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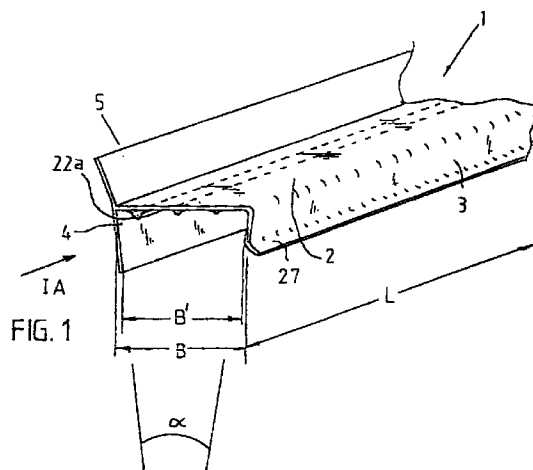
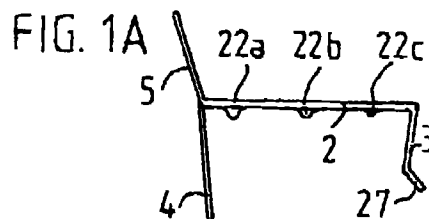
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(54) Water receiving strip for cavity walls

(57) Device for stopping or receiving and discharging moist from or away from a cavity wall with a cavity wall leave, comprising a receiving and discharge strip (1) with a front and a rear longitudinal edge (3,4), in which the rear longitudinal edge (4) is destined to lie at the inside of the outer leave and is provided with an upright strip (5) for receiving moist and guiding it to the discharge strip, in which both longitudinal edges are provided with integrally formed pending members.



EP 0 933 485 A1

Description

[0001] The invention relates to a means for stopping or the receiving and guiding of water or moist from or away from a cavity wall.

[0002] The outer leave of a cavity wall can as a result of rain water falling down on it particularly through the joints become saturated and wet on the inner surface. In this way downward transport of water takes place through and along the outer leave. This water has to be guided out before it contacts the construction parts that are sensitive to moist, such as in particular wooden casings, or an inner wall forming a continuation of the outer leave and situated beneath the outer leave, in case of the presence of an extension.

[0003] There are many products available with which this water can be received and guided out. The Triform Cavity System can be mentioned, among others subject of the European patent application 0.410.692 and the British patent applications 2.286.211, 2.297.100 and 2.199.817. A main part of this system is a flat strip of PP which is provided with longitudinal corrugations for anchoring in the mortar and at the rear side merges into an upright strip, which is bent to the rear to form a receiving surface for receiving water going down passed the inner surface of the outer leave. At the upper edge of the upright strip connection can take place to a pending strip, which is attached to the inner leave, which may or may not engage over an insulation layer on the inner leave. Such a strip may also be accommodated in the inner leave. The discharge of the water collected on the flat strip takes place at the location of the transverse, upright end partitions, where the water is guided out through open vertical joints. The front edge is provided with a horizontal slit, in which a counter flashing can be attached, as in pigeon-holes in the connection of the outer leave to a inclining roof extending transverse to it. The front edge can be provided with a pending edge strip.

[0004] Other so-called "damp proof course components" or "cavity trays" are known which have the shape of a tray, comprising a flat strip, which at the front edge is provided with a pending band, onto which a counter flashing or the like can be attached and which shields the area at the lower side of the strip against upward impact of rain. Accompanying "trays" are described in the British patent applications 2.291.661 and 2.292.956. In the first document a water discharging strip is shown, which is provided with turned longitudinal edges, which can engage about protruding edges on a lintel. In the second document a water discharging tray provided with an end wall is shown, which at the rear edge is provided with an inclined upright, built from two parts that are adjustable with regard to each other, of which the one at the rear is provided with a horizontal edge portion, an edge strip to be accommodated in the inner leave.

[0005] Another "cavity tray" is known which comprises

a flat strip, which at the front edge is provided with a slit for accommodating a counter flashing or the like, and at the rear edge merges into a V-shaped longitudinal gutter, which itself at the rear side merges into an upright, which is provided with transverse ribs. These discharge strips are destined to be used in pigeon-holes in chimneys, in which the V-shaped gutters which are situated higher discharge to V-shaped gutters which are situated lower and the lowest strip is flat and provided with an end partition for discharging water to the outside.

[0006] The "cavity trays" are placed during the building of the cavity wall leave, the outer leave and/or the inner leave, in which first a layer of mortar is applied on top of the already completed part of the cavity wall leave, the tray is placed and after that the bricks or blocks are secured on the tray by means of mortar.

[0007] The correct placing of the tray has to be done accurately. With aforementioned trays with pending front edge an aid is available for placing, but unwanted sliding in outward direction or gliding away cannot prevented with it. Such slidings may occur after placing of the tray, in particular during the placing of the bricks on the tray.

[0008] An objective of the invention is to improve on this.

[0009] To that end the invention provides a device for stopping or receiving and discharging moist from or away from a cavity wall with a cavity wall leave, comprising a receiving and discharging strip with a front and a rear longitudinal edge, in which the rear longitudinal edge is destined to lie at the inside of the cavity wall leave and is provided with an upright strip for receiving moist and guiding it to the discharge strip, in which both longitudinal edges are provided with integrally formed pending members. In this way the discharge strip has a placing aid on both the front and the rear, which aids moreover serve as limit for the movement of the discharge strip transverse to the cavity wall leave. Because no layer of mortar is needed for securing the device and it can be placed directly on the (then) top layer of bricks, -in case of accommodation in a masonry wall- the height of the mortar layer when the bricks are secured on top of the device may be relatively thick, as a result of which the water received can flow very well in outward direction. The placing of the device according to the invention moreover needs fewer operations, material and time. Moreover, the location of the device during the hardening of the mortar will hardly be influenced by the bricks placed above it.

[0010] Preferably the pending members of the front longitudinal edge and of the rear longitudinal edge are spaced at a distance which is only a little larger than the thickness of the cavity wall leave. In this way the discharge strip can easily be placed on the bricks, but the freedom of movement is small, and measurement deviations of the bricks will not impede the placing of the device. In case of an outer leave with a nominal thickness of 10 cm, the width of the brick may for instance

vary between 9.5 - 10.5 cm and the distance between the pending members at the connection to the discharge strip will approximately be 11 cm.

[0011] Preferably the pending members converge to each other, to increase the ease of placing. It is advantageous here, when the pending members are flexible with respect to each other. Preferably this flexibility is elastic, as a result of which the discharge strip can be clamped onto the bricks and can thus be placed in a secure way without any aid whatsoever. The location of the discharge strip remains fixed in this way, without -in case of a masonry outer leave- hardening joints in the outer leave being loaded on shear forces.

[0012] The pending members of the front longitudinal edge preferably form a longitudinal strip for discharging moist.

[0013] Preferably the pending members of the rear longitudinal edge form a longitudinal strip. The rear longitudinal strip and the upright strip may be in each other's extension and be formed as a unity with each other and the discharge strip. The rear longitudinal strip and the upright strip and possibly the discharge strip too may form rigid angles with each other. Such a profile is simple to form in a form stable manner by means of extrusion.

[0014] Preferably the discharge strips are formed in order to be transversely connected to each other or to a further discharge means. To that end from one aspect the front longitudinal strip is provided with means for connection to a further moist discharging means, such as the upright strip of a similar device or a flashing. From another aspect the upright strip is provided with means for connection to a further moist discharge means, such as the front longitudinal strip of a similar device or a flashing.

[0015] In case of a flashing alternatively it can already be integrally formed or be connected to the longitudinal strip by means of a "living hinge", in which case the flashing will be relatively rigid.

[0016] A further object of the invention is to promote outward discharge of water received to a large extent without additional parts being necessary. To that end the receiving and discharge strip at least near the rear edge at the lower side is provided with one or more pending elevations. These elevations preferably have such height, that the discharge strip keeps fitting inside the vertical space of a joint (usually 8-11 mm), in case the device is accommodated in a masonry outer leave. The elevations can have the shape of one longitudinal rib or a number of separate protrusions. To prevent the forming a bowl several elevations may be transversely arranged at a distance from each other, and decrease in height in outward direction. Alternatively the discharge strip may have a decreasing thickness in outward direction. The water received will flow to the outside over the discharge strip and through the mortar.

[0017] From another aspect the invention provides a device for stopping or receiving and discharging moist

from or away from a cavity wall with a masonry cavity wall leave, comprising a receiving and discharging strip with a front and a rear longitudinal edge, in which the rear longitudinal edge is destined to lie at the inside of the outer leave and is provided with an upright strip for receiving moist and guiding it to the discharge strip, in which the discharge strip is turned on both longitudinal edges in order to define an inverse U-shape in that way.

[0018] The invention further relates to an assembly of a masonry outer leave of a cavity wall and one or more of the devices according to any one of the preceding claims, in which the receiving and discharge strip is placed on a row of bricks and the pending members clampingly engage the sides of the bricks.

[0019] Below the invention will be elucidated on the basis of a number of exemplary embodiments and exemplary uses shown in the accompanying figures, in which:

Figure 1 is a example of a water receiving and discharge strip according to the invention;

Figure 1A is a cross-section of the profile of figure 1;

Figure 2 is a cross-section through a cavity wall with adjoining flat roof, in which an exemplary embodiment of the water receiving and discharge strip according to the invention has been accommodated in the cavity wall.

Figure 2A is a detail of the front edge of the water receiving and discharge strip which is accommodated in the outer leave of the cavity wall of figure 2;

Figure 2B is a detail of the upper rear edge of the water receiving and discharge strip which is accommodated in the outer leave of the cavity wall of figure 2; and

Figure 3 is a cross-section through an eave of a house with an inclining roof, in which the water receiving and discharge strip of figure 1 is accommodated.

[0020] In figure 1 a water receiving and discharge strip 1 according to the invention is shown. The strip 1 comprises a flat discharge or lying strip 2 and a pending front edge strip 3 formed as a unity with it, a pending rear edge strip 4 formed as a unity with the strip 2 and an upright rear strip 5 formed as a unity with it.

[0021] The front edge strip 3 and the rear edge strip 4 are at an angle in relation to the lying strip 2 of nearly 90°, but converge somewhat to each other at an angle α , of for instance 5°. The upright rear strip 5 is somewhat more inclined than the rear edge strip 4, for instance at an angle of 75° in relation to the lying strip 2. The dimension B of the space between the upper por-

tions of the front edge strip 3 and the rear edge strip 4 in this example, in which the bricks have a width range of $10\text{ cm} \pm 0.5\text{ cm}$, is 11 cm. The horizontal distance B' between the lower edges of the front edge strip 3 and the rear edge strip 4 is 9 cm. The length L in this example is more than 1 m but could be a lot more when needed. The profile 1 can be cut to length.

[0022] Preferably the profile 1 is made by means of extrusion, for instance from PVC, and has an in itself stable shape. Because a strip 4, 5 protrudes from the lying strip 2, at the rear edge both at the upper side and the lower side, no special moulding measures have to be taken in order to prevent deformation after forming, in particular angular rotation in the plane of transverse cross-section, in the rear edge area.

[0023] During forming, the lower side of the lying strip can be provided with one or more longitudinal ribs 22a, 22b and 22c formed at the lower side of the lying strip 2, which ribs decrease in height towards the front edge, to realise an oblique situation of the surface of the lying strip 2. The height of the rib 22a plus the thickness of the lying strip 2 is approximately 3 mm, which is much less than the usual joint height of 8-11 mm.

[0024] At its lower edge the front edge strip can be provided with a longitudinal lip 27 which is turned to the outside, with which lip flowing water can be guided away from the wall located underneath.

[0025] In figure 2 a cavity wall 10 of a building, in this case a house, is shown, which cavity wall 10 is built from a outer leave 6 of masonry and an inner leave 9 of gas concrete blocks glued onto each other, in which a cavity 11 is formed between the inner leave 9 and the outer leave 6, in which cavity 11 an insulation layer 8 is arranged against the inner leave 9 and in front of which an air cavity 7 is left open. Against the outer leave 6 an extension 100 is placed, with a flat roof 14 and an edge upright 16 which are both covered with a layer of bitumen 15.

[0026] In case of precipitation and a wind which blows in direction A against the housefront, the outer leave 6 will become saturated with moist and water transport will take place both on the rear of the outer leave in the direction B and in the outer leave 6 in the direction C. Before it reaches the part of the outer leave 6 which forms the inner wall at the location of the extension 100, this water has to be discharged to the outside. The profile 1 of figure 1 or a similar profile can be of special use here. In figure 2 the profile 1' can be seen, which with the front edge strip 3' and the rear edge strip 4' is placed on and about the row of bricks 6'. The row of bricks 6' in this example has a width of 10 cm, which is somewhat larger than the mutual distance B' of the lower edges of the front edge strip 3' and the rear edge strip 4'. Because the lying strip 2' can be elastically bent about the longitudinal axis of the profile 1 the strips 3' and 4' at placing can be bent somewhat away from each other in order to be able to place the profile 1 on the row of bricks 6'. After letting go the strips 3 and 4 spring back

to each other, so that afterwards the profile 1 is kept clamped onto the row of bricks without aids. Here it will not be necessary to apply a layer of mortar on the row of bricks 6' first. Afterwards a layer of mortar 30 is applied and on it the next layer of bricks 6'', and so on.

[0027] The orientation of the lying strip 2 is influenced here by the presence of the elevations reaching downwards, such as longitudinal ribs 22a, 22b and 22c, in order to have the lying strip 2 drain to the outside, through the layer of mortar 30, in the direction E.

[0028] As a result of the angle deviating from 90° which the upright rear strip 5' defines with the plane of the lying strip 2, a slit 23 opening upwards is formed between the upright rear strip 5' and the rear side of the row of bricks 6''. In the slit 23 water streaming down in the direction B is received so that it can stream to the outside in the direction E after that. The upright rear strip 5', which protrudes obliquely from the outer leave, could possibly also function to receive falling mortar, so that mortar bridges are prevented at locations situated lower in the cavity.

[0029] The profile 1' deviates a little from the profile 1 shown in figure 1, because by way of illustration a lip strip 13 of the same material is arranged on the broad edge of the front edge strip 3', which lip strip is connected to said front edge strip by means of thermoplastic elastomer "living hinge" 12. Hinge 12 and the lip strip 13 can be co-extruded with profile 1. The spring resistance of the hinge 12 can be adjusted to the desired rotatability of the lip strip 13. Alternatively a flexible flashing can be welded or attached to the front edge strip 3', or be held in a receiving slit for it. Such a receiving slit can also be used in the connecting of profiles arranged one after the other, as shown in figure 2B. At the lower edge of the front edge strip 3' of the profile 1' placed in the cavity 11 an additional edge 24 is integrally formed, which with the front edge strip 3', defines slit 25 opening downwards. In this slit 25 the upper edge of the upright strip 5 of a subsequent profile 1' placed in the cavity 11, can be accommodated, so that after attaching the profile 1' against the inner leave 9 with a suitable means, for instance adhering or nailing, a receiving and discharge is formed also for water which flows downwards at a location more to the inside of the cavity 11, for instance along the surface of the insulation 8 in the direction F or through the insulation layer 8 in the direction G. This water can then stream down in the direction H to subsequently fall downwards in the slit 23 to be received and discharged by the profile 1'. Alternatively the upright rear strip 5 can be provided with a strip connected to it through a "living hinge", in a manner which can be compared to figure 2A. Alternatively the upright rear strip can be formed with an slit opening upwards for accommodating the lower edge of a flashing. When the front edge strip 3 is formed with a lip 27, in the case of figure 2 the layer of bitumen 15 can be slid under it. The front edge strip then performs an extra clamping function.

[0030] For preventing a longitudinal transport of received water which is too large, the lying strip can be provided with little transverse grooves in which water can be collected in order to give it a longer opportunity to flow off in transverse direction E. The little transverse grooves can be provided every other 1-1.5 brick measure.

[0031] The profiles 1, 1' and 1" can also be arranged at other locations in cavity walls. Arranging them in an outer leave can be thought of here, at various levels and along the entire outer leave, possibly off-set, in order to discharge the water in the cavity structure as quickly as possible.

[0032] Furthermore using them on a lintel can be thought of, in order to prevent that water present in the cavity structure can damage a casing situated under it.

[0033] The profile which can be placed easily, can be placed everywhere where water receiving and discharge is wanted. The profile can even be placed in a cavity wall later - after removal of a layer of bricks - when a local moist problem occurs.

[0034] Furthermore use can be thought of in the connection of an inclined roof to a cavity wall, in which case just like in the situation shown in figure 2, the cavity wall merges from outer wall into a wall situated below the roof. The profile 1 or comparable profile can be used here in the placing of so-called pigeon-holes, in which profiles 1 and the like are placed stepwise in longitudinal direction of the outer leave draining towards each other and downwards, in which the bottom profile drains to the outside. For instance the connection of a chimney to an inclined roof can also be thought of here, in order to discharge the water flowing through the chimney wall or therealong at the inside, to the outside.

[0035] Another use is shown in figure 3. The eave structure 17 shown here, that is to say the connection of the roof 18 provided with the gutter 20 and the cavity wall 10, possibly at the location of storey floor 19, often has a space D at the upper end of the cavity wall 10, which space is connection with the open air. With an unfavourable wind and precipitation, precipitation can be blown inside in the direction A and thus penetrate under the roof plates 20, in the cavity 7 and in the insulation layer 8. With the help of for instance the profile 1 the water blown in can be stopped. The rear upright 5 intercepts the penetrating water, after which it can flow to the outside in the direction I over the lying strip 2. Moist that could possibly go over the strip 5 can be received by a flashing 26 attached to the upright rear strip 5, which flashing is secured at the other side to the insulation layer 8. The profile 1 can be provided here with ribs 22a, b and c (figure 1) or something similar, to have the surface of the lying strip 2 drain to the outside. When placing the profile 1 again no mortar is necessary. The profile 1 can simply be clamped onto the upper layer 6''' of bricks.

Claims

1. Device for stopping or receiving and discharging moist from or away from a cavity wall with a cavity wall leave, comprising a receiving and discharge strip with a front and a rear longitudinal edge, in which the rear longitudinal edge is destined to lie at the inside of the cavity leave and is provided with an upright strip for receiving moist and guiding it to the discharge strip, in which both longitudinal edges are provided with integrally formed pending members.
2. Device according to claim 1, in which the pending members of the front longitudinal edge and of the rear longitudinal edge are spaced from each other at a distance which is only a little larger than the thickness of the outer leave.
3. Device according to claim 2, in which the width of the discharge strip is larger than 10.5 cm, preferably approximately 11 cm.
4. Device according to claim 2 or 3, in which the pending members converge to each other.
5. Device according to claim 2, 3 or 4, in which the pending members of the front longitudinal edge and of the rear longitudinal edge can flexibly be bent away from each other, preferably elastically.
6. Device according to any one of the claims 1-5, in which the pending members of the front longitudinal edge form a longitudinal strip for discharging moist.
7. Device according to claim 6, in which on the lower edge of the front longitudinal strip a discharge lip which is bent away to the outside is integrally formed.
8. Device according to any one of the preceding claims, in which the pending members of the rear longitudinal edge form a longitudinal strip.
9. Device according to claim 8, in which the upright strip is at an angle to the lying strip which angle is larger than 90°, for instance 95°.
10. Device according to claim 9, in which the rear longitudinal strip, the upright strip and the discharge strip from rigid angles with each other and preferably are formed as a unity with the lying strip.
11. Device according to any one of the preceding claims, made from plastic by means of extrusion.
12. Device according to claim 6, in which the front longitudinal strip is provided with means for connection

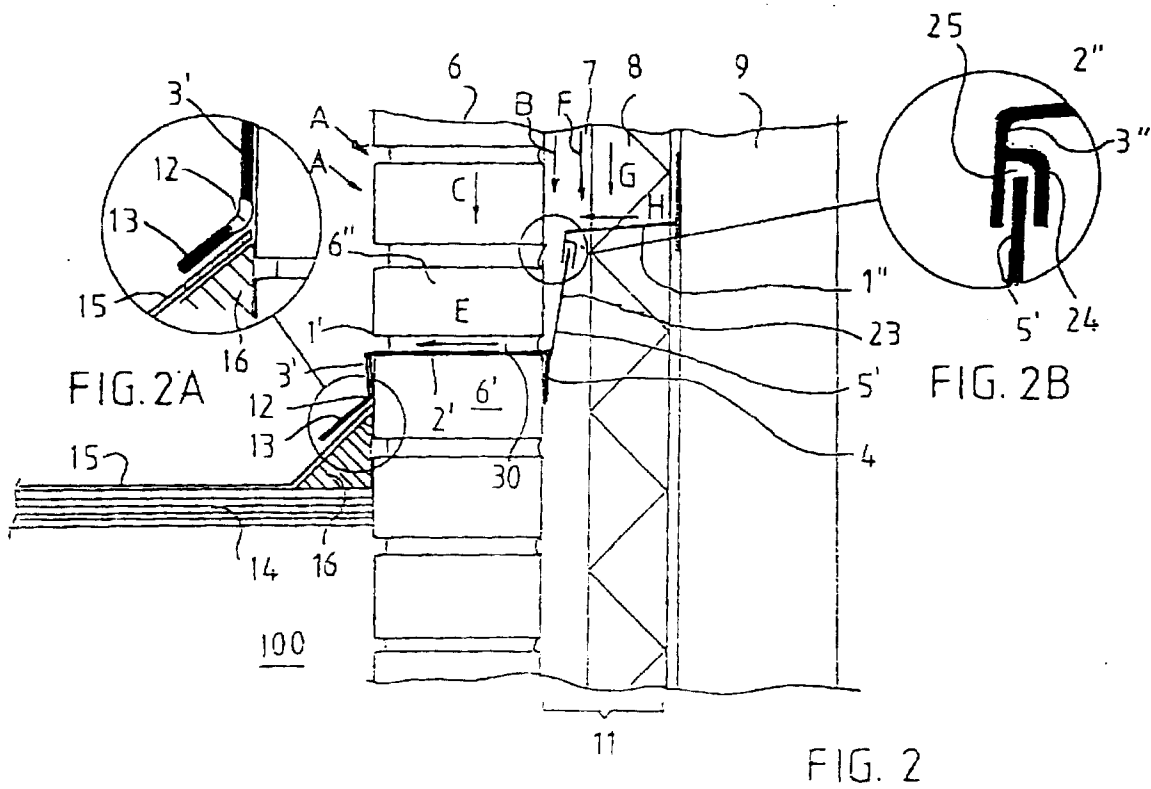
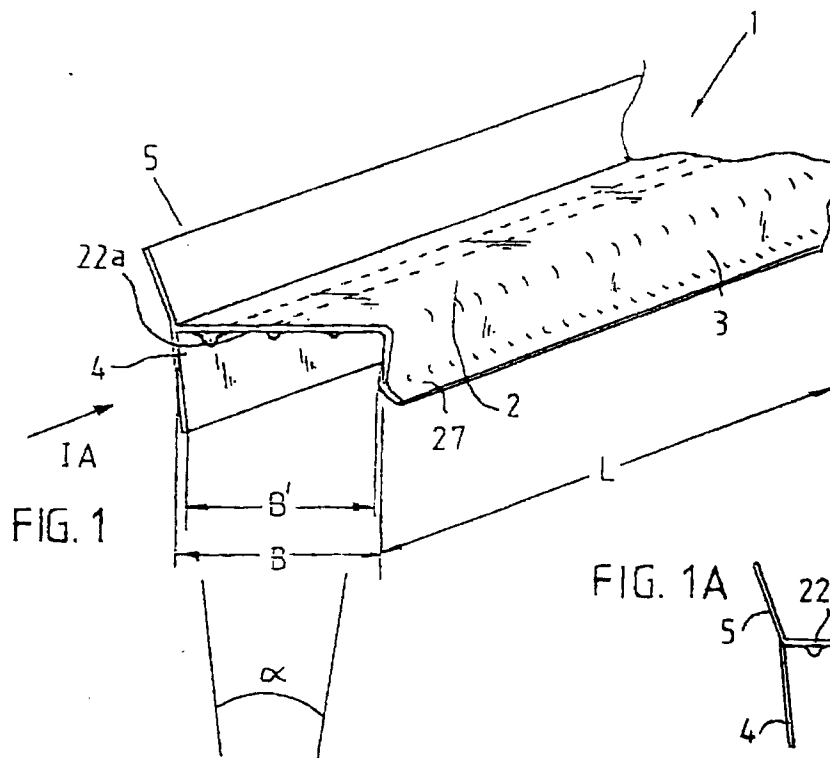
with a further moist discharging means, such as a flashing or the upright strip of a similar device.

13. Device according to claim 6 or 8, in which the longitudinal strip is connected to a further strip by means of a, preferably co-extruded, "living hinge". 5
14. Device according to claim 9, in which the upright rear strip is provided with means for connection with a further moist discharge means, such as a flashing. 10
15. Device according to any one of the preceding claims, in which at the lower side the receiving and discharge strip is locally provided with an elevation or series of elevations which extend in longitudinal direction. 15
16. Device according to claim 15, in which a number of elevations are transversely arranged at a distance from each other and decrease in height towards the front edge. 20
17. Device for stopping or receiving and discharging moist from or away from a cavity wall with a cavity wall leave, comprising a receiving and discharging strip with a front and a rear longitudinal edge, in which the rear longitudinal edge is destined to lie at the inside of the leave of a cavity wall and is provided with an upright strip for receiving moist and guiding it to the discharge strip, in which the discharge strip is turned on both longitudinal edges in order to define an inverse U-shape in that way. 25 30
18. Assembly of a masonry outer leave of a cavity wall and one or more of the devices according to any one of the preceding claims, in which the receiving and discharge strip is placed on a row of bricks and the pending members clampingly engage the sides of the bricks and the upright strip is situated on the inside of the outer leave. 35 40

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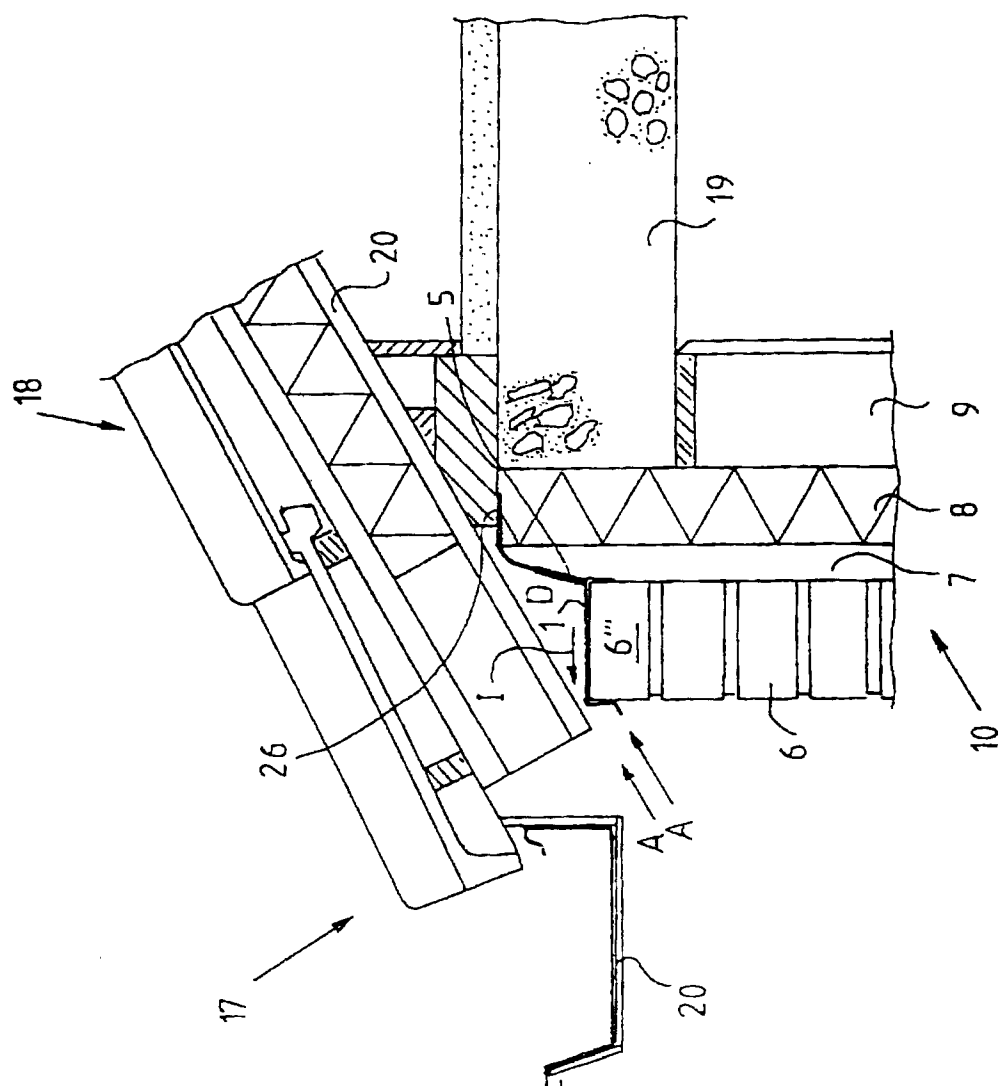


FIG. 3



European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 99 20 0233

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X	GB 2 155 076 A (REED INT PLC) 18 September 1985	1-8, 17, 18	E04B1/64 E04C3/02
A	* the whole document *	4, 9-11	
D, A	EP 0 410 692 A (KNOX COLIN J M) 30 January 1991	1, 15-18	
	* the whole document *		
A	EP 0 666 381 A (KNOX COLIN J M) 9 August 1995	1, 17, 18	
	* the whole document *		
A	DE 30 12 658 A (HELSBERG HORST; HILD WALTER) 8 October 1981	1	
	* the whole document *		
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			E04B E04C E04D
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 8 April 1999	Examiner Vrugt, S
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EPO FORM 1503 03/82 (P04C01)

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

EP 99 20 0233

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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08-04-1999

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
GB 2155076	A	18-09-1985	NONE	
EP 0410692	A	30-01-1991	GB 2234762 A	13-02-1991
			AT 104009 T	15-04-1994
			DE 69007893 D	11-05-1994
			DE 69007893 T	03-11-1994
EP 0666381	A	09-08-1995	GB 2286211 A, B	09-08-1995
DE 3012658	A	08-10-1981	NONE	