



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
02.05.2002 Bulletin 2002/18

(51) Int Cl.7: **E06B 1/70**

(21) Application number: **01204158.8**

(22) Date of filing: **30.10.2001**

(84) Designated Contracting States:
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU
MC NL PT SE
 Designated Extension States:
AL LT LV MK RO SI

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(30) Priority: **30.10.2000 NL 1016501**

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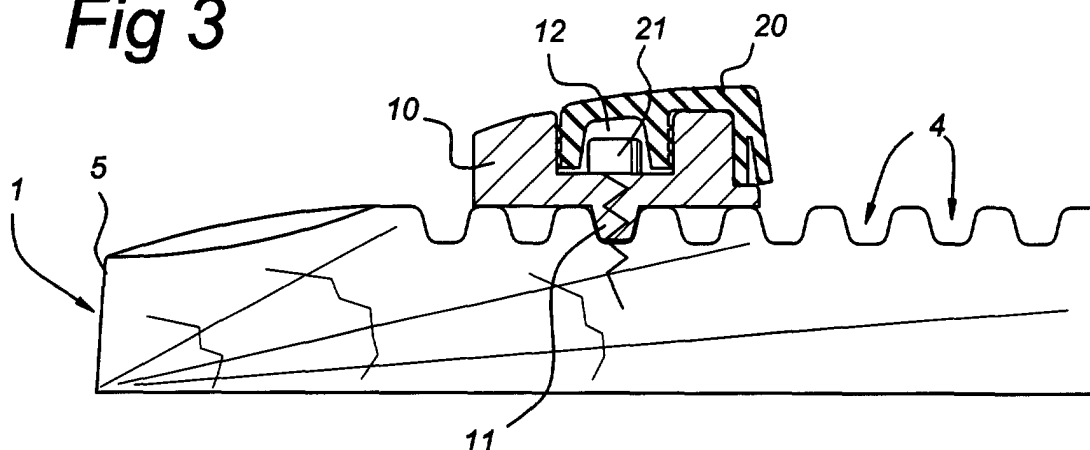
(54) **Sill assembly, in particular suitable as outdoor sill**

(57) Sill assembly, in particular suitable as outside sill, wherein the sill comprises:

- a bottom sill (1), to be fixed to a base of an opening in an internal or external wall,
- a stop sill (10) to be fixed to the bottom sill to abut

- a door or window to be fitted in the opening in the internal or external wall and
- seating blocks (7), to be fixed to the bottom sill, on either side of the stop sill, for connecting to frames or uprights fitted in the opening in the internal or external wall.

Fig 3



Description

[0001] The present invention relates to a sill assembly comprising:

- a bottom sill, to be fixed to a base of an opening in an internal or external wall,
- a stop sill to be fixed to the bottom sill to abut a door or window to be fitted in the opening in the internal or external wall.

[0002] The sill assembly according to the present invention is in particular suitable for functioning as an exterior door sill. Exterior door sills are usually made of a stone-like material.

[0003] An outside sill usually abuts frames or uprights in a door opening or an opening in which a window is fitted. These uprights are, for example, made of wood. To be able to abut correctly, in the opening in an internal or an external wall, with the specific uprights that have been fitted in the opening, each exterior door sill must be made to specific dimensions. A first important dimension of an exterior door sill is the total width of the opening in the external or internal wall. This dimension determines the total length of the sill. Secondly, the cross-section of the uprights or the frames is important. The seating blocks that are used together with the sill must be given the same cross-section as these frames or uprights. Furthermore, it is advantageous if the sill is able to abut on the bottom of the window or the door that has been fixed between the frames or the uprights. This size determines the height of the sill.

[0004] Because of all these different dimensions it is necessary to produce a specific sill for each specific combination of sill length, seating block cross-section and sill height.

[0005] A bottom sill that can be combined with part of a stop sill is disclosed in Netherlands Patent 1 011 675. This bottom sill is provided with a raised portion which will be level with the top of the stop sill. This raised portion extends over the entire longitudinal direction of the bottom sill and seating blocks or end uprights used must be provided with a corresponding recess. Consequently, it is possible to fit the stop sill or seating block in only one position with respect to the bottom sill.

[0006] US Patent 6 125 599 describes a bottom sill to which a stop sill can be screwed in a discrete position.

[0007] US Patent Re 25 590 describes a bottom sill provided with a structure arranged close to the end limits for fitting a seating block thereon.

[0008] The aim of the present invention is to provide a sill assembly of the type mentioned in the preamble with which standard elements can be used as far as possible and as few as possible "specific" components have to be manufactured.

[0009] This aim is realised in the present invention in that the bottom sill is provided at the top with two or more essentially parallel grooves in the longitudinal direction

and in that the stop sill is provided in the longitudinal direction with a protrusion corresponding to the grooves for fixing the position of the stop sill with respect to the bottom sill.

[0010] What is achieved as a result of these measures is that a specific size bottom sill is chosen depending on the opening in the door or the wall. Should this bottom sill be too long, a piece of the bottom sill can be sawn off. Two seating blocks having a cross-section that corresponds to the cross-section of the uprights or frames that have been fitted in the opening in the external or the internal wall are then fitted on either side of this bottom sill. A stop sill is then fitted in the desired position between the seating blocks. As has already been stated above, this stop sill is used for the abutment of the sill with a window or a door that is fitted between the frames or the uprights in the opening in the internal or the external wall.

[0011] The sill assembly according to the present invention is suitable in particular for renovation purposes. If, for example, the sides of the frames or uprights have rotted, it is then possible to saw off these bottom ends and then to make the seating blocks extra long. The extra long seating blocks then take the place of that part of the frames or the uprights that has rotted.

[0012] A further specific application is, for example, in gallery flats. In 1997 the requirement that a sill that forms an obstacle between the outdoor surface level and the indoor surface level may not be higher than 20 mm was incorporated in the Building Regulations in The Netherlands. In the case of numerous flats the difference in height between the surface outside the dwelling and that inside the dwelling was usually much greater. Therefore, many galleries are currently being raised in order to make the outdoor level the same as the level inside. However, in the case of numerous gallery flats a reveal remains between the gallery and the front door of a dwelling. By making use of the sill assembly according to the present invention, the height of the bottom sill can be so chosen that this reveal is filled by the bottom sill.

[0013] According to the invention the bottom sill has two or more essentially parallel grooves in the longitudinal direction in the top thereof.

[0014] Several grooves in the longitudinal direction can be made in the bottom sill. These grooves extend, for example, essentially parallel with respect to one another. The grooves in the bottom sill have a number of different functions. Firstly, the grooves in the bottom sill can provide for water drainage. It is, for example, possible that condensation occurs on a door or a window and that the condensation runs downwards in the form of water droplets. When this moisture reaches the sill it can flow away in the grooves in the bottom sill.

[0015] A second function fulfilled by the grooves in the bottom sill is the fact that the grooves provide an anti-slip effect. If a user places his or her foot on the grooves, the risk of slipping or sliding will be less because of the presence of the grooves.

[0016] In addition to these two effects, the grooves can, moreover, be used for positioning the stop sill on the bottom sill. As will be discussed below, it is advantageous to provide the stop sill with a number of protrusions on the underside thereof. With the aid of these protrusions a stop sill can be snapped into place on the bottom sill. What is achieved as a result of this measure is, firstly, that a stop sill is always fitted in line with a bottom sill. Furthermore, the possibility of a stop sill being able to slide off a bottom sill is prevented by the protrusions.

[0017] In this context it is advantageous that the size of the protrusions or each protrusion essentially corresponds to the size of the grooves in the longitudinal direction in the bottom sill.

[0018] According to the invention it is furthermore advantageous that the protrusion or each protrusion on the stop sill is made essentially elongated, the longitudinal direction of the protrusion extending in the longitudinal direction of the stop sill.

[0019] As has been stated, protrusions are used in order to ensure that the stop sill is always fitted in line with the bottom sill. If the protrusions have a size that is essentially equal to the inside diameter of the grooves, these protrusions will engage in the grooves with a certain retaining force. By, moreover, giving the protrusions a certain length, the alignment of the stop sill with respect to the bottom sill can be further ensured.

[0020] According to the invention it is furthermore possible that the bottom sill has one or more grooves in the transverse direction in order to allow the grooves to join up along one of the sides of the bottom sill. With this arrangement it is possible that the grooves are made curved or with a bend in the transverse direction.

[0021] With the transverse groove or transverse grooves the grooves in the longitudinal direction can be linked to an extremity of the bottom sill. This extremity will be the extremity that is located on the outside of a dwelling or building. Water that has accumulated in the longitudinal grooves is able to flow away via the transverse grooves. In order to prevent these transverse grooves having an adverse effect and feeding water towards the inside as a result of the effect of wind, it is advantageous to make these transverse grooves somewhat curved.

[0022] According to the invention it is furthermore possible that the grooves are made in a central region that is contained between two end regions that are essentially of flat construction.

[0023] As has been stated, a standard sill can be used in combination with various openings in doors or walls by sawing to size a bottom sill that is too long. It is advantageous if the seating blocks that are used in combination with a bottom sill can be fixed to two essentially flat end regions or side sections. With this arrangement the grooves for draining off water and the like are arranged in the central region. The central region can be so constructed that as a whole it slopes downwards somewhat towards the outside of a door or window. The

water drainage function is further intensified by this means.

[0024] According to the invention it is furthermore possible that one or more openings are made in the stop sill in order to allow a fixing element, such as a screw, to pass through. With this arrangement it is advantageous for the stop sill to be provided with a groove on the top, the openings for allowing a fixing element to pass through emerging into this groove.

[0025] The stop sill will firstly be fitted in the grooves of a bottom sill with the aid of the protrusions. In order to be certain that the stop sill does not detach from the bottom sill, the stop sill can be locked in place on the bottom sill with fixing elements. These fixing elements are, for example, screws that engage in predrilled holes in the bottom sill. It is advantageous to allow the upper end of the various passages in the stop sill to be coincident in a central groove in the stop sill. This groove can then be closed off again at the top by means of a cover element.

[0026] It is advantageous that the cover element is made of a resilient element, such as rubber. In this context it is advantageous that the cover element comprises a first part having two essentially parallel end edges for engaging on the inside walls of the groove in the stop sill and a second part for enveloping one of the end edges of the stop sill.

[0027] With this arrangement it is advantageous that the second part of the cover element comprises an end essentially in the shape of a crocodile jaw.

[0028] As has already been indicated above, the stop sill is used to allow the sill assembly to abut a window or a door. As a result of the presence of the cover element, made of resilient material, it is possible that the cover element is compressed to some extent when a door is closed. This results in a very intimate closure between the door and the stop sill.

[0029] The present invention will be further explained with reference to the appended figures, in which:

Figure 1 shows a plan view of a bottom sill that has not yet been sawn to size, with two seating blocks thereon.

Figure 2 shows a side view of a bottom sill that has not yet been sawn to size, with two seating blocks and a stop sill thereon.

Figure 3 shows a cross-section of the bottom sill according to III - III in Figure 1, where a stop sill has been fixed to the bottom sill.

Figure 4 shows a cross-section of the cover element of the stop sill (before use).

Figure 5 shows a cross-section of the cover element of the stop sill in use.

[0030] A plan view of a bottom sill 1 according to the present invention is shown in Figure 1. The bottom sill 1 can be manufactured in a standard length. The bottom sill 1 has a central region 2 that is contained on either side by an end region 3. The central region 2 has grooves 4 that extend in the longitudinal direction of the bottom sill 1. The grooves 4 are linked with one another and with an extremity 5 by means of one or more grooves 6, which extend in the transverse direction of the bottom sill 1. The grooves 4 are intended, inter alia, for collecting water, for example. The grooves 6 can be used for draining the water that has collected in the grooves 4 from the sill 1.

[0031] The grooves 4 are also used for positioning and holding in place a stop sill 10 (see Figure 2) on the bottom sill. Protrusions that are able to engage in the grooves 4 of the sill are fixed to the underside of the stop sill. That is to say, the stop sill is always in line with the bottom sill 1 beneath it.

[0032] The end regions of the bottom sill 1 are intended for positioning seating blocks 7 thereon. The stop sill is then placed between these seating blocks 7. In the case of Figure 1, the bottom sill 1 will be used for a door that opens inwards. Side 5 faces outwards. Because, in the fitted position, the end limit of the bottom sill is essentially flat and the underside of the seating blocks is also essentially flat, these seating blocks can be placed in any desired position, both in the longitudinal direction and in the transverse direction with respect to the end regions of the bottom sill, and optimum adjustment to the prevailing circumstances can thus be provided. This is important in particular in the case of renovation work. By this means the bottom sill can also be adjusted with respect to any fixed installation dimensions of the construction.

[0033] The use of the sill will be further explained with reference to Figure 2.

[0034] Figure 2 shows a side view of the bottom sill 1 according to Figure 1 with a stop sill 10 and two seating blocks 7 thereon. The protrusions 11 on the underside of the sill 10 engage in grooves 4 that have been made in the central region 2 of the bottom sill 1, so that the stop sill 10 is always in line with the bottom sill 1 beneath it.

[0035] The sill assembly 1, 10, 7 is suitable in particular as an exterior door sill.

[0036] One of the advantages of the sill assembly 1, 10, 7 according to the present invention is that the various components can be manufactured in standard sizes. If, for example, it is desired to provide an exterior door with a sill, the size of the gap in which the sill has to be fitted is first measured. Depending on this size, a standard size of the sill 1 is taken. If the length dimension of this sill does not completely correspond to the size of the gap in a wall, the bottom sill 1 is sawn to size by shortening the end regions 3. Two seating blocks are then selected for the bottom sill 1. The cross-section of these seating blocks will depend on the uprights or

frames that are present, or will be fitted, in the opening in the external or internal wall. The height of the seating blocks 7 will also depend on the uprights that are placed in the gap, or are present in the gap. If, for example, these uprights or frames have rotted at the bottom and have to be shortened, the seating block will be made extra high.

[0037] When the bottom sill 1 and the seating blocks 7 have been selected, a stop sill that has been sawn to size is then fitted between the seating blocks 7.

[0038] As a result of the modular construction of the sill according to the present invention, a limited number of standard components of standard sizes can be provided, which are then cut to size depending on the work being carried out.

[0039] The case where two seating blocks 7 have been fitted on the bottom sill 1 and the stop sill 10 has been fitted between the seating blocks 7 is shown in Figure 2. It can be seen in Figure 2 that a piece has to be sawn off from the end of the sill 1 on either side of the seating blocks 7. This portion is cross-hatched and indicated by reference numeral 3.

[0040] Figure 3 shows a cross-section of the central region 2 of the bottom sill 1, with a stop sill 10 fitted on the bottom sill 1. It can be seen in Figure 3 that the protrusions 11 on the underside of the stop sill 10 engage in one of the grooves 4 that has been made in the bottom sill 1. That is to say, the stop sill 10 is always in line with the bottom sill 1. The stop sill 10 is fixed not only with the protrusions 11 but also with one or more fixing elements 21 distributed over the length of the stop sill 10. The fixing element used can be, for example, a bolt or a screw. These bolts or screws can engage in holes that have been tapped or drilled beforehand in the bottom sill 1.

[0041] The fixing elements 21 are located in a groove 12 that has been hollowed out in the top of the stop sill 10. The groove 12 is covered at the top with the aid of a cover element 20. The specific shape and the function of this cover element 20 is indicated with reference to Figures 4 and 5.

[0042] Figure 4 shows a cross-section of the cover element 20 that is used to cover the groove 12 in the stop sill 10.

[0043] The cover element 20 has two legs 22, 23, which together form a U-shaped section. These legs 22, 23 are placed against the walls of the groove 12. To provide better engagement of the legs 22, 23, these are provided with protrusions 24 on either side. The legs 22, 23 are connected by a flat section 25. The flat section 25 is also provided with a jaw-shaped protrusion 26 at the end that is shown on the right in the figure. This jaw-shaped protrusion 26 is formed by two jaws 27, 28, between which there is a space 29. In Figure 4 the cover element 20 is shown in the condition prior to use.

[0044] In Figure 5 the element 20 is shown in the condition in which it has been fitted on the stop sill 10. The protrusions 24 on the legs 22, 23 are curved, so that the

legs 22, 23 press against the walls of the groove 12 with a certain resilient force. Moreover, the jaw-shaped element 26 has been displaced somewhat with respect to the rest position that is shown in Figure 4. This means that resilient force for clamping the element 20 on the top of the sill 10 is also built up between the leg 23 and the jaw 27. It can also be seen that the jaws 27 and 28 are spread to some extent and the space 29 is open. As is already inferred by the name, the stop sill 10 is used to come into contact with the bottom of a door. If this door is pushed against the sill, the jaw 28 will be moved towards the jaw 27. As a result these jaws become prestressed with respect to one another. As a result of this prestress the jaw 28 will itself press against the door (not shown). Good closure of the opening between the sill and the door is obtained by this means.

[0045] In the above description of the figures reference has always been made to an opening in a wall or a gap in which frames or uprights are present, for hanging a door between them. It is clear that the sill can also advantageously be used with other closures for openings in doors or walls, such as windows and the like. Moreover, it is possible to couple various bottom sills together in the case of larger openings. One application is use with double French windows.

[0046] The modular construction can be used both with inward-opening and outward-opening doors or windows.

[0047] On reading the above description, those skilled in the art will immediately conceive further variants of the invention, which fall within the scope of the appended claims.

Claims

1. Sill assembly comprising:

- a bottom sill, to be fixed to a base of an opening in an internal or external wall,
- a stop sill to be fixed to the bottom sill to abut a door or window to be fitted in the opening in the internal or external wall, **characterised in that** the bottom sill (1) is provided at the top with two or more essentially parallel grooves (4) in the longitudinal direction and **in that** the stop sill (10) is provided in the longitudinal direction with a protrusion (11) corresponding to the grooves (4) for fixing the position of the stop sill with respect to the bottom sill.

2. Sill assembly according to Claim 1, **characterised in that** the bottom sill has two or more essentially parallel grooves (6) in the transverse direction, for allowing the grooves to join up along one of the sides of the bottom sill.

3. Sill assembly according to Claim 2, **characterised**

in that the grooves (6) are made curved or with a bend in the transverse direction.

4. Sill assembly according to one of the preceding claims, **characterised in that** the grooves (6) are made in a central region that is contained between two end regions that are essentially of flat construction.

5. Sill assembly according to one of the preceding claims, **characterised in that** the size of the protrusions (11) or each protrusion essentially corresponds to the size of the grooves in the longitudinal direction in the bottom sill.

6. Sill assembly according to one of the preceding claims, **characterised in that** the protrusion (11) or each protrusion on the stop sill is made essentially elongated, the longitudinal direction of the protrusion extending in the longitudinal direction of the stop sill.

7. Sill assembly according to one of the preceding claims, **characterised in that** one or more openings are made in the stop sill in order to allow a fixing element, such as a screw, to pass through.

8. Sill assembly according to Claim 7, **characterised in that** the stop sill is provided with a groove on the top, the openings for allowing a fixing element to pass through emerging into this groove.

9. Sill assembly according to Claim 8, **characterised in that** the sill assembly has a cover element for covering the groove in the stop sill.

10. Sill assembly according to Claim 9, **characterised in that** the cover element is made of a resilient element, such as rubber.

11. Sill assembly according to Claim 10, **characterised in that** the cover element comprises a first part having two essentially parallel end edges for engaging on the inside walls of the groove in the stop sill and a second part for enveloping one of the end edges of the stop sill.

12. Sill assembly according to Claim 11, **characterised in that** the second part of the cover element comprises an end essentially in the shape of a crocodile jaw.

13. Sill assembly according to one of the preceding claims, wherein the end limits in the longitudinal direction of the bottom sill are constructed to accommodate seating blocks and wherein seating blocks are fitted on said end limits.

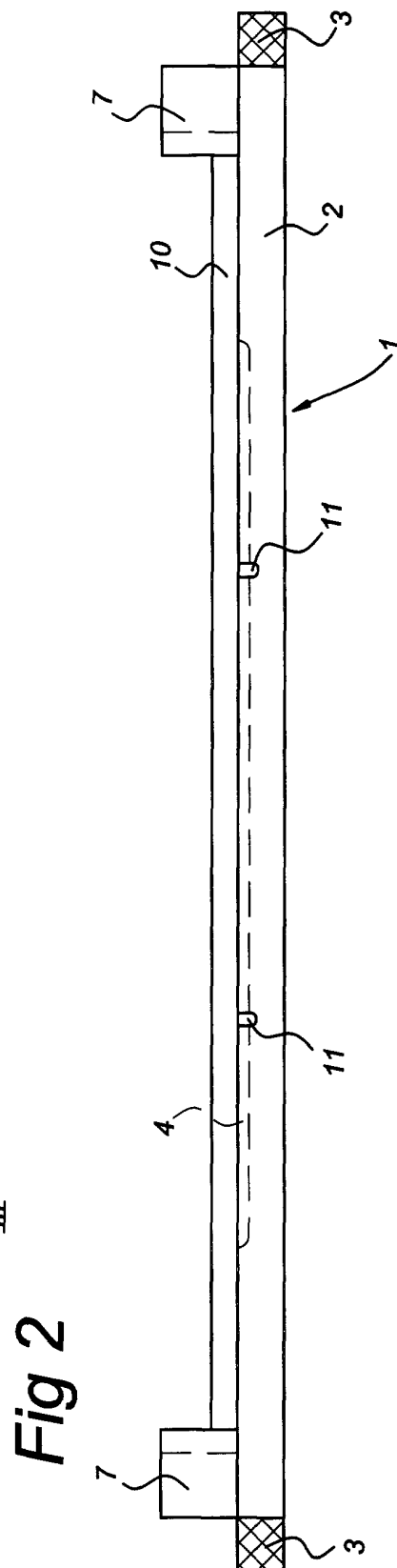
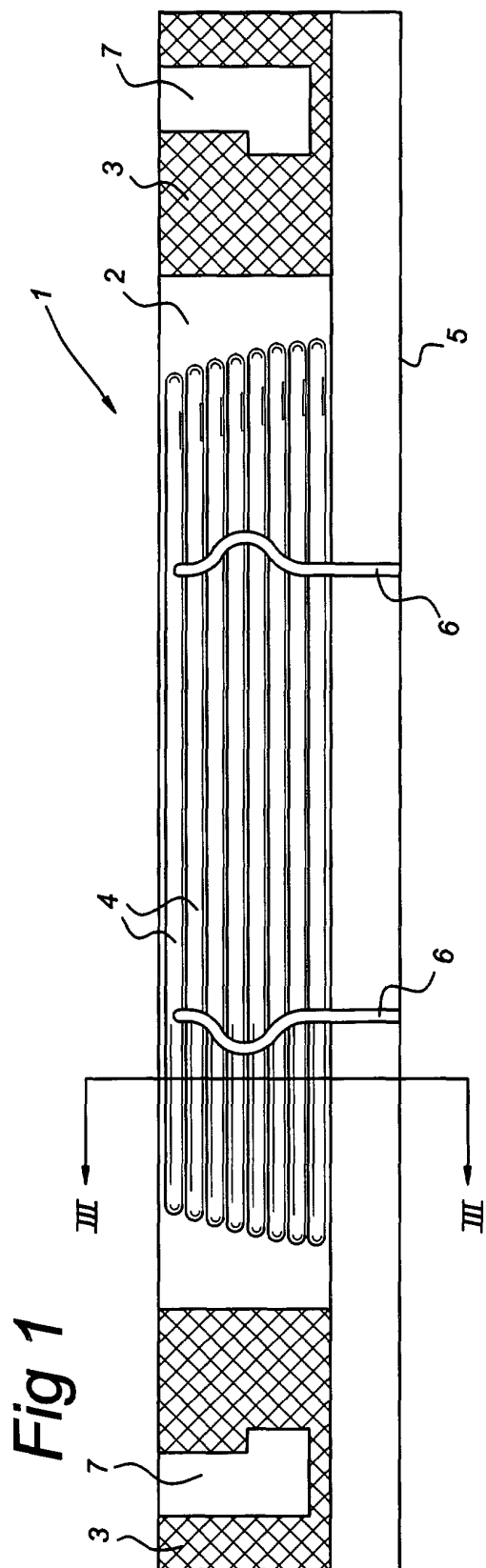


Fig 3

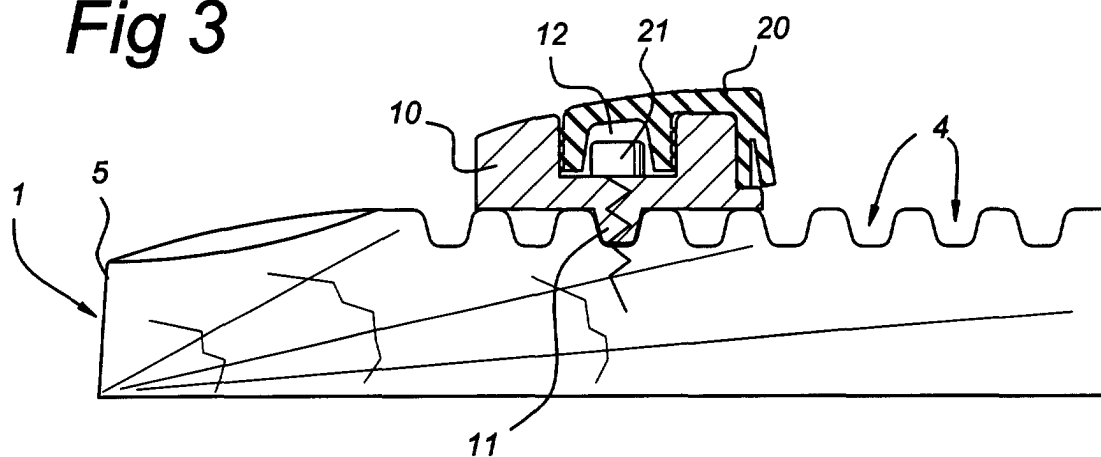


Fig 4

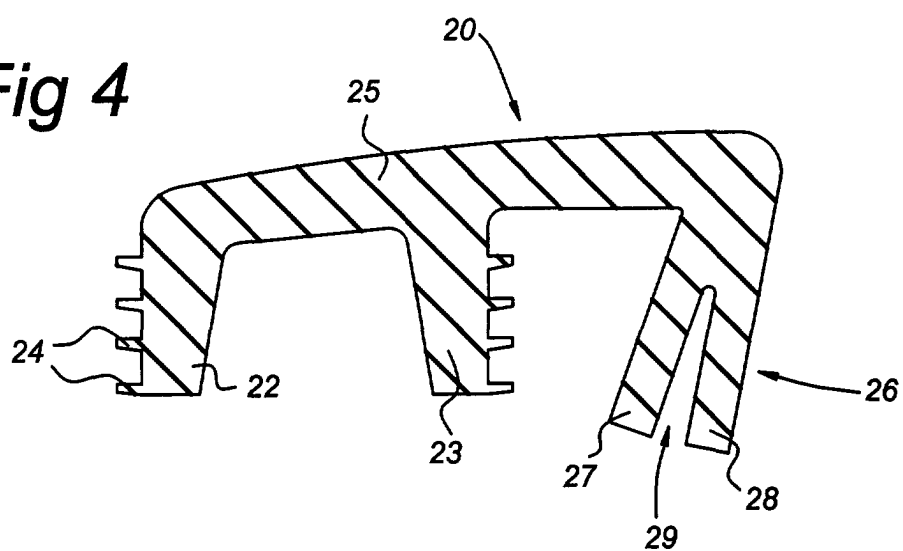
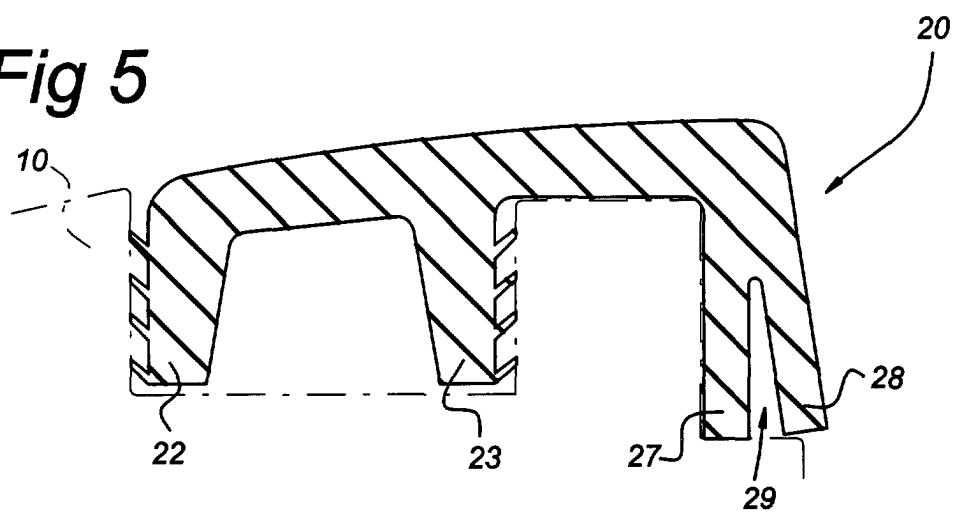


Fig 5





European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 01 20 4158

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
D,A	US RE25590 E (MILLER, WALLACE W.) 9 June 1964 (1964-06-09) * column 2, line 10 - column 3, line 40 * * figures *	1,7,13	E06B1/70
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The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
THE HAGUE		27 February 2002	Verdonck, B
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EPO FORM 1503 03/92 (P04001)

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

EP 01 20 4158

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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27-02-2002

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