



(11)

EP 2 141 319 A1

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
06.01.2010 Bulletin 2010/01

(51) Int Cl.:
E06B 9/17 (2006.01)

(21) Application number: **08159593.6**

(22) Date of filing: **03.07.2008**

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

(72) Inventor: **Van Doorn, Teunis**
3902 GE Veenendaal (NL)

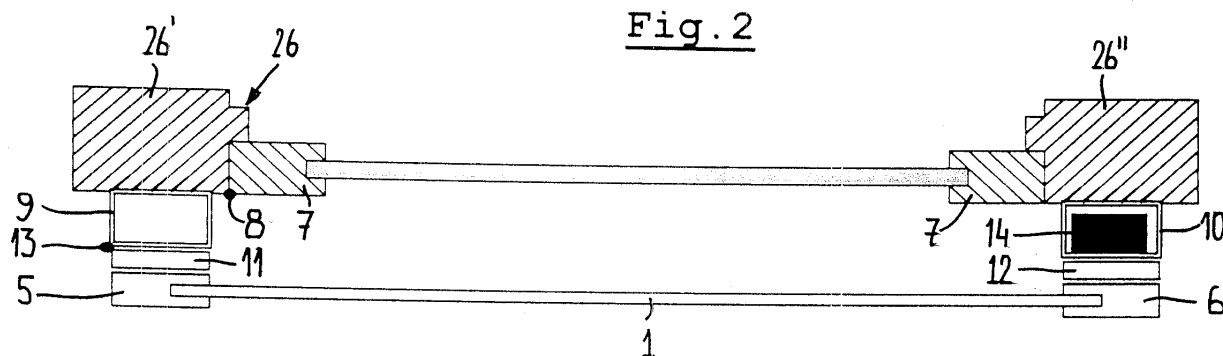
(74) Representative: **Voncken, Bartholomeus Maria Ch.**
De Vries & Metman
Overschiestraat 180
1062 XK Amsterdam (NL)

(71) Applicant: **Van Doorn, Teunis**
3902 GE Veenendaal (NL)

(54) **Roller shutter**

(57) A roller shutter for application on a window or door opening of a building is provided, comprising a flexible shutter element (1), a winding shaft (3) for winding and unwinding said flexible shutter element and two opposite guides (5,6) positioned perpendicularly to the winding shaft for cooperation with two opposite edges of

the flexible shutter element. The roller shutter is characterized in that the winding shaft, flexible shutter element and two guides are movable, such as by a hinging motion, in unison from a working position in which the flexible shutter element may close the said window or door opening, towards an emergency position away from said window or door opening.



Description

[0001] The invention relates to a roller shutter for application on a window or door opening of a building, comprising a flexible shutter element, a winding shaft for winding and unwinding said flexible shutter element and two opposite guides positioned perpendicularly to the winding shaft for cooperation with two opposite edges of the flexible shutter element.

[0002] In a known embodiment of such a roller shutter, said two guides are mounted to two opposite vertically (or horizontally) extending window or door frame parts. The winding shaft is positioned within a housing connecting both vertically extending guides at their tops.

[0003] When the flexible shutter element (which, for example, may comprise a number of hinged slats) is fully wound onto the winding shaft, the window or door opening is substantially unobstructed (and it is possible, for example, to open a moving window part or a door). When, however, the flexible shutter element is fully unwound from the winding shaft, it completely covers and obstructs the window or door opening (for improving the security level, for decreasing heat loss, etcetera).

[0004] Although, therefore, such a roller shutter offers a number of distinct advantages, it also defines a safety risk. Specifically in the case of a fire such a roller shutter in its closed (fully unwound) position creates an obstacle in the escape route for occupants and for rescue workers/firemen which can lead to valuable and dangerous time loss.

[0005] Thus, it is an object of the present invention to provide an improved roller shutter of the type referred to above.

[0006] The roller shutter according to the present invention is **characterized in that** the winding shaft, flexible shutter element and two guides are movable in unison from a working position in which the flexible shutter element may close the said window or door opening, towards an emergency position away from said window or door opening.

[0007] In the working position the roller shutter operates much in the way of a conventional roller shutter, thus able of fully closing the window or door opening (flexible shutter element fully unwound from the winding shaft), and fully revealing said window or door opening (flexible shutter element fully wound onto the winding shaft), with the possibility of being positioned in any intermediate position. In any of these positions, however, the roller shutter additionally may be moved to the emergency position in which the window or door opening is unobstructed, irrespective the winding position of the flexible shutter element. As a result a window or door opening which is closed by the roller shutter may be revealed quickly without winding the flexible shutter element onto the winding shaft (which process may take precious time). Rescue operations, for example in case of a fire, may be carried out quickly then.

[0008] In a preferred embodiment of the roller shutter

according to the present invention, the winding shaft, flexible shutter element and two guides define an assembly which is hingeably connectable to a window or door frame.

[0009] Such an assembly then may be pivoted from the working position towards the emergency position in an easy manner. Such a hinged movement generally requires no complicated constructional means.

[0010] Then, in a handy embodiment of the roller shutter according to the present invention, the assembly comprises a first auxiliary frame to be mounted to the window or door frame and a second auxiliary frame mounted to the assembly of winding shaft, flexible shutter element and two guides, wherein the second auxiliary frame is hinged to the first auxiliary frame.

[0011] The use of such first and second auxiliary frames allows a very quick and effective mounting of the roller shutter. The first auxiliary frame may be mounted to the window or door frame in an appropriate position and the second auxiliary frame may be mounted to the said assembly of winding shaft, flexible shutter element and two guides (which may or may not be of a conventional type). Next the first and second auxiliary frames are interconnected by appropriate hinges (which may or may not be present already on one of said, or both, auxiliary frames). As an alternative the first and second auxiliary frames are already connected by hinges before said assembly is mounted to said window or door frame.

[0012] Preferably said second auxiliary frame comprises at least two frame members which are connected to the two guides, respectively, whereas the first auxiliary frame correspondingly comprises at least two frame members to be mounted to the window or door frame. Although preferred for rigidity, it is not necessary that the auxiliary frames are fully closed members, and in an optional embodiment an auxiliary frame may comprise separate frame members which are not directly interconnected.

[0013] Further it is possible that the roller shutter according to the present invention is provided with locking means for selectively preventing the hinging motion of the assembly of winding shaft, flexible shutter element and two guides.

[0014] Such locking means may prevent an unauthorised movement of the roller shutter from its working position to the emergency position.

[0015] For example, the locking means may comprise electromagnetic means. In an energised state such electromagnetic means may be capable of creating a holding force withstanding unauthorised attempts to move the roller shutter towards the emergency position. Only when an authorised de-energising of the electromagnetic means has occurred, the roller shutter may be moved towards the emergency position.

[0016] De-energising the electromagnetic means may occur manually, but it is also possible that a sensor is provided for sensing a condition in which the electromagnetic means are to be de-energised. For example, such

a sensor may be a heat sensor or smoke sensor.

[0017] In one embodiment of the roller shutter according to the invention the electromagnetic means comprise at least one electromagnet positioned at the first or second auxiliary frame. The electromagnet then cooperates with the other one of the first or second auxiliary frames. To be most effective, such electromagnet(s) preferably should be positioned in the frame member opposite the frame member provided with the hinge(s).

[0018] In a constructively preferred embodiment, the first auxiliary frame is at least partially hollow and houses said at least one electromagnet.

[0019] In an alternative embodiment of the roller shutter, the locking means comprise mechanical locking means, for example at least one locking member extending through and operable from within the window or door frame. Such a mechanical locking means is protected against unauthorised use. Its operation may be caused manually or automatically.

[0020] In an embodiment of the roller shutter according to the present invention, the locking member has an operative end for engaging a recess of the second auxiliary frame which is rotatable between a locking position and a release position.

[0021] It is noted that in certain aspects the present invention is described while referring to a roller shutter which is mountable to a window or door frame. It is intended however that the scope of the invention also includes roller shutters which are attachable directly to a wall surrounding the window or door opening.

[0022] Hereinafter the invention will be elucidated while referring to the drawing, in which

Figure 1 shows a schematic frontal view of a roller shutter mounted to a window opening;

Figure 2 shows a section according to II-II in figure 1, and

Figure 3 shows a section corresponding to figure 2, however of a different embodiment.

[0023] Firstly referring to figure 1, a roller shutter is illustrated which is applied around a window frame 26 of a building. The roller shutter comprises a flexible shutter element 1 which may comprise a number of hinged slats 2 (with constant or varying dimensions, as known per se).

[0024] A winding shaft 3 for winding and unwinding said flexible shutter element 1 is housed within a housing 4. Said winding shaft may be driven manually or automatically (for example by an electric motor, as known per se) for moving the flexible shutter element 1 upwards and downwards (winding and unwinding, respectively) as indicated by the double arrow.

[0025] Two opposite guides 5 and 6 are positioned perpendicularly to the winding shaft 3 for cooperation with two opposite transverse edges of the flexible shutter element 1.

[0026] Within the stationary window frame 26 a movable window element 7 is positioned which is connected

to the stationary window frame by hinges 8.

[0027] Referring to figure 2, it is shown that a first auxiliary frame is mounted to the window frame 26. Said first auxiliary frame comprises two frame members 9 and 10 mounted (in any appropriate manner) to frame members 26' and 26" of the window frame. A second auxiliary frame is mounted to the two guides 5 and 6 and comprises two frame members 11 and 12. The first auxiliary frame further may comprise frame parts (not shown) interconnecting said frame members 9 and 10 for improved rigidity. The same may apply for the frame members 11 and 12 of the second auxiliary frame.

[0028] The second auxiliary frame is hinged to the first auxiliary frame by means of hinges 13. As a result the winding shaft 3 (including housing 4 which is connected to the upper end of the guides 5 and 6), flexible shutter element 1 and two guides 5 and 6 define an assembly which is hingeably connectable to the window frame 26 and which is movable in unison from a working position (illustrated in the figures) in which the flexible shutter element 1 may close the said window opening, towards an emergency position away from said window opening (in which a pivotal movement has occurred around the hinges 13).

[0029] The roller shutter according to the invention may be provided with locking means for selectively preventing the hinging motion of the assembly of winding shaft 3 (including housing 4), flexible shutter element 1 and two guides 5 and 6.

[0030] In the embodiment according to figure 2 said locking means comprise at least one electromagnet 14 positioned in the first auxiliary frame member 10 which is at least partially hollow for housing said at least one electromagnet 14. The electromagnet 14 cooperates with the frame member 12 of the second auxiliary frame. A sensor (not illustrated) may be provided for sensing a condition (e.g. heat, smoke) in which the electromagnet 14 is to be de-energised.

[0031] Figure 3 illustrates an embodiment of the roller shutter according to the invention wherein the locking means comprise mechanical locking means. Specifically the locking means comprise at least one locking member 15 extending through and operable from within the window frame 26. The locking member 15 has an operative end 16 for engaging a recess of the second auxiliary frame member 12 and which is rotatable between a locking position and a release position.

[0032] The invention is not limited to the embodiments described before, which may be varied widely within the scope of the invention as defined by the appending claims.

Claims

1. Roller shutter for application on a window or door opening of a building, comprising a flexible shutter element, a winding shaft for winding and unwinding

said flexible shutter element and two opposite guides positioned perpendicularly to the winding shaft for cooperation with two opposite edges of the flexible shutter element, **characterized in that** the winding shaft, flexible shutter element and two guides are movable in unison from a working position in which the flexible shutter element may close the said window or door opening, towards an emergency position away from said window or door opening.

2. Roller shutter according to claim 1, wherein the winding shaft, flexible shutter element and two guides define an assembly which is hingeably connectable to a window or door frame.

3. Roller shutter according to claim 2, wherein the assembly comprises a first auxiliary frame to be mounted to the window or door frame and a second auxiliary frame mounted to the assembly of winding shaft, flexible shutter element and two guides, wherein the second auxiliary frame is hinged to the first auxiliary frame.

4. Roller shutter according to claim 3, wherein the second auxiliary frame comprises at least two frame members which are connected to the two guides, respectively, whereas the first auxiliary frame correspondingly comprises at least two frame members to be mounted to the window or door frame.

5. Roller shutter according to any of the claims 2-4, provided with locking means for selectively preventing the hinging motion of the assembly of winding shaft, flexible shutter element and two guides.

6. Roller shutter according to claim 5, wherein the locking means comprise electromagnetic means.

7. Roller shutter according to claim 6, wherein a sensor is provided for sensing a condition in which the electromagnetic means are to be de-energised.

8. Roller shutter according to claim 6 or 7 in combination with claim 3 or 4, wherein the electromagnetic means comprise at least one electromagnet positioned at the first or second auxiliary frame.

9. Roller shutter according to claim 8, wherein the first auxiliary frame is at least partially hollow and houses said at least one electromagnet.

10. Roller shutter according to claim 5, wherein the locking means comprise mechanical locking means.

11. Roller shutter according to claim 10, wherein the locking means comprise at least one locking member extending through and operable from within the window or door frame.

12. Roller shutter according to claim 11 in combination with claim 3 or 4, wherein the locking member has an operative end for engaging a recess of the second auxiliary frame and which is rotatable between a locking position and a release position.

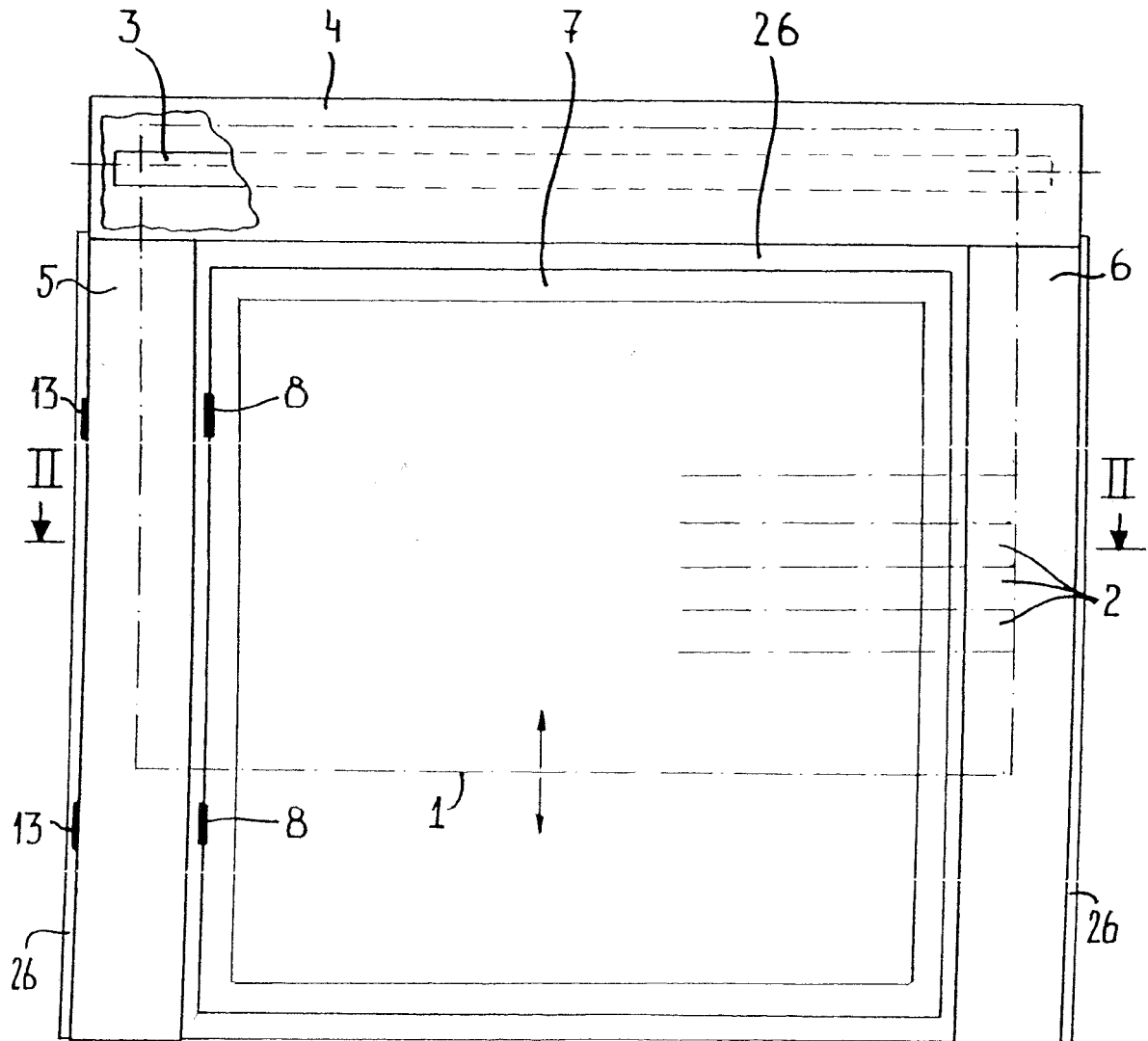


Fig. 1

Fig. 2

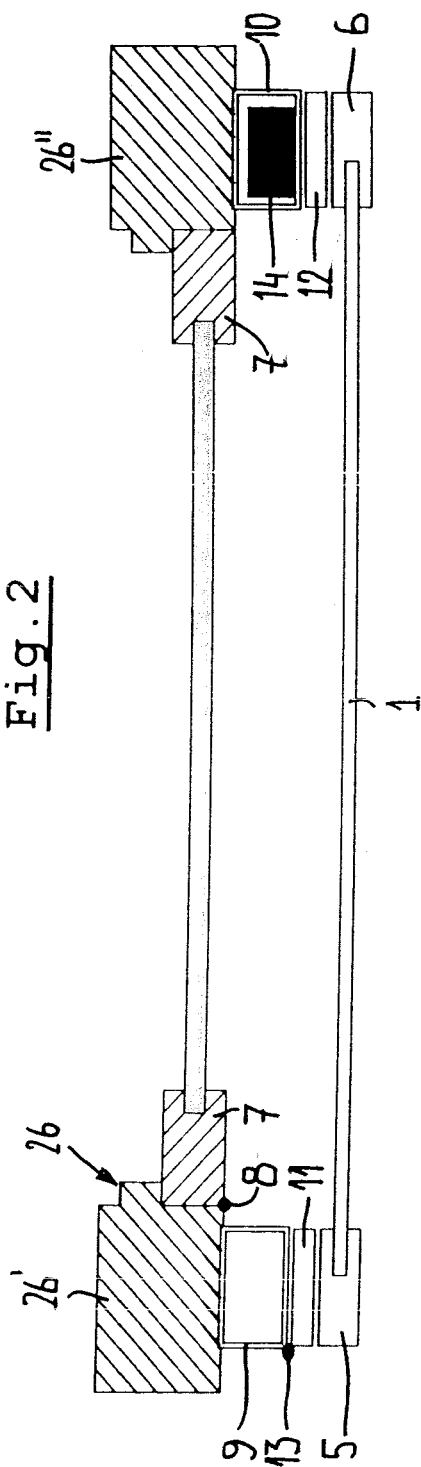
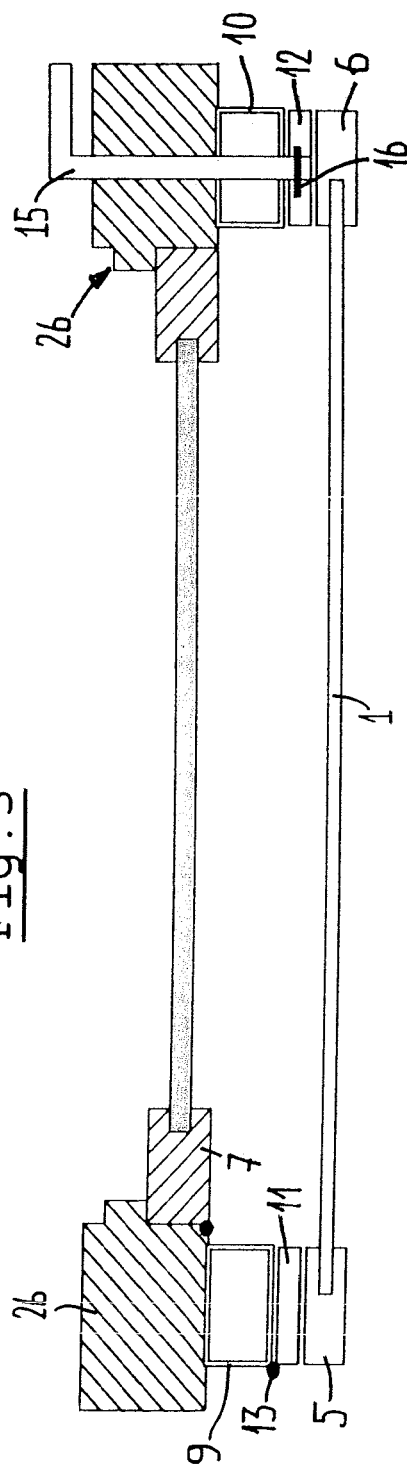


Fig. 3





EUROPEAN SEARCH REPORT

Application Number
EP 08 15 9593

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	EP 1 408 193 A (REHAU SA [FR]; GUIGNEUX SAS [FR]) 14 April 2004 (2004-04-14) * paragraph [0012] - paragraph [0020] * * figures 1,2,7 *	1-4, 10-12	INV. E06B9/17
Y	-----	5-9	
X	US 4 995 440 A (VORSMANN FRANZ [DE]) 26 February 1991 (1991-02-26) * column 4, line 46 - column 5, line 45; figures 2,3,9 *	1-4	
Y	----- GB 2 237 738 A (JONES DAVID FRANCIS) 15 May 1991 (1991-05-15) * page 4, line 27 - page 5, line 19 * * page 6, line 11 - line 18 * * figures 1,3 *	5-9	
A	----- JP 2005 030181 A (BS LINE KK) 3 February 2005 (2005-02-03) * the whole document *	5-9	TECHNICAL FIELDS SEARCHED (IPC)
			E06B
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 17 November 2008	Examiner Cornu, Olivier
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			

 1
EPO FORM 1503 03/02 (P04C01)

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

EP 08 15 9593

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.

17-11-2008

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
EP 1408193	A	14-04-2004	FR	2845414 A1	09-04-2004

US 4995440	A	26-02-1991	CA	2009885 A1	13-08-1990
			EP	0383067 A1	22-08-1990

GB 2237738	A	15-05-1991	NONE		

JP 2005030181	A	03-02-2005	NONE		
