(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 0 945 560 A2

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
29.09.1999 Bulletin 1999/39

(51) Int. Cl.[6]: **E04D 1/30**, F24F 7/02

(21) Application number: **99105618.5**

(22) Date of filing: **19.03.1999**

(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

(30) Priority: **21.03.1998 GB 9805974**

(71) Applicant:
Lafarge Braas Research & Development Ltd.
Horsham RH12 4QG, West Sussex (GB)

(72) Inventors:
- **Pestell, Claire Louise**
  Broadbridge Heath, West Sussex RH12 3NQ (GB)
- **Payne, Simon Robert**
  Felbridge, West Sussex RH19 2SF (GB)

(74) Representative:
Brüning, Rolf, Dr.rer.nat.
c/o Lafarge Braas GmbH,
Intellectual Property Department,
Rembrücker Strasse 50
63147 Heusenstamm (DE)

(54) Roof ventilator

(57) A covert roof ventilator unit (10) is manufactured as a planar or substantially planar configuration, having a lower wall (13) and an upper wall (52) hingedly connected thereto which upper wall (52), when the unit (10) is in use on a roof is closed upon the lower wall (13) to form a hollow ventilator having an aperture (24) in said lower wall (13) for ventilating a roof space on which the unit (10) is used, said walls when closed together defined an elongate aperture (82) at a toe end portion of the unit (10). Baffle elements (32, 54) provided on the said walls (13, 52) intermesh in use to prevent the ingress of small birds, mammals and large insects to the roof space via the elongate aperture (82) and the aperture (24) in said lower wall (13).

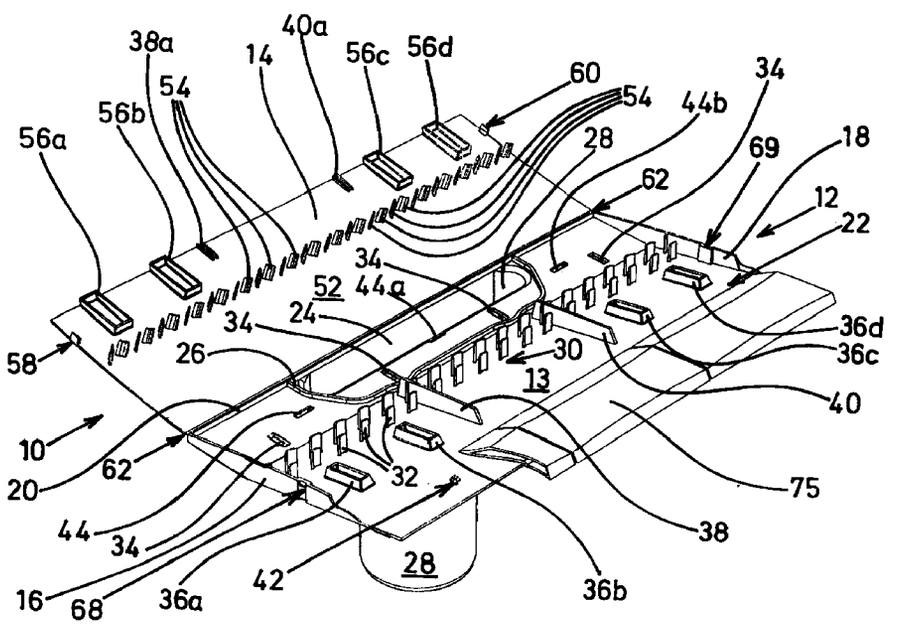

FIG.1

EP 0 945 560 A2

Description

[0001] This invention is concerned with improvements in a roof ventilator and is particularly concerned with a covert ventilator for pitched tiled roofs.

[0002] Since the advent of ventilation devices for use on pitched tiled roofs, many variations of device have been proposed most of which are provided by overt configurations which extend above a plane of the tiled roof and appear somewhat obtrusive and not altogether aesthetically pleasing. Lately, however, in response to the wishes of architects and designers, efforts have been made to introduce covert designs of roof ventilator which are aesthetically pleasing in that they do not detract from the symmetry of a roofscape in which they are used.

[0003] Examples of roof ventilators are disclosed in GB 21 99 860, see Figures 17 and 22, GB 22 62 295, see Figure 4, GB 22 79 675, see Figure 4, GB 22 85 817, see Figure 2, DE-U 93 08 401, see Figure 3b and EP 0 663 487, see Figure 5. One of the main disadvantages of these and other prior art ventilators resides in their method of manufacture in that they are usually comprised of several pre-formed pieces of plastics material which are joined together by a suitable epoxy adhesive. Because the ventilators are formed in this way they are susceptible to deterioration, at the sealed joints between the pre-formed pieces thereof. This in turn causes the ingress of rainwater to the underside of the tiles on a roof with the result that the fabric of the dwelling may be harmed.

[0004] In addition, several ventilators include upwardly facing grille members for facilitating the ventilation of the underside of the tile and roof space, see GB 2199860 and GbM 9308401. Such arrangements are susceptible to internal blockage due to excess detritus collecting within the ventilator. Other ventilators, see GB 22 62 295 and EP 0 663 487 are provided with elongate ventilation apertures at a toe end portion of the ventilator unit; however, no provision is made for preventing the ingress of small mammals and birds or driven rain and snow to the inside of the ventilator unit. This may be particularly deleterious in inclement weather conditions when driven snow may pack into the ventilator and interfere with its efficiency.

[0005] The present invention seeks to obviate or mitigate the drawbacks of prior art ventilators and thus provides a roof ventilator of hollow configuration or substantially so comprising an upper wall of shape complementary to tile with which the ventilator is used and a lower wall spaced therefrom characterised in that the ventilator is formed as a planar or substantially planar configuration in which the upper and lower walls are disposed in the same plane or substantially so.

[0006] Preferably the upper and lower walls are cojoined along hinged portions thereof.

[0007] Preferably the hinged portions are provided at upper head lap portions of the upper and lower walls or at lower tail portions of the upper and lower walls or the hinged portions are provided along at least one of opposite side lock portions of the upper and lower walls.

[0008] In one convenient arrangement provided by the invention the hinged portions are provided by a flexible web portion formed between the upper and lower walls and more conveniently the flexible web is formed integrally with the upper and lower walls as a unitary moulding of plastics material, viz polypropylene.

[0009] Conveniently, the lower wall is provided with an aperture to facilitate in use the ventilation of a roof on which the ventilator is used.

[0010] Preferably the upper and lower walls are provided with mutually aligned catch members which, when the upper wall is hingedly closed upon the lower wall in use, enable the two walls to be fixedly secured together.

[0011] In a preferred embodiment of the invention the upper and lower walls have baffle elements formed thereon which baffle elements, when the upper wall is hingedly closed upon the lower wall in use, lie between the two walls to prevent the ingress, in use, of detritus and large insects.

[0012] The present invention also provides a method of ventilating a roof comprising the steps of:

a) tiling a roof with tiles adjacent an aperture in a roof;
b) placing a hinged ventilator unit with its lower wall overlying an upper most row of roof tiles adjacent said aperture;
c) fixing the lower wall in situ;
d) hingedly closing the upper wall upon the lower wall until aligned latch members on the walls are interengaged to secure the two walls together; and,
e) completing the tiling of the roof.

[0013] There now follows by way of example of the invention a specific description of the novel ventilator and its method of use which description is to be read with reference to the accompanying drawings in which:

Fig. 1	is an upper left hand perspective view of a ventilator unit provided by the invention and shown in an open condition,
Fig. 2	is a view corresponding to Figure 1 but with the unit shown in a closed condition,
Fig. 3 to 7	show the method of fixing the novel ventilator to a roof structure,
Fig. 8	is a section view taken along the line VIII - VIII of Figure 5 and
Fig. 9	is a section view taken along the line IX - IX of Figure 7.

[0014] The development of roof ventilators has led in recent times to the design of the so called covert roof ventilator many of which include design faults which can have a detrimental effect on the integrity of the roof in which they are used. In overcoming the perceived disadvantages of prior art ventilators the present invention provides a ventilator unit that does not rely on the durability of adhesives used for joining separate parts of a ventilator together but provides a hinged unit that clips together in a closed box-like configuration.

[0015] The present invention thus comprises a roof ventilator unit 10 provided by a unitary moulding of polypropylene. The unit 10, see Figure 1, generally comprises a shallow tray 12 and a hinged lid 14 providing in use a box like structure as shown in Figure 2. The tray 12 comprises a lower wall 13 and upstanding from the lower wall 13 are left and right side walls 16 and 18 respectively and a rear wall 20. The tray 12 is open at its forward end portion 22 for a purpose to be made clear hereinafter.

[0016] Towards the rear wall 20, the lower wall 13 is provided with an elongate aperture 24 bounded by an upstanding wall 26 of an elongate downpipe 28 that depends below the lower wall 13, see Figures 8 and 9.

[0017] At a mid-portion 30 of the lower wall 13, see Figure 1, the unit 10 is provided with two seried rows of integrally formed baffle elements 32 upstanding from said wall 13. Rearwardly of said baffle elements 32, see Figure 1, the wall 13 is provided with four equi-spaced batten bearers 34.

[0018] Forwardly of said baffle elements 32, see Figure 1, the wall 13 is provided with two pairs of elongate nailing bosses 36.

[0019] The purposes for the batten bearers 34 and nailing bosses 36 will be made clear herinafter. The unit 10 is also provided with strengthening and spacing midwall elements 38 and 40 upstanding from the wall 13 and extending longitudinally therealong, see Figure 1.

[0020] The wall 13 also includes a series of snap-fit protuberances 42 formed integrally therewith towards its forward end portion 22, only one such protuberance 42 being shown in Figure 1 and the purpose of which will be explained herinafter.

[0021] The lower wall 13 is also provided with aligned ribs 44, 44a and 44b depending from an underside thereof for facilitating, in use, the ease with which the unit 10 may be located against a roof batten during its placement on a roof.

[0022] The hinged lid 14 comprises an upper wall 52 of the unit 10 which wall, see Figure 1, is provided with a row of baffle elements 54 and spaced nail housings 56a, 56b, 56c and 56d upstanding from the wall 52 as seen in Figure 1.

[0023] The lid 14 also comprises two latch elements 58 and 60 at left and right hand sides thereof respectively, the purpose of which will be made clear herinafter.

[0024] The lid 14 of the unit 10 is integrally formed with the tray 12 as a unitary moulding of polypropylene as aforesaid, the lid 14 being joined to the tray 12 by a flexible web 62, see Figure 8.

[0025] In using the ventilator of the present invention a tiler prepares a roof by laying a row of tiles T, and attaches by tacking or nailing cut back underlay portion 70 to the next in line batten 72 above a ventilator aperture formed in the roof structure, see Figure 3.

[0026] A plain tile underlay seal 74 is then positioned as shown in Figure 4.

[0027] The tiler next positons an open form unit 10 on the roof structure with the ribs 44, 44a and 44b in locating engagement with an upper edge 76 of a batten 73 i.e. the batten next below the batten 72 of the roof structure. He then attaches the unit 10 to the roof structure using felt tacks 78 and nails 80 as shown in Figures 5 and 6. The unit 10 has a plain tile blank element 75 preattached thereto by means of the snap-fit protuberances 42.

[0028] The tiler then folds the hinged lid 14 to overlie the tray 12 and causes the latch elements 58 and 60 to be brought into locking engagement with associated detents 68 and 69 respectively provided in the side wall 16 and 18 of the tray 12, see Figure 5. The latch elements 58 and 60 and the detents 68 and 69 being aligned catch members enable the two walls (52, 13) to be fixedly secured together. In addition clip portions 38a and 40a located on an unterside of the lid 14, see Figures 1 and 2, are brought into holding engagement with their respective mid-wall elements 38 and 40, see Figure 6.

[0029] The ventilator unit 10 is thus reduced to its box-like structure as shown in Figures 2 and 6 in which the baffle elements 54 of the lid 14 lie between the two rows of baffle elements 32, see Figure 9, and the nail housings 56a, 56b, 56c and 56d overlie and surround the nailing bosses 36a, 36b, 36c and 36d.

[0030] In this condition, the baffle elements 54 and 32 provide preventative means against the ingress of small birds, mammals and large insects to the roof space through an elongate aperture 82, defined between toe end portions 84 and 86 of the tray 12 and lid 14, and through the aperture 24 provided in the lower wall of the tray 12.

[0031] Also, when the unit is reduced to its box-like structure, the nail housings 56a, 56b, 56c and 56d shelter and provide barriers against the ingress of driven rain and derivatives to the nail bosses 36a, 36b, 36c and 36d respectively.

[0032] The ventilator unit described herein envisages the hinged connection being between the upper and lower walls of the unit at the upper end portions thereof. However, in other arrangements according to the invention the unit may comprise more than one hinged walls and the hinged connections may be at the sides or toe portions of the unit. Indeed, any combination of integrally hinged folding walls may be utilised within the scope of the invention.

Claims

1. A roof ventilator (10) of hollow configuration or substantially so comprising an upper wall (52) of shape complementary to tiles with which the ventilator (10) is used and a lower wall (13) spaced therefrom
characterised in that
the ventilator (10) is formed as a planar or substantially planar configuration in which the upper and lower walls (52, 13) are disposed in the same plane or substantially so.

2. A roof ventilator according to Claim 1
characterised in that
the upper and lower walls (52, 13) are cojoined along hinged portions thereof.

3. A roof ventilator according to Claim 2
characterised in that
the hinged portions are provided at upper head lap portions of the upper and lower walls (52, 13).

4. A roof ventilator according to Claim 2
characterised in that
the hinged portions are provided at lower tail portions of the upper and lower walls (52, 13).

5. A roof ventilator according to Claim 2
characterised in that
the hinged portions are provided along at least one of opposite side lock portions of the upper and lower walls (52, 13).

6. A roof ventilator according to any one of the preceding Claims
characterised in that
the hinged portions are provided by a flexible web portion (62) formed between the upper and lower walls (52, 13).

7. A roof ventilator according to Claim 6
characterised in that
the flexible web (62) is formed integrally with the upper and lower walls (52, 13).

8. A roof ventilator according to Claim 7
characterised in that
the ventilator (10) ist formed as a unitary moulding.

9. A roof ventilator according to Claim 8
characterised in that
the unitary moulding is of a plastics material.

10. A roof ventilator according to Claim 9
characterised in that
the plastics material is polypropylene.

11. A roof ventilator according to any one of the preceding Claims
characterised in that
the lower wall (13) is provided with an aperture (24) to facilitate in use the ventilation of a roof on which the ventilator (10) is used.

12. A roof ventilator according to Claim 11
characterised in that
the upper and lower walls (52, 13) are provided with mutually aligned catch members (56, 68; 60, 69) which, when the upper wall (52) is hingedly closed upon the lower wall (12) in use, enable the two walls (52, 13) to be fixedly secured together.

13. A roof ventilator according to Claim 12
characterised in that
the upper and lower walls (52, 13) have baffle elements (54, 32) formed thereon which baffle elements (54, 32), when the upper wall (52) is hingedly closed upon the lower wall (13) in use, lie between the two walls (52, 13).

14. A method of ventilating a roof comprising the steps of:

a) tiling a roof with tiles adjacent an aperture in a roof;
b) placing a hinged covert ventilator unit (10) with its lower wall (13) overlying an upper-most row of roof tiles adjacent said aperture;
c) fixing the lower wall (13) in situ;
d) hingedly closing the upper wall (52) upon the lower wall (13) until aligned catch members (56, 68; 60, 69) on the walls are interengaged to secure the two walls (52, 13) together; and
e) complete the tiling of the roof.

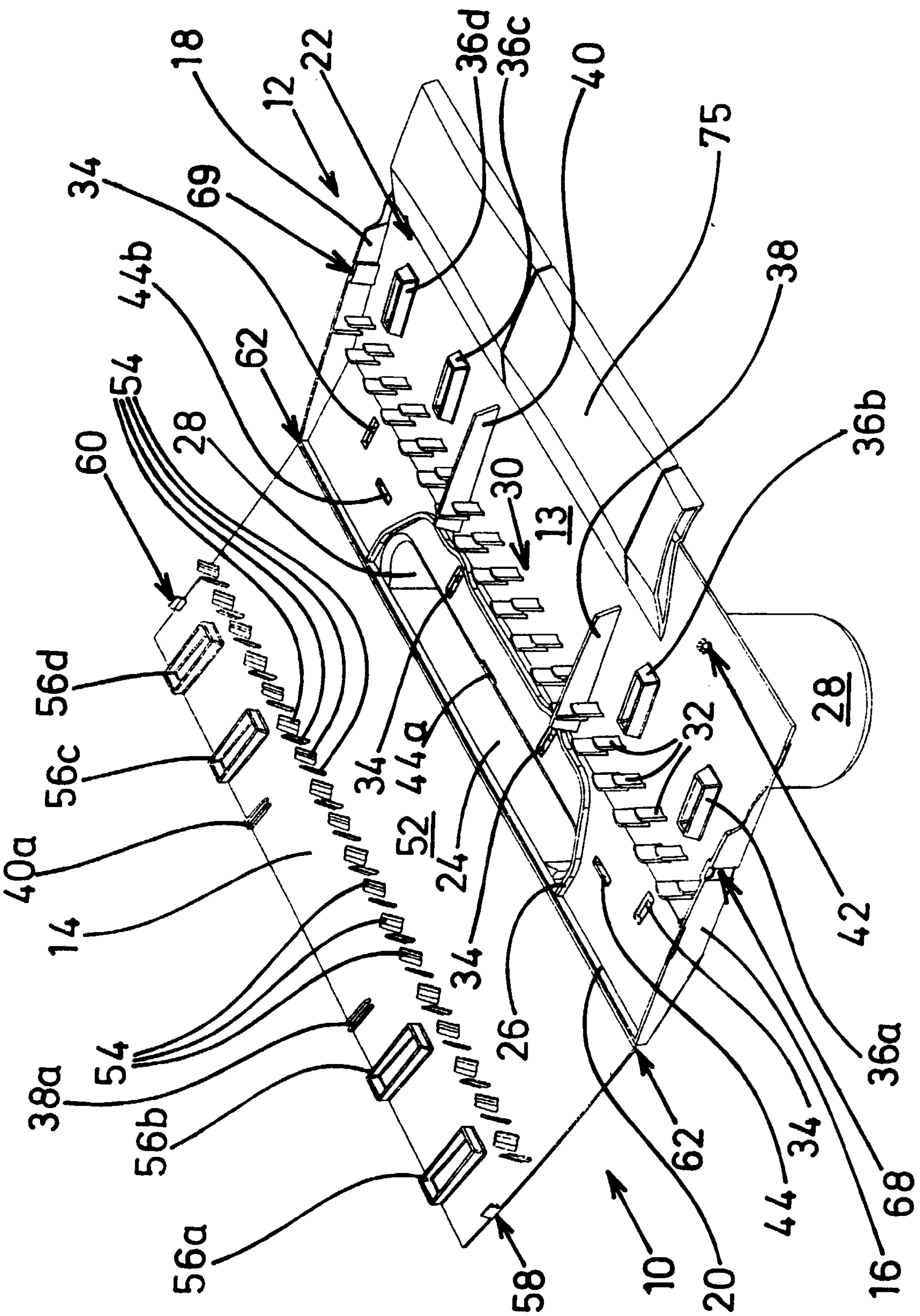
18
12
22
36d
36c
40
75
34
69
44b
62
54
60
28
30
13
38
36b
56d
56c
40a
14
52
24
44a
34
32
42
28
38a
54
56b
56a
58
10
20
62
26
34
44
34
16
68
36a

FIG.1

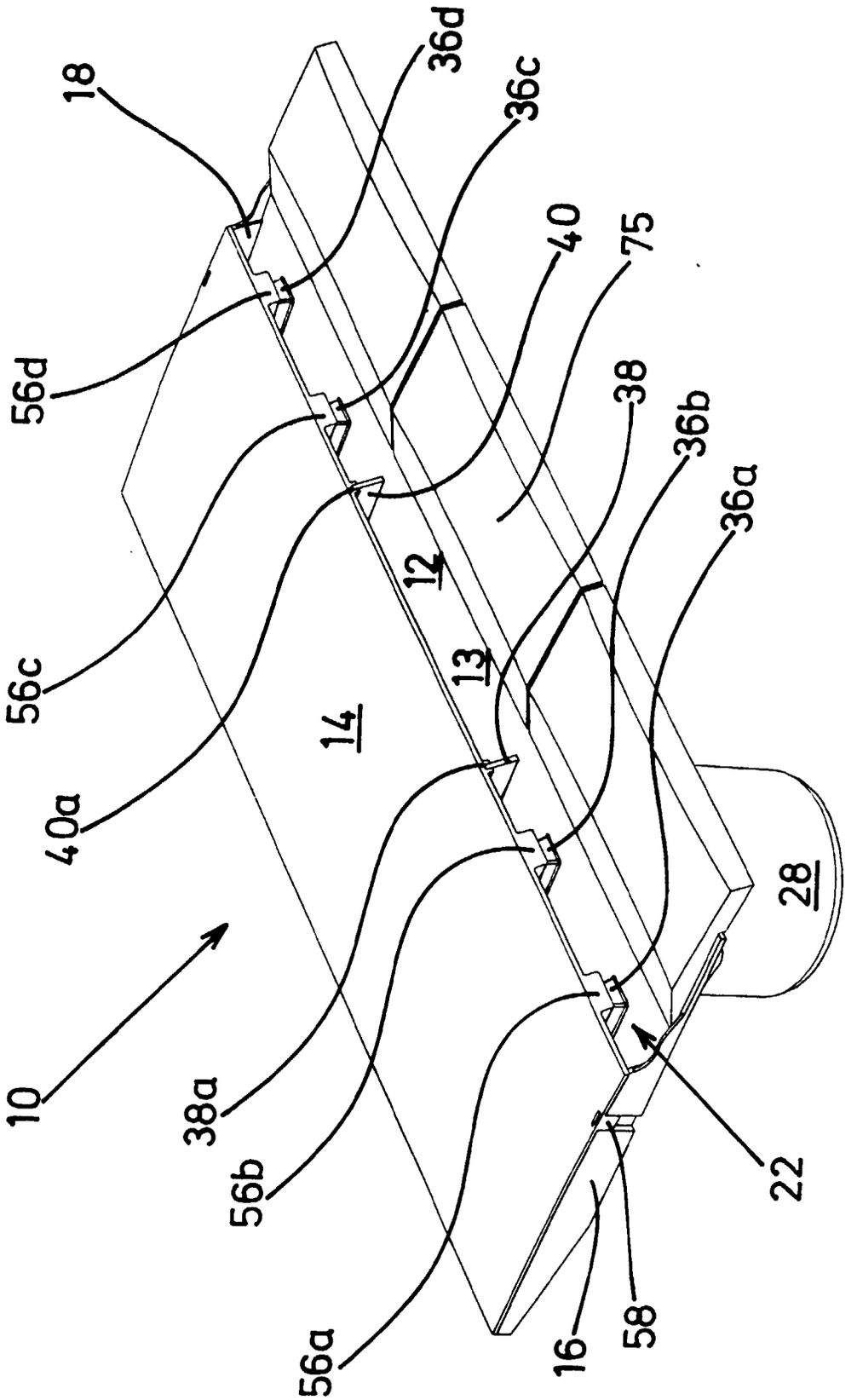
18
36d
36c
56d
40
75
38
36b
36a
56c
12
13
14
40a
28
10
38a
56b
22
56a
16
58

FIG.2

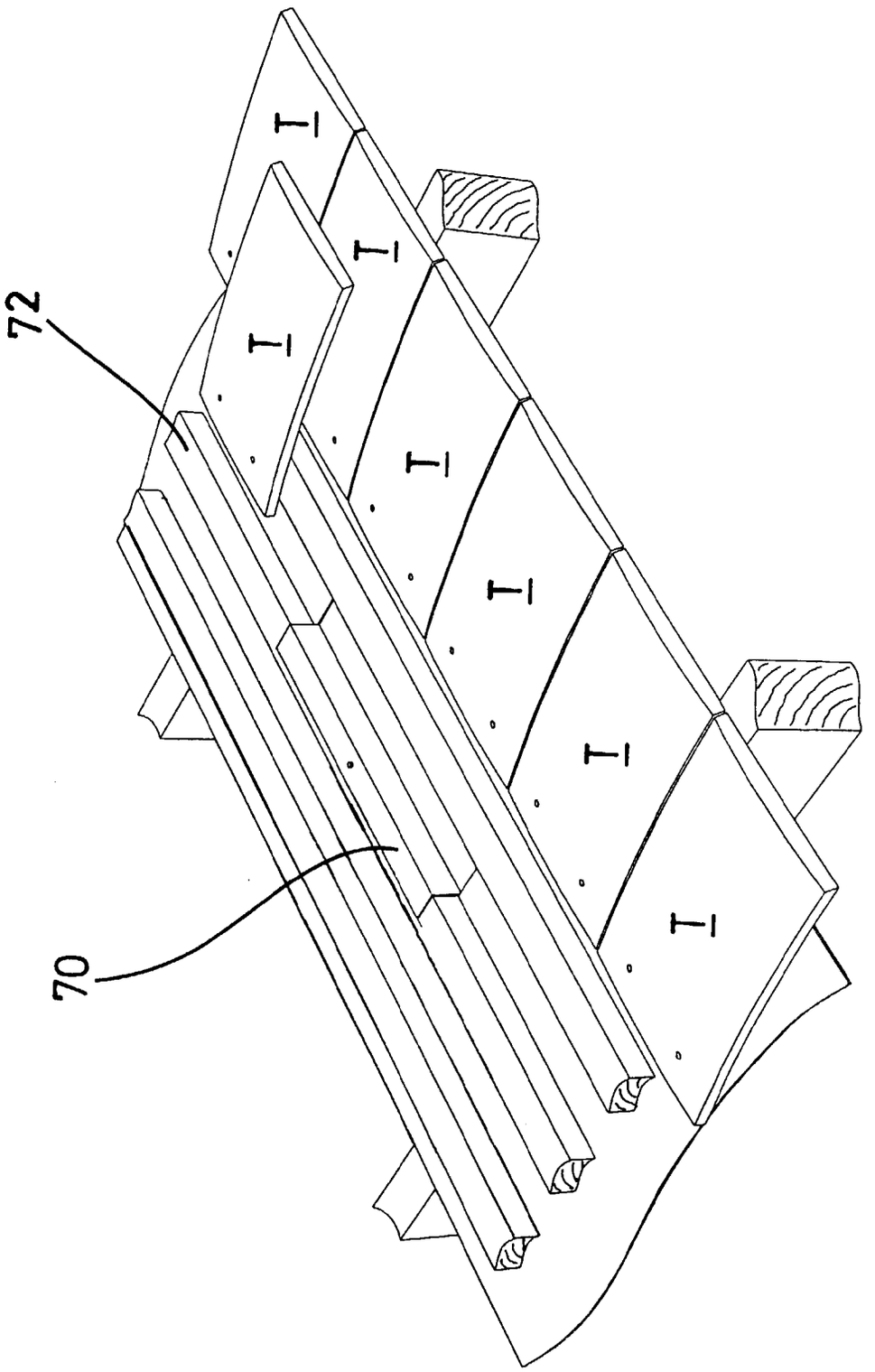

FIG.3

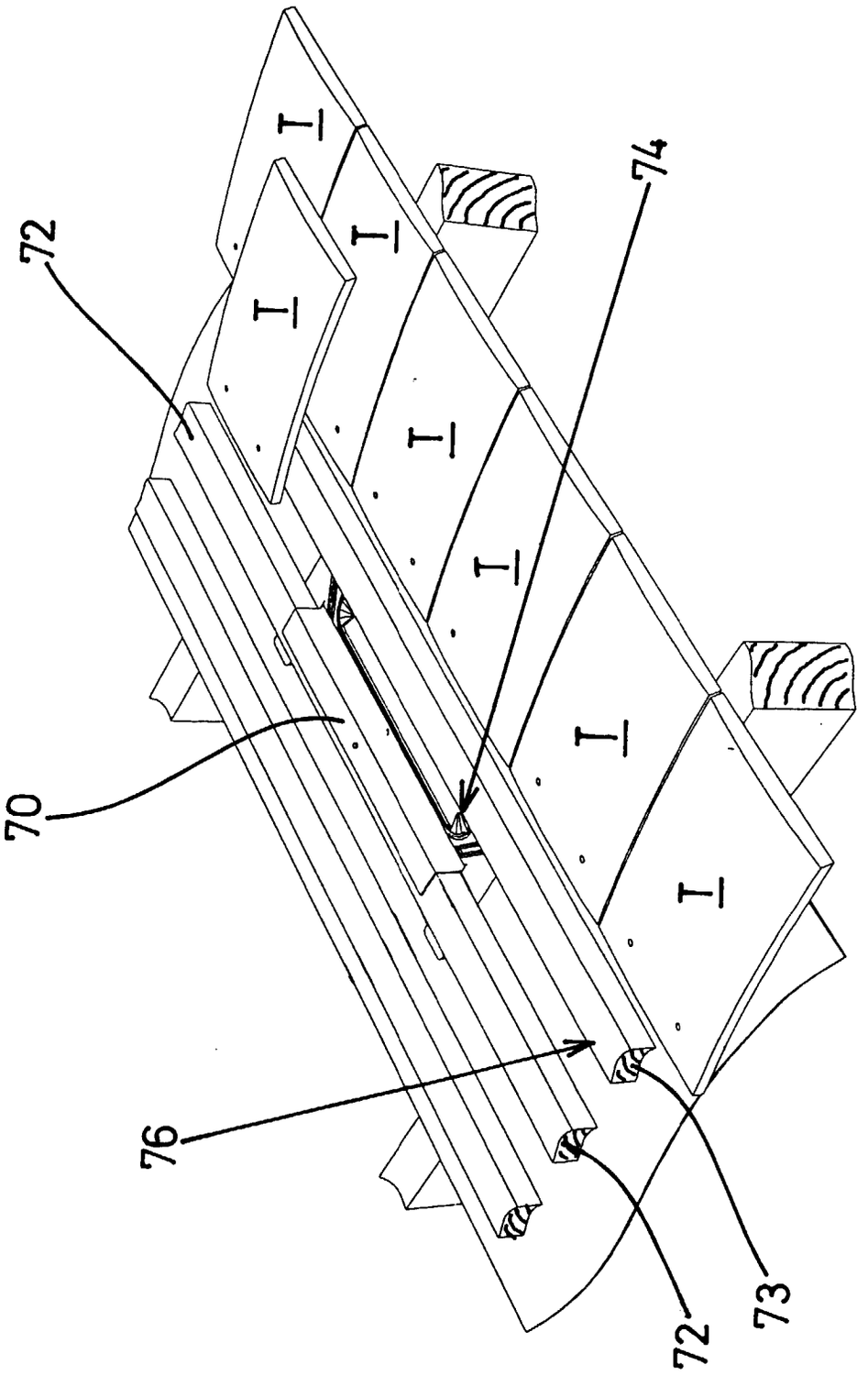

FIG.4

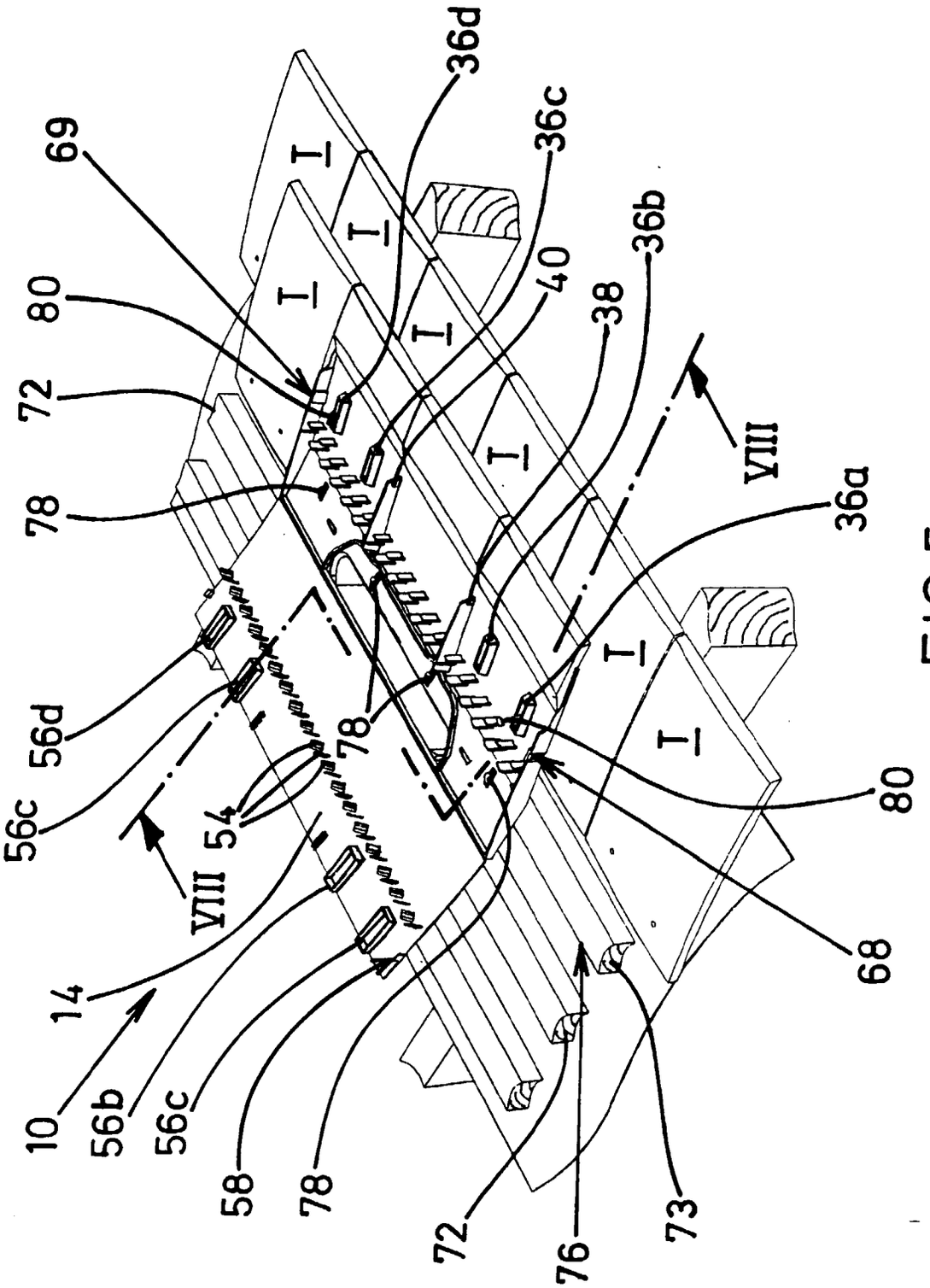
69
80
72
78
56d
56c
VIII
54
14
10
56b
56c
58
78
72
76
73
68
80
36a
VIII
36b
38
40
36c
36d

FIG.5

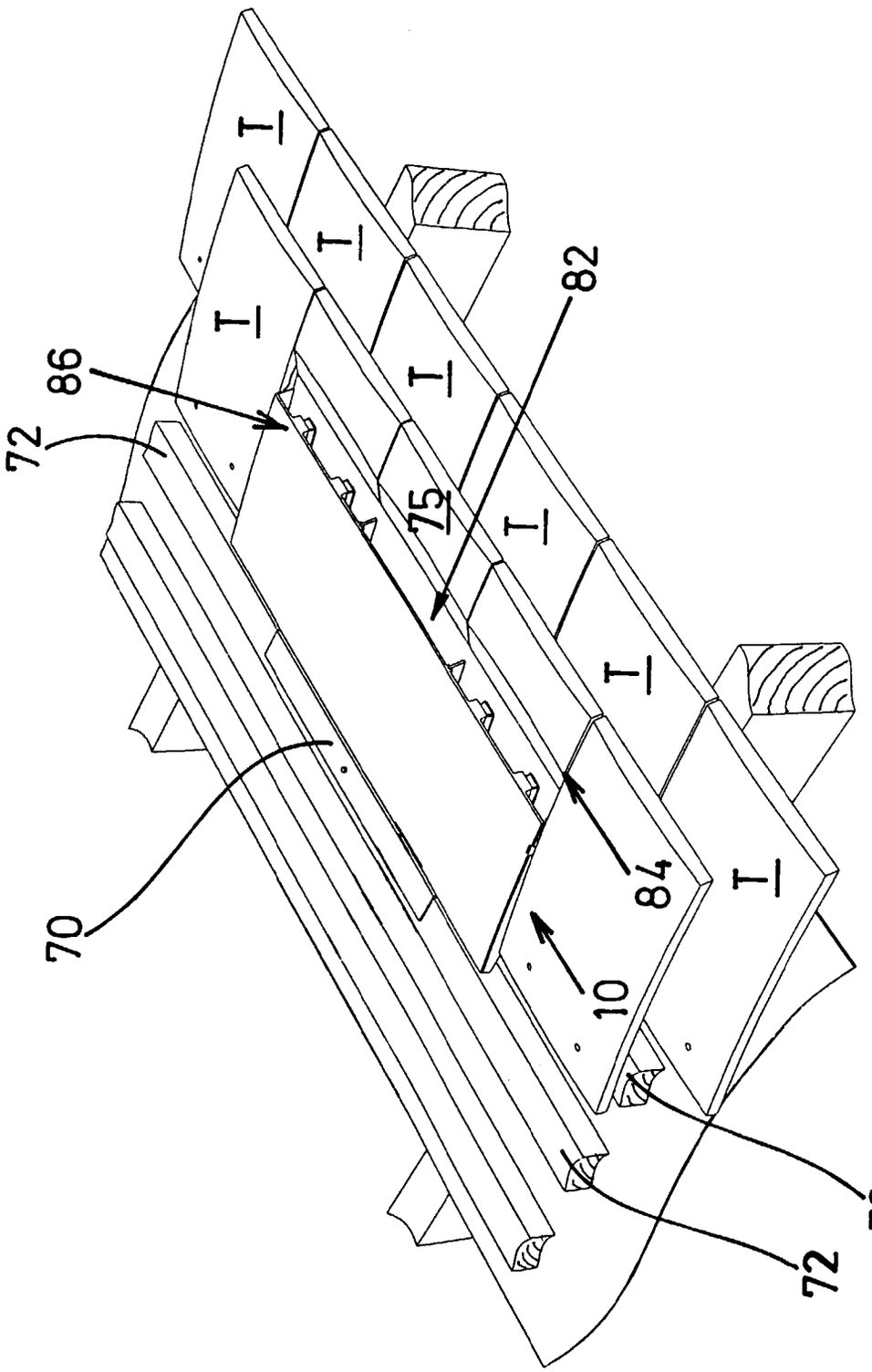

FIG.6

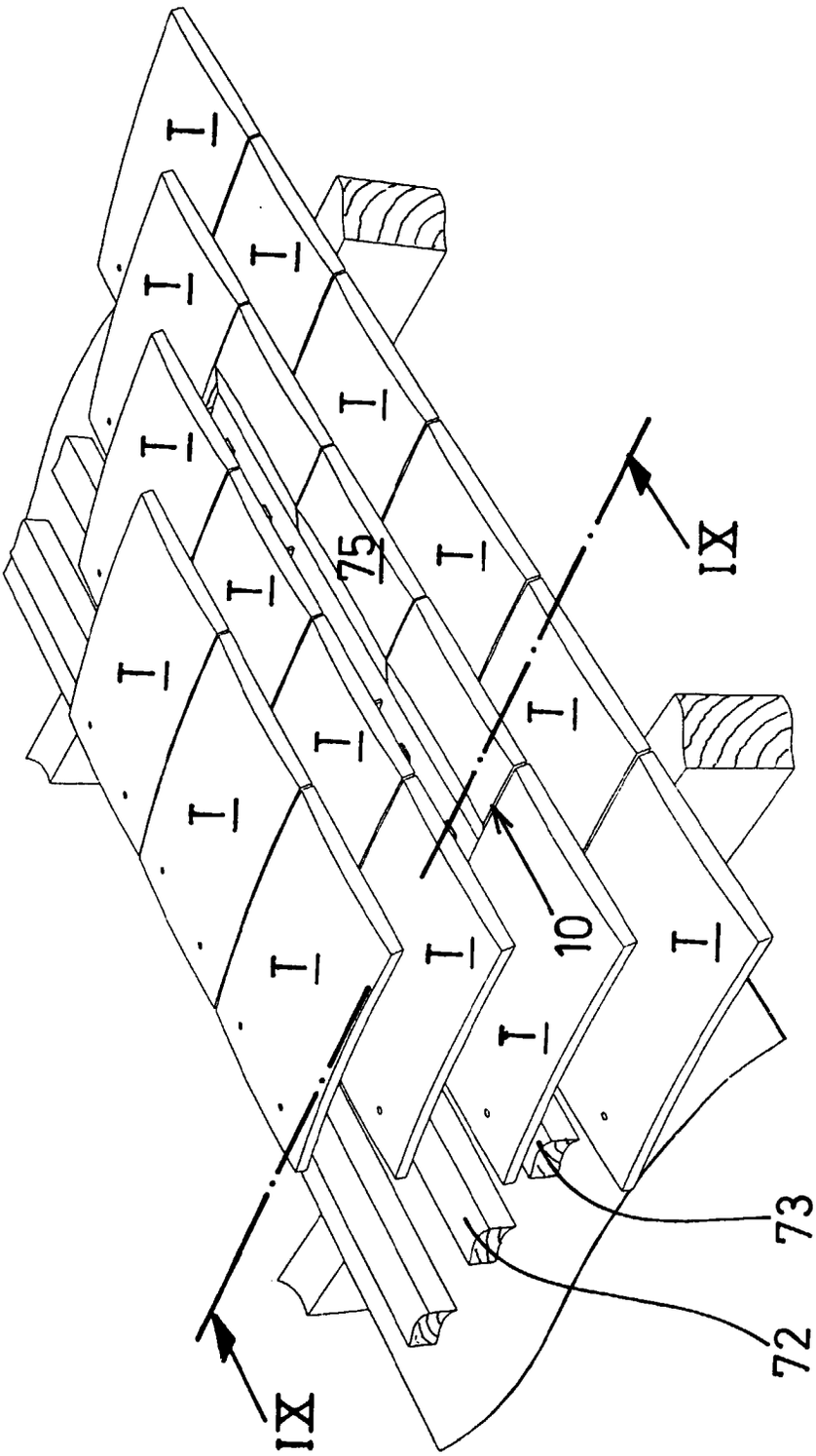

FIG.7

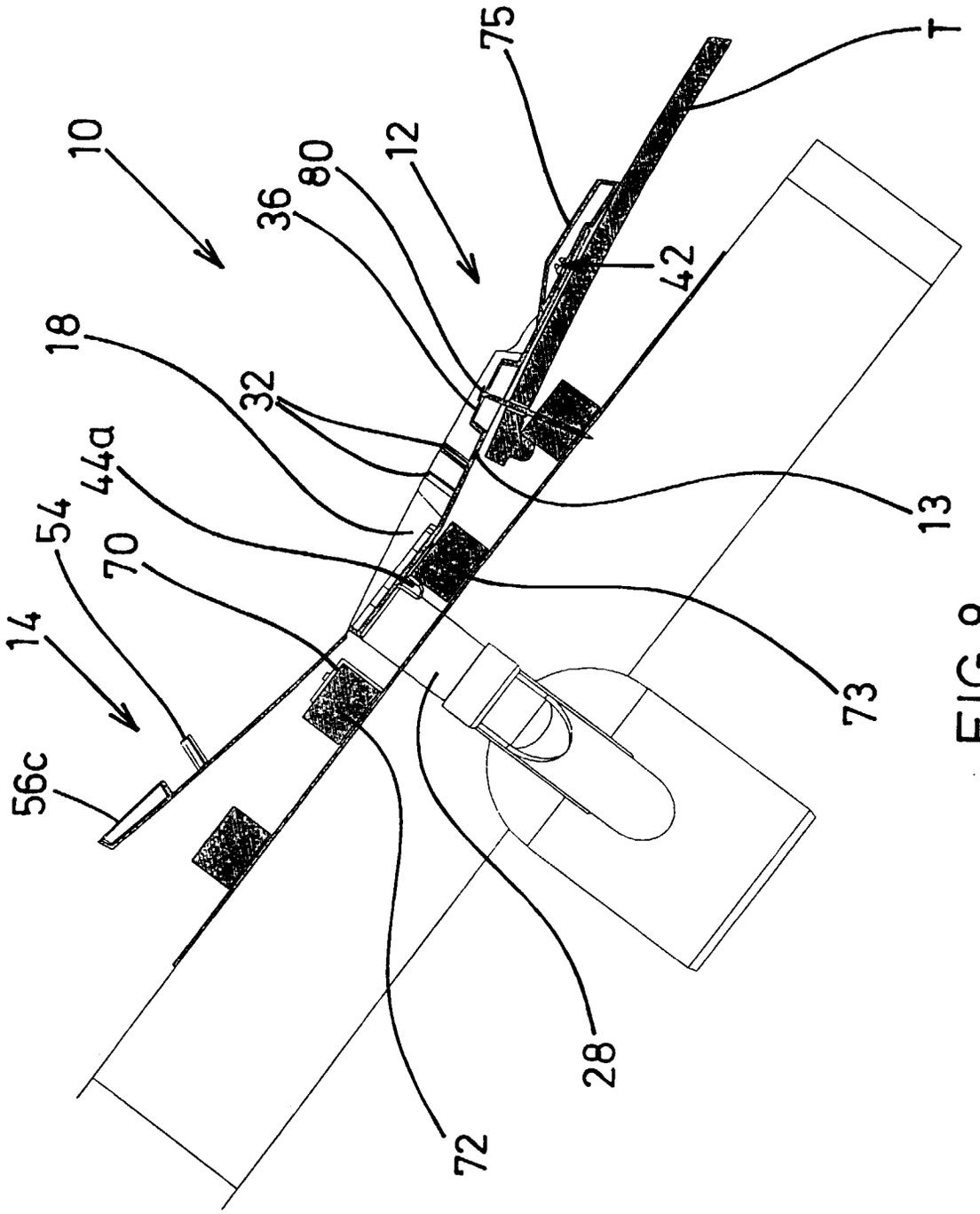

FIG.8

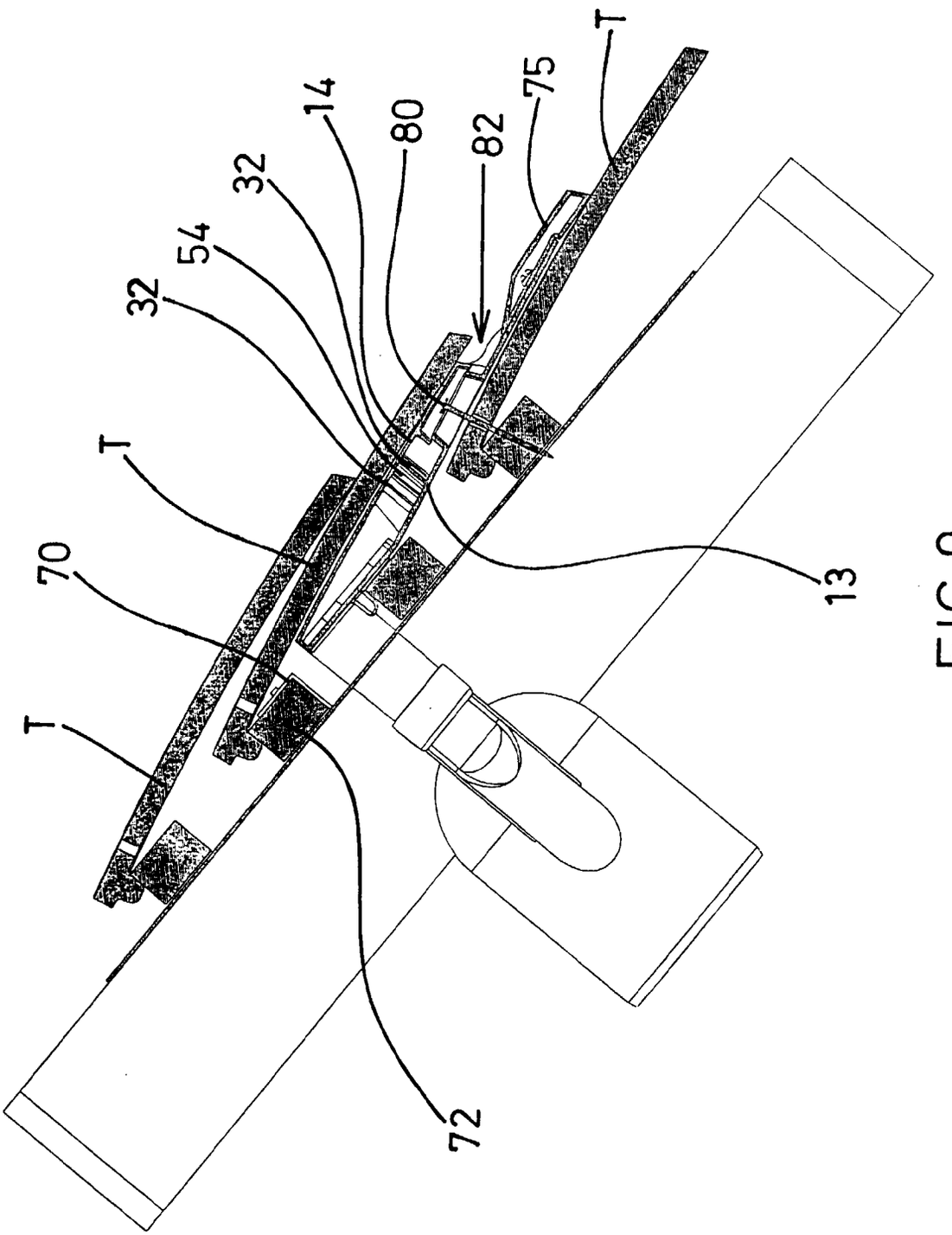

FIG.9