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(54) **A cavity tray**

(57) A cavity tray (10) comprising a base panel (12), a first wall (20) extending from a first side (14) of the base panel (12) and a second wall (22) extending from a second side (16) of the base panel (12), the second side being adjacent the first side. An overlap panel (24)

is provided between the first and second walls (20, 22), at least a portion of the overlap panel (24) being folded behind one or other of said first and second walls (20, 22). The base panel (12), the first and second walls (20, 22) and the overlap panel (24) are formed from a substantially continuous sheet of material.

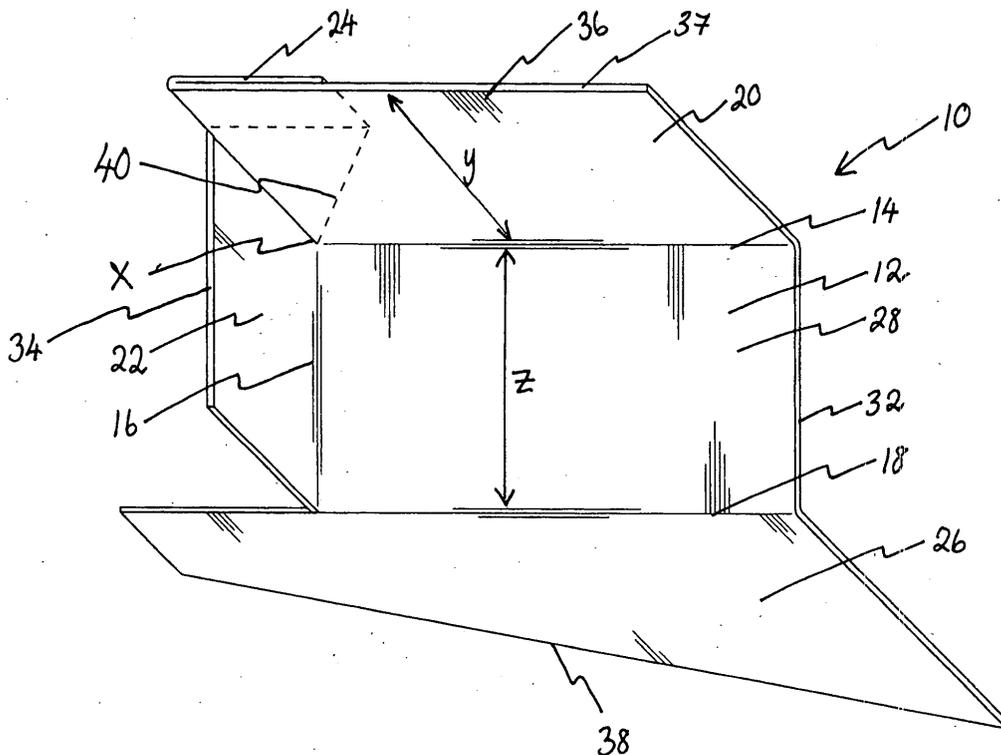


FIGURE 2

Description

[0001] The present invention relates to cavity trays. The invention relates particularly to a blank for forming a cavity tray or similar item.

[0002] A typical cavity wall consists of an inner wall and an outer wall separated by a cavity. Most of the moisture in a cavity accumulates on the inner face of the outer wall. It is known to incorporate a cavity tray into the outer wall to collect moisture from the inner wall, and from within the cavity generally, and to direct the moisture externally of the outer wall where it flows towards a drain or the like. Cavity trays are commonly formed from lead and are made in a number of stages, typically comprising one or more welding steps. However, welded joints in the cavity tray are prone to leaking over time.

[0003] It is also known to attach a lead flashing to the front edge portion of the cavity tray, such that the lead flashing extends externally of the cavity wall in order to deflect the moisture collected by the cavity tray away from the cavity wall. The lead flashing is usually attached by stapling the lead flashing to the tray and providing a layer of bitumen therebetween. However, the staples are known to rust and corrode over time and this can result in leaking between the cavity tray and the attached lead flashing.

[0004] It would be desirable therefore to provide a cavity tray, or similar item, which does not suffer from the disadvantages outlined above.

[0005] It will be understood that the term 'cavity tray' as used herein is intended to embrace any similar membrane or device.

[0006] According to one aspect of the invention, there is provided cavity tray comprising a base panel; a first wall extending from a first side of the base panel; and a second wall extending from a second side of the base panel, the second side being adjacent the first side, wherein an overlap panel is provided between the first and second walls, at least a portion of the overlap panel being folded behind one or other of said first and second walls and wherein the base panel, the first and second walls and the overlap panel are formed from a substantially continuous sheet of material.

[0007] Preferably, the sheet of material is foldable between an unfolded state, in which it is substantially planar, and a folded state, in which it forms the cavity tray.

[0008] In the preferred embodiment, the sheet comprises flexible, non-resilient material which is capable of holding the shape into which it is folded.

[0009] Other preferred features are recited in the dependent claims.

[0010] A second aspect of the invention provides a blank for forming the cavity tray of the first aspect of the invention.

[0011] A third aspect of the invention provides a method of forming a cavity tray from a blank, the method comprising folding the blank along a first fold line to create a first wall; folding the blank along a third fold line, being

substantially perpendicular to said first fold line, to create a second wall adjacent the first wall, the blank being shaped to provide an overlap panel between the first and second walls and wherein the method further includes folding the overlap panel behind one or other of the first and second walls.

[0012] Further advantageous aspects of the invention will become apparent to those ordinarily skilled in the art upon review of the following description of specific embodiments of the invention and with reference to the accompanying drawings.

[0013] An embodiment of the invention is now described by way of example and with reference to the accompanying drawings, in which:

Figure 1 is a plan view of one embodiment of a blank for forming a cavity tray embodying the invention;

Figure 2 is a perspective view of the cavity tray formed from the blank shown in Figure 1;

Figure 3 is a perspective view of a plurality of cavity trays of Figure 2, in situ, incorporated into the outer wall of a cavity wall;

Figure 4 is a side elevation of the cavity trays of Figure 3, showing a portion of a pitched roof abutting the outer wall;

Figure 5 is a side sectional view of an alternative embodiment of a cavity tray incorporated into a cavity wall;

Figure 6 is a perspective view of the cavity tray of Figure 2 further including a hollow.

[0014] Referring now to the accompanying drawings, there is illustrated a first embodiment of blank 10 embodying one aspect of the invention. The blank 10 may be used to form a cavity tray, waterproof membrane or course, or similar item embodying another aspect of the invention. Figure 1 shows the blank 10 in an unfolded state in which it is generally planar. In the illustrated embodiment, the unfolded blank 10 is trapezium shaped comprising first and second non-parallel ends 36, 38 connected by first and second substantially parallel sides 32, 34 wherein the first end 36 is preferably substantially perpendicular to the sides 32, 34. The acute angle formed between the second end 38 and the first side 32 is denoted as R. It will be seen that the blank 10 is particularly suited for use at the junction of a vertical cavity wall and a pitched roof structure (see Figure 4). Such cavity trays are sometimes referred to as abutment cavity trays. In alternative embodiments, the unfolded blank 10 need not necessarily be trapezium shaped and may, for example, alternatively be substantially rectangular in shape.

[0015] An incision 30 is formed in the blank 10. The

incision 30 runs substantially perpendicular to, and opens onto, the second side 34 of the blank 10. The blank 10 includes a first, a second and a third fold line 14, 18, 16 which may be tangible, for example in the form of a score line or marked line, or notional. The first fold line 14 runs substantially parallel with the first end 36 of the blank 10 substantially from one side 32, 34 to the other side 34, 32 and is located between the first end 36 and the incision 30. The second fold line 18 is substantially parallel with the first fold line 14 and runs between the first side 32 of the blank 10 and the end of the incision 30. The third fold line 16 is substantially perpendicular with the first and second fold lines 14, 18 and runs between the first end 36 of the blank 10 and the end of the incision 30. The fold lines 14, 18, 16, together with the sides and ends of the blank 10 and with the incision 30 define regions as is now described.

[0016] A substantially rectangular base panel 12 is defined on three sides by the first, second and third fold lines 14, 18, 16 respectively and on the fourth side by the side 32 of the blank 10. A substantially rectangular back panel 20 is defined on two sides by the first and third fold lines 14, 16 respectively and on two other sides by the first end 36 and first side 32 of the blank respectively. A front panel 26 is defined on one side by the first fold line 18 and the incision 30, on the opposite side by the end 38 of the blank 10 and on two further sides by the first and second sides 32, 34 of the blank respectively. An overlap panel 24 is defined between the back panel 12 and the side panel 22 and is bounded by the first and third fold lines 14, 16 and by the end 36 and side 34 of the blank 10. A fourth fold line 40 is provided substantially from the point of intersection X of the first and third fold lines 14, 16 and obliquely disposed, preferably at an angle of approximately 45°, with respect to both fold lines 14, 16.

[0017] Hence, the back panel 20 is foldable with respect to the base panel 12 along fold line 14, the side panel 22 is foldable with respect to the base panel 12 along fold line 16 and the front panel 26 is foldable with respect to the base panel along fold line 18. The overlap panel 24 is foldable with respect to the back panel 20 along fold line 16, with respect to the side panel 22 along fold line 14 and on itself along fold line 40.

[0018] In the preferred embodiment, the height Y of the first wall panel 20 is greater in dimension than the height P of a conventional brick 50, as shown by way of example in Figure 3. The depth Z of the base panel 12 is preferably approximately the same as the depth Q of the brick 50, also shown in Figure 3.

[0019] The blank 10 is preferably formed from a moldable, non-resilient material which is substantially impermeable to water and which is capable of retaining any shape into which it is folded. For example, the blank 10 may be formed from metal sheeting, especially lead sheeting, or suitable plastics. Alternatively, the blank 10 may be formed from flexible, impermeable, or waterproof, material and may be caused to retain the folded

state, i.e. to define a cavity tray, by any suitable fixing means. For example, in the embodiment of Figure 2, assuming that the blank, 10 comprises a flexible plastics material, the folded state shown in Figure 2 may be retained by providing one or more studs, adhesive or other fixing means, to hold the folded overlap 24 to the back panel 20 in the position shown.

[0020] The blank 10 is foldable into a folded state in which it forms a cavity tray, as illustrated in Figure 2. To form the cavity tray from the blank 10, the back panel 20 and the side panel 22 are folded along the first and third fold lines 14, 16 respectively, so as to lie generally in respective mutually perpendicular planes which are also perpendicular to the base panel 12. The overlap panel 24 is folded along fold line 40 and is thus amenable to be further folded or wrapped behind (with respect to the base panel 12) the back panel 20 (as shown in Figure 2 in broken outline) or behind the side panel 22 (with respect to the base panel 12). Preferably, the folded overlap panel 24 is folded closely against the rear of the back panel 20 or side panel 22 (as applicable) as illustrated in Figure 2. It will be seen from Figure 2 that, in the folded state, the back panel 20 serves as a first, or back, wall of the tray 10 while the side panel 22 serves as a second, or side, wall. The back wall 20 and side wall 22 extend or project from the obverse face of the base 12 in the same, or similar, general direction, i.e. generally upwards as viewed in Figure 2.

[0021] The incision 30 enables the side panel 22 to be folded independently of the front panel 26. Hence, the front panel 26 is folded along fold line 18 in a direction generally opposite the direction in which back and side panels 20, 22 are folded with respect to the base panel 12. Hence, the front panel extends or projects away from the reverse face of the base panel 12, i.e. generally downwardly as viewed in Figure 2. In the preferred embodiment, the front panel 26, when folded, lies in a plane which is substantially parallel with the plane in which the back plate 20 lies, as illustrated in Figure 2.

[0022] The front panel 26 is preferably substantially trapezium shaped as shown in Figures 1 and 2. Alternatively, the front panel 26 may be substantially triangular. Alternatively still, the front panel 26 may be substantially rectangular (where angle R is approximately 90°).

[0023] The incision 30 is preferably approximately the same dimension as the height P of the brick 50. In an alternative embodiment, the incision 30 may be wider than illustrated in Figure 1 to the extent that it forms a cut-away portion (not illustrated) between the side panel 22 and the front panel 26.

[0024] Hence, in its folded state, the blank 10 forms a cavity tray comprised of a single or continuous sheet of material and therefore comprises no joints or seams that may become susceptible to leakage.

[0025] Referring now to Figures 3 and 5, the cavity tray 10 is shown, in use, incorporated into an outer wall 52 of a cavity wall 60 (not shown in Figure 3). In Figure 3, a plurality of cavity trays 10 are incorporated into a

respective brick layer of the outer wall 52 in a stepped or staggered arrangement such that the front panel 26 of one cavity tray 10 overlaps the front panel 26 of an adjacent cavity tray 10. A plurality of calibrations (not shown) may be provided on at least a portion of an edge 37 of the first end 36 to enable a user to align adjacent cavity trays, as desired.

[0026] Figure 5 shows a sectioned view of the cavity wall 60 comprising the outer wall 52 having an inner face 58, an inner wall 57, a cavity 53 defined therebetween and cavity insulation 55. A second embodiment of the cavity tray 10' is shown incorporated into the outer wall 52, the second embodiment differing from the first embodiment only in respect of the shape of the front panel 26, as is described in more detail hereinafter.

[0027] The following description applies equally to both embodiments of cavity tray 10, 10'. The cavity tray 10, 10' is placed in the outer wall 52 with the back panel 20 adjacent or substantially abutting the inner face 58 of the outer wall 52. The arrangement is such that moisture running down the inner face 58 is able to pass between the inner face 58 and the back plate 20. In an alternative arrangement (not illustrate), the cavity tray may be adapted so that the back panel 20 is obliquely disposed to the inner face 58 (i.e. makes an acute angle with the inner face 58) so as to extend, for example, approximately half way across the cavity 53, or even to touch the inner wall 57 of the cavity wall 60. As most of the moisture (not shown) in the cavity 53 accumulates on the inner face 58, the moisture runs down into the cavity tray 10 and is transported externally of the outer wall 52. To this end one or more channels (not shown) may be formed in the, in use, upper surface of the base panel 12, the or each channel being arranged to direct moisture to the location of the fold line 18 (and hence to the exterior of the outer wall 52).

[0028] Referring now to Figure 4, cavity trays 10 are shown, incorporated into an outer wall 52 adjacent which is an abutting pitched roof 54 including a plurality of roof tiles 56. A conduit (not shown) is advantageously provided below the cavity trays 10 where the pitched roof 54 meets the outer wall 52 to direct collected moisture towards a drain or the like (not shown). The whole length of the abutting pitched roof 54 should be protected from moisture gathering thereon in this way. The angle R of the front panel 26 may be selected in order to suit the pitch of a particular abutting roof.

[0029] In Figure 5, the cavity tray 10' includes a curved tail portion 70 formed integrally with the front panel 26. The curved tail portion 70 eliminates the requirement of an additional conduit, or the like, to be used, as the curved tail portion 70 would itself direct said moisture to a drain or the like.

[0030] Figure 6 shows the cavity tray 10 including an optional hollow, or indentation 15, provided in the base panel 12 at the side 32 and adjacent the back panel 20. The hollow 15 is concave and so forms a convex protuberance in the reverse face (i.e. underside) of the base

panel 12. In use, moisture may gather in the hollow 15. The shape of the hollow 15, and in particular its convex underside, causes the moisture to drip from the hollow 15 downwardly into the tray 10 below (see Figure 3) and prevents the moisture from travelling along the reverse face of the base panel 12 whereupon it may escape from the cavity tray 10 and any neighboring cavity trays.

[0031] A third embodiment (not shown) of the cavity tray comprises a front panel which extends, in use, directly over the roof tiles 56 on the pitched roof 54, preferably being substantially in register with said roof tiles 56. As a result, the front panels, being overlapped and slanted over the roof tiles 56, again obviate the need for a separate conduit or the like.

[0032] A fourth embodiment (not shown) of the cavity tray comprises an integral second side wall panel and associated overlap panel at the side 32 of the blank 10. The second side wall panel and the second overlap panel may have approximately the same shape and dimensions as the side wall panel 22 and the overlap panel 24 previously described herein, and be located substantially opposite to the panels 22, 24. Thus, the second side wall panel may extend from the side 32 between the first and second fold lines 14, 18, and the second overlap panel may extend from between the first fold line 14 and the first end 36 of the blank. In use, the second side wall panel and associated overlap panel may be foldable in a manner similar to that described above in relation to the side panel 22 and overlap panel 24. This fourth embodiment may be used, for example, as a so-called starter tray, which is generally used as the first tray in a series of cavity trays being built into an outer wall 52.

[0033] All of the preferred embodiments include the integral second wall panel 26. Therefore, the one-piece structure of the cavity tray of the present invention eliminates the need for a separate lead flashing and for a joint or seam for attaching same.

[0034] Although the cavity tray formed from the blank 10 of the present invention has been described primarily as an abutment cavity tray, the cavity tray may be adapted as necessary to be used as, for example, a horizontal cavity tray (at the junction between vertical cavity wall's and flat roof structures); a parapet cavity tray; or a lintel cavity tray.

[0035] The invention is not limited to the embodiments described herein which may be modified or varied without departing from the scope of the invention.

Claims

1. A cavity tray (10) comprising a base panel (12); a first wall (20) extending from a first side (14) of the base panel (12); and a second wall (22) extending from a second side (16) of the base panel (12), the second side being adjacent the first side, wherein an overlap panel (24) is provided between the first

and second walls (20, 22), at least a portion of the overlap panel (24) being folded behind one or other of said first and second walls (20, 22), and wherein the base panel (12), the first and second walls (20, 22) and the overlap panel (24) are formed from a substantially continuous sheet of material. 5

2. A cavity tray as claimed in Claim 1, wherein said sheet of material is foldable between an unfolded state, in which it is substantially planar, and a folded state, in which it forms the cavity tray. 10
3. A cavity tray as claimed in Claim 1 or 2, wherein said base panel (12), first wall (20) and second wall (22) each lie in a respective plane, each planes being generally perpendicular to each other plane: 15
4. A cavity tray as claimed in any preceding claim, wherein said sheet of material is shaped to define a front panel (26) at the side of the base panel (12) opposite to the first wall (20), the sheet being further shaped to define a cut-away portion (30) between the second wall (22) and the front panel (26), the front panel (26) extending from the base panel (12) in a direction generally opposite the direction in which the first and second walls (20, 22) extend. 20
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5. A cavity tray as claimed in Claim 2, wherein, in the unfolded state, the base panel (12), the first wall (20), the second wall (22) and the overlap panel (24) individually and collectively are substantially rectangular in shape. 30
6. A cavity tray as claimed in any preceding claim, wherein the obverse face of the base panel (12) is shaped to define a hollow at the side (32) of the base panel (12) opposite to the second wall (22) and adjacent the first wall (20). 35
7. A cavity tray as claimed in any preceding claim, wherein a third wall extends from the side of the base panel (12) opposite to the second wall (22) and a second overlap panel is provided between the third wall and the first wall (20). 40
45
8. A cavity tray as claimed in any preceding claim, wherein the sheet comprises flexible, non-resilient material which is capable of holding the shape into which it is folded. 50
9. A blank for forming a cavity tray as claimed in Claim 1. 55
10. A method of forming a cavity tray from a blank (10), the method comprising folding the blank (10) along a first fold line (14) to create a first wall (20); folding the blank (10) along a third fold line (16), being substantially perpendicular to said first fold line (14), to

create a second wall (22) adjacent the first wall (20), the blank being shaped to provide an overlap panel between the first and second walls and wherein the method further includes folding the overlap panel behind one or other of the first and second walls (20, 22) .

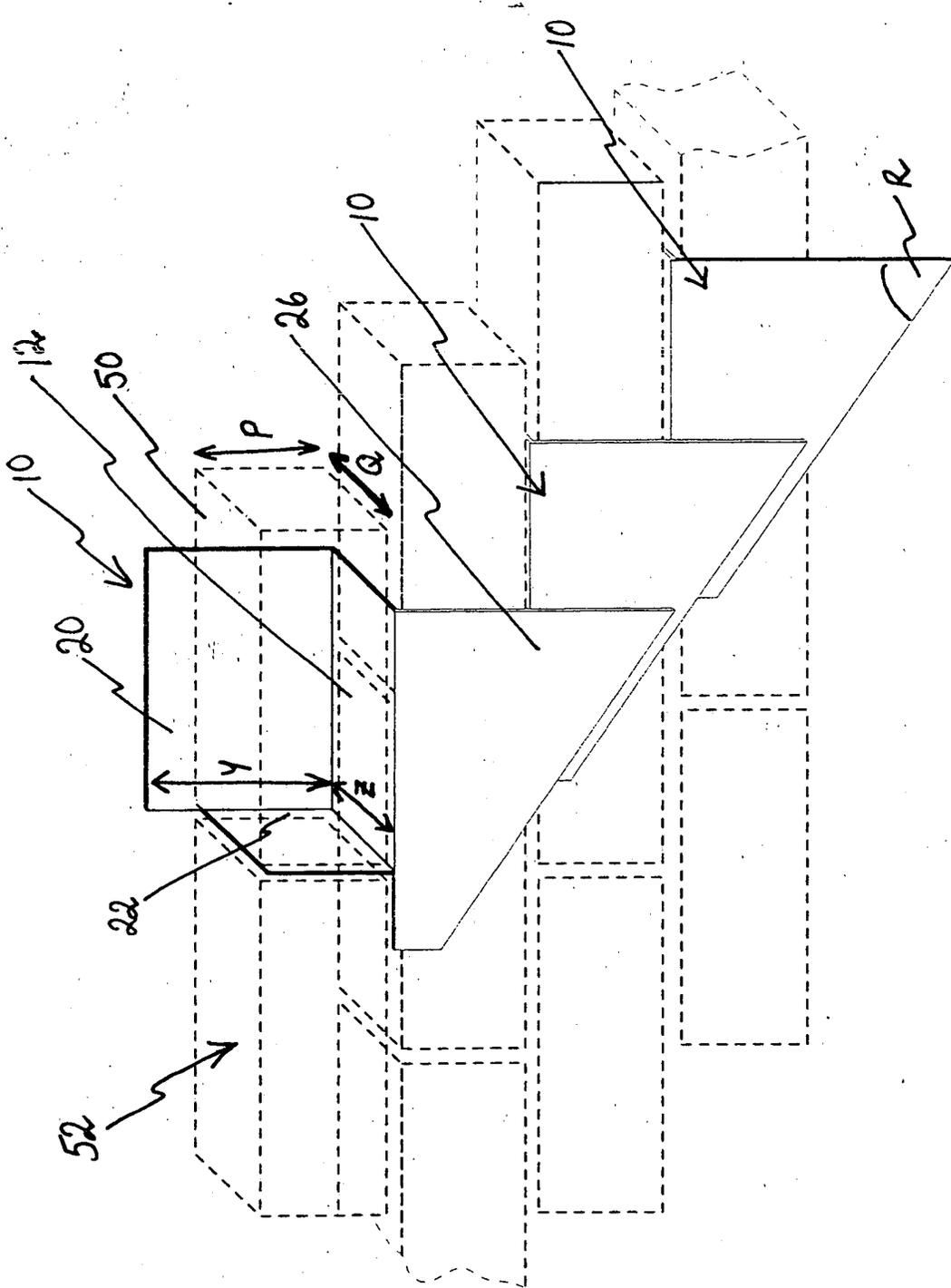


FIGURE 3

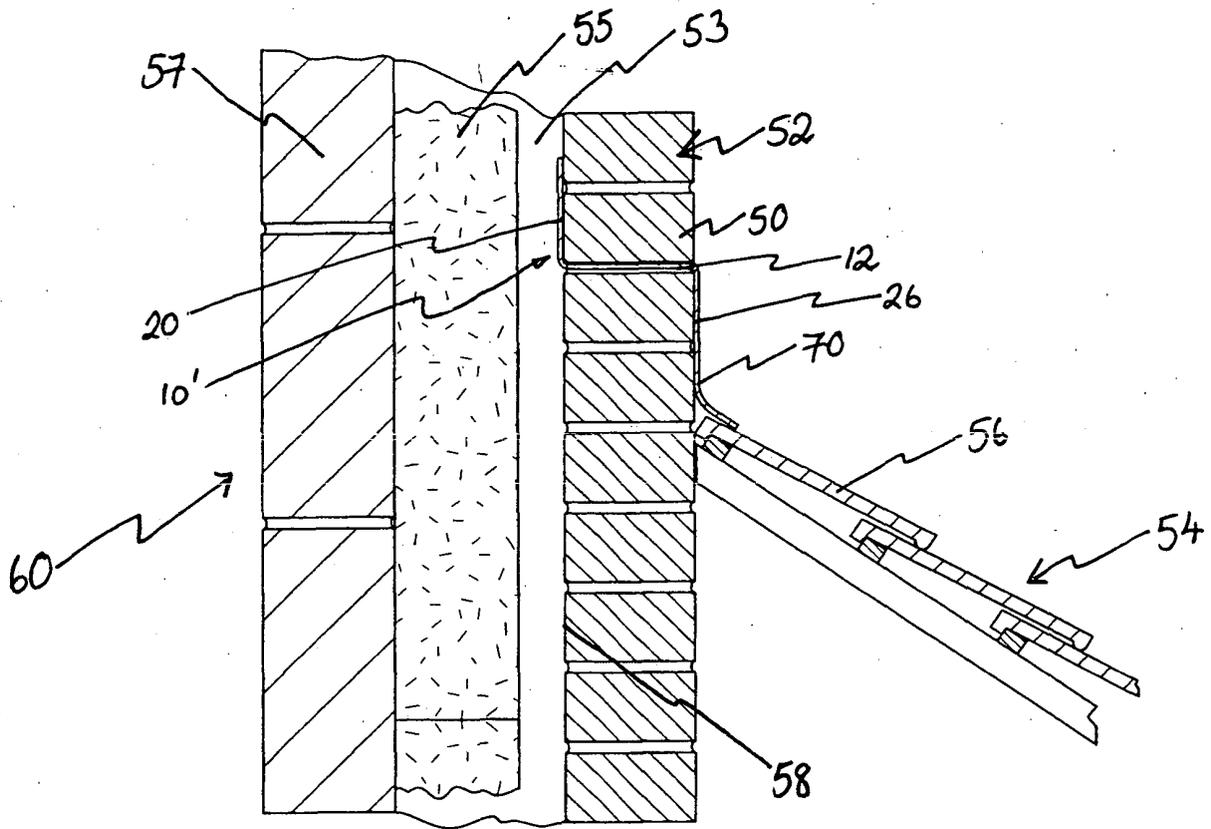


FIGURE 5

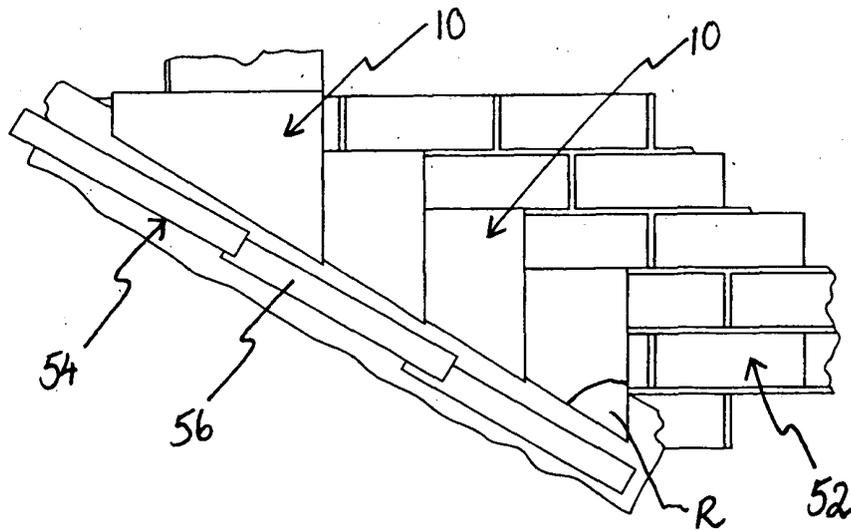


FIGURE 4



European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 03 02 4293

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.7)
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			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
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The present search report has been drawn up for all claims			
Place of search MUNICH		Date of completion of the search 30 January 2004	Examiner Rosborough, J
CATEGORY OF CITED DOCUMENTS		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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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 03 02 4293

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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30-01-2004

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