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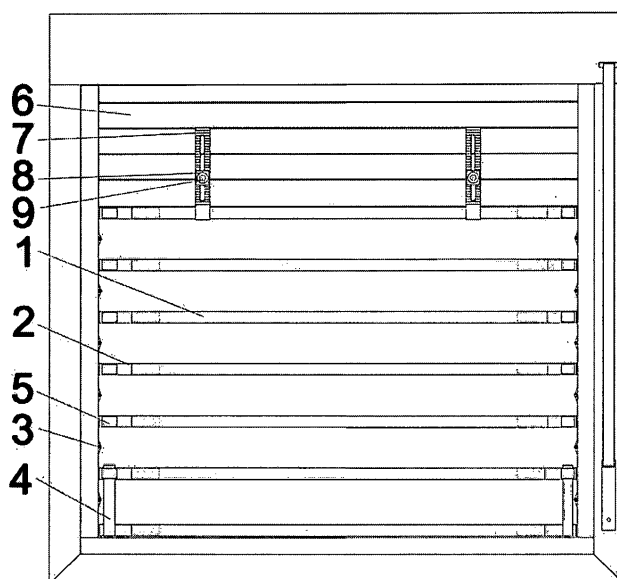
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(54) **IMPROVED SYSTEM OF FOLDABLE GRILLES FOR WINDOWS AND DOORS**

(57) This invention consists on a system that complements a conventional foldable through a simple assembly after it, protecting the hole in the door or window when the aforementioned blind is rise totally or partially,

in order to avoid both the fall of people, animals or elements to the outside, 10 as the entrance of people, insects, animals or objects.

Fig. 3



Description

Object of the invention

[0001] The present invention relates to a system that complements a conventional shutter via a simple mounting as an extension thereof, protecting the opening of the door or window when said shutter is completely or partially raised, for the purpose of preventing both the falling of people, animals or objects outwards, as well as preventing the entry of people, insects, animals or objects.

[0002] The present invention finds its scope in the sector of metalwork specialised in the manufacture of doors and windows.

Background of the invention

[0003] According to the state of the art in the matter, in the invention with publication number and title, respectively FR 1314328 A, "Security grille for windows and doors" filed in 1963, a set of bars is proposed which are folded as an extension of the shutter moving through the guides thereof as additional protection to the window opening when the shutter is raised, which has a set of drawbacks that have made its application unfeasible, such as:

A. Risk of entrapment of fingers, hands or arms in the ordinary use of the same when closing it, when folding each bar on the adjacent bars through hinged profiles with closures as a guillotine.

B. It does not include a connection system from the assembly to the existing shutter that can be undertaken by the person who assembles it in a simple way.

C. The proposed system does not ensure that in the usual movements for opening or closing the shutter-grille assembly does not occur the jamming of the grille bars in its sliding inside the two guides of the shutter as a result of not preserving the horizontality during its displacement.

D. Finally, there are also no terminals for the bars from which, the assembly to be mounted is easily adaptable to the width and height of the opening to be protected, facilitating its acquisition in specialised stores and avoiding the need to make cuts during its assembly or, even the presence of professionals.

[0004] Continuing with the state of the art, Patent CP201431725 titled 'System of foldable grilles for windows and doors' proposes a set of horizontal bars that are deployed following a conventional shutter on its guides, protecting the opening of the door or window when said shutter is completely or partially raised, for the purpose of preventing both the falling of people or objects outwards, as well as preventing the entry of people or insects, however, the proposal does not resolve some important aspects such as preventing the bars from get-

ting stuck in their vertical movement, a simple installation on a existing shutter, or to make independent the bars themselves of their ends or connections with the window.

[0005] However, the 'Improved system of foldable grilles for windows and doors' incorporates a set of improvements that substantially simplify their assembly and use, solving the problems outlined above in addition to providing a much more appropriate solution from the aesthetic and functional point of view, when moving the joints in their opening movement toward the end of the opening to be covered, reducing their visibility and increasing the useful surface of the opening itself in the fully open shutter position.

15 EXPLANATION OF THE INVENTION

[0006] By a way of explanation of 'Improved system of foldable grilles for windows and doors', it composed of the following elements:

a) A set of bars, each provided with corresponding standardised connectors in each of its ends designed to slide inside the shutter guides.

b) Attaching system between the said connectors located at the ends of successive bars, which make possible a vertical movement of each bar inside the guides from a position of overlapping bars to a position in which the said bars are separated at a maximum distance.

c) System for fixing the lower bar to the existing window opening in its base or lowest side.

d) System for fixing the upper bar to the lower end of the shutter, making integral the vertical movement of the upper bar and that of the lower slat of the shutter.

[0007] Alternatively, in order to ensure the fixation of the assembly following the shutter taking advantage of the two stops of the shutter itself, the upper bar of the assembly incorporates corresponding complementary vertical profiles fixed at its lower end to said bar, provided with a central adjustment slot at the height of the stop of the shutter and mooring and locking system.

[0008] Alternatively, the described system is complemented by the provision of two vertical profiles fixed to the lowest bar as a guide through which all the upper bars have to move in the opening or closing movements of the shutter, by ensuring the horizontal position of the each upper bar by incorporating a clamp that moves vertically with the guide and prevents the bars from becoming uneven.

[0009] The described system can be integrated into the shutter itself so that its removal is not foreseen, or conceived as an assembly to be subsequently installed in window openings with existing shutters. For this second case, from the described system, its installation consists of choosing bars of standardized length adapted to the opening that is intended to protect and undertake the

following sequence;

1. Full mounting of standardized connectors on each of the bars.
2. Mounting of attachment system between successive bars through their connectors.
3. Accommodation of the resulting assembly in the opening of the window by placing one end of the set of bars in one of the two guides through which the shutter itself moves and then, on the opposite guide looking for horizontality.
4. Using the two screws of the shutter stop itself, we fix the upper bar of the assembly to the shutter by means of corresponding complementary vertical profiles fixed at its lower end to the aforementioned bar.
5. Finally, we raise the shutter and screw the lower bar to the fixed base.

[0010] Alternatively, by providing a mesh provided with rods interspersed at the same distance as the bars, an additional insect screen effect is added to the protection of the assembly for as long as desired, easy to assemble and disassemble, by means of a simple removable fixing system from any of which it is possible to insert the aforementioned rods inside the guide provided for this purpose in each successive bar until it is fully integrated into the gaps between the bars once deployed.

[0011] Obviously, alternatively the 'Improved system of foldable grilles for windows and doors' can be also conceived without the insect screen itself being a complement but a further element of the described assembly.

DESCRIPTION OF THE DRAWINGS

[0012] In order to complement the description that is being made and in order to help a better understanding of the characteristics of the invention, according to a preferred example of practical embodiment thereof, a set of drawings is attached as an integral part of said description, a set of drawings wherein, with illustrative and non-limiting character, the following has been set forth:

Figure 1.- It shows a main detailed elevation view of 'Improved system of foldable grilles for windows and doors' wherein the three lower bars with their connectors and open hinge-type joint can be seen.

Figure 2.- It shows a main elevation view of 'Improved system of foldable grilles for windows and doors' in closed-shutter position.

Figure 3.- It shows a main elevation view of 'Improved system of foldable grilles for windows and doors' in open-shutter and protected-opening position.

Figure 4.- It shows a main sectional detailed view of the 'Improved system of foldable grilles for windows and doors' mounted with insect screen.

[0013] In the cited figures the following constituent elements can be highlighted;

1. Bars.
2. Connectors.
3. Hinge-type joint between successive bars by means of two profiles for each of the ends of each two bars to be joined, joined in a common axis of rotation that moves from an internal bar folding position, to another stop end position in the proximity of the guide of the shutter itself in which the maximum distance between bars or unfolding position is obtained.
4. Guide profile fixed to the lower bar.
5. Clamp that moves vertically around the guide profile.
6. Conventional shutter
7. Vertical profile joined together to the upper bar provided with central slot and saw-tooth outer face.
8. Lock plate with saw-tooth internal face.
9. Shutter stop.
10. Mesh with insect screen effect
11. Rods interspersed in the mesh at the same distance as the bars.
12. Guide fixed to the vertical surface of each bar.

EXAMPLE OF PREFERRED EMBODIMENT SUPPORTED IN FIGURES

[0014] In the light of the figures 1-3, it can be seen by way of example of preferred embodiment, how the 'Improved system of foldable grilles for windows and doors' can be installed based on the use of bars 1 manufactured by way of example in aluminium provided with the corresponding standardized connectors 2, also made by way of example in polyethylene and, likewise, profiles of hinged joints 3 made of stainless steel designed for mounting in the opening of a window provided with a conventional shutter 6 and two-leaf sliding window which further incorporates a system to prevent jamming of the assembly in its opening or closing movement by making use of corresponding guide profiles fixed to the lower bar 4 and corresponding clamps that move vertically around the guide profile 5 for each of the bars above the lowest bar.

[0015] To that end, the aforementioned horizontal bars 1 provided with the corresponding connectors 2 have been arranged to form a width similar to that of the shutter 6 itself, designed to be introduced next to the shutter and between the guides thereof, joined at their ends successively by hinge-type joints (3) with folding inward the window, forming a complete folding position on itself as shown in Figure 2 when the shutter 6 is completely closed, to a maximum open position as shown in Figure 3 in which the protection function for which it has been conceived is appreciated.

[0016] Following the introduction of the assembly between the guides, it is fixed to the lower end of the shutter

6 making use of corresponding vertical profiles 7 integral to the upper bar and provided with a central slot to adapt to the height of the stop 9 and saw-tooth outer face which, in combination with the corresponding locking plate 8 with a saw-tooth internal face are completely blocked once the two existing screws in corresponding stops 9 of the shutter are tightened. Obviously, it is possible to design the connection between bars 1 provided with connectors 2 by means of hinge mechanisms 3 and fixing on the end of successive bars 1 adapting the length of the bar 1 to the required width, although alternatively, it is also possible to design each bar in two profiles provided with telescopic adjustment that adapts to the required width, or play with intermediate supplements to the connectors 2 that provide some adjustment of the assembly to the required measure.

[0017] Alternatively, if required by the application, the successive bars 1 can accommodate a mesh 10 provided with the corresponding rods 11 designed for manual insertion inside the guides 12 existing on the exposed side of each bar in order to cover the existing gaps between the bars once deployed, as an insect screen.

[0018] As an alternative embodiment, instead of an installation on a window opening provided with a shutter, the application of the invention is evident by integrating it in the manufacture of the shutter itself as a single assembly incorporating the described system.

[0019] It is not considered necessary to make the present specification more extensive so that any person skilled in the art understands the scope of the invention and the advantages derived from its use.

[0020] The materials chosen for the manufacture of the different elements described, other systems for connection between the aforementioned connectors such as belts or chains, the use of locking systems of the shutter belt so that it is not used by children or additional latches not described herein for fixing the assembly from the inside, the arrangement, shapes and sizes or even the techniques used for its manufacture, will be susceptible to modification as long as it does not involve an alteration to the essence of the invention.

[0021] The terms in which this specification has been written should always be taken in a broad and non-limiting sense.

Claims

1. System of foldable grilles for windows and doors for integration into a window or door opening provided with shutter, **characterised in that** it is composed of the following elements:

- a) A set of bars, each provided with corresponding standardised connectors in each of its ends designed to slide inside the shutter guides.
- b) Attaching system between the said connectors located at the ends of successive bars,

which make possible a vertical movement of each bar inside the guides from a position of overlapping bars to a position in which the said bars are separated at a maximum distance.

c) System for fixing the lower bar to the existing window opening in its base or lowest side.

d) System for fixing the upper bar to the lower end of the shutter, making integral the vertical movement of the upper bar and that of the lower slat of the shutter.

2. Improved system of foldable grilles for windows and doors according to claim 1, **characterised in that**, alternatively, in order to ensure the fixation of the assembly following the shutter taking advantage of the two stops of the shutter itself arranged at a variable height, the upper bar of the assembly incorporates corresponding complementary vertical profiles fixed at its lower end to said bar, provided with a central adjustment slot at the height of the stop of the shutter and mooring and locking system on said stop.
3. Improved system of foldable grilles for windows and doors according to claim 1 and 2, **characterised in that**, alternatively the described system is complemented by the provision of corresponding vertical profiles fixed to the lowest bar as a guide through which all the upper bars have to move in the opening or closing movement of the shutter, by incorporating each bar that is above a clamp for each of the two guides, which moves vertically around the guide and prevents the bars from becoming uneven.
4. Improved system of foldable grilles for windows and doors according to claim 1, 2 and 3, **characterised in that**, alternatively, it can accommodate a mesh provided with rods interspersed at equal distance to the bars designed for fixing by a simple clip for inserting each one of the aforementioned rods inside existing guides in each successive baluster enabled for this purpose, until it is fully integrated into the existing gaps between the bars once deployed.

Amended claims under Art. 19.1 PCT

1. Improved system of foldable grilles for windows and doors for integration into a window or door opening provided with shutter, **characterised in that** it is composed of the following elements:

- a) A set of bars, each provided with corresponding standardised connectors in each of its ends designed to slide inside the shutter guides.
- b) Attaching system between the said connectors located at the ends of successive bars, which make possible a vertical movement of

each bar inside the guides from a position of overlapping bars to a position in which the said bars are separated at a maximum distance.

c) System for fixing the lower bar to the existing window opening in its base or lowest side.

d) System for fixing the upper bar to the lower end of the shutter, making integral the vertical movement of the upper bar and that of the lower slat of the shutter;

and **in that**, in order to ensure the fixation of the assembly following the shutter taking advantage of the two stops of the shutter itself at a variable height, the upper bar of the assembly incorporates corresponding complementary vertical profiles fixed at its lower end to said bar, provided with a central adjustment slot at the height of the stop of the shutter and mooring and locking system on said stop.

2. Improved system of foldable grilles for windows and doors according to claim 1, **characterised in that**, alternatively the described system is complemented by the provision of corresponding vertical profiles fixed to the lowest bar as a guide through which all the upper bars have to move in the opening or closing movement of the shutter, by incorporating each bar that is above a clamp for each of the two guides, which moves vertically around the guide and prevents the bars from becoming uneven.

3. Improved system of foldable grilles for windows and doors according to claim 1 and 2, **characterised in that**, alternatively, it can accommodate a mesh provided with rods interspersed at equal distance to the bars designed for fixing by a simple clip for inserting each one of the aforementioned rods inside existing guides in each successive baluster enabled for this purpose, until it is fully integrated into the existing gaps between the bars once deployed.

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Fig.1

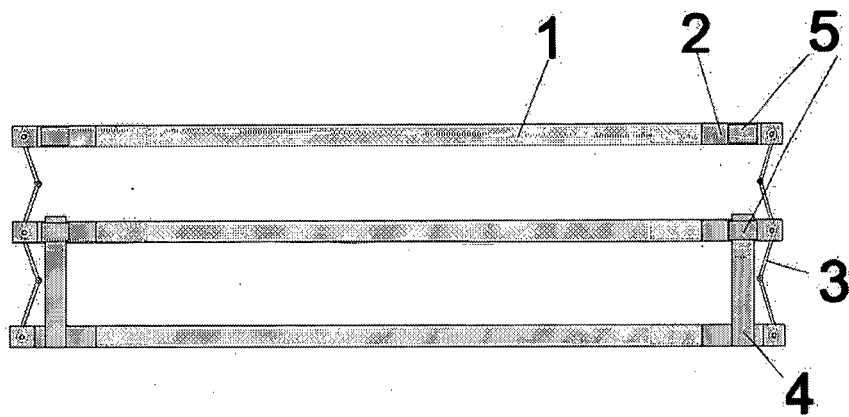


Fig. 2

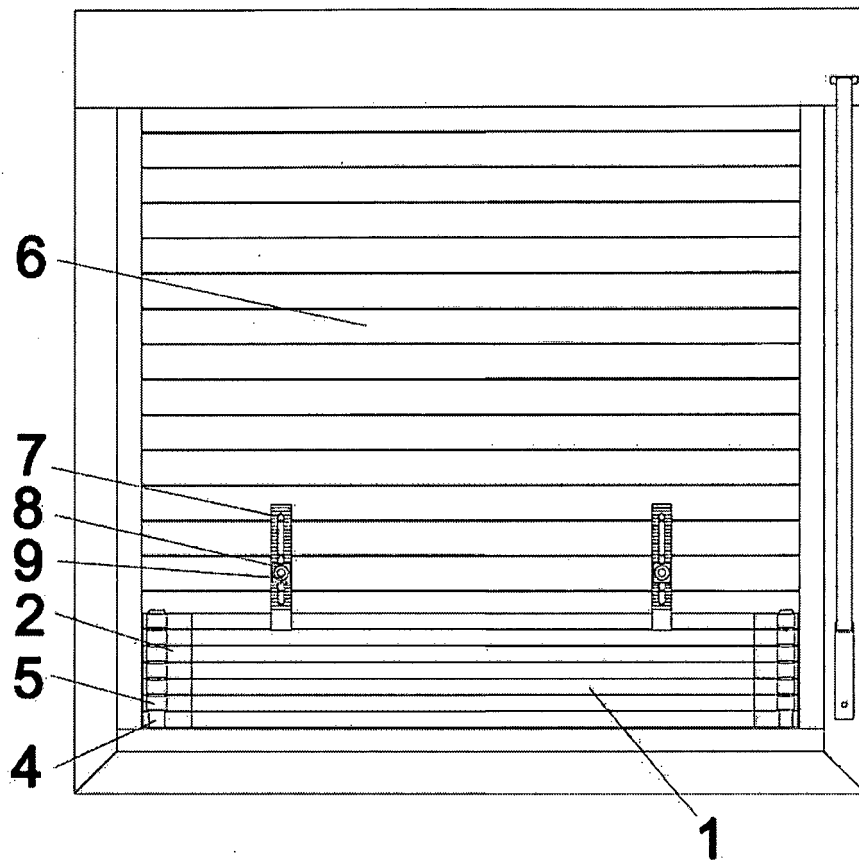


Fig. 3

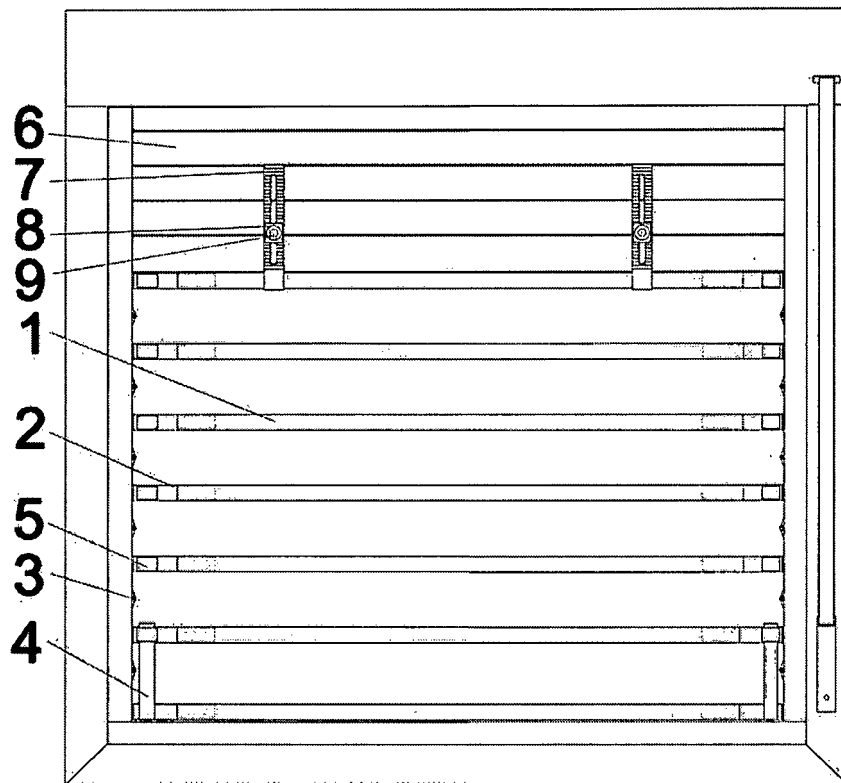
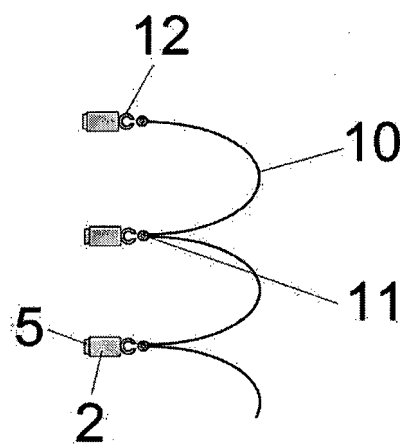


Fig. 4



INTERNATIONAL SEARCH REPORT

International application No.

PCT/ES2017/070716

A. CLASSIFICATION OF SUBJECT MATTER

See extra sheet

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)

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 practicable, search terms used)

EPODOC, INVENES

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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X A	US 1790880 A (FRANK SOO) 03/02/1931, the whole document.	1 2-4
X A	US 1908919 A (REED LEWIS H) 16/05/1933, the whole document.	1 2-4
X A	US 1908919 A (REED LEWIS H) 16/05/1933, the whole document.	1 2-4
X A	EP 3023572 A1 (DORADO GARRIDO IVAN) 25/05/2016, the whole document.	1 2-4

☒ Further documents are listed in the continuation of Box C.☒ See patent family annex.

* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance.	
"E" earlier document but published on or after the international filing date	
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"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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"P" document published prior to the international filing date but later than the priority date claimed	"&" document member of the same patent family

Date of the actual completion of the international search
09/02/2018Date of mailing of the international search report
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INTERNATIONAL SEARCH REPORT

International application No.

PCT/ES2017/070716

C (continuation).	DOCUMENTS CONSIDERED TO BE RELEVANT	
Category *	Citation of documents, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 1612771 A (OSWALD PFEIFFER) 28/12/1926, the whole document.	1-4
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Information on patent family members

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Form PCT/ISA/210 (patent family annex) (January 2015)

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CLASSIFICATION OF SUBJECT MATTER

E06B9/01 (2006.01)

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E06B9/06 (2006.01)

E06B9/18 (2006.01)

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REFERENCES CITED IN THE DESCRIPTION

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