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(54) **A MANUAL EMERGENCY OPENING DEVICE FOR AUTOMATIC DOORS, IN PARTICULAR FOR LIFT AND ELEVATOR DOORS**

MANUELLE NOTÖFFNUNGSVORRICHTUNG FÜR AUTOMATISCHE TÜREN, INSBESONDERE FÜR LIFT-UND AUFZUGSTÜREN

DISPOSITIF D'OUVERTURE D'URGENCE MANUELLE POUR PORTES AUTOMATIQUES, EN PARTICULIER POUR PORTES D'ASCENSEURS ET DE MONTE-CHARGES

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- **PATENT ABSTRACTS OF JAPAN vol. 14, no. 410 (M-1020) 5 September 1990 & JP,A,02 158 592 (MITSUBISHI ELECTRIC CORP) 19 June 1990**

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Description

The invention relates to a manual emergency opening device for automatic doors, in particular for lift and elevator doors.

Automatic gates for lifts and elevators are of two types: a first provided with two doors which meet centrally and each open in a centre-to-side sliding motion; the second provided with a single telescopic door subdivided into segments.

In the first case there are two groups of doors, each of which is formed by at least one door, with the doors of each group opening and closing in a same sense, which is opposite to the motion sense of the other group, such that the two door groups move symmetrically with respect to the centre of the lift gate.

In the second case there is one sole group of doors which all move in the same sense, producing a lateral opening and closing thereof.

In cases of malfunction of the automatic motion mechanisms of the doors, or when there is a failure in the electrical supply, an unblocking device is provided which enables the door to be manually opened so that the users can exit.

This device, which acts on the lock mechanism by unlocking it, is activatable from the outside by means of a key inserted into a hole.

The hole is made in a usually sheet metal cover situated above the door, at the door architrave, which cover contains the sliding mechanisms of the door or doors.

As the hole has to be made near the lock of the support and motion carriage of the door, it is made centrally if the door is of the central-to-side type, while it has to be made laterally on the right or the left if the door is telescopic or lateral.

Hence it is necessary to realize covers with holes made at different points according to the type of door they are destined to be applied to.

The main aim of the present invention is to obviate the above-mentioned drawback by providing a device which enables the hole to be made in a same position such that the cover can be modular, that is, the same whether destined for application to any type of lift or elevator door.

A further aim is to provide a manual unlocking device which is in a same, standard position for all types of doors.

The above aims are all fully attained by the opening device of the present invention, which is characterised as set out in the following claims and in particular in that it comprises mechanical transmissions which connect the hole with the lock element of the carriage such that the position of the hole is always the same and fixed for any type of door, whether centrally or laterally opening.

The above hole is preferably made in the central part of the sliding mechanism cover.

Further characteristics and advantages of the present invention will better emerge from the detailed

description that follows, of an embodiment of the invention, illustrated in the form of a non-limiting example in the accompanying drawings, in which:

- 5 - figures 1 and 2 are perspective views of the sliding carriage of a door, respectively with the lock device activated and deactivated;
- figures 3 and 4 are schematic views of the device, respectively in a rest position and an active position, in which it releases the lock on the carriage;
- 10 - figure 5 is a view from below of the cover with the hole;
- figure 6 is a frontal view of a door.

15 With reference to the figures, 1 denotes in their entirety means for automatically opening and closing doors 2, in particular for lifts and elevators.

The means 1 are of substantially known type and comprise a sliding carriage 4 slidable on a guide 9 by means of wheels 11, which carriage 4 inferiorly supports a door 2, applied directly to the carriage (as in figure 1) or indirectly, through support rods 20 (as in figure 2).

A carriage lock device 3 is provided to prevent opening of the doors during normal functioning of the lift.

25 Said carriage lock device 3 is constituted by a slot 13 on the carriage itself, into which a hook element 12 solid to the fixed door frame 14 hooks. When the doors are commanded to open, a known-type device mounted on the door commands the displacement of the slot 13 downwards to effect the unlocking of the carriage and enable it to slide along the guide 9.

30 In emergencies, such as for example during a break in the electrical supply, a manual carriage unlocking device is provided which in the present invention is realized by means of mechanical transmission 8 which kinematically link the slot 13 to an opening 5 through which a transmission rod activating key 6 is inserted.

35 The hole or opening 5 is made in a cover 10 of the door architrave, which covers the door motion means 1.

40 The hole 5 is preferably made in a central position in the cover 10 but in any case in a position such as to be standard for all types of door application, whether of the central-to-side opening type or of the telescopic type: thus it is possible to produce one sole type of cover 10 for all types of automatic lift doors.

45 The key 6 is inserted in a drum 7 internally anchored in the hole 5; a rotation of the key 6 causes a corresponding rotation of a pin 15 inserted in the drum 7 and connected by a wire 16 to a lever 17 pivoted at 18 to the fixed frame 14. The other end of the lever 17 supports a second pin 19 which strikes the support of the slot 13 causing said slot 13 to lower, with a consequent unlocking from the hook element 12, as shown in figures 2 and 4.

55 An elastic recall element (not illustrated), for example a spring, is provided to return the lever 17 to its original position when the key 6 is removed.

Figures 1 and 3 shows the carriage in the locked

position, with the hook element 12 inserted in the slot 13.

The special connection of the key 6 in the slot 13 realized by means of the two pins 15 and 19, the wire 16 and the lever 17, means that the hole 5 can always be situated in the same position, independently of the door type.

Preferably the position is central for reasons of symmetry and to allow the key 6 always to act in traction on the wire 16.

If the hole were made laterally it would be necessary, instead of the wire 16, to use a rigid connection element inasmuch as the key could then act not only in traction but also by pushing the rigid element (the need for this would depend on the position of the lock).

The two pins 15 and 19, the wire 16 and the lever 17 constitute mechanical transmissions which kinematically connect the slot 13 to the hole 5.

Claims

1. A manual emergency opening device for automatic doors, in particular for lift and elevator doors having central-to-side type opening or lateral opening configurations, of the type comprising:

- a lock (3) device for locking or allowing sliding movement of a carriage (4) bearing a door (2);
- a hole (5) made externally on the door (2), through which hole (5) and by means of a key (6), the lock (3) device can be activated to lock and unlock at least a door (2) in order that said door (2) can be opened or closed,

characterised in that it comprises mechanical transmissions (8) which connect the hole (5) with the lock (3) device such that the position of the hole (5) is fixed and constant for a central-to-side opening door and a telescopic laterally-opening door (2).

2. A device as in claim 1, wherein the hole (5) is made in a central part of a cover (10) of an architrave of a lift gate and of a door motion mechanism, such as to render the cover (10) symmetrical with respect to a plane perpendicular to the cover (10) and to the door and passing through the hole (5).

3. A device as in claim 1 or 2, wherein the mechanical transmissions (8) comprise a first pin (15) which is set in rotation by the key (6) and draws a wire (16) which activates a lever (17) supporting a second pin (19) by means of which second pin (19) the lever (17) activates the lock device (3), unlocking the carriage (4).

4. A device as in claim 1 or 2 wherein the mechanic transmissions (8) comprises a first pin (15) which is set in rotation by the key (6) and pushes a lever (17)

supporting a second pin (19) by means of which second pin (19) the lever (17) activates the lock device (3), unlocking the carriage (4).

5. A gate for lifts and elevators, characterised in that it comprises a device according to any of the preceding claims.

10 Patentansprüche

1. Manuelle Notöffnungsvorrichtung für automatische Türen, insbesondere für Lift- und Aufzugstüren, mit einer Konfiguration der sich von der Mitte zur Seite oder seitlich öffnenden Art, jener Art, die folgendes umfaßt:

- eine Verriegelungsvorrichtung (3) zum Verriegeln oder Gestatten einer Schiebebewegung eines eine Tür (2) tragenden Schlittens (4);
- ein außen in der Tür (2) ausgebildetes Loch (5), durch das die Verriegelungsvorrichtung (3) mittels eines Schlüssels (6) zur Verriegelung und Entriegelung mindestens einer Tür (2), damit die Tür (2) geöffnet oder geschlossen werden kann, aktiviert werden kann,

dadurch gekennzeichnet, daß sie mechanische Übertragungsvorrichtungen (8) umfaßt, die das Loch (5) derart mit der Verriegelungsvorrichtung (3) verbinden, daß die Position des Lochs (5) für eine sich von der Mitte zur Seite öffnende Tür und eine sich seitlich öffnende Teleskoptür (2) festgelegt und konstant ist.

2. Vorrichtung nach Anspruch 1, bei der das Loch (5) in einem mittleren Teil einer Abdeckung (10) einer Einfassung einer Lifttüreinrichtung und eines Türbewegungsmechanismus ausgebildet ist, damit die Abdeckung (10) bezüglich einer senkrecht zur Abdeckung (10) und zur Tür und durch das Loch (5) verlaufenden Ebene symmetrisch ist.

3. Vorrichtung nach Anspruch 1 oder 2, bei der die mechanischen Übertragungsvorrichtungen (8) einen ersten Stift (15) umfassen, der durch den Schlüssel (6) in Drehung versetzt wird und an einem Draht (16) zieht, der einen Hebel (17) aktiviert, der einen zweiten Stift (19) stützt, wobei der Hebel (17) durch den zweiten Stift (19) die Verriegelungsvorrichtung (3) aktiviert und den Schlitten (4) entriegelt.

4. Vorrichtung nach Anspruch 1 oder 2, bei der die mechanischen Übertragungsvorrichtungen (8) einen ersten Stift (15) umfassen, der durch den Schlüssel (6) aktiviert wird und an einen Hebel (17) drückt, der einen zweiten Stift (19) stützt, wobei der Hebel (17) durch den zweiten Stift (19) die Verriegelungsvor-

richtung (3) aktiviert und den Schlitten (4) entriegelt.

5. Türeinrichtung für Lifts und Aufzüge, dadurch gekennzeichnet, daß sie eine Vorrichtung gemäß einem der vorhergehenden Ansprüche umfaßt. 5

5. Porte pour ascenseurs ou monte-charge, caractérisée en ce qu'elle comprend un dispositif selon l'une quelconque des revendications précédentes.

Revendications

1. Dispositif d'ouverture d'urgence manuelle pour portes automatiques, en particulier pour portes d'ascenseurs et de monte-charge présentant des configurations du type à ouverture du centre vers le côté ou à ouverture latérale, du type comprenant : 10

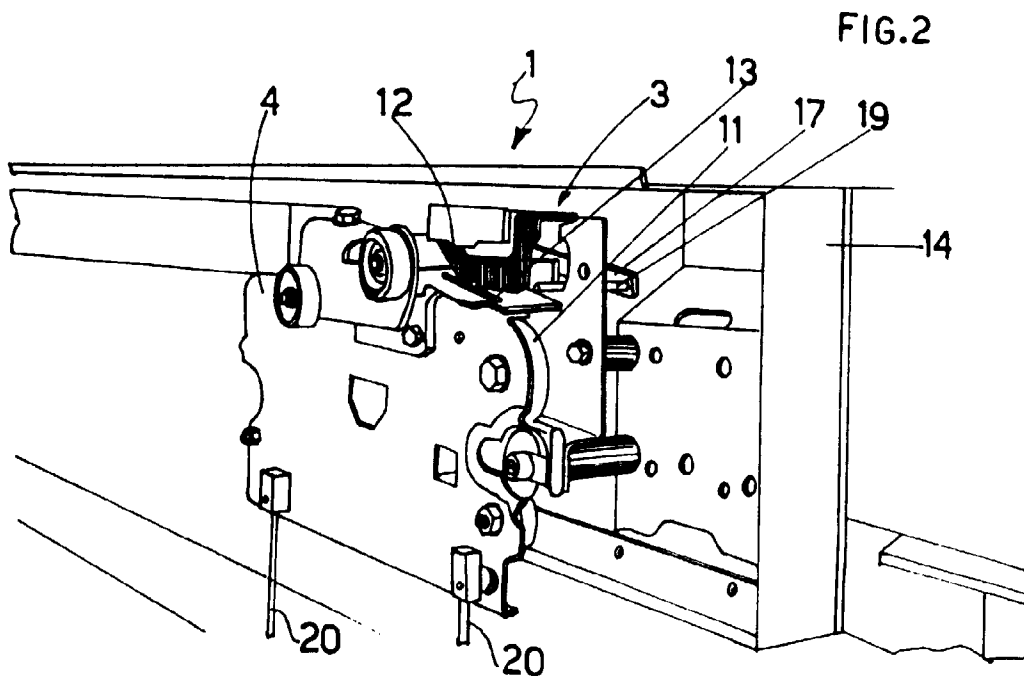
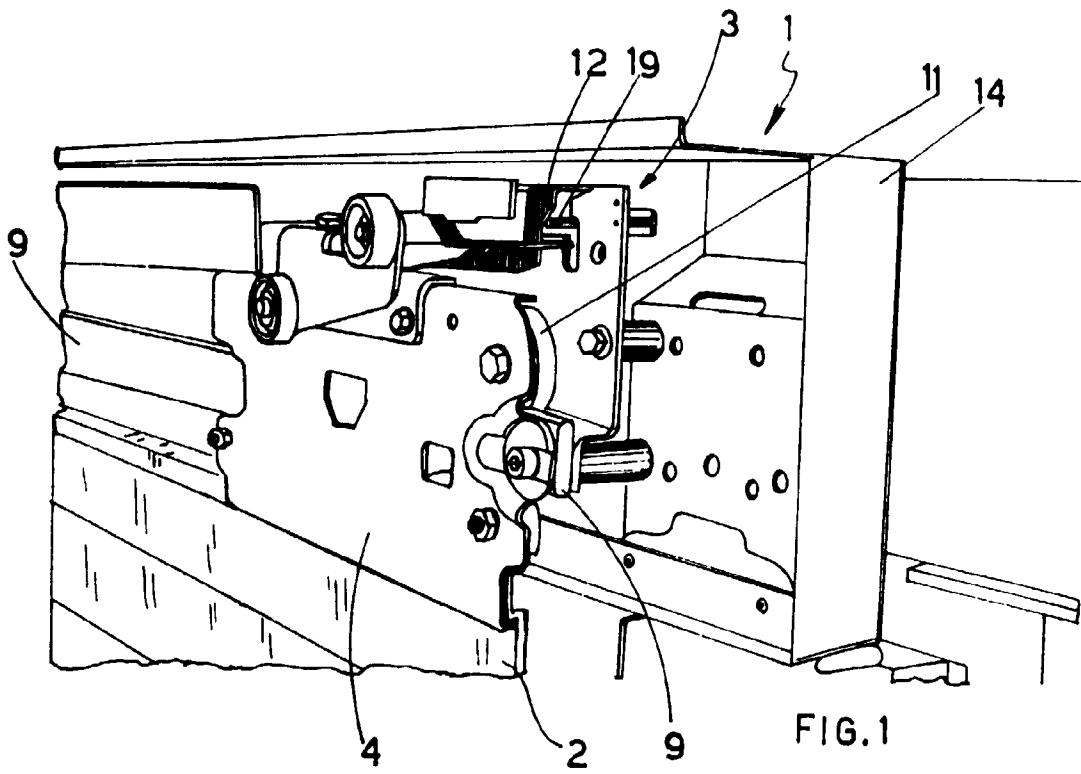
- un dispositif de verrouillage (3) destiné à verrouiller un chariot (4) supportant une porte (2) ou à permettre un mouvement de coulissement de celui-ci; 15
- un trou (5) ménagé extérieurement sur la porte (2), trou (5) à travers lequel, et à l'aide d'une clé (6), le dispositif de verrouillage (3) peut être actionné pour verrouiller et déverrouiller au moins une porte (2) afin que ladite porte (2) puisse être ouverte ou fermée, 20 25

caractérisé en ce qu'il comprend des transmissions mécaniques (8) reliant le trou (5) au dispositif de verrouillage (3) de façon que la position du trou (5) soit fixe et constante pour une porte à ouverture du centre vers le côté et une porte télescopique à ouverture latérale (2). 30

2. Dispositif selon la revendication 1, dans lequel le trou (5) est ménagé dans une partie centrale d'un carter (10) d'une architrave d'une porte d'ascenseur et d'un mécanisme de déplacement de porte, afin de faire en sorte que le carter (10) soit symétrique par rapport à un plan qui est perpendiculaire au carter (10) et à la porte et qui passe par le trou (5). 35 40

3. Dispositif selon la revendication 1 ou 2, dans lequel les transmissions mécaniques (8) comprennent un premier axe (15) qui est mis en rotation par la clé (6) et qui exerce une traction sur un fil métallique (16) actionnant un levier (17) qui supporte un second axe (19) au moyen duquel le levier (17) actionne le dispositif de verrouillage (3), pour déverrouiller le chariot (4). 45 50

4. Dispositif selon la revendication 1 ou 2, dans lequel les transmissions mécaniques (8) comprennent un premier axe (15) qui est mis en rotation par la clé (6) et qui exerce une poussée sur un levier (17) supportant un second axe (19) au moyen duquel le levier (17) actionne le dispositif de verrouillage (3), pour déverrouiller le chariot (4). 55



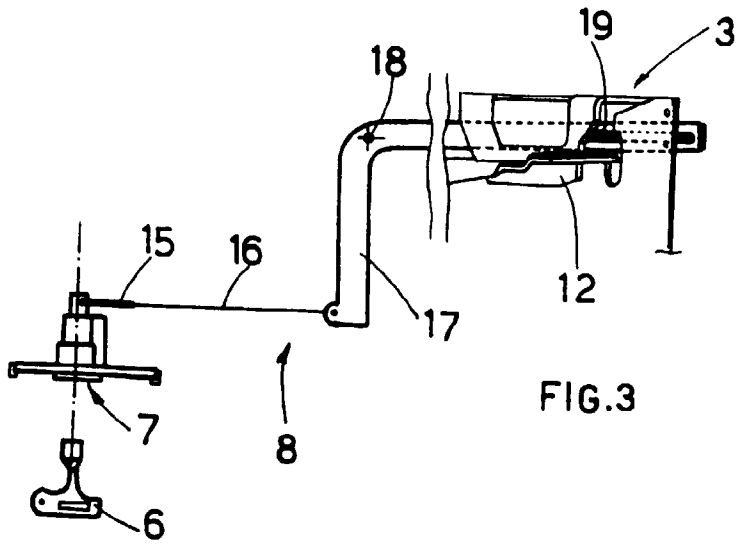


FIG. 3

FIG. 4

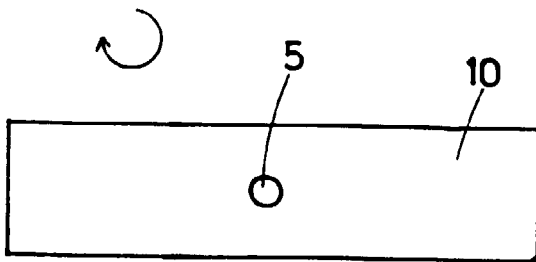
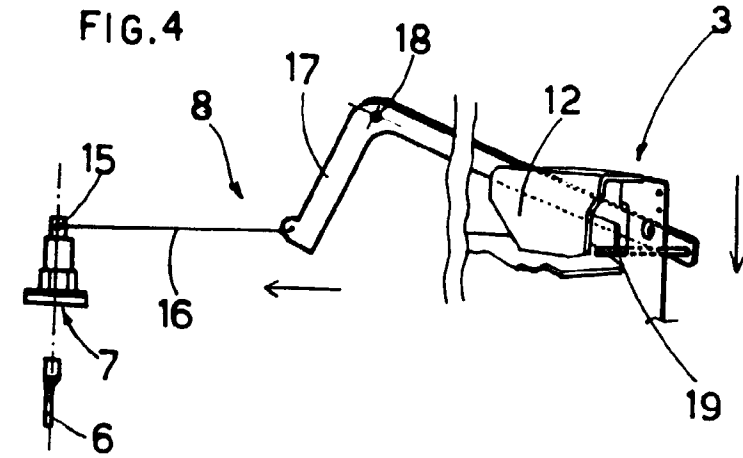


FIG. 5

FIG. 6

