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Remarks:
Amended claims in accordance with Rule 137(2) EPC.

(54) **SASH WINDOW ASSEMBLY FOR BALCONIES**

(57) A sash window assembly (1,11) for balcony slabs (3) is represented by the invention, which is very flexible in use during various weather circumstances and traffic noise. So the user can use his/her balcony in all kind of circumstances. The sash window assembly (1,11) can be mounted on different shapes of balcony slabs (3). The invention represents a safe and economic solution to use the balcony during all kind of weather circumstances all year round.

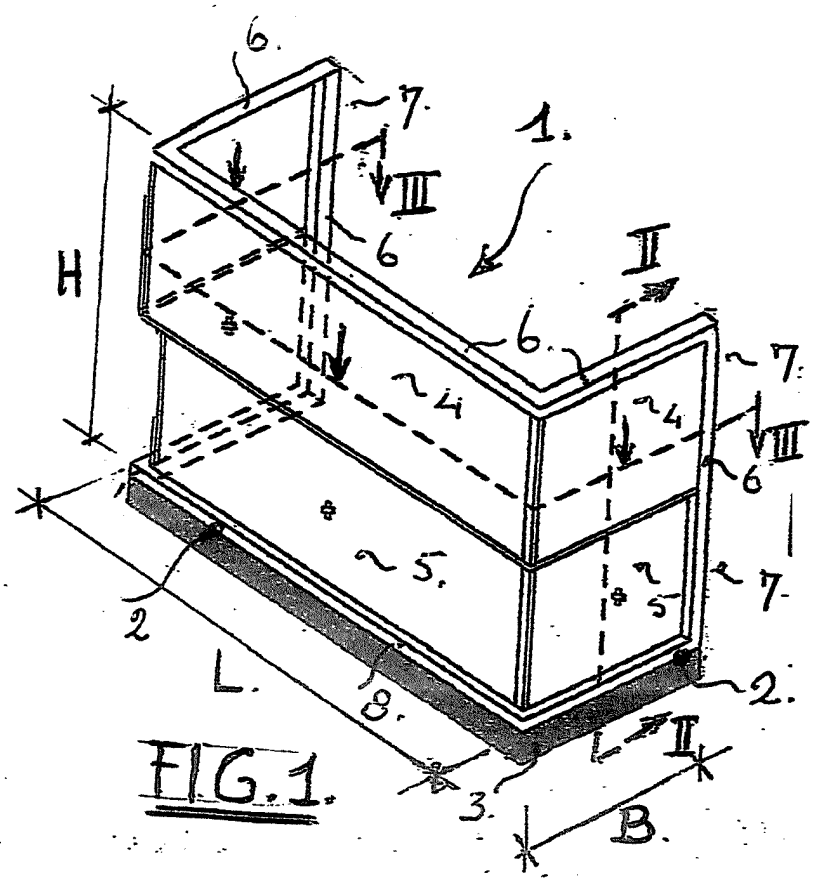

FIG.1.

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Description

[0001] The present invention concerns a sash window assembly placed on the brim of a free balcony slab, which consists of a frame with opening window parts.

Background of the invention.

[0002] The state of the art does not include very flexible usable window assemblies at an economical price. In practice, balconies on first floors and on higher levels are mostly open structures. People sit on the balcony to enjoy the weather and the surroundings. Unfortunately, the weather is not always beautiful or it is too cold, so you cannot sit on the balcony during most days of the year. This is bad luck for people with a balcony as they cannot enjoy the fresh air, sunshine and view. To solve this problem, building contractors place a full window frame on the brim of the balcony thus closing the balcony off from the fresh air. In this confined space it is not possible to enjoy the fresh air and sunshine in the same way as in an open construction. Furthermore, the balcony slab, mostly reinforced concrete, has to be strengthened to resist the bending stresses in connection with the building frame. In short, the costs and connection problems (safety problems) increase. So, placement of the known balcony frames has serious drawbacks for a comfortable and economic use of said balcony.

Object of the invention.

[0003] The aim of this invention is to overcome mentioned drawbacks and to provide a very flexible sash window assembly for balconies of different shapes and forms. The sash window assembly has to be installed in a very efficient way at minimal costs.

Summary of the invention.

[0004] The sash window assembly according to the invention is characterized in that said sash window assembly has a special frame with an upper window part, which is vertically up and down slidable in front of a lower window part, wherein the horizontal cross-section of the upper and lower window parts enclose the same corner angles alpha (a) as said balcony slab, wherein said up and down movement of the whole upper window part is executed by a driving mechanism.

[0005] The advantage is a sash window assembly for a very flexible closing-off of the balcony at minimal costs, which can be opened when the weather is beautiful. So one can be in the open air just outside the flat during many days of the year.

[0006] Furthermore, the sash window assembly according to the invention is characterized in that said special frame is a bending strength construction made of metal, which is anchoring to the vertical outer wall and on top of the brim of the balcony slab.

[0007] The advantage is to avoid extra loading of the brim of the balcony. So, the connection of the balcony slab to the building frame does not need extra strengthening. The construction always has to be checked on static mechanical properties.

[0008] Furthermore, the sash window assembly according to the invention is characterized in that the basic plane of said special frame will usually have a L-shape, a U-shape or a Δ-shape, fitting the outlined shape of the balcony slab.

[0009] The advantage is, that the sash window assembly can be placed on the most commonly used balcony slab shapes.

[0010] Subsequently the sash window assembly according to the invention is further characterized in that said driving mechanism to move the upper window part up and down is an electric tube motor in a box constructed beam and is mounted over the spatial frame.

[0011] The advantage is an optimal moving possibility of the upper window part as desired by the user.

[0012] Then the sash window assembly according to the invention is further characterized in that the material used in the construction is aluminium.

[0013] The advantage is a relatively light construction with excellent mechanical bending properties.

Brief description of the drawing.

[0014] The embodiment of the present invention will now be described by way of example, with reference to the accompanying drawing with figures in which:

figure 1 shows an oblique view of the sash window assembly in a U-shape according to the invention;
figure 2 shows a vertical cross-section over the line II in figure 1;
figure 3 shows a horizontal section over the horizontal line of figure 1;
figure 4 shows an oblique view of the sash window assembly in a L-shape according to the invention; and
figure 5 shows a horizontal section over the horizontal line V of figure 4.

Detailed description.

[0015] In figure 1 an oblique view of the sash window assembly 1 is reproduced in a U-shape according to a preferred embodiment of the invention. The sash window assembly 1 is placed on the brim 2 of the balcony slab 3. The upper window part 4 is vertically slidable up and down in front of the lower window part 5. The window frame 6 is a special construction mechanically connected with the outer wall 7 of the building and the upper side 8 of the balcony slab 3 which is placed/mounted on a rectangular beam 16, 17. Preferably, the upper window part 4 and the lower window part 5 have double glazing, in order to diminish the sound level on the balcony. The

dimensions L, B and H are mostly 4 m, 2 m and 2,75 but other dimensions are also possible.

[0016] In figure 2 a vertical cross-section is represented over the line II in figure 1. The same parts are indicated with the same numbers. The window frame 6 is preferably made of aluminium, due to its relatively low weight and sufficient bending strength. On one side at the top of the window frame 6 a driving mechanism 14 is constructed, which consists of a go-around box beam 9 with on the inside an electric tube motor 10 driving a cable set (not shown) in order to move the upper window part 4 up and down. In order to horizontally strengthen the sash window assembly 1 a horizontal beam 12 is constructed. The up and down movement of the upper window part 4 is activated by a switch 15. The window parts 4 are connected at the corners 18.

[0017] In figure 3 a horizontal section is represented over the line III of figure 1. The same parts are indicated with the same numbers.

[0018] In figure 4 an oblique view of the sash window assembly 11 is reproduced in a L-shape. Furthermore the same parts of the construction are indicated with the same numbers. Now it shows a L-shaped window frame 13. The rest of the characteristics have the same numbers.

[0019] In figure 5 a horizontal section is represented over the line V of figure 4. In this figure the same number apply as in the other figures shown.

[0020] However, it is obvious that modifications and/or additions to the afore mentioned sash window assembly can be made, but these shall remain within the field and scope of the invention.

Claims

1. Sash window assembly mounted on the brim of a free balcony slab, which consists of a frame with opening window parts, **characterized in that**, said sash window assembly (1) has a special frame (6, 13) with an upper window part (4) and is vertically up and down slidable in front of a lower window part (5), wherein the horizontal cross section of the upper and lower window parts (4, 5) enclose the same corner angles alpha (a) as said balcony slab (3), wherein said up and down movement of the whole upper window part (4) is executed by a driving mechanism (14).

2. Sash window assembly as in claim 1, **wherein** said special frame (6, 13) is a bending strength construction made of metal which is anchoring to the vertical outer wall (7) and on top of the brim of the balcony slab (3) with a rectangular beam (16, 17).

3. Sash window assembly as in claim 1 and 2, **wherein** the basic plane of said special frame (6, 13) will usually have a L-shape, a U-shape or a Δ-shape, fitting the outlined shape of the balcony slab (3).

4. Sash window assembly as in claim 1, **wherein** said angle alpha (a) is between 60 and 120 degrees, preferably 90 degrees.

5. Sash window assembly as in claim 1, **wherein** said driving mechanism (14) to move the upper window part (4) up and down is an electric tube motor (10) in a box constructed beam (9) and is mounted on top of the spatial frame (6, 13).

6. Sash window assembly as in claim 5, **characterized in that** said upper window part (4) can be moved up and down with cable sets driven by the electronic tube motor (10) mounted within the go-around box beam (9).

7. Sash window assembly as in claim 1, 2, 5 and 6, **wherein** the material used for the construction is aluminium.

8. Sash window assembly as in the preceding claim, **wherein** said upper and lower window parts (4, 5) are double glazed.

Amended claims in accordance with Rule 137(2) EPC.

1. Sash window assembly mounted between the brims of two above each other placed balcony slabs or plates, which consists of a frame , wherein in said frame is placed an upper- and lower window part, wherein the lower part is fixed mounted in said frame and the upper window part is up- and down movably mounted in said frame at the outside of the lower part, **characterized in that**, said frame is a spacial frame (6,13) and is executed in a mechanical bending strength material and fixed mounted to said balcony slab (3) and the vertical connecting walls of the dwelling, wherein the upper - and lower window parts (4,5) enclose the same corner angle alpha (α) as said corner of the balcony slab (3), wherein the upper window part (4) is movable up- and down mounted by an axle (10) with driving mechanism (14).

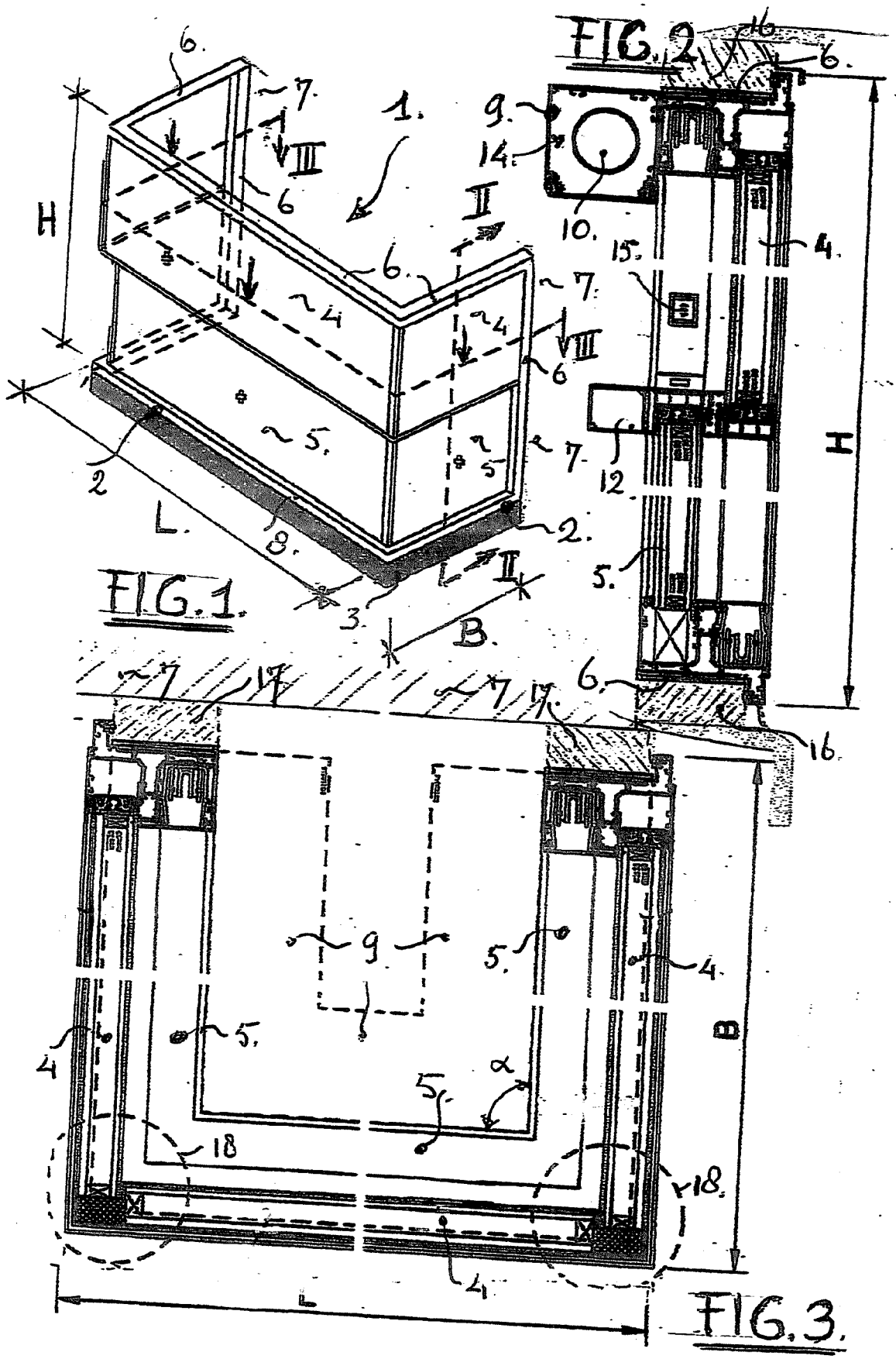
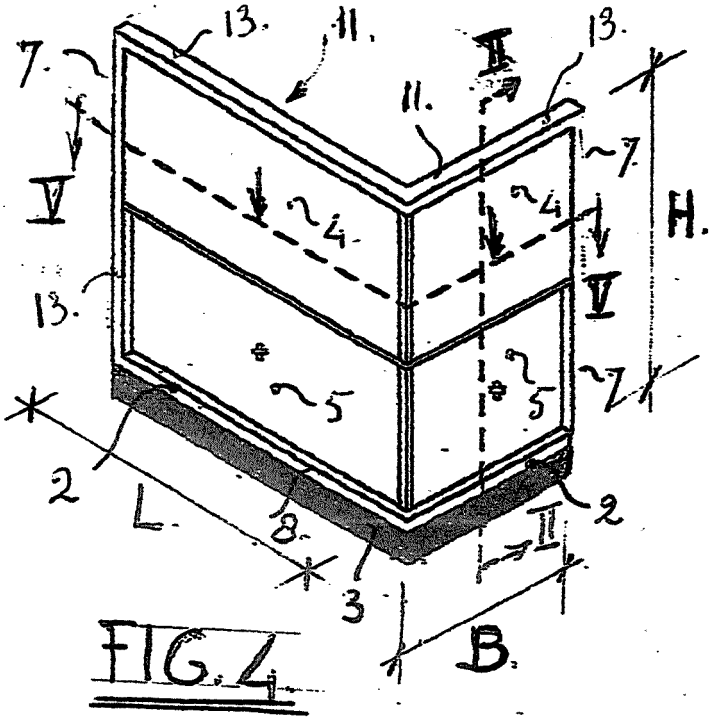


FIG.1.
FIG.2.
FIG.3.
H
L.
B.
1.
2
3
4
5.
6.
7.
8.
9.
10.
12.
14.
15.
16.
17.
18.
α
I
II
III
VIII


13.
11.
II
13.
7.
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7.
V
4.
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H.
V
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2
L.
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II
2
3
B.

FIG.4

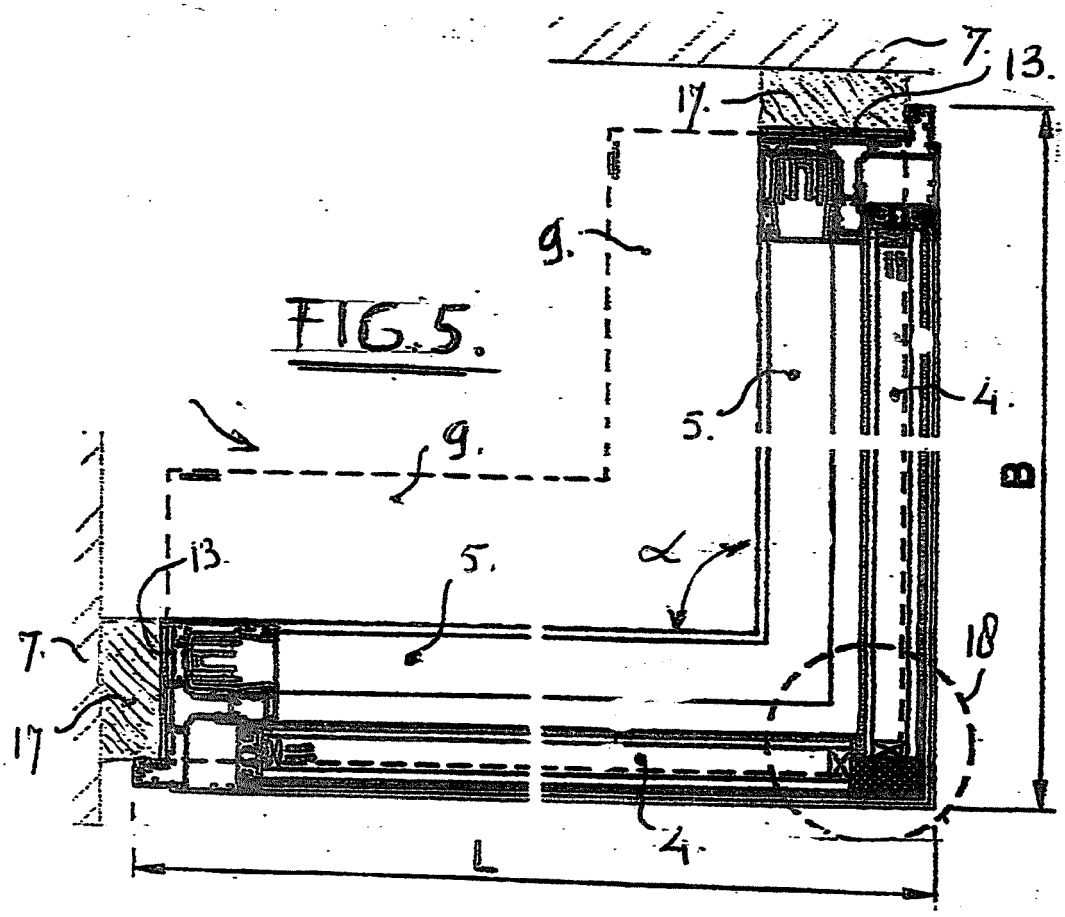
7.
13.
17.
9.
5.
4.
B
9.
13.
5.
α
7.
18
17
4.
L

FIG.5

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EUROPEAN SEARCH REPORT

Application Number
EP 20 07 5005

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	DE 20 2018 107192 U1 (WESELOH WILFRIED [DE]; YING STEPHAN [DE]) 3 January 2019 (2019-01-03) * paragraphs [0016] - [0020]; figures *	1-8	INV. E06B1/36 E06B3/44 E04B1/00
A	US 4 835 920 A (POSNER CAROLE [US] ET AL) 6 June 1989 (1989-06-06) * column 2, line 67 - column 3, line 41; figure 1 *	1-8	

TECHNICAL FIELDS SEARCHED (IPC)
E06B
E04B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	16 September 2020	Gallego, Adoración

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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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
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16-09-2020

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82