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

(11) Publication number: **0 276 906**
A1

(12) EUROPEAN PATENT APPLICATION

(21) Application number: **88300057.2**

(51) Int. Cl.4: **E06B 7/086** , F24F 7/02

(22) Date of filing: **06.01.88**

(30) Priority: **06.01.87 GB 8700153**

(43) Date of publication of application:
03.08.88 Bulletin 88/31

(84) Designated Contracting States:
AT BE CH DE FR GB IT LI LU NL SE

(71) Applicant: **COLT INTERNATIONAL HOLDINGS A.G.**
Alpenstrasse 14
CH-6300 Zug(CH)

(84) **BE CH DE FR IT LI LU NL SE AT**

(71) Applicant: **COLT INTERNATIONAL LIMITED**
New Lane
Havant Hampshire PO9 2LY(GB)

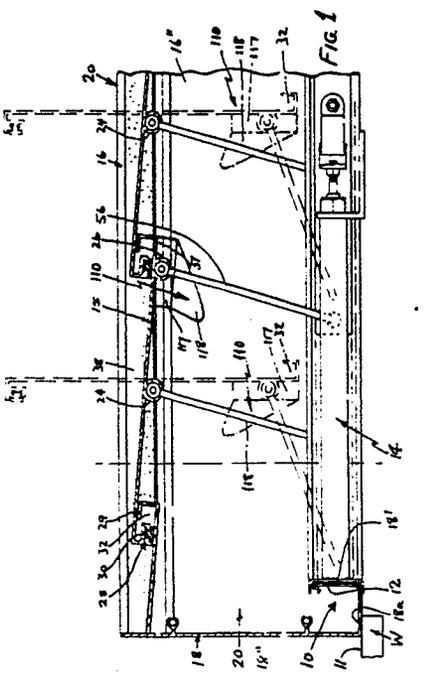
(84) **GB**

(72) Inventor: **Wheeler, John**
60 Winter Road
Southsea Portsmouth Hampshire T04 9BU(GB)

(74) Representative: **Slight, Geoffrey Charles et al**
Graham Watt & Co. Riverhead
Sevenoaks Kent TN13 2BN(GB)

(54) Improvements in ventilators.

(57) A controllable louvred ventilator in which pile weatherseal strips (38) seal the gaps between the ends of the extruded metal louvres (15) and the ventilator frame (20). The louvres (15) have leading and trailing edge formations (28, 29) which overlap in the closed position, and trailing edge channels (32) which open at their ends below the seal strips (38) to drain water into internal channels (16a) (see Figs. 3 and 4) of the frame (20). The end edges of the louvres (15) are provided with plug-in plastics sill pieces (10) which are local to the louvre trailing edges and disposed generally wholly to the underside of the sealing strips (38), the sill pieces (110) extending away from the end edges of the louvres towards the side members (16) of the frame (20) to direct water flowing out of the trailing edge channels (32) onto the inside surfaces of the side frame members (16) to drain down those surfaces into the channels (16c).



EP 0 276 906 A1

IMPROVEMENTS IN VENTILATORS

The present invention comprises improvements in ventilators and concerns controllable, louvred ventilators more particularly, although not exclusively, for roof mounting.

Such roof mounted ventilators provide for natural extract ventilation and for the exhaust of heat and smoke in the event of fire.

In order to facilitate the manufacture of louvred ventilators, and reduce costs, it is convenient to construct the louvres e.g. as aluminium extrusions, without louvre ends, and to seal the gaps between the louvre ends and the ventilator frame with pile weatherseal strips when the louvres are in their closed position. Such seals function first as draught seals and act cosmetically to avoid daylight entry through the aforementioned gaps when the ventilator is closed. The seals then also act as water seals to some extent, although, usually, water collection and drainage channels are provided, inside the ventilator frame, to drain water penetrating past the seals and into the frame back out onto the outside of the roof for example. To further facilitate the collection and drainage of water off the outside of the louvres, particularly when the ventilator is mounted in a flat roof location, it is known to provide the louvres with leading and trailing edge formations which overlap one another in the closed position of the louvres and to collect water penetrating between the louvre overlapping portions in channels provided at the trailing edges of the louvres, these channels opening at their ends below the pile weatherseal strips to drain water into internal water drainage channel members of the frame.

This arrangement requires that the outer faces of the louvres, when in their closed position, extend transversely at a shallow angle relative to the lengthwise direction of the pile weatherseal strips so as, for example, to be inclined downwardly towards the louvre trailing edge channels with the pile weatherseal strips extending horizontally.

A problem arises in this case in that water flowing out of the ends of the louvre trailing edge channels is required to fall freely into the internal drainage channel members which are necessarily disposed well below the end edges of the louvres to enable the louvres to open. Water is, therefore, liable to run back along the underside of the louvres and drip through the ventilation opening into the building or, again, water is liable to be blown into the ventilation opening, so as to fall into the building, when the ventilator is in a partly open, weathered setting.

According to the present invention, the end edges of the louvres are provided with sill pieces attached to the louvre ends, the sill pieces being confined locally to portions of the louvre ends adjacent the trailing edges of the louvres whereby the sill pieces are disposed generally wholly to the underside of the pile weatherseal strips, the sill pieces extending away from the end edges of the louvres towards the side frame members of the ventilator frame.

With this arrangement, water flowing out of the ends of the louvre trailing edge channels is directed by the sill pieces onto the inner surfaces of the side frame members so as to run down the inner surfaces of the side frame members into internal water drainage channel members of the frame.

A specific embodiment of the present invention will now be described in detail by way of example, and not by way of limitation, with reference to the accompanying drawings in which :-

FIG. 1 is a cross-section of a left hand end portion of a controllable louvred roof ventilator of the present invention, with the louvres shown in full line in their closed position and in phantom outline in their fully open position, the ventilator being mounted in a horizontal, flat roof position;

FIG. 2 is an enlarged, left hand, top corner portion of a plan view of the ventilator;

FIG. 3 is a section on line 3-3 in Fig. 2;

FIG. 4 is an exploded view corresponding to Fig. 3 but omitting the louvre; and

FIGS. 5, 6 and 7 show details of a sill piece.

With reference now to the accompanying drawings, the ventilator has a rectangular body comprising a base 10 presenting a base flange 11 for flashing the ventilator to the roof W. The base flange 11 is flat in the present example but it may be of any of the standard shapes suitable for flashing it to different kinds of sloping roof cladding or to glazing bars used in roof lights. The base 10 has an upstanding wall 12 defining a rectangular ventilation opening 14 through the base. Ventilation through the opening 14 is controlled by the louvres 15 which also prevent weather entry through the opening when the louvres are closed or in a partly opened weathered condition as will later be described.

The ventilator further comprises a readily removable outer body part 20 made up of opposite pairs of straight channel sectioned side members 16 and end members 18 removably interconnected with one another at their adjacent ends. The body part members 16, 18 are formed as extruded metal, e.g. aluminium, sections and each presents an equally spaced pair of walls extending away from the base flange 11 to the outside of the wall 12.

The walls 16', 18' (see Figs. 1 and 3) of this pair of walls adjacent the wall 12 abut and interlock with the outside of the wall 12. Thus, the adjacent walls 16', 18', of all the members 16, 18 substantially correspond with one another in cross-sectional size and shape to interfit with the wall 12 in the manner seen in Fig. 1. The webs or floors 16a, 18a, of the channel members 16, 18 abut the base flange 11. The channel members 16, 18 act as internal drainage channels for water which runs off the louvres 15 into the body part 20 of the ventilator. The other upstanding walls 16", 18" of the channel members 16, 18 form a rectangular frame or box which shelters the ventilation opening when the louvres are open and which carries the pivots for the outer ends of the louvres 15. These louvre end pivots 22 are arranged as seen in Fig. 2 and are formed by headed pivot pins which are driven into the respect ends of part-cylindrical channels formed in hollow part-cylindrical (270°) formations 24 extending along the longitudinal louvre centre lines, and corresponding formations 26 are also provided, extending parallel to the central formations 24, adjacent the inwardly opening, trailing edges of the louvres, for fixing link-louvre pivots 56 and sill pieces yet to be described. The louvres 15 are cut to the required length from metal, e.g. aluminium, extrusions of the section indicated in Fig. 1 and are additionally provided with leading and trailing edge formations 28, 29 which overlap one another in the closed position of the louvres, as best shown in Fig. 1. The leading edge formations 28 carry elastomeric seals 30, which may be lip seals, carried by the formations 28 which seals then act to resist water penetrating under the leading edges of the louvres, and water penetrating under the leading edges of the louvres is trapped in the trailing edge rain channels 32 which also act to catch and drain off water into the channel members 16 of the body part 20.

The louvre end pivots 22 are provided with bearing shoulders 34 which bear directly in the walls 16" of the box and the pivot pins 22 are secured in the formations 24 by wing formations 22' on the pins which occupy cross-cuts 36 in the formations 24, formed prior to assembly of the ventilator, the pins being driven into the formations 24 until the wings 22' reach this position whereby the louvres 15 are predeterminedly positioned between the walls 16". To secure each louvre against rotation with respect to its pivot pins 22, the pins have splines 22" which fit closely between the free edges of the channel formation 24 of the louvre. The gaps between the louvres ends and the walls 16" are sealed with pile weatherseal strips 38 mounted in open-ended T-slots 100 formed on the insides of the walls 16" and form gaps 37 (see Fig. 1) at the ends of the channels 32 for the drainage of water from these channels, when the louvres are in a closed position, into the channel members 16. Thus, as may also be seen from Fig. 1, the louvres 15 extend, transversely, at a shallow angle relative to the lengthwise direction of the pile weatherseal strips 38 so as to be inclined downwardly towards the trailing edge rain channels 32 when the ventilator is mounted in a horizontal position.

To prevent water running back along the underside of the louvres and dripping through the ventilation opening 14 into the building, sill pieces 110 are fixed to the end edges of the louvres adjacent the louvre trailing edges. The sill pieces 110 have spiggot portions 112 which are received with an interference fit in the ends of the part cylindrical channel formations 26 of the louvres so as to mount the sill pieces to the louvres. The spiggot portions 112 each have a longitudinally extending spline 114 fitted between the free edges of the formation 26 mounting the sill piece and circumferential ribs 116 force fitted in the part cylindrical channel. The splines 114 orientate the sill pieces with respect to the louvre ends so that the sill pieces proper extend substantially wholly below the pile weatherseal strips 38. The sill pieces proper comprise downwardly extending aprons 117 which abut the end edges of the louvres over a portion extending to their trailing edges and cover the ends of the channel formations 26, followed by downwardly and outwardly extending tapering portions 118 for leading water onto the inside surfaces of the walls 16". Thus, the portions 118 of the sills extend away from the end edges of the louvres into close or touching contact with the inside surfaces of the walls 16" to bridge the gap between the end edges of the louvres and the walls 16" in the locality of the ends of the channels 32. Preferably, the sill pieces are formed as plastics mouldings.

Water directed onto the inside surfaces of the walls 16" drains down the walls 16" into the channel members 16. The ends of the channel members 16 open through the walls 18" to drain off water from the channel members 16 outside the body of the ventilator.

The action of the tapering portions 118 of the sill pieces 110 is to concentrate the water flow from the ends of the channels 32 onto the wall surfaces 16" by surface tension. Thus, water may run down the edges and the undersurfaces of the portions 118 as well as down the upper surfaces of the portions 118 which act truly as sills when the louvres are in their closed position.

The sill pieces 110 also assist in draining water from the channels 32 onto the wall surfaces 16" when the louvres are in a partly open, weathered position, in which case water draining from the ends of the channels 32 can otherwise be blown in droplet form into the ventilation opening so as to

fall into the building.

The bottom wall of the T-slots 100 are milled flat to accommodate the bottom fixed louvre seen at the left hand side in Fig. 1 and the louvre extends into contact with the side walls 16" of the members 16 beneath the pile weatherseal strips which then seal the gaps between the fixed louvre and the walls 16". A similar arrangement is adopted to accommodate the top fixed louvre. Any rain water seeping through the joints is collected in the rain channels 16a, 18a to be drained outside the ventilator body onto the roof.

To prevent pull out and provide extra security, the spiggot portions 112 of the sill pieces 110 may each have a pair of retention hooks at their front ends to snap into cross cuts such as the cross cuts 36, formed in the channel formations 26 in this case.

It is preferred that the tapering portions 118 of the sills extend into contact so as to wipe the inside surfaces of the walls 16".

Claims

1. A controllable louvred ventilator in which sealing strips seal the gaps between the louvre ends and the ventilator frame when the louvres are in their closed position, the louvres have leading and trailing edge formations which overlap one another in the closed position of the louvres and trailing edge channels which open at their ends below the sealing strips to drain water into internal water drainage channels of the frame and the end edges of the louvres are provided with sill pieces attached to the louvre ends, the sill pieces being confined locally to portions of the louvre ends adjacent the trailing edges of the louvres whereby the sill pieces are disposed generally wholly to the underside of the sealing strips, the sill pieces extending away from the end edges of the louvres towards the side frame members of the ventilator frame to direct water flowing out of the ends of the louvre trailing edge channels onto the inside surfaces of the side frame members to drain down those surfaces into the internal water drainage channels of the frame.

2. A ventilator as claimed in claim 1 in which the sill pieces extend into close or touching contact with said inside surfaces of the side frame members.

3. A ventilator as claimed in claim 2 in which the sill pieces are flexible.

4. A ventilator as claimed in any preceding claim in which the sill pieces comprise tapering portions which taper towards the inside surfaces of the side frame members.

5. A ventilator as claimed in any preceding claim in which the sill pieces have spiggot portions received in sockets in the louvre ends and mounting the sill pieces to the louvres and the sill pieces have downwardly extending aprons which abut the end edges of the louvres and cover the socket openings.

6. A ventilator as claimed in claim 5 in which the ends of channel formations of the louvres define the sockets and the spiggot portions have splines which fit between the free edges of the channel formation sockets and orientate the sill pieces with respect to the louvre ends.

7. A ventilator as claimed in claim 6 in which the spiggot portions have retention hooks held in cross cuts in the channel formation sockets.

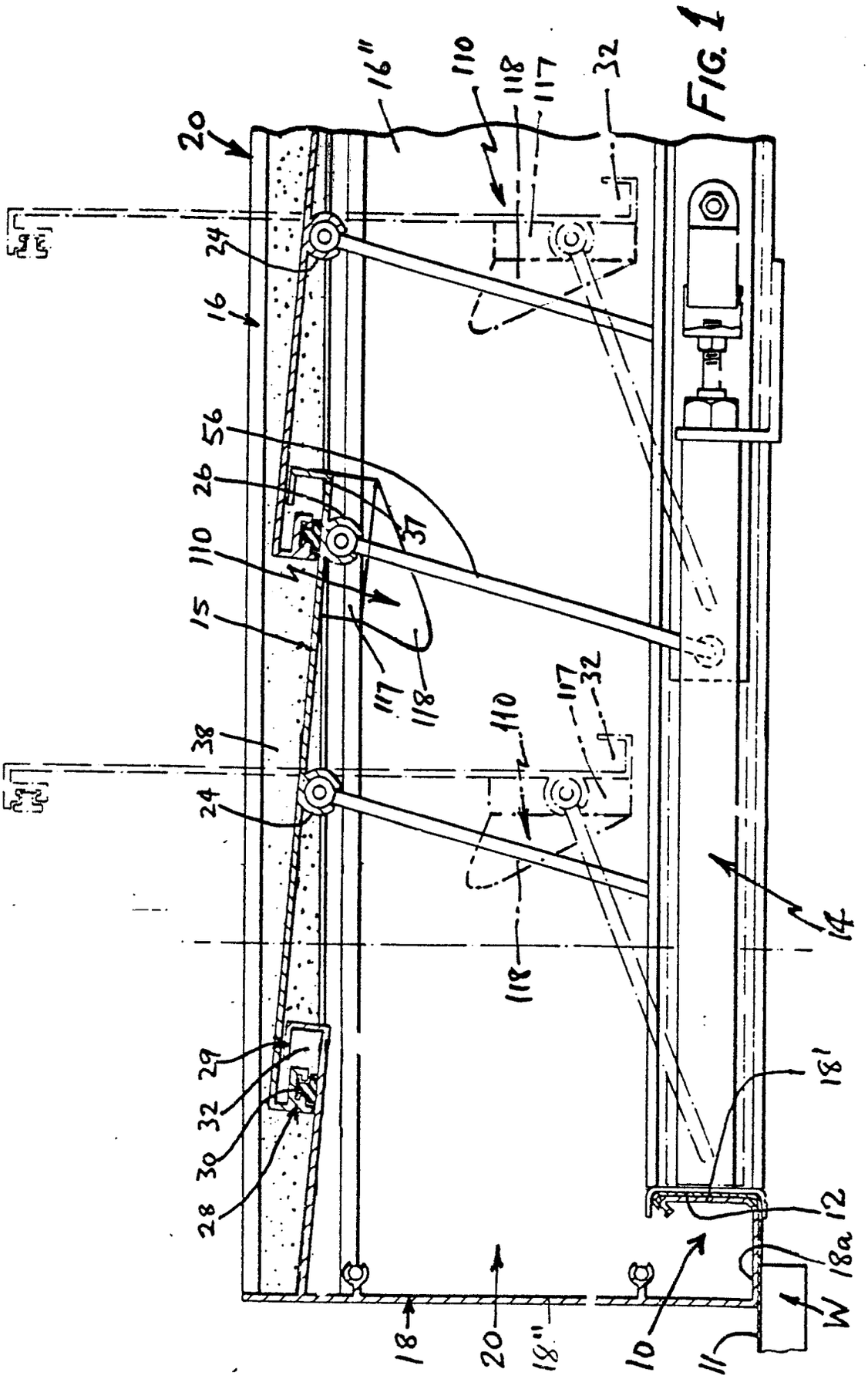

20
16"
110
118
117
32
24
16
56
26
37
110
15
117
118
38
24
110
117
32
14
118
29
32
30
28
18'
12
18a
W
18
20
18"
10
11

FIG. 1

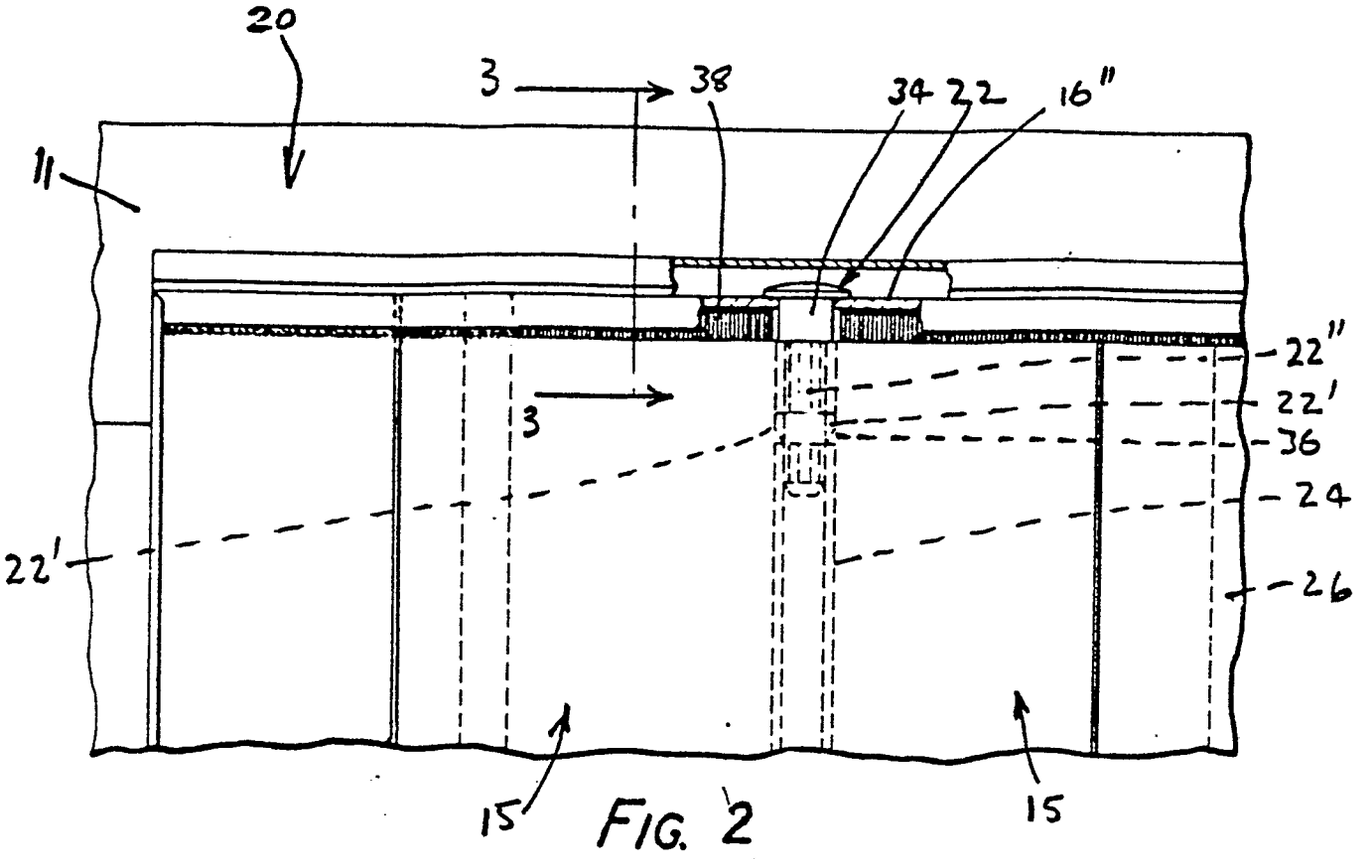


FIG. 2

Fig 3

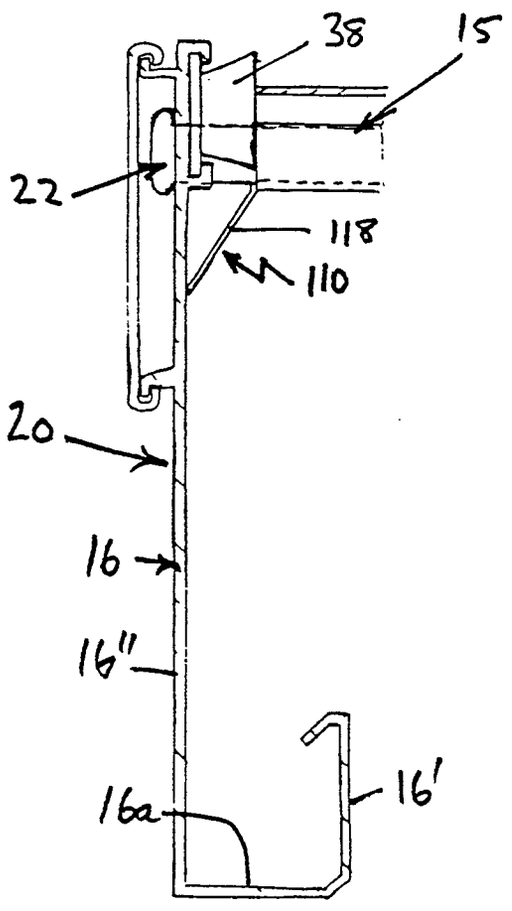


Fig 4

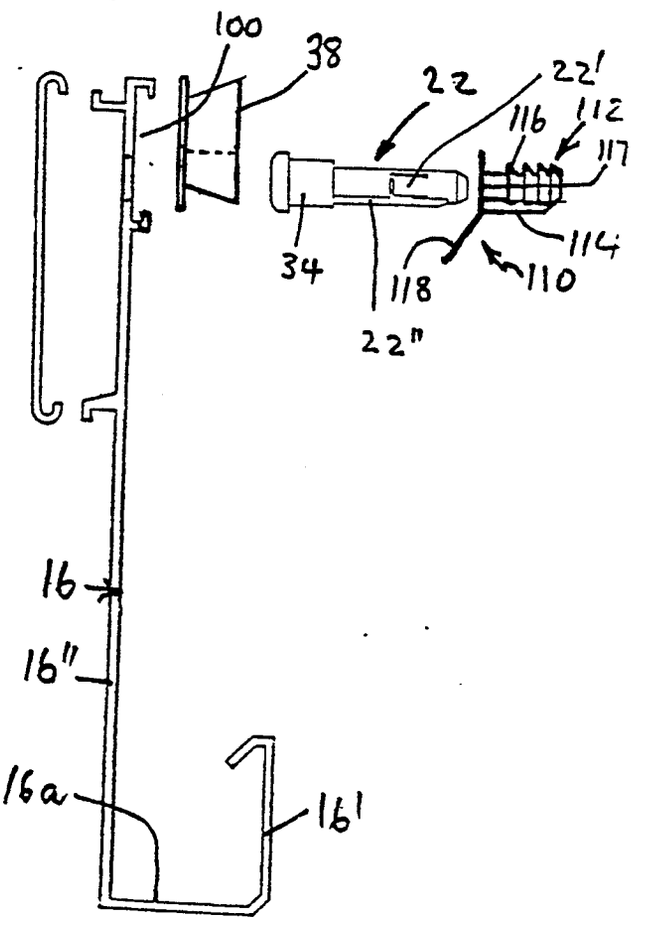


Fig5

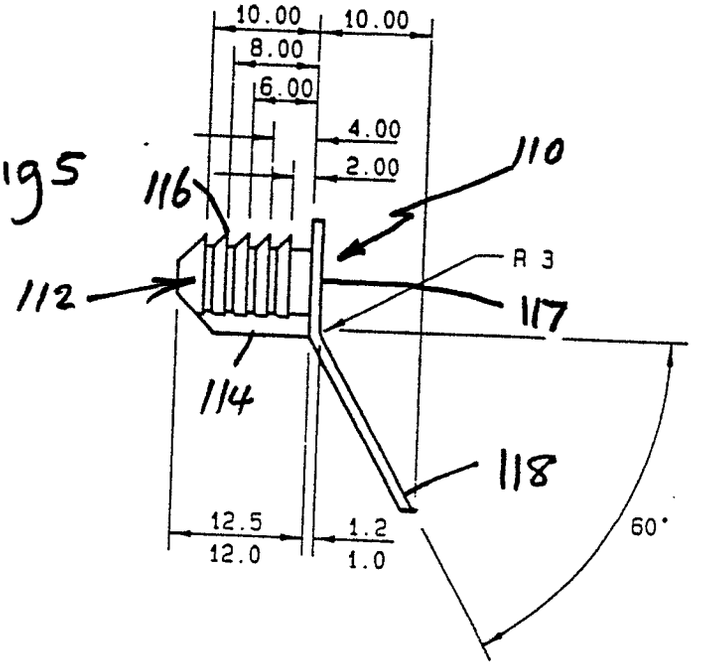


Fig6

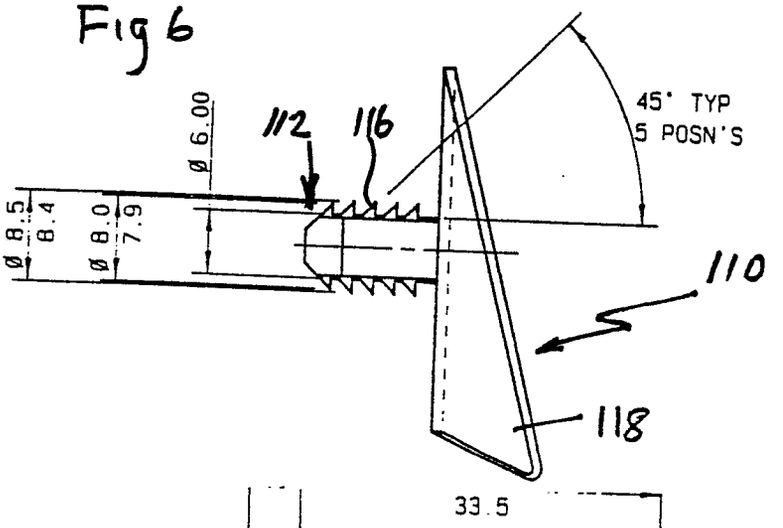
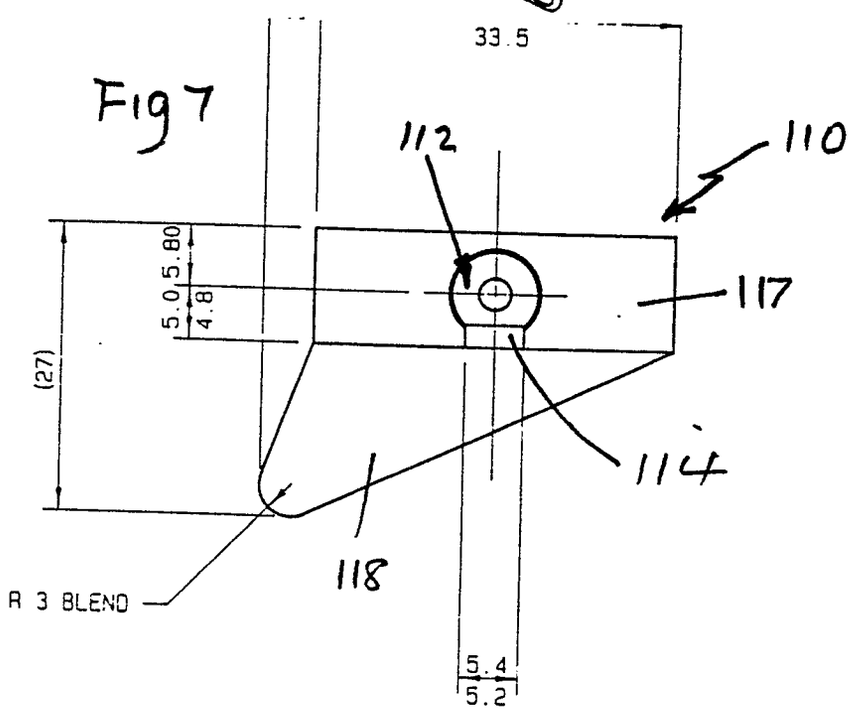


Fig7



European Patent Office

EUROPEAN SEARCH REPORT

Application Number

EP 88 30 0057

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.4)
A	GB-A-2 045 917 (COLT INTERNATIONAL LTD)		E 06 B 7/086 F 24 F 7/02
A	DE-A-3 343 538 (RUPRECHT)		

TECHNICAL FIELDS SEARCHED (Int. Cl.4)

E 06 B
F 24 F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	07-04-1988	VIJVERMAN W.C.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document