

Description

Technical Field of the Invention

[0001] The present invention relates to a sealing means, intended to be mounted on a first object movable in relation to a second object for sealing a gap between the objects, which sealing means comprises a holder integrally formed with holding means for holding a sealing strip. The invention also relates to a door, provided with such a sealing means.

Background Art

[0002] From GB 2 076 281 is known a device for sealing a gap between the surfaces of opposed objects. This device consists of a brush lodged in a holder, wherein a spring is arranged in the holder, between the brush and the interior holder bottom. When the holder is mounted on a door bottom the spring is supposed to press the brush downwards in such a way that the brush is in contact with the floor all the time without bending the bristles in the brush. The holder is an aluminium profile and due to production conditions thereof the space for the spring cannot be made deeper without also making it broader, hence the spring has only ability to seal a gap between a door and the floor of a few millimeters. Further, resilient sealing devices of this kind are often making squeaking sounds in use.

Summary of the Invention

[0003] The object of the invention is to provide a neat sealing means which, compared to prior art sealing means, is easier to mount, has a improved and silent spring function and further is more economical to manufacture. This object is achieved with a sealing strip described by way of introduction and characterized in that the holder is integrally formed with spring means for allowing the sealing strip, held by the holding means, to be moved, against the action of the spring means, in a direction from the second object.

[0004] The holder comprises preferably at least two holder segments, wherein each holder segment is a plate provided with said holding means and said spring means, wherein the total length of the holder segments is less than the length of the sealing strip. More preferably the holder comprises three holder segments, the total length of which corresponds to approximatively 60% of the sealing strip length. This allows for manufacturing with less material compared to prior art sealing means. This makes it further easier to adjust the sealing means length to the door width, eliminating the need of cutting the holder segments.

[0005] The holding means of each holder segment comprises at least one lug, preferably three, forming pockets for receiving the sealing strip.

[0006] The lug and the plate are preferably provided

with a bead for reliably suspending the sealing strip, inserted in the pocket.

[0007] The spring means of each holder segment comprises at least one arm, extending essentially parallel to the plane of the plate for pressing against the sealing strip, inserted in the pocket, at one side of the lug. The spring means can be designed in other ways, for instance like an ellipse or a diamond.

[0008] The arm is preferably curved with its free end pointing away from the sealing strip. This makes inserting the sealing strip, in a direction of the arrow P in fig 1, into the pockets easier, not risking that the sealing strip presses down the arm and gets stuck.

[0009] The sealing strip is preferably a strip brush. Another type of sealing strip is also possible, for instance a plastic strip of different polymeric materials with a stiffer part insertable in the holding means or a sealing strip provided with a felt or rubber part.

Brief Description of the Drawings

[0010] A non-restricting example of an embodiment according the invention will below be explained further in detail with reference to the attached drawings.

[0011] Fig 1 is a perspective view of a sealing means according the invention.

[0012] Fig 2 is a perspective view of a holder segment of the sealing means.

[0013] Fig 3 is a cross-sectional view of the sealing means in a larger scale.

Detailed Description of a Preferred Embodiment of the Invention

[0014] A sealing means 1 according the invention is intended to be mounted on a first object, in this case a door, movable in relation to a second object, in this case the floor, for sealing a gap between the objects.

[0015] The sealing means 1 comprises a holder 2 integrally formed with holding means 3 for holding a sealing strip 4 and integrally formed with spring means 5 for pressing the sealing strip towards the floor. The fact that the spring means is integrally formed with the holder does not only make it easier to mount, with lesser parts to assemble, it also makes it silent, without a loose spring making squeaking sounds when moving in relation to the holder.

[0016] In fig 1-3 is shown a preferred embodiment of the invention, wherein the sealing means is a brush seal, hence the sealing strip is a strip brush 4.

[0017] The holder 2 is composed of several holder segments 2'. Each holder segment 2' is a plate provided with three holding means 3 and three spring means 4. For a door with a width of 1 meter it is preferred to use three holder segments, each with a length of approximately 20 cm, hence the total length of the holder segments is slightly more than half the width of the door. This allows for manufacturing sealing means with less material com-

pared to a full length holder with the same length as the door width. This also renders redundant the step of cutting the holder to a length corresponding to the width of the door.

[0018] Each holding means 3 comprises a lug 7, forming a pocket for receiving the strip brush 4. The lug is provided with a bead 8 for suspending the sealing strip 4 inserted in the pocket. The plate 6 is preferably also provided with a bead 9 below the spring means. The lug bead 8 and the plate bead 9 are directed towards each other as seen in cross-section in fig 3, creating a bearing surface on which the strip brush is suspended when inserted in the pocket.

[0019] The holder 2 is mounted along the bottom part of the door in such a way that the strip brush is mainly extending beneath the door and sealing the gap between the door and the floor. The spring means 5 makes it possible for the strip brush to conform to the surface of the floor, taking up irregularities without bending its bristles.

[0020] As is mentioned above the holder 2 is integrally formed with spring means 5, by which the strip brush 4, held by the holding means 3, is pressed in the direction of the floor. Each spring means comprises an arm 5, extending parallel to the plane of the plate. The arm is positioned at the side of the lug in such a way that it presses against an upper part of the sealing strip, inserted in the pocket. The arm 5 can be curved or, as is shown in the figures, bent like a V, with the free end pointing upwards. With an integrally formed spring it is possible to more effectively make use of the space on the plate, hence to design a more resilient spring and accomplish a sealing means with ability to seal a greater gap between a door and the floor compared to an equally sized prior art sealing means.

[0021] The holder further has mounting means 10 for snap or sliding fastening of a cover profile (not shown), giving the brush seal a good appearance as well as protecting the holder. When using several holder segments, one cover profile is to cover the whole strip brush and extending along the width of the door.

[0022] The holder is preferably injection moulded and made of a polymeric material. When mounting the sealing means according to the invention the strip brush and the cover profile are cut to the length corresponding to the width of the door. In case of using one holder instead of several holder segments this is cut to the same length as well. The holder or the holder segments are then mounted on the door, by means of for example a double-stick tape or screws. Thereafter the strip brush is inserted into the holding means and the cover profile is fastened on the holder or the holder segments. Finally end pieces 12 are attached at each side of the sealing means. The sealing means according to the invention thus allows for easy mounting and also easy adaption to the door width without impairing the appearance of the seal.

Claims

1. Sealing means (1), intended to be mounted on a first object movable in relation to a second object for sealing a gap between the objects, comprising

a holder (2) integrally formed with holding means (3) for holding a sealing strip (4),

characterized in that the holder (2) is integrally formed with spring means (5) for allowing the sealing strip (4), held by the holding means (3), to be moved, against the action of the spring means, in a direction away from the second object.

2. Sealing means according to claim 1, in which the holder (2) comprises at least two holder segments (2'), wherein each holder segment is a plate (6) provided with said holding means (3) and said spring means (5), wherein the total length of the holder segments (2') is less than the length of the sealing strip (4).
3. Sealing means according to claim 2, in which the holding means (3) of each holder segment (2') comprises at least one lug (7), forming a pocket for receiving the sealing strip (4).
4. Sealing means according to claim 3, in which the lug (7) is provided with a bead (8) for suspending the sealing strip (4) inserted in the pocket.
5. Sealing means according to claim 3, in which the spring means (5) of each holder segment (2') comprises at least one arm (5), extending essentially parallel to the plane of the plate (6) for pressing against the sealing strip (4), inserted in the pocket, at one side of the lug (7).
6. Sealing means according to claim 5, in which the arm (5) is curved with its free end pointing away from the sealing strip (4).
7. Sealing means according to one of claims 2-6, in which the plate (6) has a bead (9) for suspending the sealing strip (4).
8. Sealing means according to one of claims 2-7, in which the holder comprises three holder segments (2'), the total length of which corresponds to approximately 60% of the sealing strip length. [föredragen utföringsform]
9. Sealing means according to one of claims 1-8, in which the sealing strip is a strip brush (4).
10. Sealing means according to one of claims 1-9, in which the holder (2) is integrally formed with mount-

ing means (10) for mounting a cover strip thereon.

11. Door provided with a sealing means according to any of the preceeding claims.

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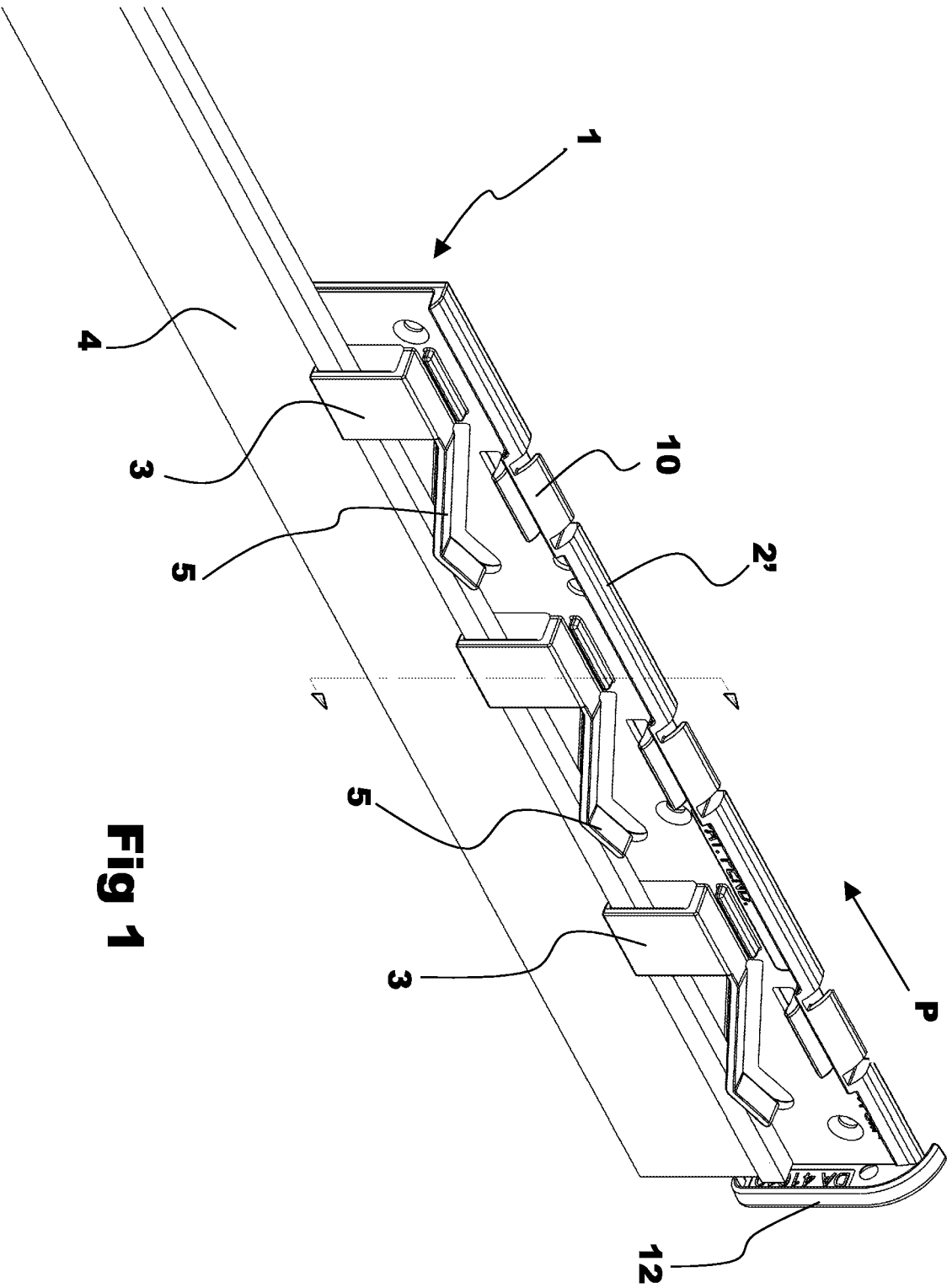


Fig 1

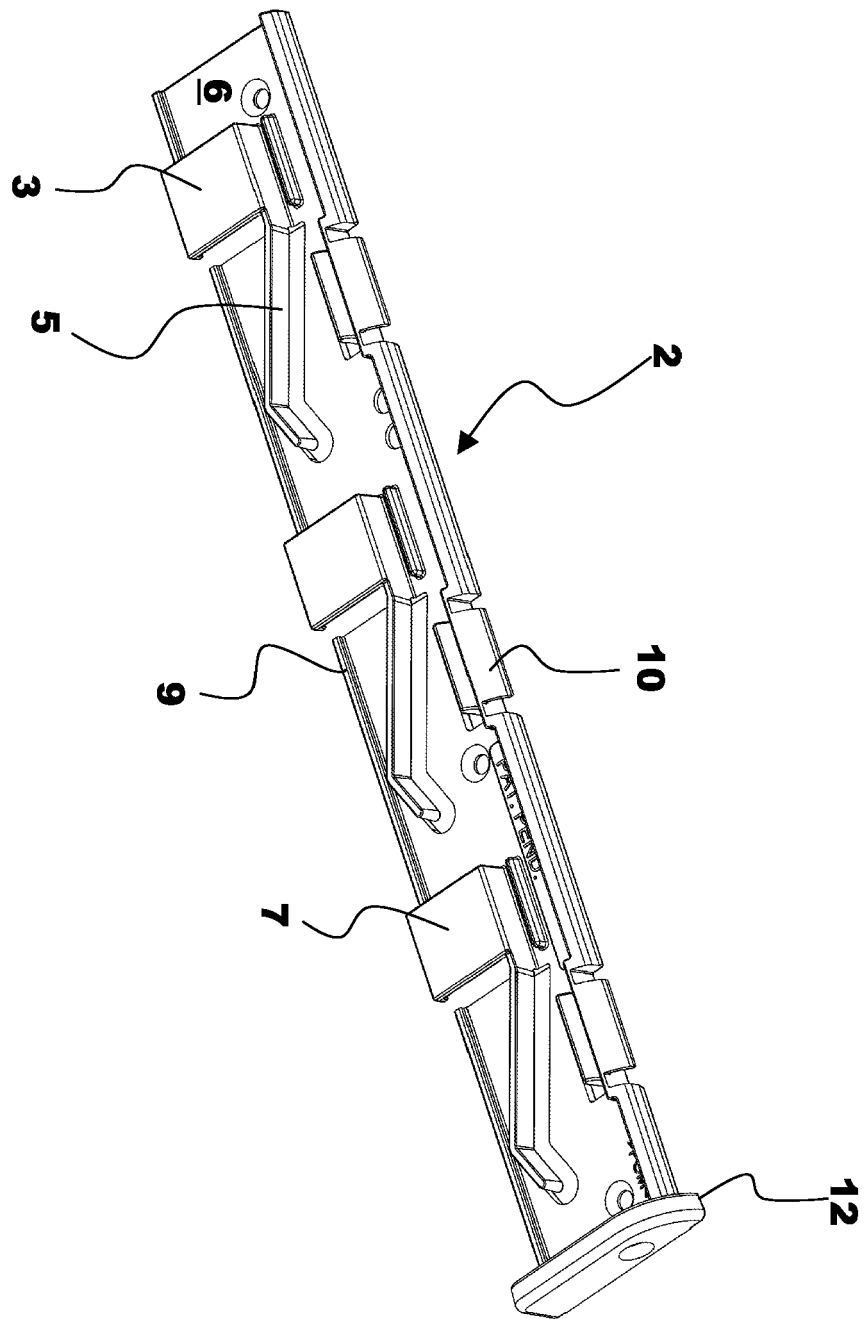


Fig 2

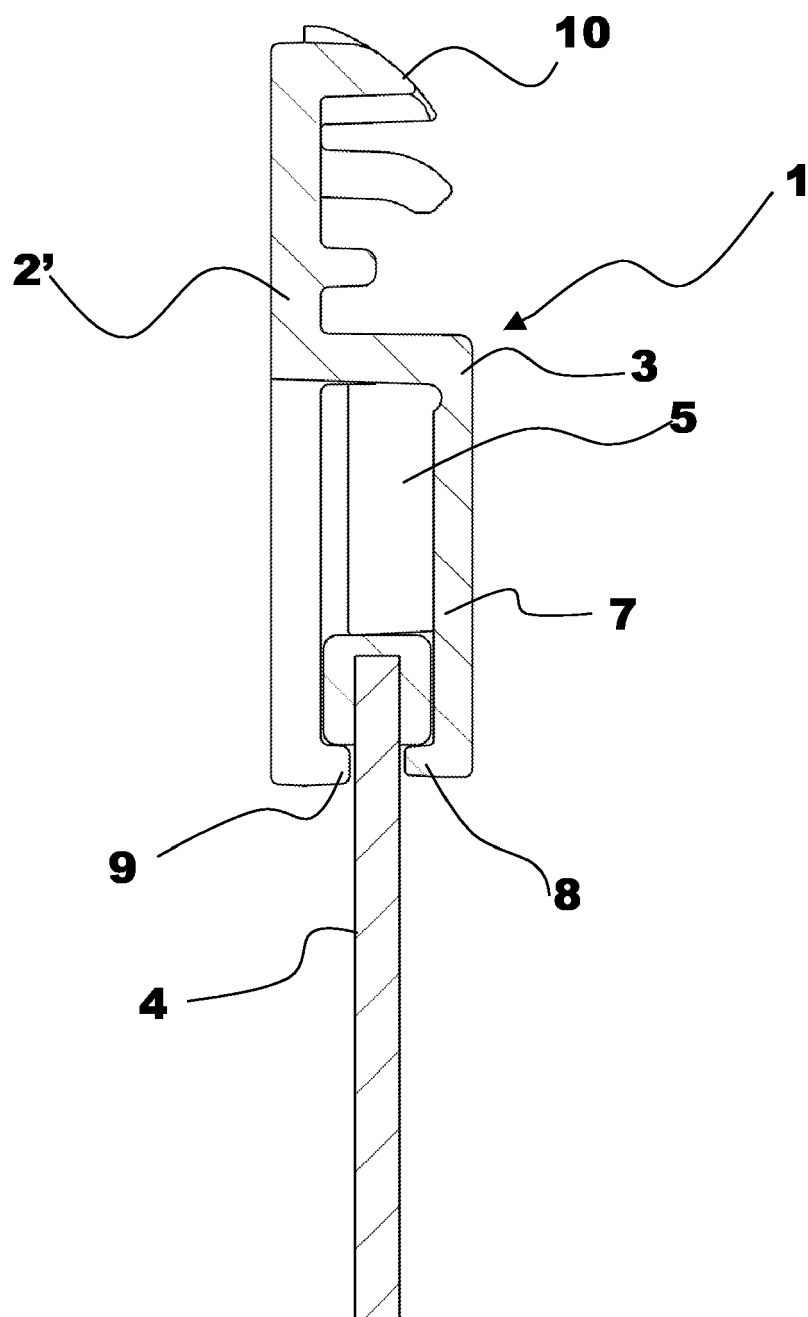


Fig 3



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 05 10 5395

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	US 5 454 192 A (ADLER ET AL) 3 October 1995 (1995-10-03)	1-3,5,6,8,10,11	E06B7/215
Y	* column 2, line 30 - column 5, line 44; figures 1,4,11,12,47,48 *	4,7,9	

D,Y	GB 2 076 281 A (KULLEN & MEZ GMBH & CO) 2 December 1981 (1981-12-02) * figure 1 *	4,7,9	

			TECHNICAL FIELDS SEARCHED (IPC)
			E06B
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 16 November 2005	Examiner Merz, W
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			

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EPO FORM 1503 03.82 (P04C01)

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

EP 05 10 5395

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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16-11-2005

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REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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