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Insert for intruder resistant screen

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ABSTRACT
INSERT FOR INTRUDER RESISTANT SCREEN

5 An insert (20) for an intruder resistant screen comprising a pair of coupled
walls (21, 22) of plastics material, first (24) and second (25) lip sections
extending from a first wall of the pair of walls for securing the insert to a
first portion (6) of the screen and a third lip section extending from a
second wall of the pair of walls for securing the insert to a second portion
10 (7) of said screen. The pair of walls prevent contact between mesh (4) of
the screen and the first and second portions to inhibit corrosion.

AUSTRALIA

Patents Act 1990

**ORIGINAL
COMPLETE SPECIFICATION
INNOVATION PATENT**

Invention Title:

"INSERT FOR INTRUDER RESISTANT SCREEN"

The following statement is a full description of this invention, including the best method of performing it known to me/us:

TITLE

"INSERT FOR INTRUDER RESISTANT SCREEN"

FIELD OF THE INVENTION

5 THIS INVENTION relates to an insert for an intruder resistant screen, the screen being particularly useful for both security and insect screening of windows, doorways and the like.

BACKGROUND OF THE INVENTION

10 Screens or grilles are sometimes used to improve the security of a building. For example, steel bar grilles have been used to deter intruders from entering premises through a window or door. However, steel bar grilles are generally considered unsightly and are therefore usually only used in industrial or commercial settings. Furthermore, such grilles do not always
15 provide adequate security. Conventional security screens provide an aesthetic alternative, but they also do not always provide adequate security and can be labour intensive to produce.

 A further disadvantage is that the above described screens or grilles are not effective for insect screening and therefore fine mesh screens are
20 sometimes used in conjunction with security screens or grilles. However, the above fine mesh screens are not intruder resistant. Accordingly, to provide limited security and insect screening both fine mesh screens and security screens or grilles are often used which increases the manufacturing and/or installation costs.

25 A solution to the problems evident in the prior art has been described in our Australian Patent Number 694515 which describes an intruder resistant screen incorporating a woven wire intruder resistant mesh clamped between a plurality of clamping portions and clamping members with leveraged clamping action.

30 However, the inventors have found that such screens can be susceptible to the problem of corrosion. Corrosion typically occurs through

an electrolytic reaction where two different metal types come into contact with each other. Such corrosion can occur in the screen of aforementioned Australian Patent Number 694515 where the steel mesh and the aluminium frame are in contact. Furthermore, the problem of corrosion can be exacerbated by the ingress of moisture.

SUMMARY OF THE INVENTION

According to one aspect of the invention there is provided an insert for an intruder resistant screen, said insert comprising:

a pair of coupled walls, said walls being of plastics material;
first and second lip sections extending from a first wall of said pair of walls for securing said insert to a first portion of said screen; and
a third lip section extending from a second wall of said pair of walls for securing said insert to a second portion of said screen;

wherein said pair of walls prevent contact between mesh of said screen and said first and second portions to inhibit corrosion.

Suitably, the first lip section and/or the third lip section comprise a curved or sloping side to minimise the ingress of moisture between the first and second portions and the mesh.

Suitably, the pair of walls are coupled by a substantially s-shaped portion that facilitates insertion of the mesh between the walls.

Suitably, the first lip section is provided towards a free end of the first wall and the second lip section is provided towards a free end of the second wall.

Suitably, the second lip section is provided intermediate a free end of the first wall and the substantially s-shaped portion.

BRIEF DESCRIPTION OF THE DRAWINGS

In order that the invention may be readily understood and put into practical effect, reference will now be made to preferred embodiments that are provided by way of example only in which:

FIG 1 is a perspective view of an intruder resistant screen;

FIG 2 is a perspective view of the insert in accordance with an embodiment of the invention;

5 FIG 3 is a partial cross sectional view through A-A of FIG 1 illustrating the insert of FIG 2 in a closed position;

FIG 4 is an exploded perspective view illustrating how frame members of FIG 3 form a corner section; and

10 FIG 5 is a cross sectional view through A-A of FIG 1 illustrating the insert of FIG 2 in an open position.

DETAILED DESCRIPTION

With reference to FIG 1 there is illustrated an intruder resistant screen 1 having a frame 2 comprised of elongate frame members 3 with an intruder resistant mesh 4 clamped to frame members 3.

15 Mesh 4 covers the opening enclosed by frame 2. Mesh 4 is a woven grid of stainless steel wire. Suitable mesh dimensions have been described in Australian Patent 694515. The most suitable dimensions have been found to be wire diameters from 0.8mm to 1.2mm and wire spacing (in weft or warp) from 1mm to 2.2mm.

20 Referring to FIGS 3 and 4, an embodiment of a frame member 3 is illustrated. Frame member 3 is formed from extruded aluminium and has a channel section 5 for receiving a corner stake 10 at each of its ends. Accordingly, frame 2 is formed to a desired shape and dimensions by cutting suitable lengths of each frame member 3 and assembling the lengths with mitred corners. Although frame members 3 are preferably extruded aluminium lengths, they may be extruded, roll formed or press formed lengths of any suitable material.

30 Located inwardly of channel 5 is a first portion of the screen in the form of an integral clamping portion 6 and a second portion of the screen in the form of non-integral clamping member 7 which is separately formed from frame member 3. The clamping portion 6 and the clamping member 7 are of

an identical length and extend along the length of frame member 3. Spaced holes are drilled along the clamping portions 6 and the clamping members 7 to receive fastening means in the form of pop-rivets 8 or screws, which co-act with the clamping portions 6 and the clamping members 7 to clamp mesh 4 to frame 2. Hence, when clamped, an area adjacent each respective edge of mesh 4 is clamped to frame 2 such that each clamped area is in the same plane as the rest of mesh 4 which is enclosed by frame 2. As a result, each edge of mesh 4 is clamped to no more than one clamping surface of each one of clamping portions 6 and clamping members 7. Mesh 4 and fastening means 8 have been omitted from FIG 3 for the sake of clarity.

A surface of the clamping portion 6 is serrated to provide stronger retention of mesh 4. A surface of the clamping member 7 may also be serrated, as shown in FIG 3. The serrations on the clamping portion 6 and the clamping member 7 act together to firmly hold the mesh 4 in the frame member 3. The fastener 8 holds the clamping member 7 in position against the clamping portion 6 with the result that the mesh can withstand significant impact and not be pulled from the frame.

An integral wall section 9 extends inwardly from the channel section 5. At the free end of wall section 9 is a flange section 11 which extends towards mesh 4 and supports clamping portion 6.

A lip section 12, integral with and extending inwardly from channel section 5, forms with wall section 9 a recess 13 which accommodates an edge of clamping member 7 and an edge of mesh 4. Lip section 12 abuts clamping member 7 and assists in keeping clamping portion 6 and clamping members 7 parallel during clamping.

The lip section 12 terminates in hook 18 which seats in slot 19 of the clamping member 7 to positively locate the clamping member 7 with respect to the frame 3 and thus the clamping portion 6. The hook and slot combination assist to provide strong leveraged clamping of the mesh 4 by providing a pivot point for the clamping member 7.

As shown in FIG 4, two frame members 3 are attached together at a

corner of frame 2 by corner stake 10 being inserted into a channel section 5 of two mitred frame members 3. Holes are then drilled into edges of frame members 3 and corner stake 10. Pop-rivets 17 are then inserted for securing frame members 3 to corner stake 10.

5 Referring to FIGS 2, 3 and 5, to address the aforementioned problem of corrosion that can occur at the points of contact between the stainless steel mesh 4 and the aluminium frame member 3, an insert 20 is provided between the clamping portion 6 and the clamping member 7. In one embodiment, insert 20 is in the form of an extrusion of flexible PVC, although
10 it is envisaged that alternative waterproof plastics materials are suitable.

Referring to FIG 2, insert 20 comprises first wall 21 and second wall 22 and is extruded such that first and second walls 21, 22 are coupled by substantially s-shaped portion 32. A first lip section 24 and a second lip section 25 extend from the first wall 21 and a third lip section 30 extends
15 from wall 22. First lip section 24 is provided towards a free end of the first wall 21 and the third lip section 25 is provided towards a free end of the second wall 22. Second lip section 25 is provided intermediate the free end of the first wall 21 and the substantially s-shaped portion 32. Lip sections 24, 25 and 30 extend substantially perpendicularly from walls 21, 22. First and
20 third lip sections 24, 30 each comprise a substantially planar first side 35 inclined slightly to the perpendicular with respect to walls 21, 22 and a curved second side 36. In an alternative embodiment, side 36 may be planar rather than curved, but sloping in the same direction as the curved side. Second lip section 25 is substantially planar on both sides.

25 As shown in FIG 3, insert 20 is substantially U-shaped when in a closed position such that mesh 4 is surrounded by opposing walls 21, 22 and base 23 of the insert 20 to prevent contact between the mesh 4 and the frame member 3 to inhibit corrosion. Insert 20 in particular prevents contact between the mesh 4 of the screen and a first portion of the screen in the
30 form of clamping portion 6 and between the mesh 4 and a second portion of the screen in the form of clamping member 7. First and second lip sections

24, 25 cooperate to secure insert 20 to the first portion of the screen in the form of clamping portion 6. Third lip section 30 secures the insert 20 to the second portion of the screen in the form of clamping member 7. Base 23 of the insert 20 abuts a wall section 27 of the frame member 3 between channel section 5 and recess 13.

As illustrated in FIG 5, when wall 21 of the insert 20 is in place with first and second lip sections 24, 25 securing the insert 20 about clamping portion 6, wall 22 of the insert 20 is folded away from wall 21 to facilitate easy insertion of mesh 4. Wall 22 is folded away from wall 21 by virtue of the extruded elongated s-shape 32 of the insert 20 such that wall 22 of the insert is folded over hook 18 and away from wall 21, as shown in FIG 5. Once the mesh 4 is inserted, wall 22 of the flexible insert is folded back towards wall 21 and the inserted mesh 4 to facilitate location of the clamping member 7. Clamping member 7 clips between hook 18 of frame member 3 and third lip section 30 of insert 20, as shown in FIG 3. First and third lip sections 24, 30 provide a seal between the mesh 4 and clamping portion 6 and between the mesh 4 and the clamping member 7. Curved or sloping second sides 36 slope away from mesh 4 thus encouraging water to flow away from the mesh 4.

Hence, insert 20 inhibits corrosion that can occur at the points of contact between the stainless steel mesh 4 and the aluminium frame member by presenting a barrier between the two types of metal to prevent the electrolytic reaction. Walls 21, 22 and base 23 surround the mesh 4 to help minimise the ingress of moisture and inhibit corrosion. Curved or sloping second sides 36 further help to inhibit corrosion by minimising the ingress of moisture between the first and second portions of the screen and the mesh. Furthermore, first and second lip sections 24, 25 help to secure the insert 20 on the clamping portion 6 and third lip section secures the insert 20 to the clamping member 7. Easy insertion of mesh 4 is facilitated by the foldable nature of the plastics material forming the insert 20 and the substantially s-shaped portion 32, thus positively contributing to the process

of fabricating the screen.

5 In use intruder resistant screen 1 may be mounted on hinges in a doorway or secured in any known manner to a window frame. Mesh 4 provides difficulties for intruders as a sufficiently large hole to gain entry cannot be easily sawn or cut by bolt cutters due to the mesh grade which also provides insect screening. Furthermore, when stainless steel mesh 4 is used these difficulties for potential intruders can be compounded due to the properties of stainless steel which can blunt cutting tools.

10 The clamping of the mesh provides additional intruder resistance as wall sections 9 are located on the outside of the doorway or window so that fastening means 8 are concealed from a potential intruder. When viewed on the inside, fastening means 8 are hidden by a cover which is of a colour matching clamping member 7.

15 Although the invention has been described with reference to preferred embodiments, it is to be understood that the invention is not limited to the specific embodiments described herein.

CLAIMS

1. An insert for an intruder resistant screen, said insert comprising:
a pair of coupled walls, said walls being of plastics material;
5 first and second lip sections extending from a first wall of said pair
of walls for securing said insert to a first portion of said screen; and
a third lip section extending from a second wall of said pair of walls
for securing said insert to a second portion of said screen;
wherein said pair of walls prevent contact between mesh of said
10 screen and said first and second portions to inhibit corrosion.
2. The insert of claim 1, wherein said first lip section and/or said third
lip section comprise a curved or sloping side to minimise the ingress of
moisture between said first and second portions and said mesh.
- 15 3. The insert of claim 1 or 2, wherein said pair of walls are coupled by a
substantially s-shaped portion that facilitates insertion of said mesh between
said walls.
- 20 4. The insert of any preceding claim, wherein said first lip section is
provided towards a free end of said first wall and said second lip section is
provided towards a free end of said second wall.
- 25 5. The insert of claim 3 or 4, wherein said second lip section is provided
intermediate a free end of said first wall and said substantially s-shaped
portion.

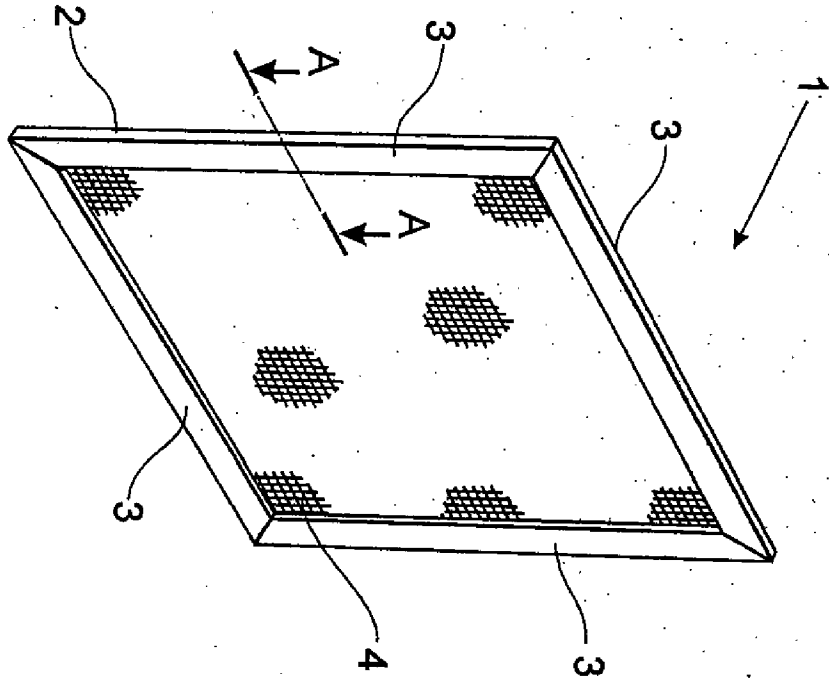


FIG. 1

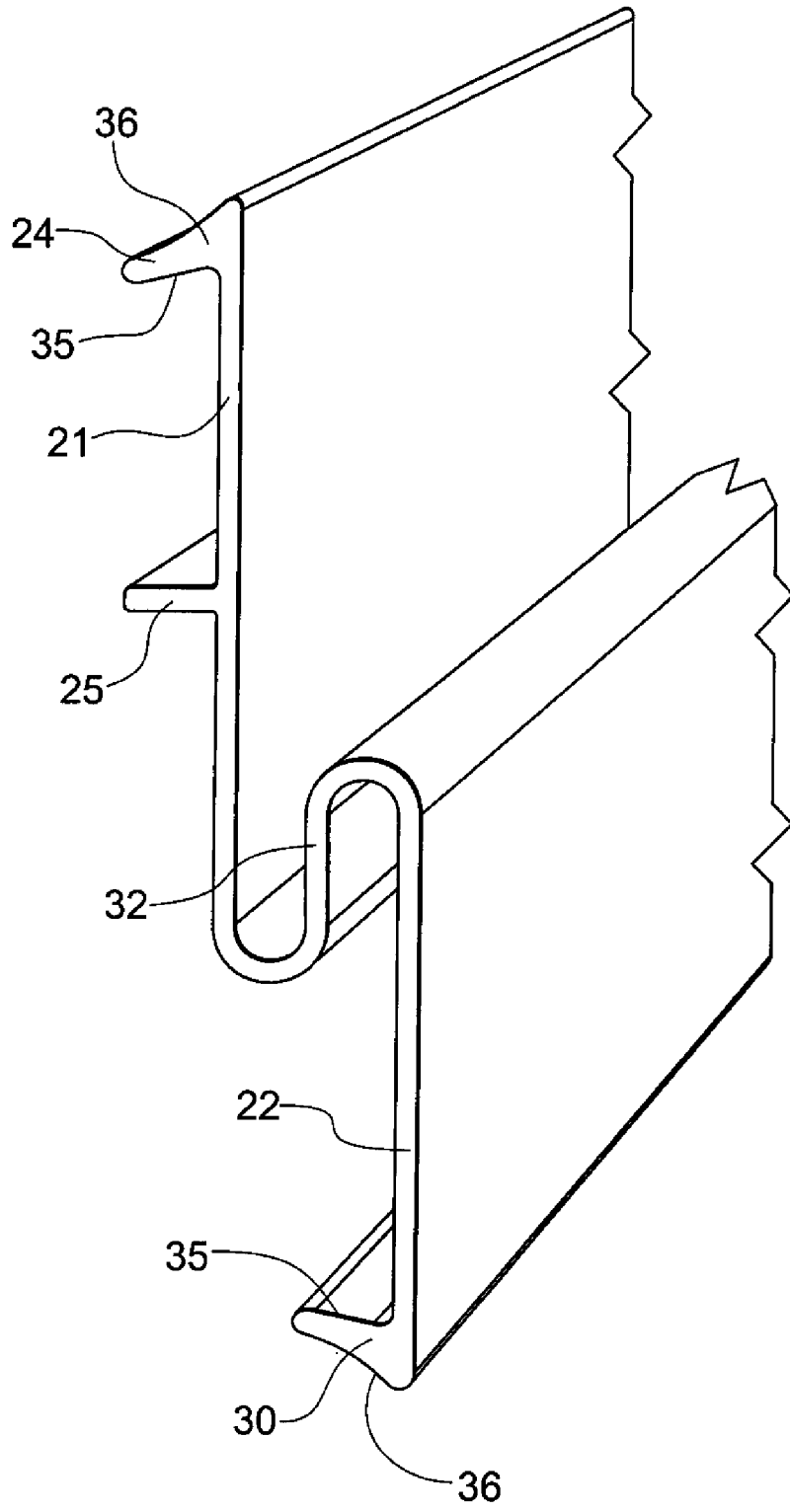


FIG. 2

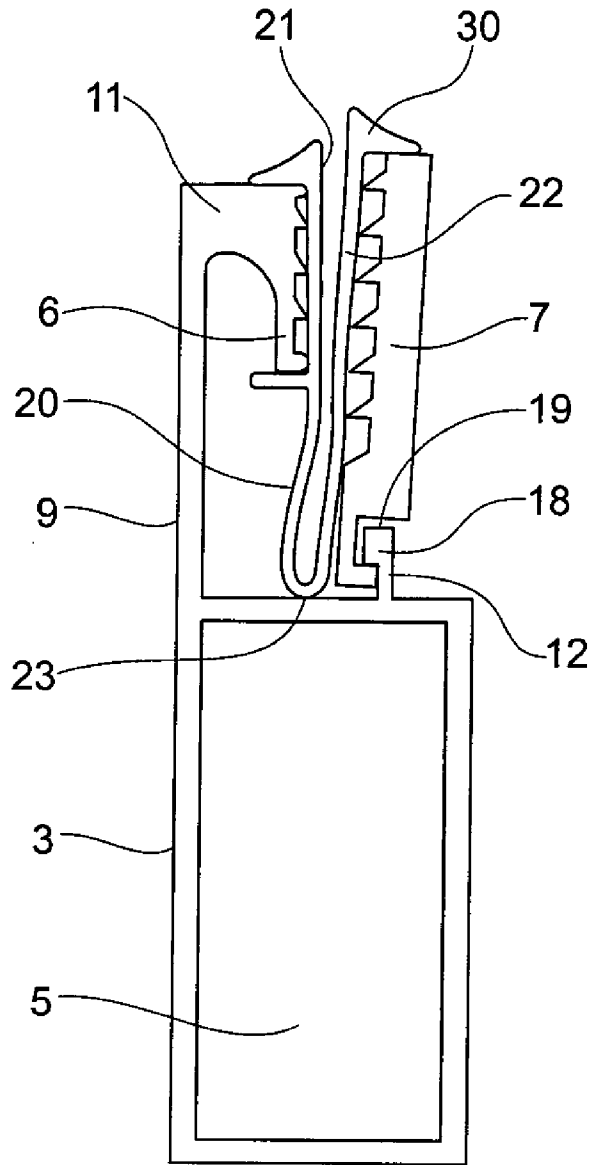


FIG. 3

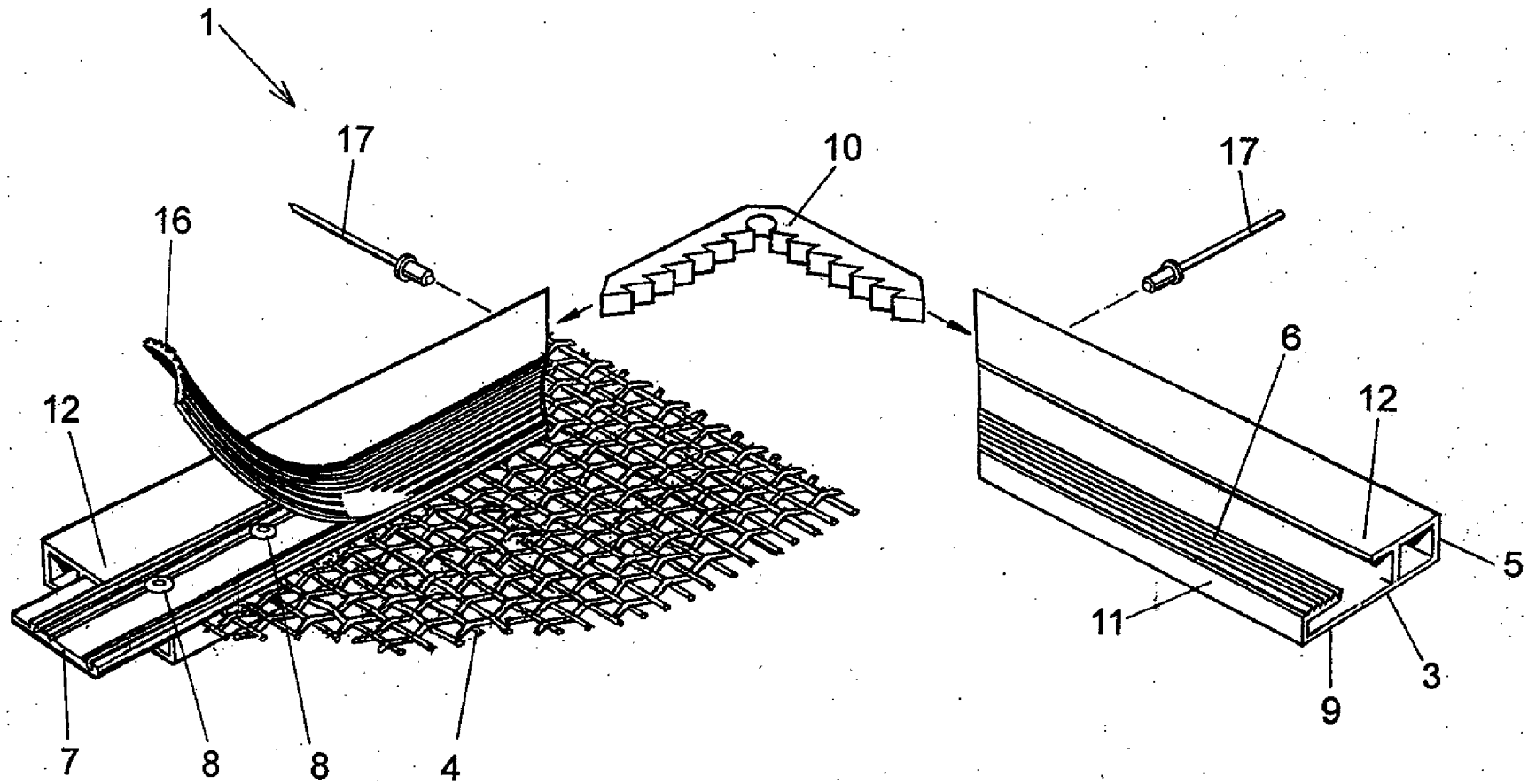


FIG. 4

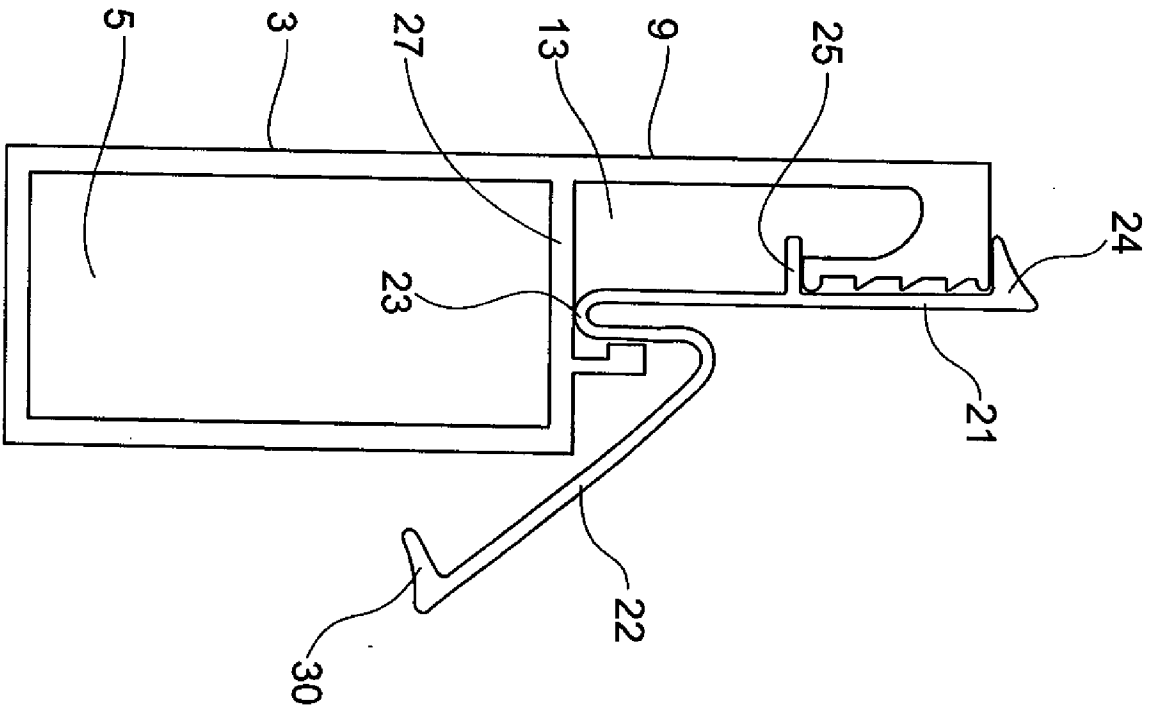


FIG. 5