitting portion is disposed on the enclosure, and the other is disposed on the storage box body.

[0006] Optionally, the elastic element is a torsion spring, the torsion spring comprises a spring body, and a spring arm connected to the spring body, and the spring body is sleeved on the pivot shaft.

[0007] Optionally, the enclosure comprises a fixing portion connected to a side wall of the enclosure, the fixing portion is provided with a through hole, and the

spring arm passes through the through hole.

[0008] Optionally, the fitting portion is a lock tongue provided on a rear wall of the storage box body, and the locking portion is a push lock provided on a rear wall of the enclosure.

[0009] Optionally, the push lock comprises a first force receiving portion, a second force receiving portion, and a resisting portion, the first force receiving portion causes the resisting portion to release the lock tongue, and the

second force receiving portion causes the resisting portion to clamp the lock tongue.
[0010] Optionally, the resisting portion is provided with a first protrusion, and the lock tongue is provided with a second protrusion.

¹⁵ **[0011]** Optionally, the storage box further comprises a damping device connected to the enclosure and the storage box body, and the damping device provides a resistance against the turn of the storage box body outward the enclosure.

²⁰ **[0012]** Optionally, the damping device comprises:

a rotary damper fixedly connected to a side wall of the enclosure;

a gear fixedly connected to a damping rotation shaft of the rotary damper;

an arc-shaped rack fixedly connected to the side wall of the storage box body and meshing with the gear.

[0013] Optionally, the storage box further comprises a³⁰ buffer structure which is a rubber member disposed on the enclosure.

[0014] To achieve the above object of the invention, an embodiment provides a refrigerator, comprising a door body, a storage box is disposed on an inner side of

³⁵ the door body; the storage box comprises an enclosure, a storage box body, a pivot shaft connected to the enclosure and the storage box body, the storage box further comprising:

an elastic element disposed between the pivot shaft and the enclosure, the elastic element always providing a driving force driving the storage box body to turn outwards the enclosure about the pivot shaft; a locking device comprising a locking portion and a
 fitting portion which is push-fitted with the locking portion, where one of the locking portion and the fitting portion is disposed on the enclosure, and the other is disposed on the storage box body.

⁵⁰ **[0015]** Optionally, the elastic element is a torsion spring, the torsion spring comprises a spring body, and a spring arm connected to the spring body, and the spring body is sleeved on the pivot shaft.

[0016] Optionally, the enclosure comprises a fixing portion connected to a side wall of the enclosure, the fixing portion is provided with a through hole, and the spring arm passes through the through hole.

[0017] Optionally, the fitting portion is a lock tongue

provided on a rear wall of the storage box body, and the locking portion is a push lock provided on a rear wall of the enclosure.

[0018] Optionally, the push lock comprises a first force receiving portion, a second force receiving portion, and a resisting portion, the first force receiving portion causes the resisting portion to release the lock tongue, and the second force receiving portion causes the resisting portion to clamp the lock tongue.

[0019] Optionally, the resisting portion is provided with a first protrusion, and the lock tongue is provided with a second protrusion.

[0020] Optionally, the storage box further comprises a damping device connected to the enclosure and the storage box body, and the damping device provides a resistance against the turn of the storage box body outward the enclosure.

[0021] Optionally, the damping device comprises:

a rotary damper fixedly connected to a side wall of ²⁰ the enclosure;

a gear fixedly connected to a damping rotation shaft of the rotary damper;

an arc-shaped rack fixedly connected to the side wall of the storage box body and meshing with the gear.

[0022] Optionally, the storage box further comprises a buffer structure which is a rubber member disposed on the enclosure.

[0023] As compared with the prior art, the present utility model has the following advantageous effects: the elastic element is fitted with the locking device so that the storage box body can turn automatically; the storage box needn't be provided with a handle, thereby expanding the space for storing items, and the user needn't manually open the storage box so that his experience can be improved.

BRIEF DESCRIPTION OF THE DRAWINGS

[0024]

FIG. 1 is a side view of a storage box in an embodiment of the present utility model;

FIG. 2 is a structural schematic diagram of an enclosure in an embodiment of the present utility model; FIG. 3 is an enlarged schematic diagram of position A of FIG. 2;

FIG. 4 is an enlarged schematic diagram of position B of FIG. 2;

FIG. 5 is an enlarged schematic diagram of position C of FIG. 2;

FIG. 6 is a structural schematic diagram of a storage box body in an embodiment of the present utility model;

FIG. 7 is a structural schematic structural view showing that a storage box is disposed on a refrigerator door body in an embodiment of the present utility model.

DETAILED DESCRIPTION

- ⁵ **[0025]** The present utility model will be described in detail below in conjunction with specific embodiments shown in the figures. However, these embodiments are not intended to limit the present utility model. Variations in structures, methods or functions made by those having
- ¹⁰ ordinary skill in the art according to these embodiments all are included in the extent of protection of the present utility model.

[0026] In the figures of the present utility model, some dimensions of structures or parts will be enlarged relative

¹⁵ to other structures or parts for the convenience of illustration. Therefore, the figures are only used to illustrate the basic structures of the subject matter of the present utility model.

[0027] Referring to FIG. 1, the present utility model provides a storage box 20, comprising an enclosure 21, a storage box body 22, a pivot shaft 23 connected to the enclosure 21 and the storage box body 22, an elastic element, and a locking device.

[0028] The storage box body 22 is formed with a cavity for storing items, the enclosure 21 has an opening on one side, and the storage box body 22 is turnable outward about the pivot shaft 23 from the opening to open.

[0029] Referring to FIG. 2 through FIG. 6, in the present embodiment, the pivot shaft 23 is fixedly disposed on side walls of the enclosure 21, the side walls of the storage box body 22 are each provided with a pivot hole 221, the pivot shaft 23 is inserted into the pivot holes 221, and the pivot shaft 23 rotates in the pivot holes 221 so that the storage box body 22 pivots relative to the enclosure
25 21 thoraby balance the user to take out the items from

³⁵ 21, thereby helping the user to take out the items from the storage box body 22.

[0030] The elastic element is disposed between the pivot shaft 23 and the enclosure 21, and the elastic element always provides a driving force driving the storage

box body 22 to turn outwards the enclosure 21 about the pivot shaft 23. When a user needs to take an item, the storage box body 22 can be automatically opened under the action of the elastic element, and the user needn't manually open the storage box body 22, so that the user
 experience can be improved.

[0031] Specifically, the elastic element is a torsion spring 25. The torsion spring 25 comprises a spring body 251, and a spring arm 252 connected to the spring body 251. The spring body 251 is sleeved on the pivot shaft

Solution
 23. When the storage box body 22 is in a closed state, the spring body 251 is in a torsional energy-storing state, and the elastic potential energy can be continuously released while the spring body 251 drives the storage box body 22 to open. At the same time, the torsion spring 25
 can make the storage box body 22 in an open state, and the user may take items out of the cavity without holding

the storage box body.

[0032] Further, the enclosure 21 comprises a fixing

portion 213 connected to the side wall of the enclosure 21, the fixing portion 213 is provided with a through hole, the spring arm 252 passes through the through hole, and the through hole catches the spring arm 252, thereby improving the stability of the torsion spring 25.

[0033] The locking device can lock or unlock the enclosure 21 to the storage box body 22. It may be appreciated that when the locking device locks, the elastic element cannot make the storage box body 22 open, so that the closeness of the storage box 20 may be maintained; when the locking device unlocks, the elastic element can make the storage box body 22 open, which is convenient for users to use.

[0034] Specifically, the locking device comprises a locking portion and a fitting portion which is push-fitted with the locking portion. One of the locking portion and the fitting portion is disposed on the enclosure 21, and the other is disposed on the storage box body 22.

[0035] The fitting portion is a lock tongue 222 provided on a rear wall of the storage box body 22, and the locking portion is a push lock 211 provided on a rear wall of the enclosure 21. When the storage box body 22 is in the closed state, the lock tongue 222 extends into the push lock 211; when the storage box body 22 is in the open state, the lock tongue 222 separates from the push lock 211.

[0036] The push lock 211 comprises a first force receiving portion 2111, a second force receiving portion 2113, and a resisting portion 2112. The first force receiving portion 2111 causes the resisting portion 2112 to release the lock tongue 222, and the second force receiving portion 2113 causes the resisting portion 2112 to clamp the lock tongue 222.

[0037] When the storage box body 22 is in the closed state, the user may apply a push elastic force to any position of the front wall of the storage box body 22, and the push elastic force may be transferred to the first force receiving part 2111 to cause the resisting portion 2112 to release the lock tongue 222 to open the storage box body 22. When the storage box body 22 is closed, after the lock tongue 222 contacts the second force receiving portion 2113, the resisting portion 2112 clamps the lock tongue 222.

[0038] Preferably, the resisting portion 2112 is provided with a first protrusion, and the lock tongue 222 is provided with a second protrusion. When the storage box 20 is in the closed state, the first protrusion abuts against the second protrusion so that the second protrusion cannot cross the first protrusion, such that the lock tongue 222 is locked in the push lock 211.

[0039] Further, the storage box 20 further comprises a damping device 24 connected to the enclosure 21 and the storage box body 22, and the damping device 24 provides a resistance against the turn of the storage box body 22 outward the enclosure 21. During the opening process of the storage box body 22, the damping device 24 can reduce a turning speed of the storage box body 22, so that the storage box body 22 can slowly open and

the storage box body 22, thereby preventing damages of the storage box body 22 and the enclosure 21 caused by the storage box body 22 violently stroking the enclosure 21 due to an excessive turning speed.

⁵ **[0040]** Specifically, the damping device 24 comprises a rotary damper 242, a gear 243, and an arc-shaped rack 241. The rotary damper 242 is fixedly connected to a side wall of the enclosure 21, the gear 243 is fixedly connected to a damping rotation shaft 244 of the rotary damper 242,

¹⁰ the arc-shaped rack 241 is fixedly connected to the side wall of the storage box body 22, and the arc-shaped rack 241 meshes with the gear 243.

[0041] During the opening of the storage box body 22, the arc-shaped rack 241 rotates and drives the gear 243

¹⁵ to rotate, then the gear 243 drives the damping rotation shaft 244 to rotate, the damping rotation shaft 244 has a rotational damping force, and the storage box body 22 receives the rotational damping force so that the opening speed of the storage box body 22 is reduced.

20 [0042] Furthermore, the storage box 20 further comprises a buffer structure. When the body of the storage box 20 turns inward the enclosure 21 about the pivot shaft 23, the buffer structure can further prevent damages caused by the storage box 20 body striking the enclo-

²⁵ sure 21, and reduce the noise generated when the storage box body 22 strikes the enclosure 21.

[0043] Specifically, the buffer structure is a rubber member 212 disposed on the enclosure 21. The rubber member 212 can cooperate with the front wall of the stor-

30 age box body 22 to prevent the storage box body 22 from violently striking the enclosure 21. In other embodiments, the buffer structure may also be disposed on the storage box body 22, and may also be any of other members functioning to buffer, such as a sponge.

³⁵ [0044] Referring to FIG. 7, the present utility model further provides a refrigerator, comprising a door body 10, wherein the storage box 20 is disposed on an inner side of the door body 10.

[0045] The detailed descriptions set forth above are merely specific illustrations of feasible embodiments of the present utility model, and are not intended to limit the scope of protection of the present utility model. All equivalent embodiments or modifications that do not depart from the art spirit of the present utility model should fall

⁴⁵ within the scope of protection of the present utility model.

Claims

50 1. A storage box, comprising an enclosure, a storage box body, a pivot shaft connected to the enclosure and the storage box body, wherein the storage box further comprises:

> an elastic element disposed between the pivot shaft and the enclosure, the elastic element always providing a driving force driving the storage box body to turn outwards the enclosure

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about the pivot shaft;

a locking device comprising a locking portion and a fitting portion which is push-fitted with the locking portion, where one of the locking portion and the fitting portion is disposed on the enclosure, and the other is disposed on the storage box body.

- The storage box according to claim 1, wherein the elastic element is a torsion spring, the torsion spring ¹⁰ comprises a spring body, and a spring arm connected to the spring body, and the spring body is sleeved on the pivot shaft.
- **3.** The storage box according to claim 2, wherein the enclosure comprises a fixing portion connected to a side wall of the enclosure, the fixing portion is provided with a through hole, and the spring arm passes through the through hole.
- 4. The storage box according to claim 1, wherein the fitting portion is a lock tongue provided on a rear wall of the storage box body, and the locking portion is a push lock provided on a rear wall of the enclosure.
- The storage box according to claim 4, wherein the push lock comprises a first force receiving portion, a second force receiving portion, and a resisting portion, the first force receiving portion causes the resisting portion to release the lock tongue, and the 30 second force receiving portion causes the resisting portion to clamp the lock tongue.
- The storage box according to claim 5, wherein the resisting portion is provided with a first protrusion, ³⁵ and the lock tongue is provided with a second protrusion.
- The storage box according to claim 1, wherein the storage box further comprises a damping device 40 connected to the enclosure and the storage box body, and the damping device provides a resistance against the turn of the storage box body outward the enclosure.
- **8.** The storage box according to claim 7, wherein the damping device comprises:

a rotary damper fixedly connected to a side wall of the enclosure;

a gear fixedly connected to a damping rotation shaft of the rotary damper;

an arc-shaped rack fixedly connected to the side wall of the storage box body and meshing with the gear.

9. The storage box according to claim 1, wherein the storage box further comprises a buffer structure

which is a rubber member disposed on the enclosure.

10. A refrigerator, comprising a door body, wherein the storage box according to claim 1 is disposed on an inner side of the door body.

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Fig. 2



Fig. 3



Fig. 4



Fig. 5



Fig. 6



Fig. 7

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20 Category* Citation of document, with indication, where appropriate, of the relevant passages Relevant to claim N 21 Y CN 106958982 A (HEFEI HUALING CO., LTD. et al.) 18 July 2017 (2017-07-18) 1-10 22 Y CN 106568289 A (QINGDAO HAIER CO., LTD.) 19 April 2017 (2017-04-19) 1-10 23 Y CN 106568289 A (QINGDAO HAIER CO., LTD.) 19 April 2017 (2017-04-19) 1-10 24 CN 102538373 A (HEFEI MIDEA RONGSHIDA REFRIGERATOR CO., LTD. et al.) 04 1-10 25 A CN 102538373 A (HEFEI MIDEA RONGSHIDA REFRIGERATOR CO., LTD. et al.) 04 1-10 30 A CN 102538373 A (HEFEI MIDEA RONGSHIDA REFRIGERATOR CO., LTD. et al.) 04 1-10 31 attrice document A CN 102538373 A (HEFEI MIDEA RONGSHIDA REFRIGERATOR CO., LTD. et al.) 04 1-10 32 attrice document A CN 102538373 A (HEFEI MIDEA RONGSHIDA REFRIGERATOR CO., LTD.) 29 January 2014 (2014-01-29) 1-10 33 CM 103341614 A (SAMSUNG ELECTRONICS CO., LTD.) 29 January 2014 (2014-01-29) 1-10 1-10 34 CN 1033431614 A (SAMSUNG ELECTRONICS CO., LTD.) 29 January 2014 (2014-01-29) 1-10 1-10 35 The document set is lated in the continuation of Box C. Imet documents. See patent fami	00	C. DOC	UMENTS CONSIDERED TO BE RELEVANT			_	
25 Y CN 106958923 A (HEFEI HUALING CO., LTD. et al.) 18 July 2017 (2017-07-18) 1-10 26 Y CN 10655828 A (QINGDAO HAIER CO., LTD.) 19 April 2017 (2017-04-19) 1-10 26 Y CN 10558280 A (QINGDAO HAIER CO., LTD.) 19 April 2017 (2017-04-19) 1-10 27 PX CN 102538373 A (HEFEI MIDEA RONGSHIDA REFRIGERATOR CO., LTD. et al.) 22 December 2020 (2020-12-22) 1-10 200 CN 102538373 A (HEFEI MIDEA RONGSHIDA REFRIGERATOR CO., LTD. et al.) 04 1-10 30 A CN 104344676 A (HAIER GROUP CORP. et al.) 11 February 2015 (2015-02-11) 1-10 31 A CN 104344676 A (HAIER GROUP CORP. et al.) 11 February 2015 (2015-02-11) 1-10 32 A CN 104344676 A (HAIER GROUP CORP. et al.) 11 February 2014 (2014-01-29) 1-10 35 A CN 103541614 A (SAMSUNG ELECTRONICS CO., LTD.) 29 January 2014 (2014-01-29) 1-10 36 Purther documents are listed in the continuation of Box C. Image: Control of particular relevance There document publised after the international filing date or prior date and on in contick with the application but eticle to understand priority clain(3) or who downs an priority clain(3) or who ownere it is fidame and anotic control worken any movie an internative step who downs an priority clain(3) or who ownere its fidame and anotic control worken any movie an inventive step who downs an priority clain(3) or who ownere is fidame and anotic control worken any movie and movie and movie anu movie an inventive step who downs an pri	20	Category*	Citation of document, with indication, where a	appropriate, of the rele	evant passages	Relevant to claim No.	
25 Y CN 106568299 A (QINGDAO HALER CO., LTD.) 19 April 2017 (2017-04-19) 1-10 26 PX CN 212203306 U (QINGDAO HALER REFRIGERATOR CO., LTD. et al.) 22 December 2020 (2020-12-22) claims 1-10 1-10 30 A CN 102538373 A (HEFEI MIDEA RONGSHIDA REFRIGERATOR CO., LTD. et al.) 04 July 2012 (2012-07-04) entire document 1-10 30 A CN 104344676 A (HALER GROUP CORP. et al.) 11 February 2015 (2015-02-11) 1-10 31 A CN 104344676 A (HALER GROUP CORP. et al.) 11 February 2015 (2015-02-11) 1-10 32 A CN 104344676 A (HALER GROUP CORP. et al.) 11 February 2014 (2014-01-29) 1-10 35 A CN 103541614 A (SAMSUNG ELECTRONICS CO., LTD.) 29 January 2014 (2014-01-29) 1-10 36 P See patent family annex. T Iter document annex. * Special categories of cited documents: ** * T Iter document family annex. * Special categories of cited documents: ** * T Iter document published after the international filing date or prior date and out in conflict with the application but cited to understaud recomber of priorder and be considered to a inventive and to be optication after date of ander citation or other ** * 40 * Special categories of cited documents: ** * * ** document defining the general state of the artwhich is not considered **		Y 	CN 106958982 A (HEFEI HUALING CO., LTD. et description, paragraphs 52-80, and figures 1-10	al.) 18 July 2017 (201	17-07-18)	1-10	
PX CN 212205306 U (QINGDAO HAER REFRIGERATOR CO., LTD. et al.) 22 December 202 (2020-12-22) claims 1-10 1-10 A CN 102538373 A (HEFEI MIDEA RONGSHIDA REFRIGERATOR CO., LTD. et al.) 04 July 2012 (2012-07-04) entire document 1-10 A CN 102538373 A (HEFEI MIDEA RONGSHIDA REFRIGERATOR CO., LTD. et al.) 04 July 2012 (2012-07-04) entire document 1-10 A CN 104344676 A (HAIER GROUP CORP. et al.) 11 February 2015 (2015-02-11) 1-10 A CN 103541614 A (SAMSUNG ELECTRONICS CO., LTD.) 29 January 2014 (2014-01-29) 1-10 atime document entire document See patent family annex. ** Special categories of cited documents: ** See patent family annex. ** Special categories of cited documents: ** ** ** See patent family annex. ** ** See patent family annex. ** ** See patent family annex. ** ** ** ** ** ** to caument upublished on or after the international fining date ** ** to caument upublished on or after the international specified to involve an inventive step when the document considered on anote conside	25	Y	CN 106568289 A (QINGDAO HAIER CO., LTD.) description, paragraphs 32-81, and figures 1-6	19 April 2017 (2017-0	14-19)	1-10	
30 A CN 102538373 A (HEFEI MIDEA RONGSHIDA REFRIGERATOR CO., LTD. et al.) 04 1-10 30 A CN 102538373 A (HEFEI MIDEA RONGSHIDA REFRIGERATOR CO., LTD. et al.) 04 1-10 A CN 104344676 A (HAIER GROUP CORP. et al.) 11 February 2015 (2015-02-11) 1-10 A CN 1043541614 A (SAMSUNG ELECTRONICS CO., LTD.) 29 January 2014 (2014-01-29) 1-10 35 A CN 103541614 A (SAMSUNG ELECTRONICS CO., LTD.) 29 January 2014 (2014-01-29) 1-10 36 Purther documents are listed in the continuation of Box C. See patent family annex. ** Special categories of cited documents: ** ** ** See patent family annex. *** ** ** Inter document bin the continuation of Box C. See patent family annex. *** ** ** Inter documents in the explicitation but cited to understand filing date or priot the optication prevence the claimed invention cannot conflict with the application but cited to understand filing date or priot date and on in conflict with the application but cited to understand filing date or more or cannot be considered to involve an inventive set when the document or patent but published on or after the international search report document of paticular relevance; the claimed invention cannot considered for ovel or cannot be considered to involve an inventive set when the document or states appecinted) *** <td></td> <td colspan="4">PX CN 212205306 U (QINGDAO HAIER REFRIGERATOR CO., LTD. et al.) 22 December 1-10 2020 (2020-12-22) claims 1-10</td> <td>1-10</td>		PX CN 212205306 U (QINGDAO HAIER REFRIGERATOR CO., LTD. et al.) 22 December 1-10 2020 (2020-12-22) claims 1-10				1-10	
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35 A CN 103541614 A (SAMSUNG ELECTRONICS CO., LTD.) 29 January 2014 (2014-01-29) 1-10 35 Image: Comparison of the comment		А	CN 104344676 A (HAIER GROUP CORP. et al.) 1 entire document	1 February 2015 (2015	5-02-11)	1-10	
 Further documents are listed in the continuation of Box C. Further documents are listed in the continuation of Box C. See patent family annex. * Special categories of cited documents: * Special categories of cited documents: * A " document defining the general state of the at which is not considered to be of particular relevance; * eritic application or patent but published on a rafter the international filing date or priority relation or patter that publication due of another citation or other special reason (as specified) * '' document which may throw doubts on priority claim(s) or which is environ special reason (as specified) * '' document which may throw doubts on priority claim or other means * ''' document which may throw doubts on priority claim or other means * ''' document velicitation and is closure, use, exhibition or other means * ''' document mether publication atter of the international filing date but later than the priority date claimed * ''' document mether of the international filing date but later than the priority date claimed * '''' document mether of the same patent family * ''' document mether of the international search the priority date claimed * '''' document mether of the same patent family * '''' document mether of the international search the priority date claimed international search report * ''' document mether of the international search the international search report to he international search report to 'no ''' document member of the same patent family * '''' ''' '''''''''''''''''''''''''''		А	CN 103541614 A (SAMSUNG ELECTRONICS CO entire document	D., LTD.) 29 January 2	2014 (2014-01-29)	1-10	
 Further documents are listed in the continuation of Box C. Special categories of cited documents: * Special categories of cited documents: * A* document defining the general state of the art which is not considered to be of particular relevance * C* document which may throw doubts on priority claim(s) or which is cited to exablish the publication date of another citation or other special reason (as specified) * Or means 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 45 50 Name and mailing address of the ISA/CN Name and mailing address of the ISA/CN China National Intellectual Property Administration (ISA/CN) No. 6, Xitucheng Road, Jimenqiao, Haidian District, Beijing 100088 China 	35						
 * 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 * C" 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 published prior to the international filing date but later than the priority date claimed * P" document published prior to the international filing date but later than the priority date claimed * P" document published prior to the international filing date but later than the priority date claimed * Date of the actual completion of the international search 15 March 2021 * Name and mailing address of the ISA/CN Name and mailing address of the ISA/CN * Name and mailing a		Further d	locuments are listed in the continuation of Box C.	See patent fami	ly annex.		
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 45 ^{apr} document published prior to the international filing date but later than the priority date claimed ^{both} of the actual completion of the international search Date of the actual completion of the international search 50 both of the actual completion of the international search both of the international search report china National Intellectual Property Administration (ISA/CN) No. 6, Xitucheng Road, Jimenqiao, Haidian District, Beijing 100088 china 		"O" documen means	eason (as specified) t referring to an oral disclosure, use, exhibition or other	 Y^{**} document of particular relevance; the claimed invention cannot b considered to involve an inventive step when the document i combined with one or more other such documents, such combination being obvious to a person skilled in the art 			
50 Date of the actual completion of the international search 15 March 2021 Date of mailing of the international search report 26 March 2021 50 Name and mailing address of the ISA/CN China National Intellectual Property Administration (ISA/ CN) No. 6, Xitucheng Road, Jimenqiao, Haidian District, Beijing 100088 China Authorized officer	45	"P" documen the priori	t published prior to the international filing date but later than ty date claimed	"&" document memb	er of the same patent far	nily	
50 15 March 2021 26 March 2021 50 Name and mailing address of the ISA/CN Authorized officer China National Intellectual Property Administration (ISA/ CN) No. 6, Xitucheng Road, Jimenqiao, Haidian District, Beijing 100088 Authorized officer		Date of the act	tual completion of the international search	Date of mailing of th	e international search	report	
50 Name and mailing address of the ISA/CN Authorized officer China National Intellectual Property Administration (ISA/ CN) No. 6, Xitucheng Road, Jimenqiao, Haidian District, Beijing 100088 China			15 March 2021		26 March 2021		
China National Intellectual Property Administration (ISA/ CN) No. 6, Xitucheng Road, Jimenqiao, Haidian District, Beijing 100088 China	50	Name and mai	ling address of the ISA/CN	Authorized officer			
		China Na CN) No. 6, Xit 100088 China	tional Intellectual Property Administration (ISA/ ucheng Road, Jimenqiao, Haidian District, Beijing				
FE Facsimile No. (86-10)62019451 Telephone No.	<i>EE</i>	Facsimile No.	(86-10)62019451	Telephone No.			

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

EP 4 130 625 A1

		INTERNATIONAL SEARCH REPORT	International applica	tion No.
_			PCT/CN	2021/070215
5	C. DOC	CUMENTS CONSIDERED TO BE RELEVANT		
	Category*	Citation of document, with indication, where appropriate, of the rele	evant passages	Relevant to claim No.
10	A	CN 204806818 U (GUANGZHOU MIDEA HUALING REFRIGERATO 25 November 2015 (2015-11-25) entire document	R CO., LTD. et al.)	1-10
	A	CN 102564042 A (HAIER GROUP CORP. et al.) 11 July 2012 (2012-07- entire document	-11)	1-10
	А	EP 3550236 A1 (WHIRLPOOL CORPORATION) 09 October 2019 (201 entire document	9-10-09)	1-10
15	A	JP 11-183025 A (SANYO ELECTRIC CO., LTD.) 06 July 1999 (1999-0 entire document	7-06)	1-10
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20				
25				
30				
35				
40				
45				
50				
50				
55	Form PCT/ISA	A/210 (second sheet) (January 2015)		

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International application No.

INTERNATIONAL SEARCH REPORT Information on patent family members

PCT/CN2021/070215		mormation on patent failing members					
Publication date (day/month/year)	(s)	nt family member	Pate	Publication date (day/month/year)		atent document 1 in search report	P cite
		None	_	18 July 2017	А	106958982	CN
		None		19 April 2017	А	106568289	CN
		None		22 December 2020	U	212205306	CN
		None		04 July 2012	А	102538373	CN
11 September 201	A1	2015131765	wo	11 February 2015	А	104344676	CN
18 January 2017	В	104344676	CN				
15 June 2016	A3	2685185	EP	29 January 2014	А	103541614	CN
22 January 2014	А	20140008597	KR				
28 December 201	В	103541614	CN				
09 August 2017	B 1	2685185	EP				
09 January 2014	A1	2014009055	US				
15 January 2014	A2	2685185	EP				
		None		25 November 2015	U	204806818	CN
14 December 201	В	102564042	CN	11 July 2012	А	102564042	CN
29 October 2019	B1	10458696	US	09 October 2019	A1	3550236	EP
10 October 2019	Al	2019309568	US				
14 January 2009	B2	4208280	JP	06 July 1999	А	持开平11-183025	JP

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