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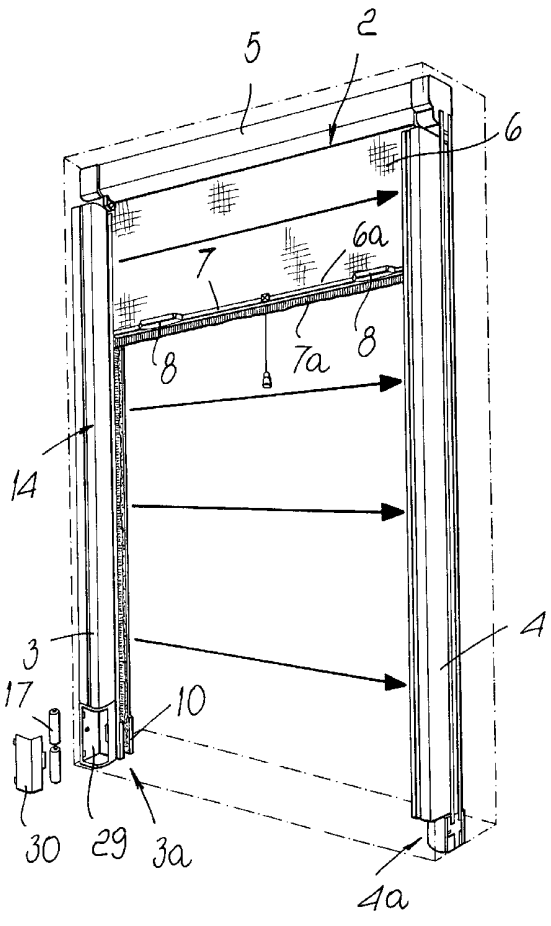
(54) Title: MOSQUITO NET FRAME EQUIPPED WITH ALARM DEVICE



(57) Abstract: A mosquito net frame (1) equipped with an alarm device, constituted by first and second lateral posts (3, 4) and by an upper supporting beam (5) inside which the mosquito net (6) can roll up, the alarm device (14) being contained within the lateral posts (3, 4) and comprising one or more emitter elements (15) which emit infrared optical beams, one or more receiver elements (16) which receive infrared optical beams, and a unit for supplying power and controlling the emitter and receiver elements.

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patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

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MOSQUITO NET FRAME EQUIPPED WITH ALARM DEVICE

Technical Field

The present invention relates to a mosquito net frame equipped with an alarm device.

Background Art

It is known that increasingly there is a demand for accessories which can be installed in the openings of doors and windows, such as mosquito nets for protection against entry of insects, and it is also known that it is necessary to protect these openings from the intrusion of strangers or to provide such openings with alarm devices adapted to indicate attempts to break in and the like.

Disclosure of the Invention

The aim of the present invention is to obviate the above-mentioned drawbacks of known devices, by providing a mosquito net frame equipped with an alarm device which is adapted to ensure permanent protection and at the same time great freedom of use of the window or door.

Within this aim, an object of the present invention is to provide a modular structure which is adjustable, relatively easy to provide in practice, requires low maintenance, is safe in use, effective in operation, and relatively low in cost.

Still another object of the present invention is to provide a structure which adapts well to small spaces and architectural styling.

This aim and these and other objects which will become better apparent hereinafter are achieved by the present mosquito net frame equipped with an alarm device, constituted by first and second lateral posts and by an upper supporting beam inside which the mosquito net can roll up, characterized in that said alarm device is contained within said lateral posts and comprises a first plurality of elements which emit infrared optical beams, a second plurality of receiver elements which receive said infrared optical beams, and a unit for supplying power and controlling said emitter and receiver

elements.

Brief description of the drawings

Further characteristics and advantages of the present invention will become better apparent from the detailed description of a preferred but not exclusive embodiment of a mosquito net frame equipped with an alarm device according to the invention, illustrated only by way of non-limitative example in the accompanying drawings, wherein:

Figure 1 is an elevated perspective view of the frame according to the present invention;

Figure 2 is an elevated perspective view of a second embodiment of the frame according to the present invention;

Figure 3 is a cross-sectional view of the lateral posts of the frame;

Figure 4 is an elevated perspective view of a detail of the lateral posts of the frame;

Figure 5 is a cross-sectional view of the lateral posts of the frame according to another embodiment of the lateral posts of the frame;

Figure 6 is a sectional view of a detail of the enclosure for protection and lateral closure of the posts;

Figure 7 is a view of a detail of the acoustic warning device according to a first embodiment, in which it is included in a post of the frame;

Figure 8 is a view of a detail of the acoustic warning device according to a second embodiment, in which it is external to the frame and is connected by radio waves to a transmitter accommodated in a post;

Figure 9 is a view of a detail of the acoustic warning device according to a third embodiment, in which it is external to the frame and is connected by electrical cables to a transmitter accommodated in an post.

Ways to carrying out the Invention

With reference to the figures, the reference numeral 1 generally designates a mosquito net frame equipped with an alarm device according to the present invention.

The frame 1 of the mosquito net 2 is constituted by a first and a second lateral posts 3, 4 and by an upper beam 5 inside which the screen 6 of the mosquito net 2 can be rolled up.

The screen 6 is in fact wound, in an upward region, onto a roller which is provided with elastic roll-up means, not shown, and is connected, at the lower edge 6a, to a grip bar 7 which is adapted to pull the screen 6 vertically downward.

The grip bar 7 moves between an upper position, which is raised and adjacent to the upper beam 5, and a lower position, which is lowered and adjacent to the bases 3a, 4a of the lateral posts 3, 4.

The grip bar 7 is provided with two strips 8 which protrude from its profile, so that it can be easily moved with one's fingers, and has, along its lower edge 7a, a longitudinal brush 9 which is adapted to block to insects the gap that remains when the screen 6 of the mosquito net 2 is in the lowered position.

Respective devices 10 for the detachable engagement of the grip bar 7 to said posts 3, 4 of the frame 1 are provided at the bases 3a, 4a.

Two adjacent chambers 11, 12 are formed internally along each of the lateral posts 3, 4. The lateral edges 13 of the screen 6 can slide in the first chambers 11, while the second chambers 12 accommodate the elements that constitute the alarm device, generally designated by the reference numeral 14.

In particular, the second chamber 12 of the post 3 accommodates one or more emitter elements 15 which emit infrared optical beams and the second chamber 12 of the post 4 accommodates one or more receiver elements 16 which receive infrared optical beams.

The emitter elements 15 and receiver elements 16, together with a control apparatus, not shown, and with electrical power supply batteries 17, constitute the main components of the alarm device 14.

Figure 3 illustrates the cross-sections of the first and second chambers 11

and 12 provided inside each post 3 and 4. Both the chambers 11 and 12 have a cross-section which is open at a shorter side 11a and 12a.

The first chamber 11 is substantially rectangular and has two opposite brushes 18 which guide the screen 6 of the mosquito net 2 during its vertical sliding, and prevent the entry of foreign matter in the chamber 11.

The brushes 18 are locked in opposite positions proximate to the open side 11a of the first chamber 11 by way of respective bases 18a inserted in seats 19 formed in the first chamber 11. Seats 19 are formed by respective longitudinal edges 20 which retain internally the bases 18a and prevent the escape of the brushes 18.

The second chamber 12 has a contoured cross-section being open at one of its shorter sides, which is closed by a protective enclosure 21.

The protective enclosure 21 is substantially C-shaped and can be fitted on, and removed from, the lateral posts 3 and 4 by snap action so as to allow rapid access to the elements contained in the chamber 12.

The internal profile of the second chamber 12 is such as to define a first longitudinal guide 22 and a second longitudinal guide 23, which lie internally along the chamber 12.

The guides 22 and 23 are arranged opposite and parallel to each other and transversely to the plane formed by the screen 6 of the mosquito net 2, being formed by longitudinal ribs 24 and 25.

The guides 22, 23 accommodate the emitter elements 15 and the receiver elements 16 of the alarm device 14, which can be advantageously arranged in preset positions along the posts 3 and 4 and locked thereat by means of screws.

The elements 15 and 16 respectively emit and receive infrared optical beams and are mushroom-shaped, so as to define a lower base 26 and an upper head 27 which are circular and are connected one another by a tubular portion 28.

In this manner, the lower base 26 is accommodated in the first guides 22,

while the upper head 27 is accommodated in the second guides 23.

Advantageously, thanks to their shape, the elements 15 and 16 can also be accommodated in said guides 22 and 23 in the inverted position.

The elements 15 and 16 are circuitally connected to electric batteries 17 which constitute the independent power supply of the alarm device 14.

The batteries 17 are accommodated in compartments 29 located at the bases 3a and 4a of the two posts 3 and 4.

Each compartment 29 is provided with an angular protective door 30 which in the closure position is arranged flush to the profile of the post 3 and 4 and does not alter its styling.

Figure 2 illustrates a second embodiment of the present invention, in which the constructive details are designated by reference numerals increased by 100 with respect to those of the preceding embodiment.

In this embodiment, both the emitter elements and the receiver elements are accommodated in the post 103, while the lateral post 104, which is free and not occupied by the emitter or receiver elements, contains a band 130 of a material adapted to reflect the infrared optical beams produced by the emitter elements and to direct them toward the receiver elements.

Figure 4 illustrates the detail of another embodiment, in which the constructive details are designated by reference numerals increased by 200 with respect to those of the first embodiment.

In this latter embodiment, each one of the lateral posts is constituted by the assembly of two separate profiled elements 232 and 233, each of which contains respectively the first and second chambers 211 and 212.

The profiled elements 232 and 233 are joined by fixing screws 234 which ensure their stable coupling.

Advantageously, the frame 1 according to the present invention and to above described embodiments thereof has three options for connection to the acoustic warning device.

As shown in Figure 7, an acoustic warning device 300 is accommodated

inside one post and connected by means of internal wires 301 to an emitter 302 for controlling the acoustic warning, which is also arranged inside the same post.

Figure 8 illustrates an acoustic warning device 303, accommodated outside the frame 1 and connected by radio waves to the control emitter 304, which is internal to the post of the frame 1.

Figure 9 illustrates an acoustic warning device 305, accommodated on the outside of the frame 1 and connected by means of internal and external wires 306a, 306b to the control emitter 307, which is arranged inside a post.

It has thus been shown that the invention achieves the proposed aim and objects.

The invention thus conceived is susceptible of modifications and variations which are within the scope of the appended claims.

In practice, the materials used, as well as the shapes and the dimensions, may be any according to requirements without thereby abandoning the scope of the appended claims.

The disclosures in Italian Patent Application No. BO2000A000494 from which this application claims priority are incorporated herein by reference.

CLAIMS

1. A mosquito net frame equipped with an alarm device, constituted by first and second lateral posts and by an upper supporting beam inside which the mosquito net can roll up, characterized in that said alarm device is contained within said lateral posts and comprises one or more emitter elements which emit infrared optical beams, one or more receiver elements which receive infrared optical beams, and a unit for supplying power and controlling said emitter and receiver elements.

2. A mosquito net frame equipped with an alarm device, constituted by first and second lateral posts and by an upper supporting beam inside which the mosquito net can roll up, characterized in that said alarm device is contained within one of said lateral posts and comprises one or more emitter elements which emit infrared optical beams, one or more receiver elements which receive infrared optical beams, and a unit for supplying power and controlling said emitter and receiver elements, the lateral post that is not occupied by said elements being provided with a band of material adapted to reflect the infrared optical beams produced by said emitter elements and to direct said beams toward said receiver elements.

3. The frame according to claim 1, characterized in that a first chamber and a second chamber adjacent one another are formed internally along each one of said lateral posts, the lateral edges of the screen of the mosquito net being able to slide within the first chambers, said second chambers accommodating said elements that constitute the alarm device.

4. The frame according to claim 3, characterized in that said lateral posts comprise two separate profiled elements, each of which contains respectively said first chamber and said second chamber, said profiled elements being joined by fixing screws which are adapted to ensure a stable coupling of said profiled elements.

5. The frame according to claim 3, characterized in that said chambers have a cross-section which is open at one shorter side, said first chamber

having a substantially rectangular cross-section, said second chamber having a contoured cross-section.

6. The frame according to claim 3, characterized in that said first chamber contains opposite brushes which are adapted to guide the screen of the mosquito net during its vertical sliding.

7. The frame according to claim 3, characterized in that a first longitudinal guide and a second longitudinal guide are formed in said second chambers, run internally along each one of said chambers, are opposite and parallel to each other and arranged transversely to the plane formed by the screen of said mosquito net, and are further adapted to accommodate said infrared optical beam emitter and receiver elements.

8. The frame according to claim 1, characterized in that said emitter and receiver elements are fixed in preset positions along said posts and are locked by means of screws.

9. The frame according to claim 1, characterized in that said emitter and receiver elements use optical carriers.

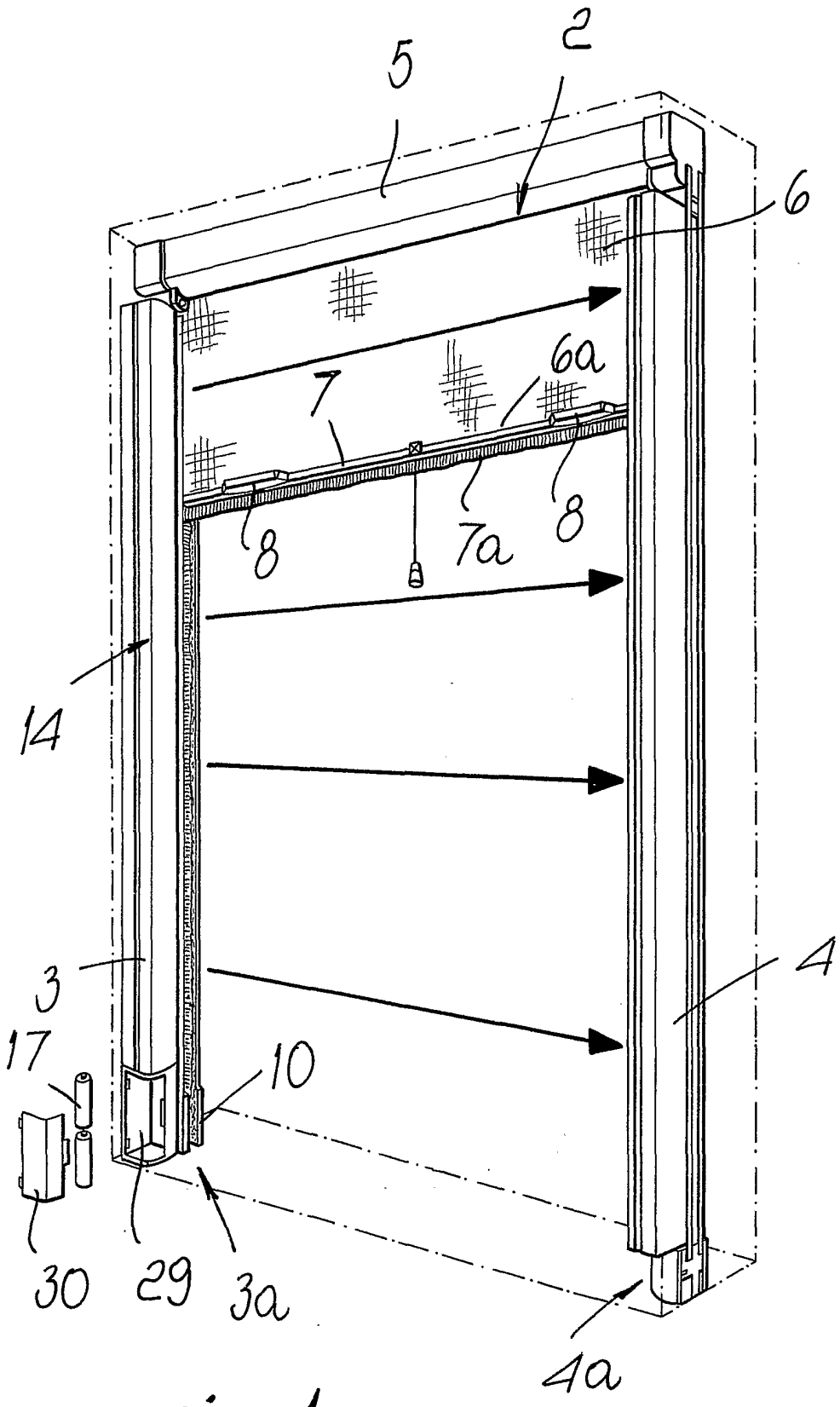

Fig. 1

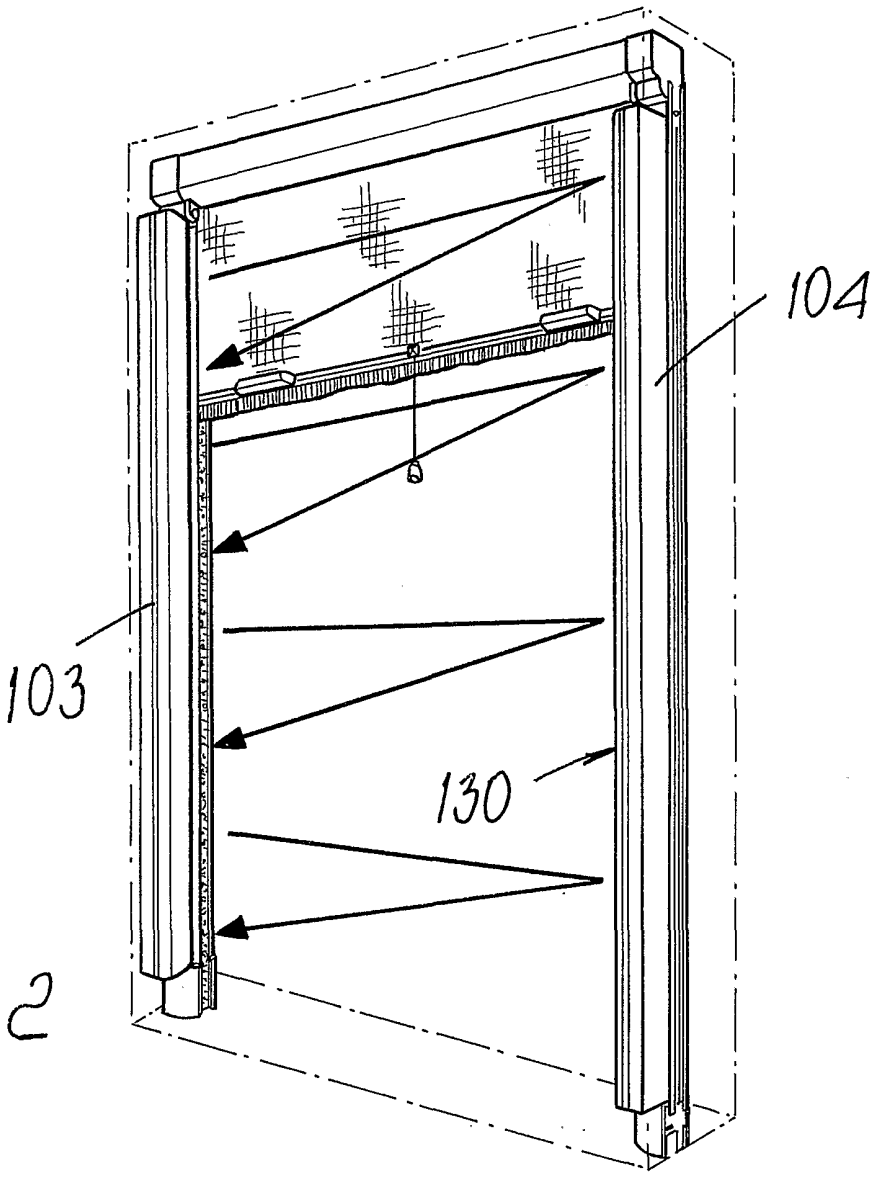

Fig. 2

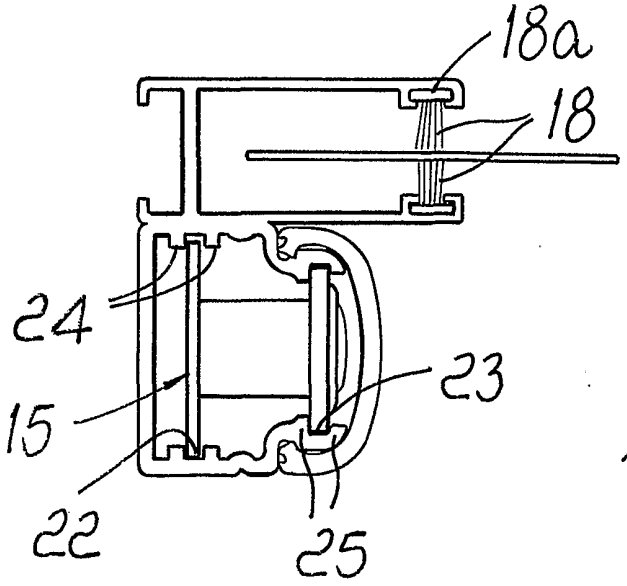

Fig. 3

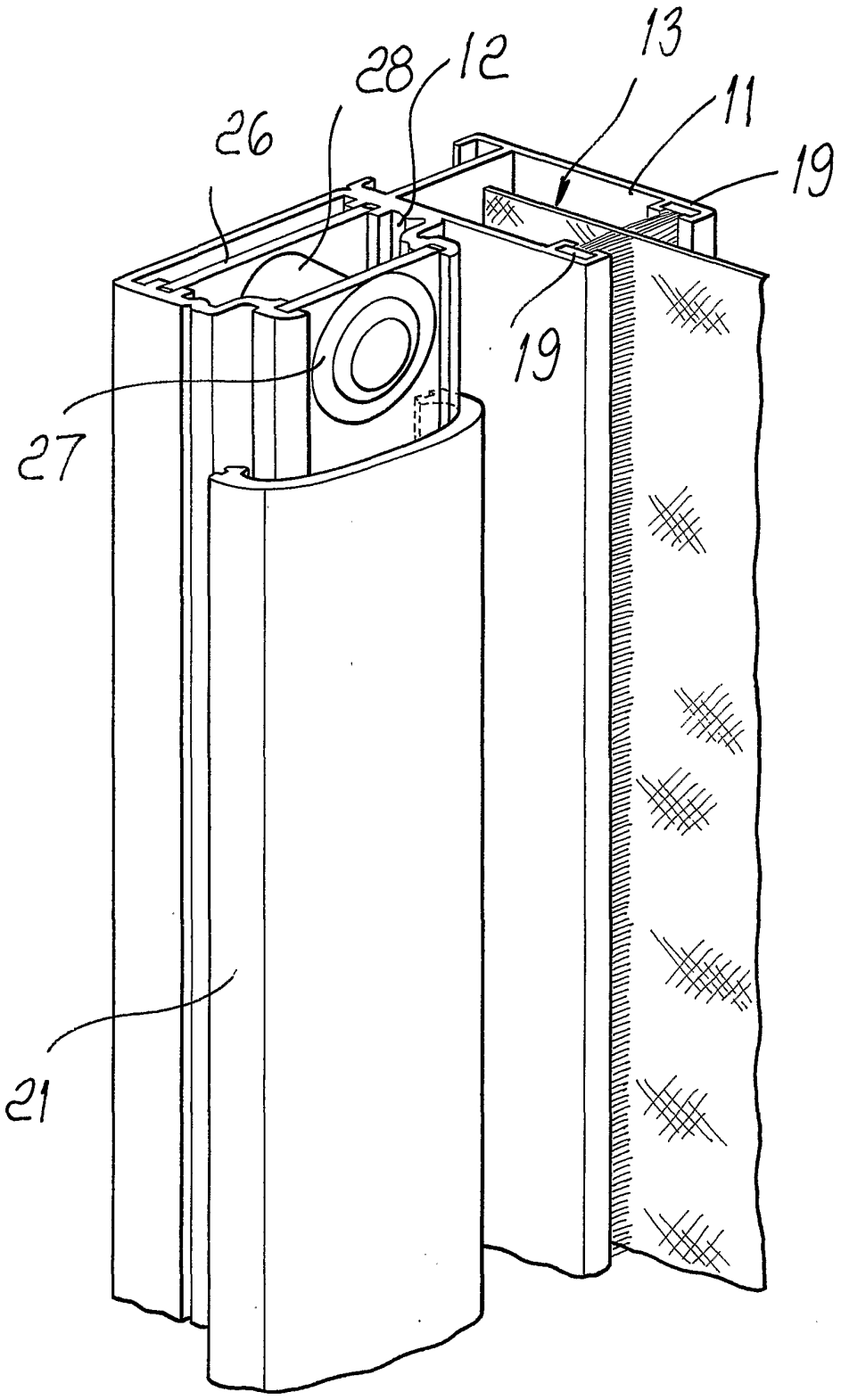

Fig. 4

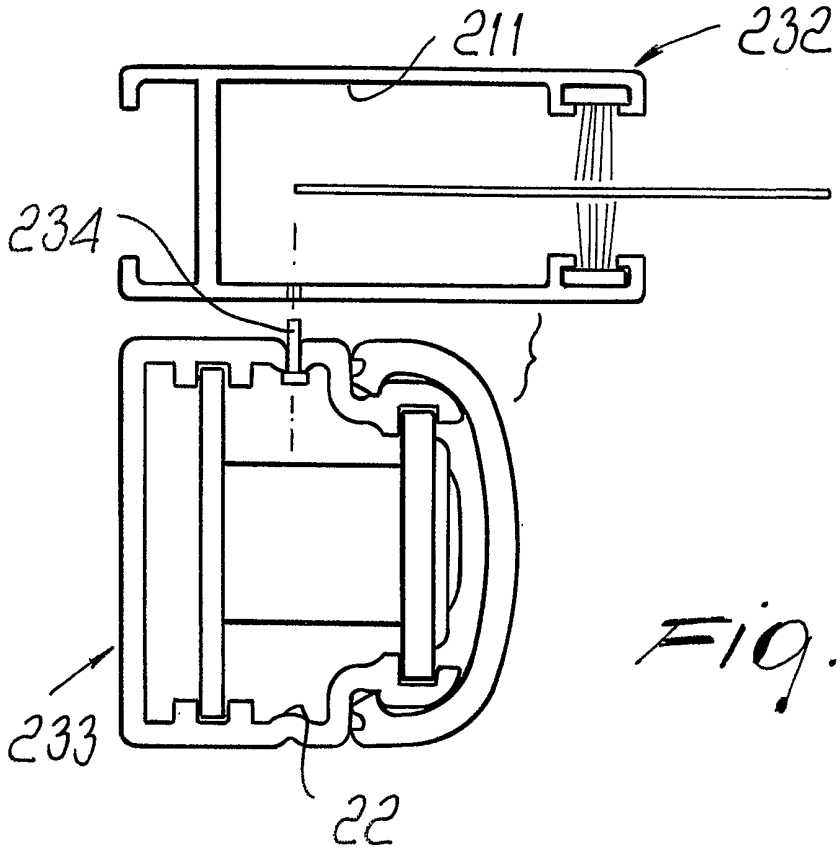

Fig. 5

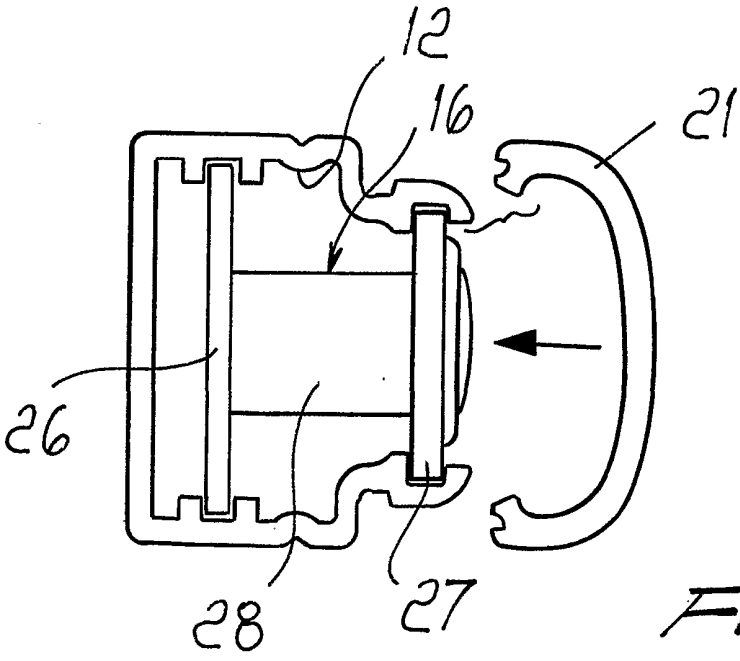

Fig. 6

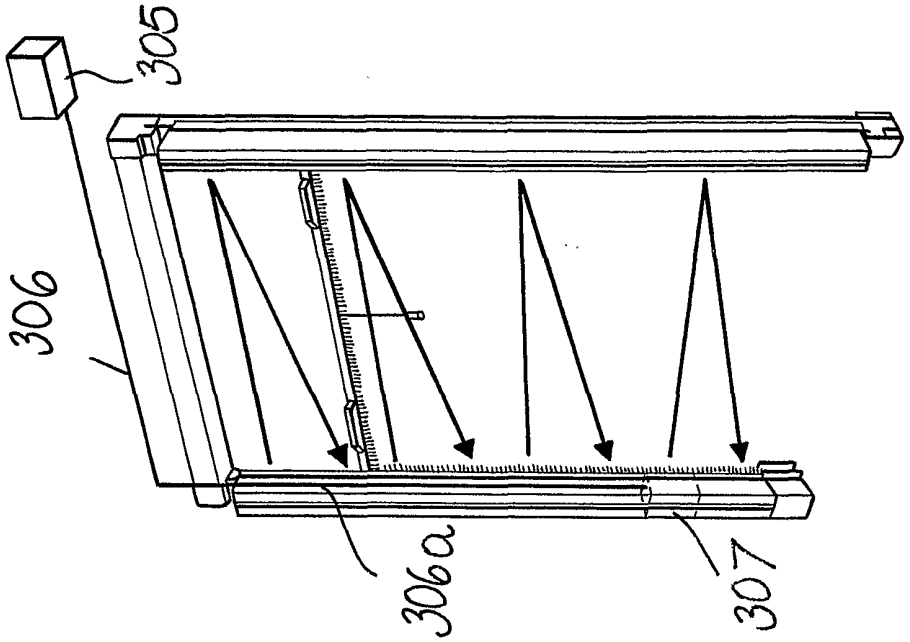

Fig. 9

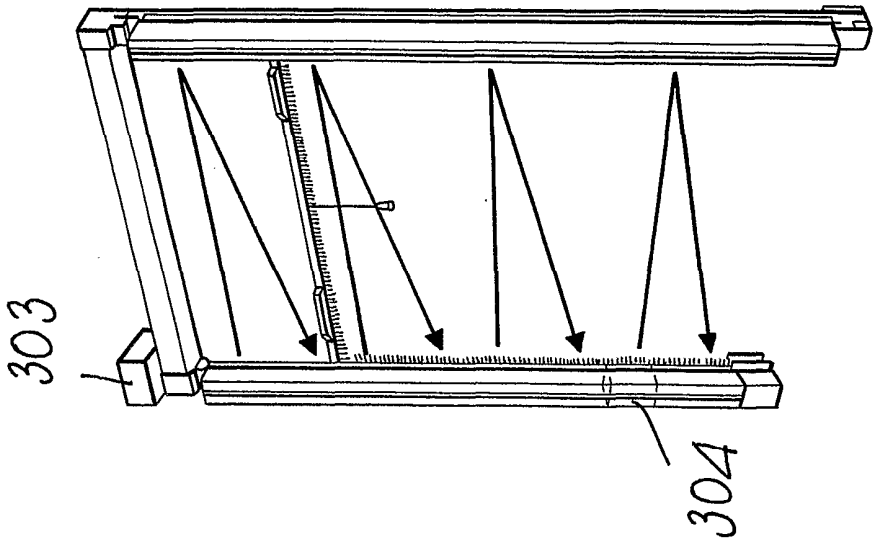

Fig. 8

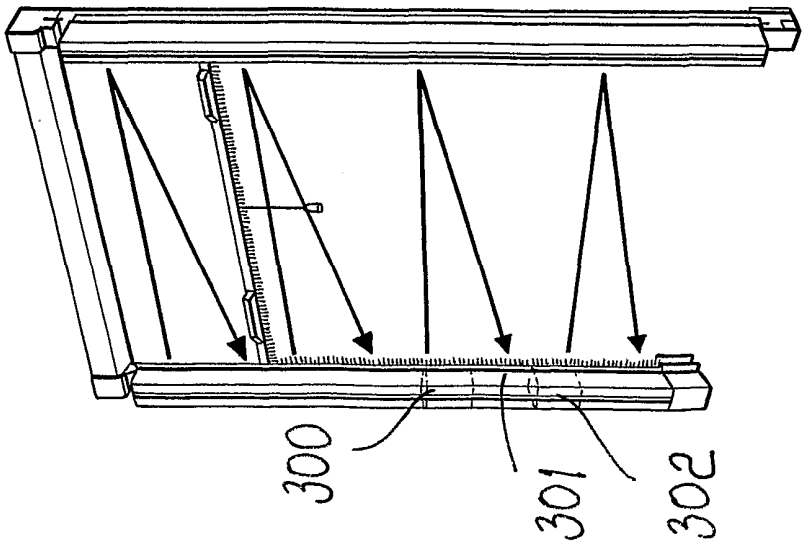

Fig. 7

INTERNATIONAL SEARCH REPORT

Int nal Application No
PCT/EP 01/08945

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 E06B9/54 E06B9/86

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 E06B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	DE 43 11 416 A (IROWI INSEKTENSCHUTZ ROLLGITTE) 13 October 1994 (1994-10-13) column 3, line 27 - line 38 figures 1-3	1,2

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

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"O" document 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

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"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
23 November 2001	30/11/2001

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31–70) 340–2040, Tx. 31 651 epo nl, Fax: (+31–70) 340–3016	Geivaerts, D

INTERNATIONAL SEARCH REPORT

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 4311416 A	13-10-1994	DE 4311416 A1	13-10-1994
		AU 665732 B2	11-01-1996
		AU 4900493 A	13-10-1994
		EP 0619412 A2	12-10-1994
		US 5392835 A	28-02-1995