

(19)



(11)

EP 4 316 314 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
07.02.2024 Bulletin 2024/06

(21) Application number: **23188561.7**

(22) Date of filing: **29.07.2023**

(51) International Patent Classification (IPC):
A47G 29/12 (2006.01) **A47G 29/122** (2006.01)
A47G 29/14 (2006.01) **A47G 29/30** (2006.01)
F21V 33/00 (2006.01)

(52) Cooperative Patent Classification (CPC):
A47G 29/1201; A47G 29/1225; A47G 29/141;
A47G 29/30; F16B 35/04; F21V 33/0012;
A47G 2029/1226

(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 ME MK MT NL
NO PL PT RO RS SE SI SK SM TR
 Designated Extension States:
BA
 Designated Validation States:
KH MA MD TN

(30) Priority: **05.08.2022 PL 44194822**

(71) Applicant: **Allegro Spolka z Ograniczona**
Odpowiedzialnoscia
61-569 Poznan (PL)

(72) Inventors:
 • **Glimasinski, Kamil**
Warszawa (PL)
 • **Derek, Marcin**
Piaseczno (PL)
 • **Szolle, Wojciech**
Zagorze (PL)

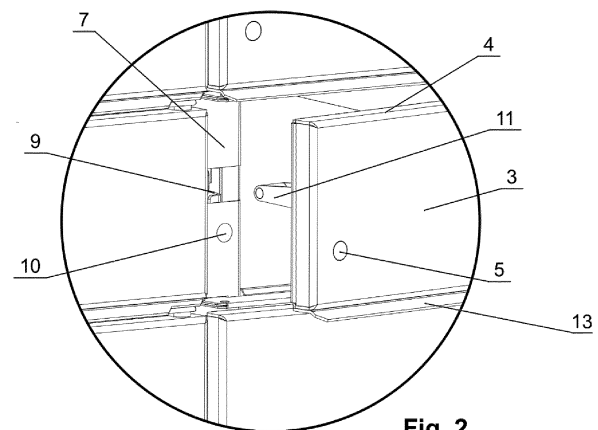
(74) Representative: **Wroblewski, Marcin Jan**
Fert, Jakubiak vel Wojtczak
Wróblewski rzeczniczy patentowi
Sp. P. / ul. Gdanska 126/A103
90-520 Lodz (PL)

(54) **THE DOOR FOR LOCKERS OR CABINS WITH LIMITED ACCESS, IN PARTICULAR FOR POST OFFICE BOXES, AND THE UNIT OF LOCKERS WITH LIMITED ACCESS, IN PARTICULAR THE POST OFFICE BOXES UNIT**

(57) The subject of the invention is a door for lockers or cabinets with limited access and the unit of lockers or cabinets with limited access, intended in particular for storing parcels.

The door (1) includes structural parts, including a front panel (3) and side walls (4); wherein at least the side walls (4) have holes (6) for articulated connection of the door (1) with the body (7) of the locker. The essence consists in that a selected structural part of the door has at least a light beam transmitting surface fragment (5).

The unit of lockers (2) with limited access, in particular the post boxes unit, comprises a body (7) with lockers (8) having an assigned lighting element (10). Each locker has walls, including a rear wall, and an articulated door (1) with a catch (11) cooperating with a lock (9) embedded in the body (7) of the locker unit (2). The essence consists in that the lighting element (10) assigned to each locker is embedded in at least one wall of the body (7) of the locker unit, to which the door (1) is adjacent, and the door (1) has at least a light beam transmitting surface fragment (5) matched to the position of the lighting element (10).

**Fig. 2****EP 4 316 314 A1**

Description

[0001] The subject of the invention is a door for lockers or cabinets with limited access, in particular for post office boxes, and the unit of lockers with limited access, in particular the of post office boxes unit. The door is used in constructions with limited access like lockers or cabinets, in particular in post office boxes commonly referred to as parcel lockers and other devices for storing and sharing parcels. The locker unit, in turn, is used as an individual and complete device that allows you to store and share parcels of various sizes.

[0002] In the state of the art, there are known various types of doors used as structural elements in cabinets, lockers or luggage storage rooms, in which the key aspect is to ensure the security of the stored content. Particularly noteworthy are devices for storing parcels in the form of parcel lockers, which are a system of post office boxes, used to store parcels with the option of collecting or leaving the parcel at a time convenient for the user. For this reason, they are characterized by simple construction, durability and ease of production and assembly. They are also usually resistant to burglary attempts. Cabinets of this type usually contain many lockers of various sizes. Individual lockers are provided with a door controlled usually by one control unit, located in an area of the cabinet that is easily accessible to the user. In such devices, security and communication means are often used, consisting of sensors, cameras or lighting elements.

[0003] In the prior art, cabinet door is known for use in cabinets, including constructions provided with electronically controlled locks. Patent description PL229307B1 discloses a cabinet door made of a sheet of metal constituting a front panel and containing side walls in the form of an inner edge as well as the upper and lower edges of the front panel, which are bent at right angles to the inside of the cabinet body constituting an internal edge, an upper edge and a lower edge, respectively. Furthermore, the upper and lower edges are bent upwards and protect the construction against water entering the cabinet, ensuring water drainage to the outside. Furthermore, the upper edge of the front panel contains a hinge hole in which a Teflon sleeve is mounted, constituting an electroinsulator in the entire construction, allowing to eliminate or significantly reduce the phenomenon of electrochemical corrosion. The cabinet door is attached to the cabinet body with spacers in the form of brackets in the form of a flat sheet. In this solution, the door has a simple construction and prevents the potential difference and, consequently, corrosion resulting from the difference in materials of which the door and the cabinet body are made. Furthermore, the door can be provided with a grounding pin and a metal cable attached to the inside of the locker.

[0004] While from the document EP3058530A1 there is known a method of delivering a parcel to a recipient, which uses a system of post office boxes and enables

an identification of an appropriate locker in a cabinet with the unit of lockers, depending on the size of the delivered parcel. The cabinet with the unit of lockers is provided with a central communication and control unit ensuring access control to each locker by controlling the locking mechanisms that each locker is provided with. In this solution, it is disclosed that each locker can be assigned with a light indicator for informing the user of the accessibility of the locker. The presented system is configured in such a way as to control access to each of the cabinets by using at least one locking mechanism, suitably compatible with each cabinet. Furthermore, one embodiment discloses a cabinet with at least one light indicator configured to inform the user which of the individual cabinets is unlocked or accessible.

[0005] In the state of the art, a device acting as a parcel exchange point is also known from the US2013144428A1. The device has the form of a cabinet containing storage lockers of various sizes, depending on the individual dimensions of the parcel. The outer parts of individual lockers are doors that can be provided with slots for letters. The door has a lock, which protects against uncontrolled opening of the locker. The lock can include a latch member, a latch engagement and disengagement member that are remotely controlled and consequently lock the door movement. The door of the locker is pivotally connected to one of the walls of the cabinet by means of at least one hinge. In this way, it is possible to rotate the door in relation to the locker and the cabinet. What's more, in order to facilitate use and provide information which of the lockers is accessible, an illuminating element has been installed inside the locker or on its door, which can be a light bulb, LED diode or any other light emitting object. The light effect varies depending on the accessibility of individual lockers. Depending on the configuration, the light on or off will signal the accessibility of a given locker. Furthermore, the lamp can be configured so that, in addition to indicating the accessibility of the locker, the user will also receive information about the opening of the door of the locker, and the illuminated interior will make it easier to see its content. The role of lighting the inside of the locker is performed primarily by the lighting element mounted inside it. The door can also be provided with sensors, in the form of, for example, a camera or a device used to detect the load of the locker, thus informing about its accessibility and the possibility of accepting a new parcel.

[0006] The aim of the invention is the construction of a door for lockers or cabinets with limited access, in particular post office boxes, and a locker units with limited access, in particular post office boxes, which will ensure safe use of lockers or cabinets, and at the same time facilitate their use by informing the user about the various parameters of the box, including its position, accessibility or safe closure.

[0007] The invention relates to a door for lockers or cabinets with limited access, in particular post office boxes, comprising structural parts including a front panel and

side walls. At least the side walls include holes for articulated connection of the door with a body of the locker. The essence of the invention is in that a selected structural part of the door, preferably the front panel, has at least a light beam transmitting surface fragment.

[0008] Preferably, the light beam transmitting surface fragment has the shape of a circle.

[0009] It is also expedient for the light beam transmitting surface fragment to include a lens.

[0010] Suitably, the door includes the rear panel, wherein the front panel and the rear panel have light beam transmitting surface fragments matched one to another.

[0011] Preferably, the door includes the rear panel, wherein the front panel and the rear panel have through holes, in which between the front panel and the rear panel there is at least one body with light beam transmitting faces, wherein preferably at least one front wall of the body has a lens.

[0012] Preferably, the front panel and the rear panel have through holes in which the light beam transmitting faces of the body are seated.

[0013] It is particularly appropriate when the body has two sided external recesses forming walls on which the front panel and the rear panel are supported; wherein the size of the through holes in the front panel and the rear panel substantially corresponds to the outer dimension of the recess, and the outer walls of the recesses are preferably provided with sealing elements.

[0014] Preferably, the front wall of the body has a size substantially corresponding to the size of the selected edge of the front panel.

[0015] It is also expedient for the door to include a plurality of bodies assigned to each side of the front panel.

[0016] It is reasonable for the door to have a ground wire attached to an element selected from the front panel, the side walls, and the rear panel.

[0017] It is appropriate when the front panel and side walls are made of a single sheet of metal.

[0018] Alternatively, the front panel has side walls attached.

[0019] It is also reasonable when the door is provided with an eave extending beyond the plane of the front panel, having at least a light beam transmitting surface fragment.

[0020] The invention also relates to the locker unit with limited access, in particular the of post office boxes unit, comprising a body with the lockers, each having an assigned lighting element. Each locker has walls, including a rear wall and an articulated door with a catch that cooperates with the lock embedded in the body of the locker unit. The essence of the invention is in that the lighting element assigned to each locker is embedded in at least one wall of the body of the locker unit to which the door is adjacent, and the door has at least a light beam transmitting surface fragment, matched to the position of the lighting element; wherein preferably the light beam transmitting surface fragment is provided with a lens.

[0021] It is also expedient for the door to include a front panel having a light beam transmitting surface fragment.

[0022] Equally preferably, the door includes a rear panel, the front panel and the rear panel having through holes in which a light transmitting front walls of a body located between the front panel and the rear panel are embedded (15).

[0023] Equally preferably, the body has two sided external recesses forming walls on which the front panel and the rear panel are supported, wherein the size of the through holes in the front panel and in the rear panel substantially corresponds to the external dimension of the recess.

[0024] As used herein, a light transmitting surface fragment is understood, in accordance with the nomenclature adopted in the field of optics, as a transparent element, characterized by the physical property of transmitting light through this material, preferably without significant light dispersion.

[0025] As used herein, a lighting element is understood as any element capable of emitting light or displaying information. These can be, in particular, LEDs, displays or monitors of various sizes and configurations.

[0026] The basic advantage of the invention is to ensure safety when using a locker or cabinet, and at the same time to facilitate its use by providing information about various parameters of the locker, including its position in the lockers or cabinets unit, its accessibility, whether it is opened or securely closed. The use of a light beam transmitting surface fragment in the construction of the door and use of such doors in the lockers unit allows the user to receive a visible signal about the status of a given locker. Importantly, the visible point of light can also provide information about the position of the opened locker in the locker unit, or about the correct closure of the locker, increasing the safety of the goods stored therein. The lighting element can be used to provide various information, including, for example, information on overloading the locker when storing items of larger dimensions or heavy weight.

[0027] An equally important advantage is that if the door has the light beam transmitting surface fragment, then the lighting element, especially the LED diode, can be placed in the walls of the body of the locker unit. In typical solutions, the locker unit is connected to the power supply, ensuring the operation of the control and communication modules, including the locks of individual lockers. For this reason, supplying power to the lighting elements is very simple and does not require a battery power supply for the lighting elements. Lighting elements can also be connected to the control module just as easily.

[0028] The construction in which the door of the locker or cabinet has a light beam transmitting surface fragment is simple, and the manufacturing process is not complicated. In particular, the door, which is usually made of metal sheet can have cut outs of any shape, in which a lens or an element made of a light transmitting material

can be embedded. The door can also have a selected structural element made entirely of light transmitting material, for example, the door eave can be transparent and can transmit light from the lighting element. The use of a circle shaped light beam transmitting surface fragment facilitates its implementation in the door construction and does not weaken its construction due to the lack of sharp edges.

[0029] The door construction and safety can also be improved by mounting the rear panel in the door. In this design, the front panel of the door and the rear panel of the door have light beam transmitting surface fragments, which are preferably matched to each other, which promotes the transmission of light from the lighting elements mounted in the body of the parcel locker. The best light transmission is achieved, however, if the body with light transmitting faces is placed between the front and rear panels. Then a light beam passing through the space between the front and rear panels is not dispersed. Additional benefits can be achieved by embedding the lenses in the faces of the body.

[0030] Ensuring a simple construction of locker door with a limited number of structural elements facilitates servicing and reduces the susceptibility to failure of locker or cabinet door elements. An equally important advantage of the solution is the assignment of a lighting element to each locker. In units of lockers or cabinets, there are many lockers of different sizes, often lockers of the same dimensions are located close to each other. This often causes a problem with identifying which locker the user should use. The use of lighting elements makes it much easier for the user to identify the correct locker or cabinet in the unit of lockers or cabinets. The correct locker or cabinet can be marked by the lighting element displaying a particular colour, or the user can follow the lighting elements leading to the selected locker. Another advantage of placing lighting elements in the door is the ability to display and inform about the failure of the device, its occupancy or the accessibility of individual lockers. Using a lighting element one can provide a lot of information to the users.

[0031] The invention has been presented in embodiments and in the drawing, in which:

Fig. 1 shows a perspective view of the post office boxes unit;

Fig. 2 shows a fragment of the post office boxes unit with a half open door in a perspective view;

Fig. 3 shows a fragment of a locker of the post office boxes unit with an open door in a perspective view;

Fig. 4 6 show a post office box door in a perspective view in further embodiments;

Fig. 7 shows a post office box door in a partial cross section;

Fig. 8 shows a light beam guiding body in a perspective view;

Fig. 9 shows a light beam guiding body in a perspective view in further embodiment.

[0032] A door 1 for the post office box unit 2 in the first embodiment (fig. 13) comprises front panel 3 and side walls 4. The front panel 3 and selected side walls 4 are made of a single sheet of metal. A drainage eave 13 is attached to the lower side wall. On the front panel 3 there is a circular light beam transmitting surface fragment 5. It was made as a cut out in the material forming the front panel 3, in which a transparent plastic element was embedded. The shape of the circle facilitates production by using die cutters of typical shapes, and the cut out does not weaken the door construction. Preferably, the circular light beam transmitting surface fragment 5 has a diameter selected from the range of 8 to 15 mm. Diameters smaller than 8 mm cannot be perceived by users of the post office boxes unit. Placing the light transmitting surface fragment 5 on the front panel 3 allows users to particularly easily see the generated light effects visible through this surface fragment.

[0033] In other embodiments, the light beam transmitting surface fragment 5 can be provided with a lens, additionally favoring the light propagation. In particular, the lens can focus the light generated even by a single LED.

[0034] In further embodiments, the eave 13 can be made of a light conducting material.

[0035] The door 1 was used in the limited access post office box unit 2. The post office boxes unit 2 has a body 7, and the walls and structural elements of which define the walls, including the rear wall of individual lockers 8. The door 1 for articulated connection with the body 7 of the post office box unit 2 has holes 6 on the side walls 4 for articulated connection of the door 1. The body 7 defines a single locker 8. Each locker 8 has in the body 7 an assigned electrically actuated lock 9 and a single lighting element 10 in the form of a LED diode. They are embedded in one of the walls of the body 7 to which the door 1 adhere. In the body 7 there are embedded known communication and control units (not shown in the drawing), that allow remote opening of selected lockers 8 and control of the lighting element 10. The position of the circular light beam transmitting surface fragment 5 on the front panel 3 of the door 1 is matched to the position of the lighting element 10. Furthermore, the door 1 has a catch 11 designed to cooperate with a lock 9.

[0036] In other embodiments, the light beam transmitting surface fragment 5 can be made on other structural elements of the door, for example on the side wall 4, which allows to obtain the effect of highlighting the edge of the selected door 1.

[0037] In further embodiments, the light beam transmitting surface fragment 5 can be of any shape, such as a star (fig. 4), a square (fig. 5), or a rectangle with a width corresponding to the width of the door edge 1 (fig. 6).

Especially in the embodiment, in which the light beam transmitting surface fragment 5 has a width corresponding to the width of the door edge 1, many light sources can be placed in the body 7 of the post office box unit 2, using, for example, a strip of LED diodes. Then, on the entire edge of the body of the post office box unit to which the edge of the door with the light beam transmitting fragment 5 adheres, there are light sources.

[0038] In the next embodiment, the door 1 (fig. 7 8) for post office boxes or cabinets include the front panel 3, the side walls 4 and the rear panel 12. The front panel 3 and selected side walls 4 are made of a single sheet of metal. Also, the rear panel 12 is made of a single sheet of metal and has a lower side wall located under the lower side wall of the front panel 3 and extending into the eave 13, which extends beyond the plane of the front panel 3. The rear panel 12 is attached to the side walls 4. In the embodiments, the rear panel 12 is screwed to the side walls, thanks to which, by unscrewing the bolts, easy access to the space behind the front panel 3 can be obtained. The rear panel 12 also has a screwed catch 11 to cooperate with the lock 9 located in the post office box unit 2. In this embodiment, the holes 6 in the side walls 4 enabling the articulated connection of the door 1 with the body of the post office box unit 2 partially overlap the rear panel 12. The door 1 is also provided with a ground wire 14 attached to the front panel 3 and led out beyond the side edge of the door 1.

[0039] A body 15 is placed between the front panel 2 and the rear panel 5. The body 15 can have any cross section, for example the shape of a circle, square or rectangle. In the presented embodiment, the body 15 is in the form of a sleeve (fig. 7 8) and is seated in through holes in the front panel 3 and rear panel 12, which in shape correspond to the shape of the body 15, so that the faces 15A of the body 15 pass through the planes formed by these panels or lie in these planes. The faces 15A of the body 15 are made of a transparent material so that in the front panel 3 and the rear panel 12 they form a light beam transmitting surface fragment 5. The body 15 has wall forming recesses 16 on its outer surface near its ends. The walls of the recesses 16 support the front panel 3 and the rear panel 12, and additionally the walls of the recesses 16 define a fragment of the body 15 that can be inserted into the front panel 3 and the rear panel 12. Thus, it is particularly advantageous if the recess is made over the width of the body 15 corresponding to the thickness of the material forming the front panel 3 and the rear panel 12. In this embodiment, it is particularly easy to obtain front walls 15 that lie in the planes of the front panel 3 and the rear panel 12. The transparent faces 15A, i.e. front walls 15A conduct the light generated by the lighting element 10 located in the body 7 of the locker unit 2. As in the previous embodiment, the position of the faces 15A of the body 15, i.e. the circular light beam transmitting surface fragment 5 on the front panel 3 and the rear panel 12 of the door 1, is matched to the position of the lighting element 10.

[0040] In other embodiments, the front or rear front wall 15A of the body 15 can be provided with a lens, further promoting the light propagation. In particular, the lens can magnify the light generated inside the body even by a single LED. The use of the body 15 limits the light dispersion from the lighting element 10 placed in the body 7. Thus, the body 15 forms an optical element transmitting light between the light source 10 and a selected point located on the door 1 of the locker unit 2. As a result, the light generated by the lighting element 10 can be easily seen outside the locker unit.

[0041] Embodiments are also possible in which the door will be provided with a front panel and a rear panel and side walls. In such cases, it is not necessary to use the body, but a front panel and a rear panel must have matching light beam transmitting surface fragments.

[0042] As mentioned, the body 15 can be of any shape in a cross section. Thus, identically as in the previous embodiments, in which the cut out in the front panel 3 can have any shape, identically the body 15 can also have star or rectangular shaped faces. In a further embodiment, the body 15 (fig. 9) has the form of a closed profile having a square cross section. Identically as in the previous embodiment, the body has external recesses 16 forming walls.

[0043] In other embodiments, the door of the cabinet or locker can have a front panel and the rear panel of the same size. With such a construction, the side walls can be separate structural elements, for example made of closed square shaped profiles, with which the front panel and rear panel will be connected.

[0044] In the next embodiment (not shown in the drawing), a sleeve shaped bodies, were mounted at three edges of the door. The body of the locker unit in the places adjacent to the edges of the door 1 with sleeves is provided with lighting elements. In order to improve the tightness of the construction, sealing elements in the form of o ring seals were slid onto the walls of the recesses. The seals ensure the tightness of the construction and prevent water from getting into the door.

Claims

1. A door (1) for lockers or cabinets (2) with limited access, in particular post office boxes, comprising structural parts including a front panel (3) and side walls (4); wherein at least the side walls (4) include holes (6) for hinged connection of the door with a body of the locker, **characterized in that** a selected structural part of the door, preferably the front panel (3), has at least a light beam transmitting surface fragment (5).
2. The door according to claim 1, **characterized in that** the light beam transmitting surface fragment (5) includes a lens.

3. The door according to claim 1 or 2, **characterized in that** it includes a rear panel (12), wherein the front panel (3) and the rear panel (12) have light beam transmitting surface fragments (5) matched one to another. 5
4. A door according to any claims from 1 to 3, **characterized in that** it includes the rear panel (12), wherein the front panel (3) and the rear panel (12) have through holes, in which between the front panel (3) and the rear panel (12) there is at least one body (15) with light beam transmitting faces (15A), wherein preferably at least one face of the body (15) has a lens. 10
5. The door according to claim 4, **characterized in that** the front panel (3) and the rear panel (15) have through holes in which the light beam transmitting faces (15A) of the body (15) are seated. 15
6. The door according to claim 4 or 5, **characterized in that** the body (15) has two sided external recesses (16) forming walls on which the front panel (3) and the rear panel (12) are supported, wherein the size of the through holes in the front panel (3) and in the rear panel (12) substantially corresponds to the outer dimension of the recess (16), and the outer walls of the recesses (16) are preferably provided with sealing elements. 20
7. The door according to any claim from 4 to 6, **characterized in that** the front wall (15A) of the body (15) has a size substantially corresponding to the size of the selected edge of the front panel (3). 25
8. The door according to any claim from 4 to 7, **characterized in that** the door includes a plurality of bodies (15) assigned to each side of the front panel (3). 30
9. The door according to any claim from 1 to 8, **characterized in that** it has a ground wire (14) attached to an element selected from the front panel (3), the side walls (4), and the rear panel (12). 35
10. The door according to any claim from 1 to 9, **characterized in that** the front panel (3) has attached side walls (4). 40
11. The door according to any claim from 1 to 10, **characterized in that** it is provided with an eave (13) extending beyond the plane of the front panel (3) and having at least a light beam transmitting surface fragment (5). 45
12. A locker unit (2) with limited access, in particular the post office boxes unit, comprising a body (7) with lockers (8), each having an assigned lighting element (10); wherein each locker (8) has walls, including a rear wall, and an articulated door (1) with a catch (11) cooperating with a lock (9) embedded in the body (7) of the locker unit (2), **characterized in that** the lighting element (10) assigned to each locker is embedded in at least one wall of the body (7) of the locker unit to which the door (1) is adjacent, and the door (1) has at least a light beam transmitting surface fragment (5), matched to the position of the lighting element (10), wherein preferably the light beam transmitting surface fragment (5) is provided with a lens. 50
13. The locker unit according to claim 12, **characterized in that** the door (1) includes a front panel (3) having a light beam transmitting surface fragment (5). 55
14. The assembly of lockers according to claim 12 or 13, **characterized in that** the door (1) includes a rear panel (12), wherein the front panel (3) and the rear panel (12) have through holes in which a light transmitting front walls (15A) of a body located between the front panel (2) and the rear panel (6) are embedded (15).
15. The locker unit according to claim 14, **characterized in that** the body (15) has two sided external recesses (16) forming walls on which the front panel (3) and the rear panel (12) are supported, wherein the size of the through holes in the front panel (3) and in the rear panel (12) substantially corresponds to the outer dimension of the recess (16).

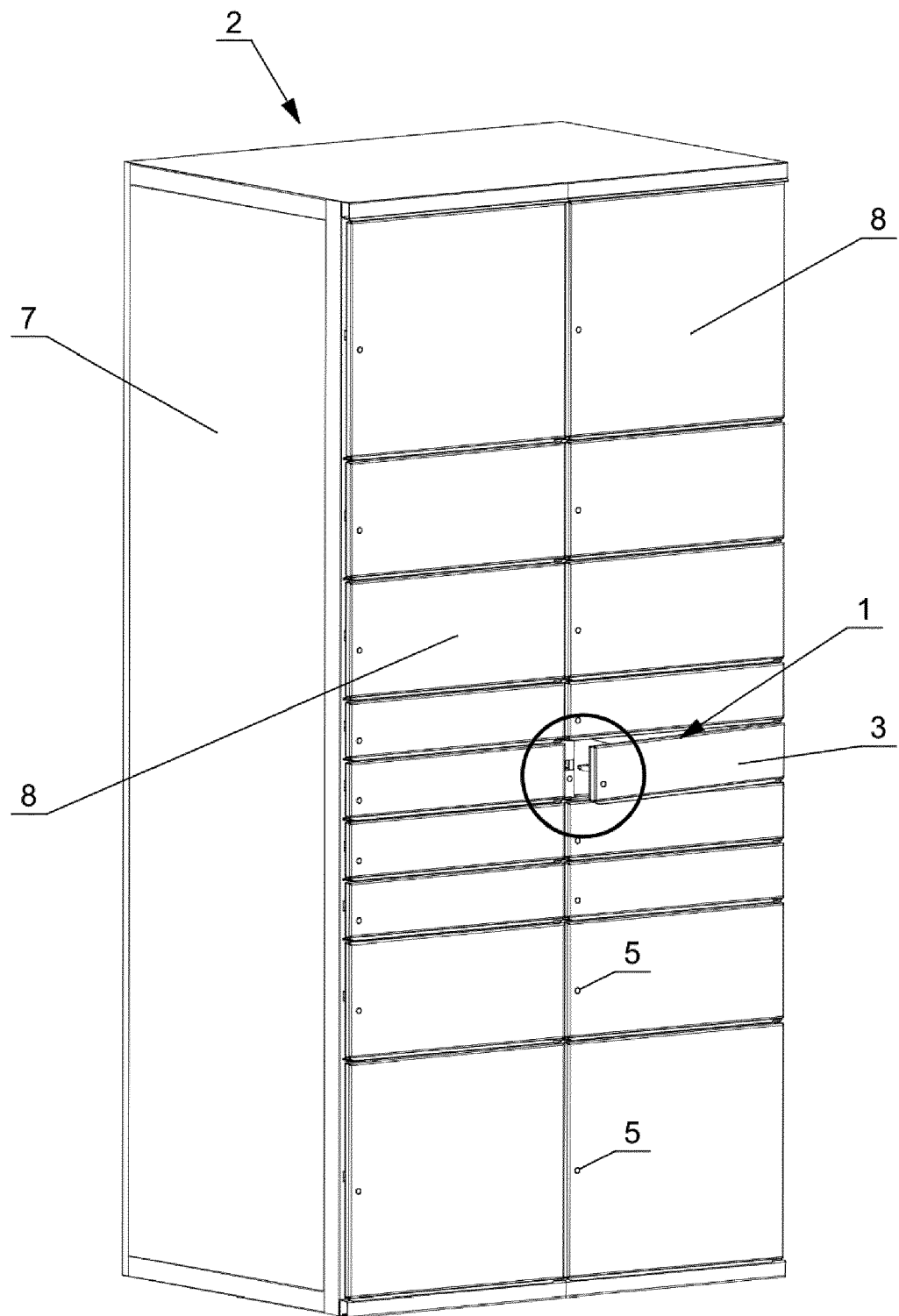


Fig. 1

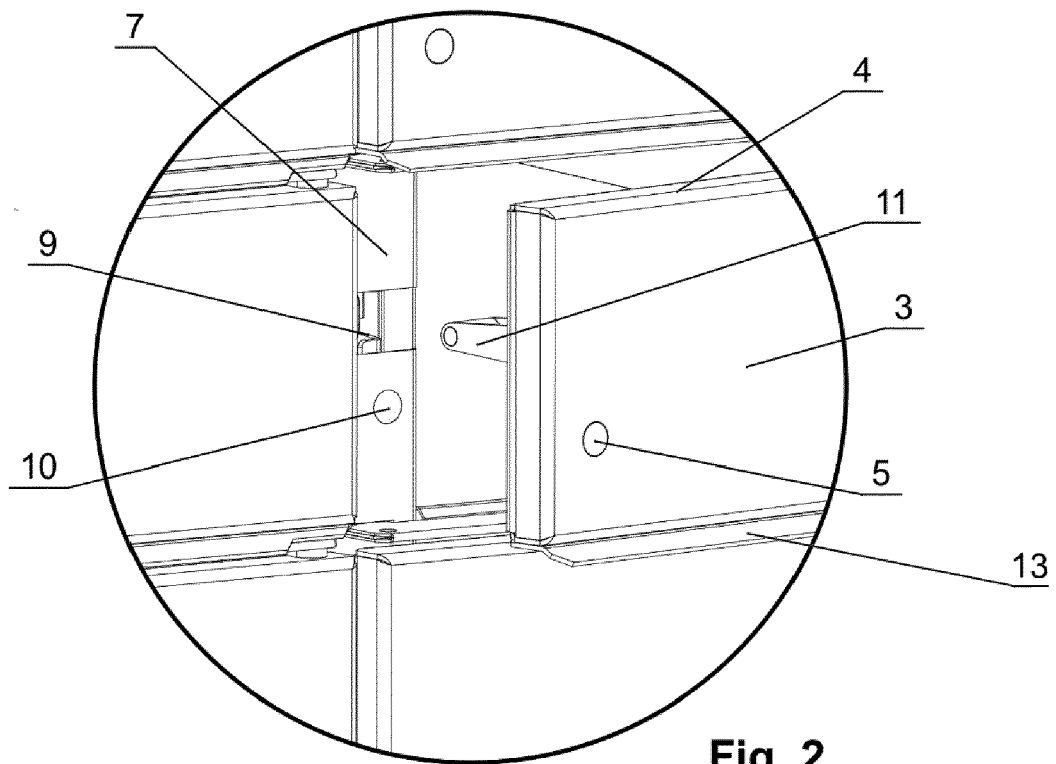


Fig. 2

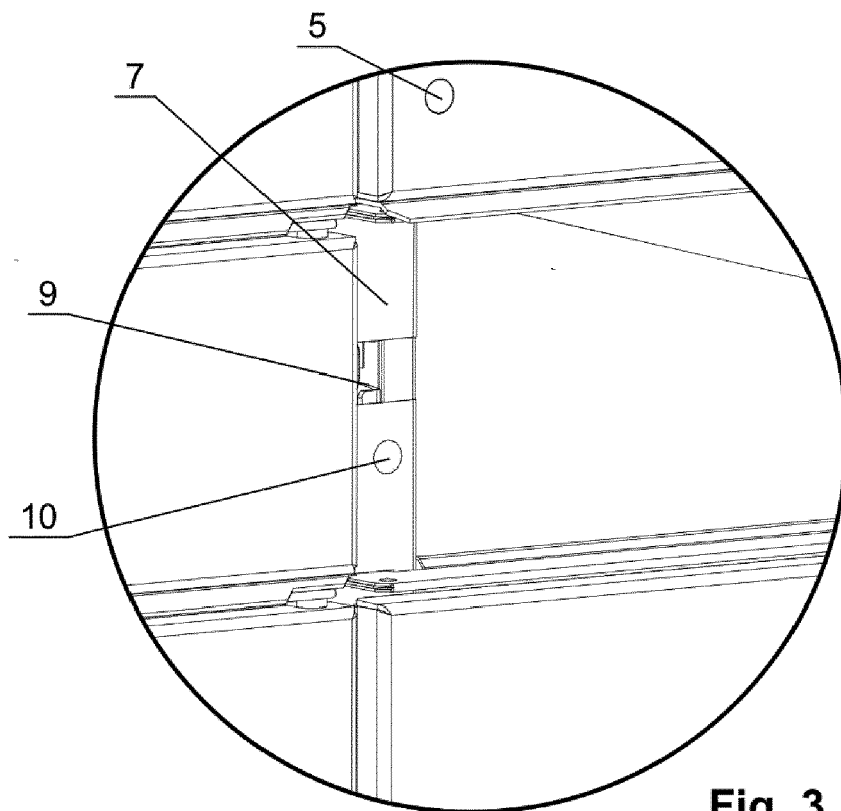


Fig. 3

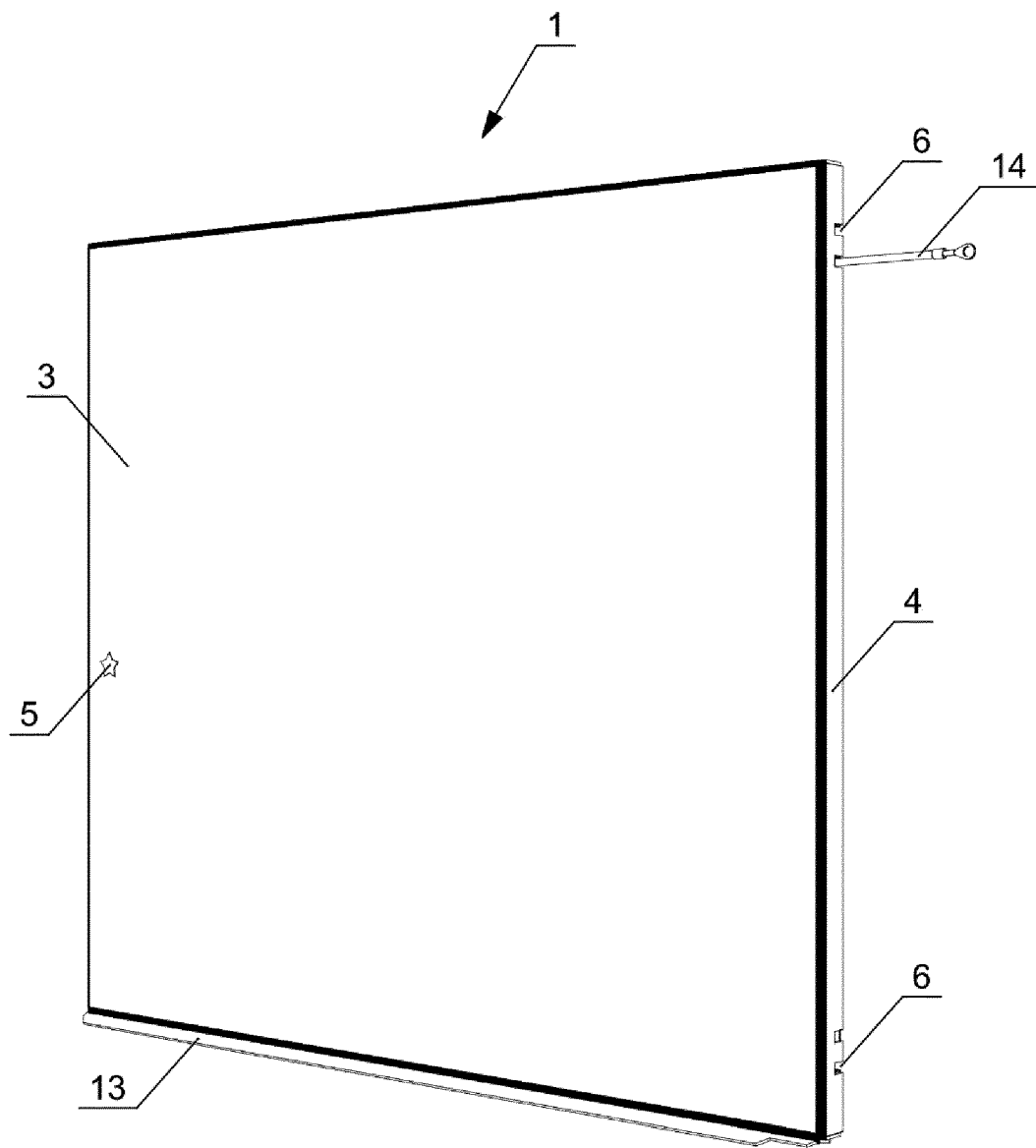


Fig. 4

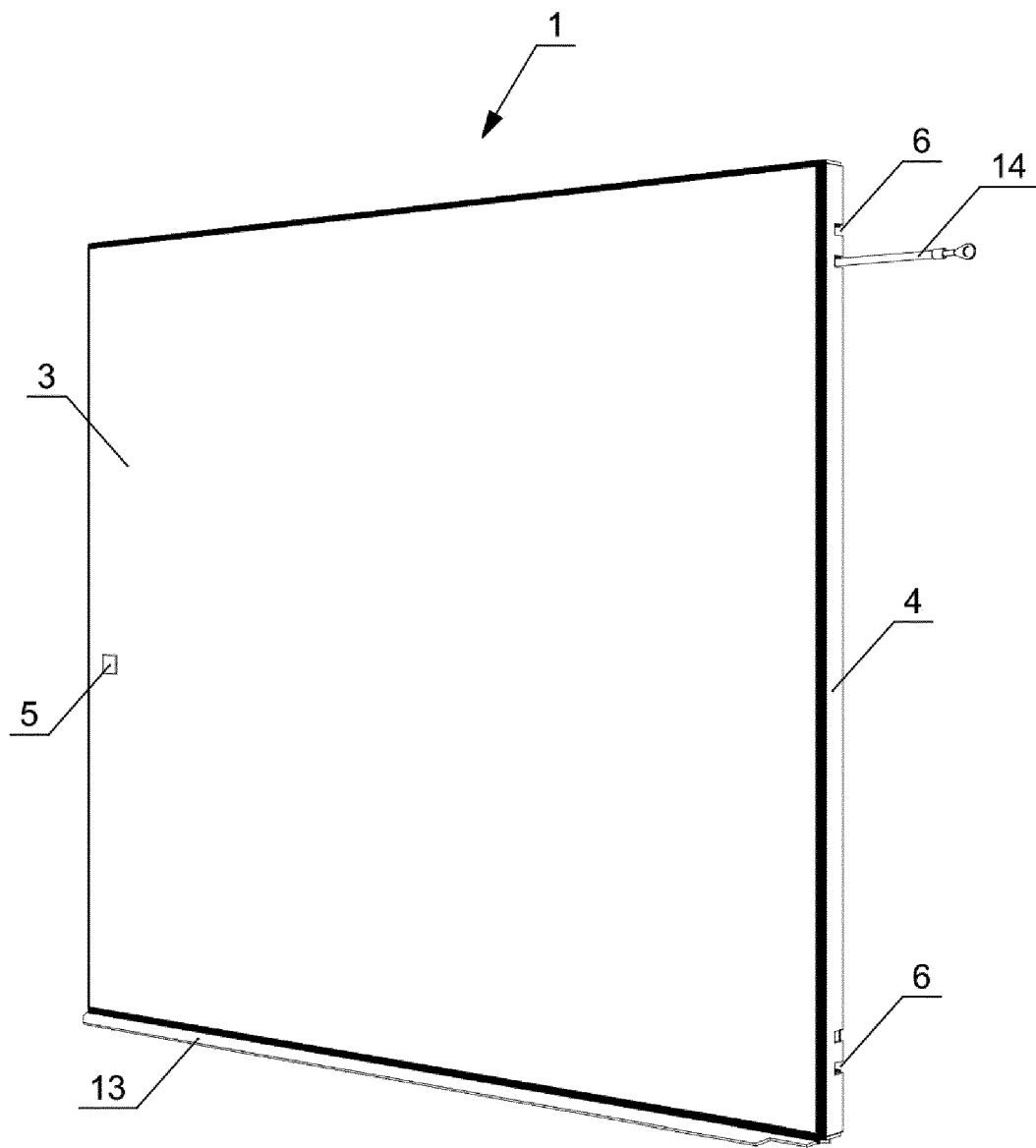


Fig. 5

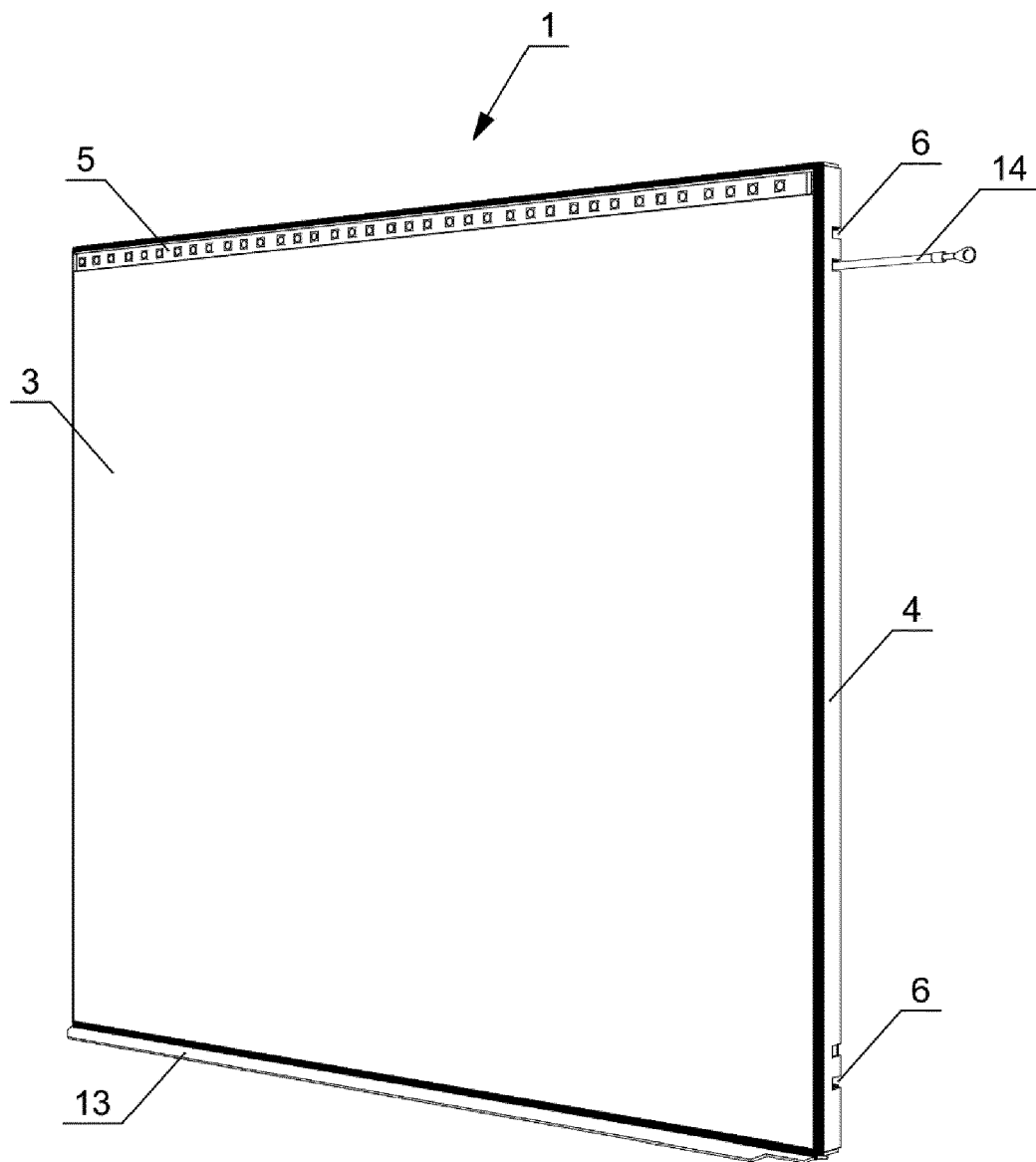
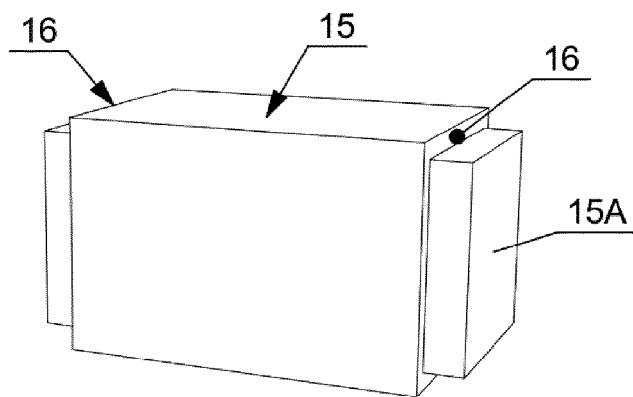
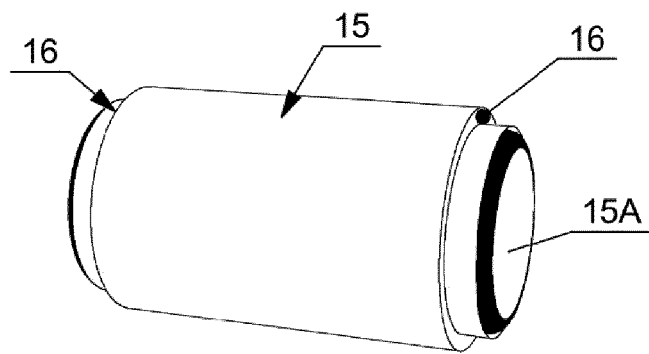
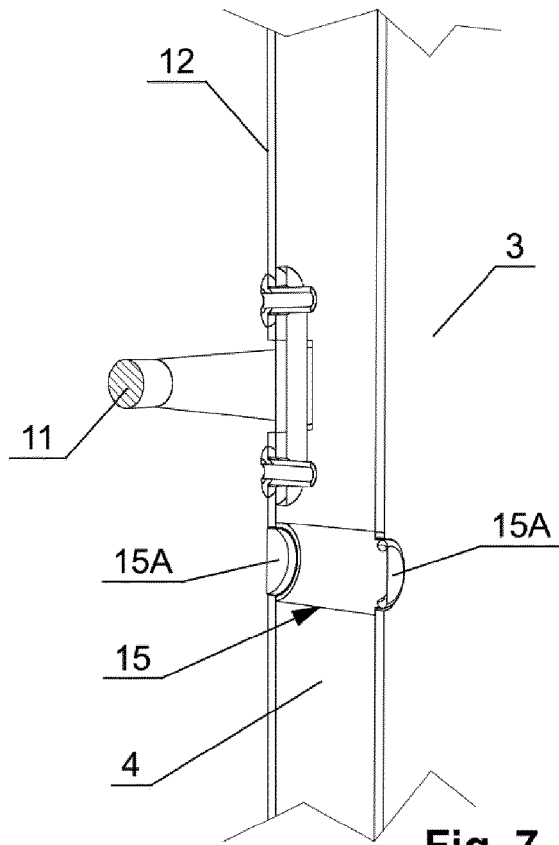


Fig. 6





EUROPEAN SEARCH REPORT

Application Number

EP 23 18 8561

5

10

15

20

25

30

35

40

45

50

55

2

EPO FORM 1503 03.82 (P04C01)

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	JP 2007 334607 A (FUJI ELECTRIC RETAIL SYSTEMS) 27 December 2007 (2007-12-27)	1-3, 10, 12, 13	INV.
Y	* figures 1-3 *	9	A47G29/12
	-----		A47G29/122
X	JP H05 71988 U (-) 28 September 1993 (1993-09-28)	1-3	A47G29/14
	* figures 1-3 *		A47G29/30
	-----		F21V33/00
X	KR 2009 0005940 A (KIM MIN JA [KR]) 14 January 2009 (2009-01-14)	1, 2	
	* figures 1, 2 *		

X	DE 20 2014 004120 U1 (LEHMANN LARS [DE]; NICOLAISEN RINNEL [DE]; RÄDISCH ROMAN [DE]) 29 July 2014 (2014-07-29)	1, 2	
	* figures 1, 4 *		

Y, D	PL 229 307 B1 (-) 31 July 2018 (2018-07-31)	9	
	* claim 7; figure 4 *		

			TECHNICAL FIELDS SEARCHED (IPC)
			A47G
			G06Q
			E06B
			A47B
			F21V
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
The Hague		13 December 2023	Longo dit Operti, T
CATEGORY OF CITED DOCUMENTS		T : theory or principle underlying the invention	
X : particularly relevant if taken alone		E : earlier patent document, but published on, or after the filing date	
Y : particularly relevant if combined with another document of the same category		D : document cited in the application	
A : technological background		L : document cited for other reasons	
O : non-written disclosure		
P : intermediate document		& : member of the same patent family, corresponding document	

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 23 18 8561

5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

13-12-2023

10	Patent document cited in search report	Publication date	Patent family member(s)	Publication date
	JP 2007334607 A	27-12-2007	NONE	
15	JP H0571988 U	28-09-1993	JP 2533819 Y2 JP H0571988 U	23-04-1997 28-09-1993
	KR 20090005940 A	14-01-2009	NONE	
20	DE 202014004120 U1	29-07-2014	NONE	
	PL 229307 B1	31-07-2018	NONE	
25				
30				
35				
40				
45				
50				
55				

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- PL 229307 B1 [0003]
- EP 3058530 A1 [0004]
- US 2013144428 A1 [0005]