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(54) **SLIDING GATE**

(57) The subject of the invention is a sliding gate, particularly a fire gate. Such gates are intended mainly for enclosing space and preventing fire from spreading. In the case of gates crossing evacuation routes, the gate wing is provided with at least one passage door.

A sliding gate including a housing with an entry pocket, placed within the housing of the moving rail and a gate wing with the passage door and a drive system, **characterised in that** it is equipped with a mechanical locking system (5) located in the top part of the gate wing (1), above the passage door (4), formed by a body (6) made of an closed profile, a bolt (7) installed and rotating on a pin (8) placed inside the body (6), a tensioning spring (9) attached to the housing at one end and connected to the

bolt (7) at the other end, a linkage (10) provided as a steel bar, in the closed position of the gate resting on the housing at one end and holding the bolt (7) in the unlocked position at the other end, a linkage (10) guide (11) made of a closed profile, fixed within the body (6), a latching socket (12) with a width corresponding to the bolt (7) thickness, located in the top part of the passage door (3) wing, or with an electric locking system (13) located on the gate wing (1), including an electric bolt (14) with a latch (15) located within the passage door (3) area, a battery (16) providing power supply through the electric bolt (14) wires and a latching socket (17) provided at the edges of the door wing (4).

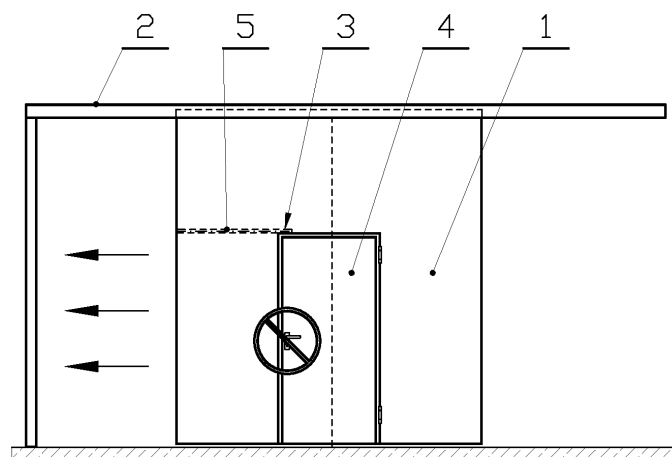


Fig. 2

Description

[0001] The subject of the invention is a sliding gate, particularly a fire gate. Such gates are intended mainly for enclosing space and preventing fire from spreading. In the case of gates crossing evacuation routes, the gate wing is provided with at least one passage door.

[0002] The passage door installed in the gate should be provided with a safety measure preventing door opening during motion - opening/closing the gate wing, as well as when the gate wing remains open. The passage door may be opened only when the door is closed.

[0003] A solution according to the invention was developed in order to meet the described requirements.

[0004] A sliding gate including a housing with an entry pocket, placed within the housing of the moving rail and a gate wing with the passage door and a drive system, **characterised in that** it is equipped with a mechanical locking system located in the top part of the gate, above the passage door, formed by a body made of a closed profile, a tensioning spring attached to the housing at one end and connected to the bolt at the other end, a linkage provided as a steel bar, in the closed position of the gate resting on the housing at one end and holding the bolt in the unlocked position at the other end, a linkage guide made of a closed profile, fixed within the body, a connection socket with a width corresponding to the bolt thickness, located in the top part of the passage door wing, or with an electric locking system located on the gate wing, including an electric bolt with a latch located within the passage door, a battery providing power supply through the electric bolt wires and a latching socket provided at the edges of the door wing.

[0005] The locking system is preferably located within the gate wing, in the area of the door wing, on the side of the door lock.

[0006] The body preferably has a rectangular or a circular cross-section.

[0007] The bolt preferably has the shape of a rectangular plate with one tapered edge.

[0008] The linkage preferably has the shape of a circular or a rectangular cross-section steel bar.

[0009] The guide preferably has the shape of a closed profile with a circular or a rectangular outline. The cross-sectional dimensions of the linkage are preferably adapted to the internal dimensions of the guide.

[0010] The electrical locking system couples the electric bolt with the door wing. Locking is the condition prevalent when the electric bolt is not supplied, which is usually the case during a fire. The electric bolt then holds the latch inside the latching socket. The passage door is locked when the gate wing is moving. Unlocking takes place when the gate wing is closed, by switching the power supply on. The electric bolt unlocks the latch from the latching socket and the door wing may be operated. Locking using the electrical bolt is used usually when the gate is provided with a power supply system.

[0011] The design of the locking system is simple to

make and operate.

[0012] The locking system enables simple coupling between the passage door and the gate wing when the gate is moving and holding the bolt in the unlocking position when the gate is closed. The intermediate door secured against opening during gate motion significantly increases operational safety of the sliding gate.

[0013] The subject of the presented in an embodiment in the drawing, in which Fig. 1 - presents the gate in its open position, Fig. 2 - presents the moving gate, Fig. 3 - presents the gate in its closed position, Fig. 4 - presents a front view of the mechanical locking system, partially in a cross-section, Fig. 5 - presents a side view of the mechanical locking system, Fig. 6 - presents the gate wing with the door wing locking, Fig. 7 - presents the gate wing with the door wing unlocking in the closed position, Fig. 8 - presents the gate with the electrical locking system, Fig. 9 - presents the door wing locked with the gate wing using an electrical locking system, and Fig. 10 - presents the door wing and the gate wing in the unlocked position.

[0014] The sliding gate is fixed inside a housing. It is built out of a gate wing **1** suspended on a moving rail **2** and intermediate door **3** placed in it, with a door wing **4**, a drive system and a locking system. The mechanical locking system **5** is located in the top part of the gate, above the passage door **3**, in the corner area of the door wing **4**, on the side of the door lock. The locking system **5** comprises of a body **6** in the shape of a closed profile, fixed to the gate wing **1**, a bolt **7** in the shape of a rectangular plate with one tapered corner, installed and rotating on a pin **8** fixed in the body **6**, a tensioning spring **9** fixed to the body **6** at one end, and on the other end - connected with the bolt **7**, a linkage **10** in the form of a steel bar, sliding inside a guide **11** in the shape of a closed profile, fixed to the interior of the body **6** and a latching socket **12** placed in the top part of the door wing **4**. The latching socket **12** cooperates with the bolt **7**. During motion - opening or closing of the gate wing **1**, the bolt **7** passes through the latching socket **12** and blocks the opening of the passage door **3** during gate motion.

[0015] In the closed position of the sliding gate, the linkage **10** rests at one end against the housing and the other end holds the bolt **7** in a position moved away from the latching socket **12**, such that the door wing **4** is released and may open. On the other hand, when the gate wing **1** starts moving from the closed position of the gate, the end of the linkage **10** moves away from the housing and the linkage **10** will move due to the pressure of the bolt **7** caused by the tensioning spring **9**, causing the bolt **10** to move onto the latching socket **12** and locking the door wing **4**. The length of the linkage **10** and of the body **7** depends on the dimensions of the wing gate **1** and of the passage door **3** placed in it. The electrical locking system **13** is placed on the gate wing **1**. It includes and electric lock **14** with a latch **15**, a battery **16** powering the electric lock **14** and a latching socket **16** installed on the edges of the door wing **4**.

[0016] The door wing 4 becomes locked with the gate wing 1 when the electric lock 14 is not energised. This is significant during a fire, when the power supply system is inoperational. Unlocking takes place when the power supply is switched on.

This improves safety during the use of sliding gates.

[0017] The subject of the invention has been presented in an embodiment. In the case of low gate wings and lack of space preventing the locking system 5 from being placed in the top part of the gate, the locking system 5 may be placed vertically.

[0018] This solution may also be used with gates with low gates, by placing the locking systems in a horizontal position.

List of references

[0019]

1. gate wing
2. moving rail
3. passage door
4. door wing
5. mechanical locking system
6. body
7. bolt
8. pin
9. tensioning spring
10. linkage
11. guide
12. latching socket
13. electrical locking system
14. electrical bolt
15. latch
16. battery
17. latching opening

electric locking system (13) located on the gate wing (1), including an electric bolt (14) with a latch (15) located within the passage door (3) area, a battery (16) providing power supply through the electric bolt (14) wires and a latching socket (17) provided at the edges of the door wing (4).

2. A sliding gate according to Claim 1 **characterised in that** when the locking system (5,13) is located on the gate wing (1) within the area of the door wing (4).

3. A sliding gate according to Claim 1, **characterised in that** the body (6) has a rectangular or a circular cross-section.

4. A sliding gate according to Claim 1, **characterised in that** the bolt (7) has the shape of a rectangular plate with one tapered edge.

5. A sliding gate according to Claim 1, **characterised in that** the linkage (10) has the shape of a circular or a rectangular cross-section steel bar.

6. A sliding gate according to Claim 1, **characterised in that** the guide (11) has the shape of a closed profile with a circular or a rectangular outline.

7. A sliding gate according to Claim 1, **characterised in that** the cross-sectional dimensions of the linkage (10) are preferably adapted to the internal dimensions of the guide (11).

Claims

1. A sliding gate including a housing with an entry pocket, placed within the housing of the moving rail and a gate wing with the passage door and a drive system, **characterised in that** it is equipped with a mechanical locking system (5) located in the top part of the gate wing (1), above the passage door (4), formed by a body (6) made of an closed profile, a bolt (7) installed and rotating on a pin (8) placed inside the body (6), a tensioning spring (9) attached to the housing at one end and connected to the bolt (7) at the other end, a linkage (10) provided as a steel bar, in the closed position of the gate resting on the housing at one end and holding the bolt (7) in the unlocked position at the other end, a linkage (10) guide (11) made of a closed profile, fixed within the body (6), a latching socket (12) with a width corresponding to the bolt (7) thickness, located in the top part of the passage door (3) wing, or with an

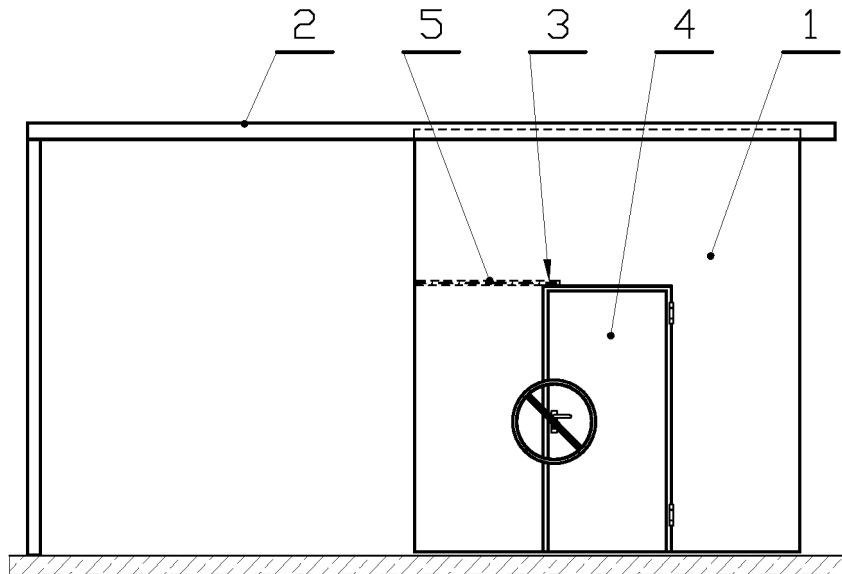


Fig. 1

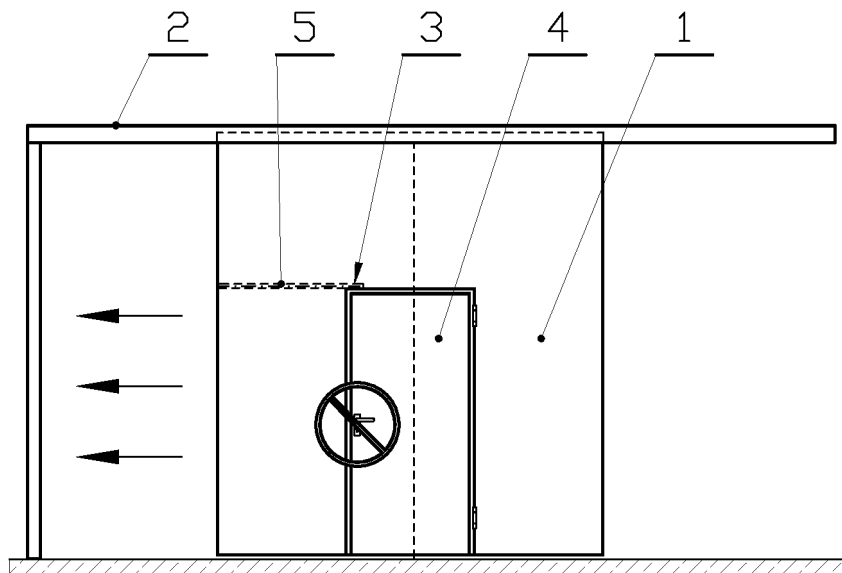


Fig. 2

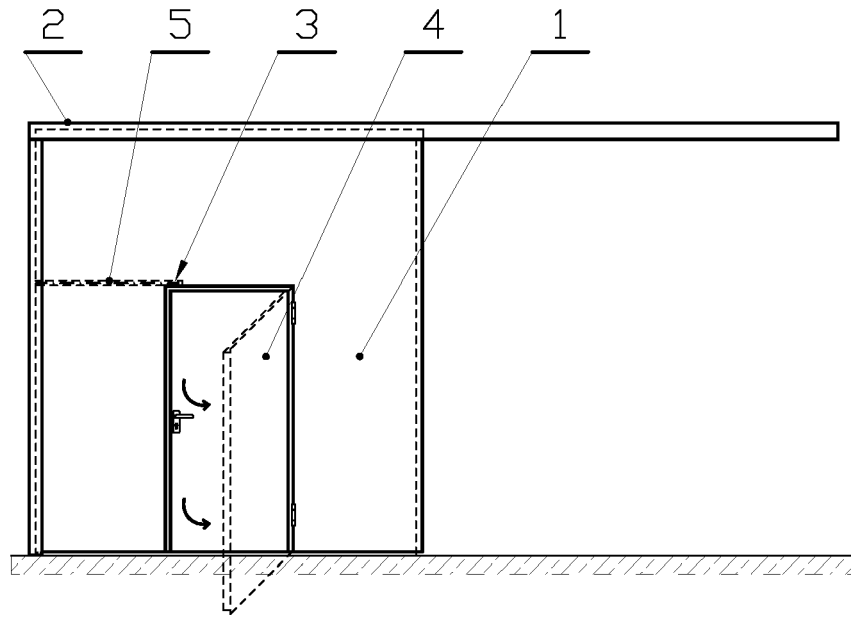


Fig. 3

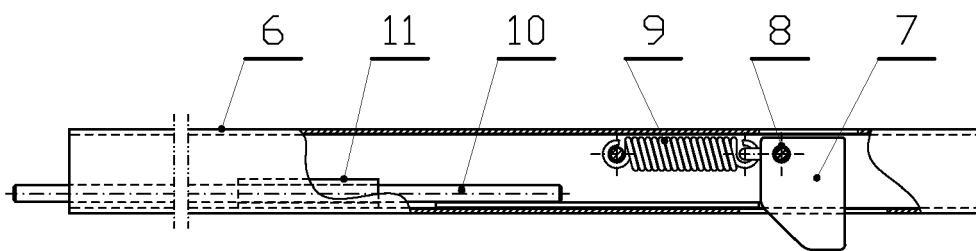


Fig. 4

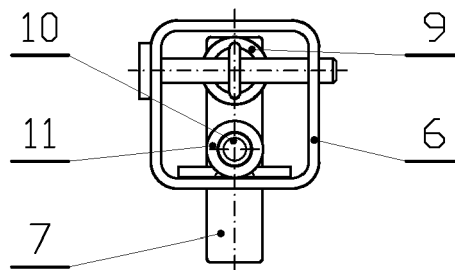


Fig. 5

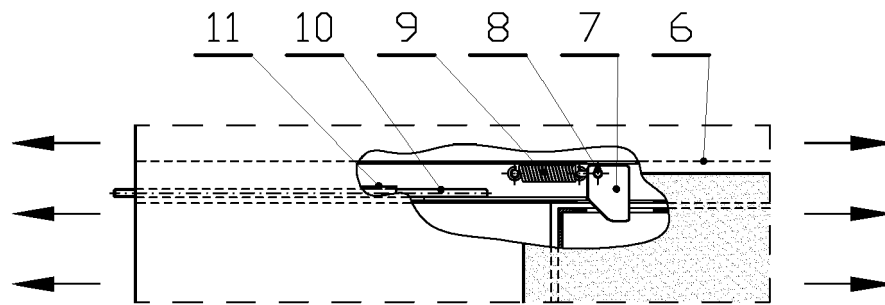


Fig. 6

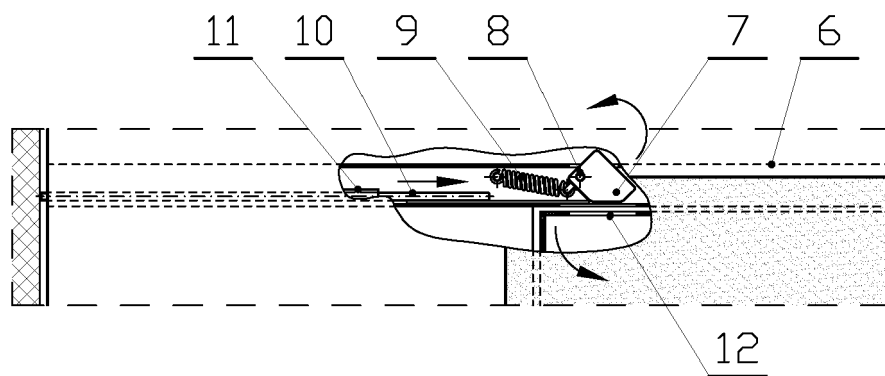


Fig. 7

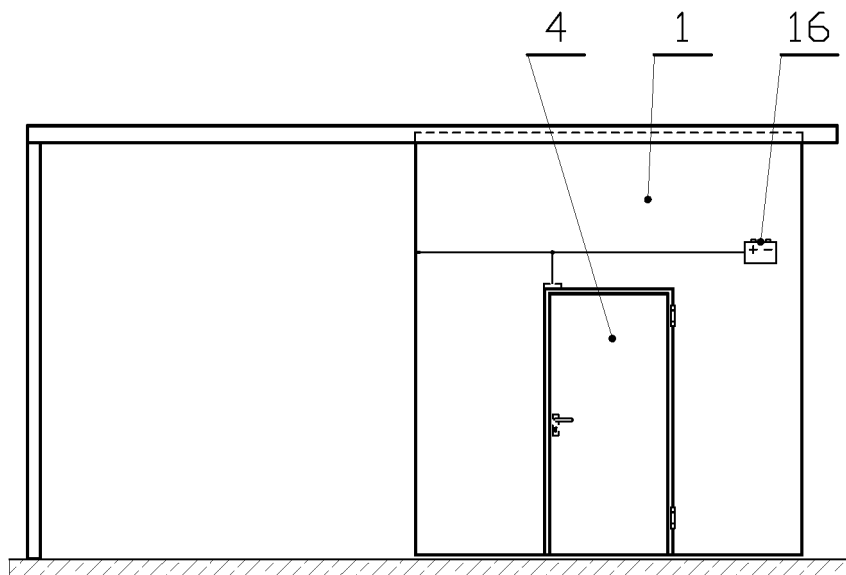


Fig. 8

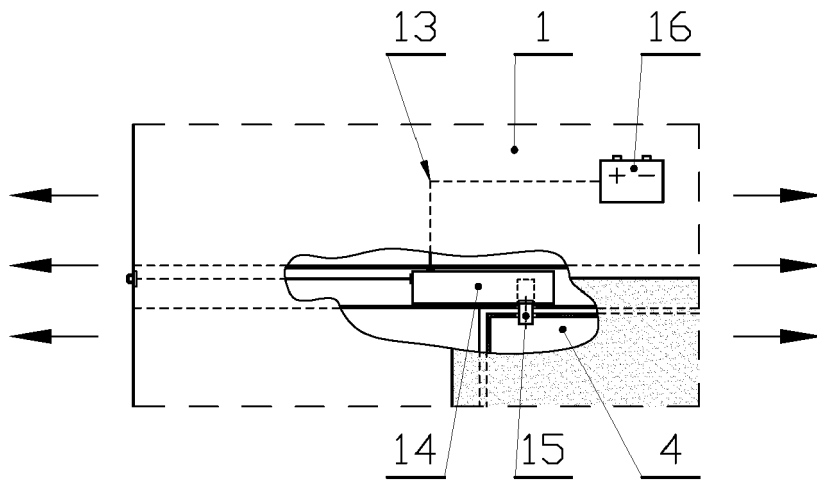


Fig. 9

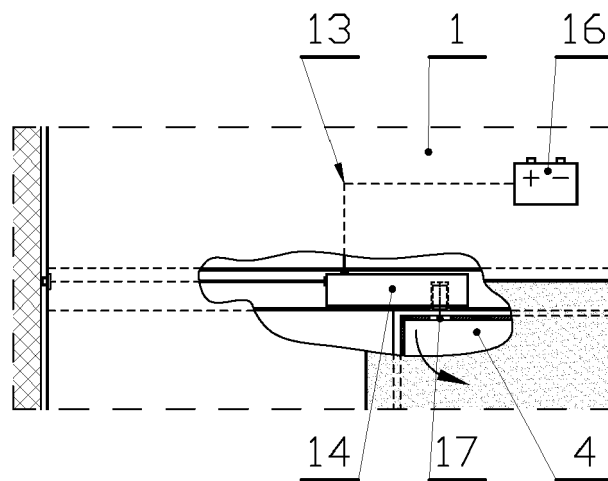


Fig. 10



EUROPEAN SEARCH REPORT

Application Number

EP 21 02 0558

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EPO FORM 1503 03.82 (P04C01)

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			TECHNICAL FIELDS SEARCHED (IPC)
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The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 25 April 2022	Examiner Cobusneanu, D
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

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

EP 21 02 0558

5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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