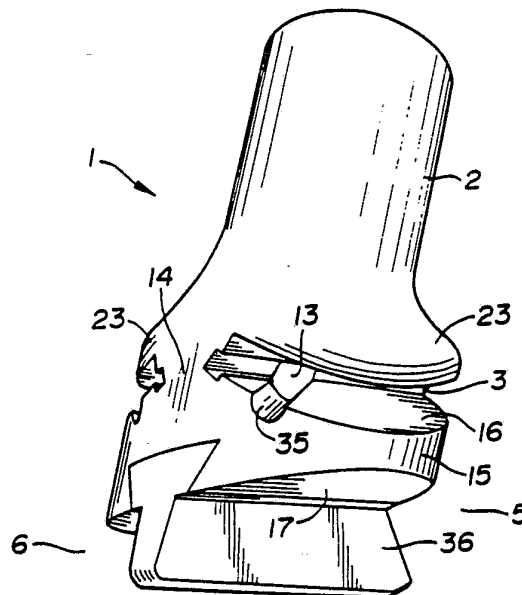




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(54) Title: APPLICATOR TIP FOR DISPENSING LIQUID ADHESIVE TO SEAM ADJACENT LAYERS OF FLOORCOVERING SHEETING



(57) Abstract

The applicator tip (1) is used by inserting it between the side edges of the adjacent layers of floorcovering sheeting which are to be seamed. The tip (1) is pulled along the line of abutment and wets the side edges with liquid adhesive. The tip (1) comprises an upright body having a bottom foot portion having wedges (15) for upraising and tilting marginal portions of the floorcovering as they pass therebeneath, an intermediate ankle portion (3) that is relatively narrow, and an upper leg portion (2) adapted to connect with a squeeze bottle containing the adhesive. A flow passageway extends through the leg portion (2) and into the ankle portion (3) and has side-opening outlets (13) in the side surfaces of the ankle portion (3). Thus the adhesive is discharged laterally relative to the seam. Means are provided to press against the top surface of the upraised marginal portions to guide the side edges into close engagement with the outlets (13).

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1 APPLICATOR TIP FOR DISPENSING LIQUID ADHESIVE TO
2 SEAM ADJACENT LAYERS OF FLOORCOVERING SHEETING
3 DESCRIPTION

4 FIELD OF THE INVENTION

5 This invention relates to an applicator tip for
6 use in seaming linearly abutting, side-by-side, planar
7 layers of floorcovering with liquid adhesive, to form a
8 finished seam extending along the line of abutment.

9 DEFINITIONS

10 For purposes of this specification,
11 "floorcovering" is intended to encompass both carpet and
12 resilient flooring material. "Open seam" is intended to
13 describe the elongated gap formed between the vertical
14 side edges of abutting layers of floorcovering, which
15 gap appears when the marginal floorcovering portions
16 adjacent the side edges are simultaneously raised by the
17 tip passing thereunder. "Closed seam" is intended to
18 describe the linear break between the abutting planar
19 layers of floorcovering when they are lying flat on the
20 sub-floor or underlay, with the side edges not yet
21 bonded by adhesive. And "finished seam" is intended to
22 describe the seam after applied adhesive has bonded the
23 side edges.

24 BACKGROUND OF THE INVENTION

25 As a beginning point, it is useful to shortly
26 describe the various forms of what is known in the
27 industry as "resilient flooring" and to provide some
28 background on the seaming techniques used in the past
29 with that material. Resilient flooring is generic to:

- 30 - linoleum;
31 - rigid-backed vinyl (such as the material
32 sold under the well known trade-mark
33 CORLON);
34 - cushion backed vinyl; and
35 - homogeneous vinyl (which is a solid layer of
36 vinyl).

1 Linoleum was commonly seamed by laying the
2 vertical side edges of adjacent layers in close
3 abutment, folding back the adjacent marginal portions of
4 the floorcovering layers to expose the sub-floor,
5 applying a band of water-resistant adhesive to the sub-
6 floor along the line of abutment using a spatula-like
7 tool called a 'spreader', then bringing the marginal
8 portions back down onto the sub-floor, and hand-rolling
9 the seam to complete operation.

10 The rigid-backed vinyl was seamed in the same
11 fashion as the linoleum, except that an excess of the
12 sub-floor adhesive was applied to the sub-floor along
13 the line of abutment, with the hope that it would
14 squeeze up between the abutting side edges when they
15 were pressed down, to seal and bond them together.

16 In the case of the cushion-backed vinyl, the
17 marginal portions were first laid flat on the adhesive-
18 coated sub-floor, in the same manner as linoleum. An
19 applicator was then used to apply low viscosity,
20 solvent-base, liquid adhesive into the closed seam. The
21 applicator comprised a plastic squeeze bottle having a
22 hollow, knife blade-like tip. The cushion-backed vinyl
23 could be laterally compressed slightly, to allow
24 penetration of the tip for application of the liquid
25 adhesive.

26 In the case of the homogeneous vinyl, a narrow
27 groove would be cut along the seam, a bead of vinyl
28 would be laid into the groove and a hot iron would be
29 used to melt the bead and adjacent material to thereby
30 weld the side edges together.

31 From the foregoing, it will be understood that
32 seaming involved bonding the undersurface of the
33 floorcovering to the sub-floor with pre-applied thick
34 adhesive and bonding the vertical side surfaces
35 together, either by application of low viscosity, liquid
36 adhesive or by heat welding the vinyl edges.

1 In the mid-eighties I developed a novel
2 applicator tip for use with homogeneous vinyl. The tip
3 was disclosed in United States Patent No. 4,484,976,
4 issued November 27, 1985, as is hereafter referred to as
5 the "prior tip".

6 This prior tip was designed to wet the vertical
7 side edges of the floorcovering with a solvent-base
8 liquid adhesive. The tip is adapted to raise the flat
9 marginal portions of the floorcovering as it passes
10 along the seam, thereby exposing the vertical side edges
11 while wetting them with liquid adhesive. More
12 particularly, the installer inserts the tip between the
13 floorcovering side edges and beneath the adjacent
14 marginal portions. He then pulls the tip along the
15 seam. The tip is connected at its upper end to a
16 plastic squeeze bottle containing a supply of liquid
17 adhesive. The tip forms a longitudinal passageway
18 having an outlet positioned to deliver the adhesive to
19 the faces of the floorcovering side edges. The bottle
20 is manually squeezed by the installer as he draws the
21 assembly along the line of abutment, to discharge the
22 adhesive.

23 Structurally, the prior tip comprises:

- 24 - An upstanding, elongate body having, from
25 top to bottom, a leg portion, a relatively
26 narrow ankle portion, and a relatively broad
27 foot portion. The body is also formed with
28 a notch projecting inwardly from its
29 trailing edge, said notch being located at
30 the juncture of the ankle and foot portions
31 (since the body is pulled along the line of
32 abutment or seam, it has leading and
33 trailing edges);
34 - The leg portion having coupling means at its
35 upper end for connecting it with the
36 adhesive supply squeeze bottle, as
37 aforesaid;

- 1 - A longitudinal open-ended passageway
2 extending downwardly through the leg and
3 ankle portions to an outlet located at the
4 inner end of the notch, the outlet being
5 positioned to discharge rearwardly;
- 6 - The foot portion having downwardly and
7 outwardly sloping flat upper surfaces
8 extending laterally from a linear central
9 apex to, in effect, provide a pair of side-
10 by-side wedges having a common flat bottom
11 surface; and
- 12 - The foot portion further forming a
13 longitudinal passageway which is an
14 extension of the leg and ankle passageway,
15 said foot passageway having a centrally
16 located outlet in the foot portion's bottom
17 surface.

18 In use, the prior tip involves the following:

- 19 - The foot portion is inserted beneath the
20 adjacent marginal portions of the two
21 floorcovering layers. The wedges thus
22 underlie the marginal portions and cause
23 their side edges to be raised, tilted,
24 spread apart and positioned in proximity to
25 the sealant outlet and notch area; and
- 26 - The combination of the notch walls and the
27 upraised floorcovering side edges form a
28 narrow chamber or conduit, open at the
29 trailing end and having the adhesive outlet
30 at its leading end -the adhesive is fed into
31 the conduit, to wet the floorcovering side
32 edges.

33 The prior tip has worked well when used with
34 homogeneous vinyl using solvent-base liquid adhesive
35 but, when applied to carpeting and other resilient
36 flooring, certain problems have become evident. More
37 particularly:

1 - The ankle portion has had to be kept quite
2 narrow (typically 1/16"). If this is not
3 done, the seam will open too much as the tip
4 is moved along it. An excessive amount of
5 adhesive will then readily move down the
6 conduit and into the open seam (this
7 excessive flow is referred to as
8 "flooding"). In the case of carpet, when
9 the upraised marginal portions of the
10 floorcovering drop back down to the sub-
11 floor after the tip has passed, the excess
12 adhesive will get squeezed upwardly and will
13 wick into the pile. The installer can then
14 attempt to clean off the surface adhesive,
15 but this is time-consuming, expensive and
16 rarely complete. The presence of adhesive
17 on top of the seam will result in flattening
18 of the pile fibers with traffic, thereby
19 creating an undesired, hard, lumpy ridge
20 running along the seam. In the case of
21 resilient flooring, excess adhesive will
22 accumulate on top of the finished seam and
23 is wasted and must be removed;

24 - Flooding is also partly a result of having
25 to use low viscosity, solvent base, liquid
26 adhesive. These adhesives will readily flow
27 down the conduit and through; the outlet or
28 orifice into the open seam. It has not been
29 possible to substitute a high viscosity,
30 water base liquid adhesive (referred to
31 hereinafter as "sealant") for use with the
32 prior tip, as it will not flow at a
33 sufficient rate through the narrow ankle
34 passageway and orifice (which typically has
35 a diameter of about 40/1000"). It would be
36 desirable to use a high viscosity, water-
37 based sealant, because it is less toxic in

1 nature than the solvent base adhesive.
2 However this is deterred because a
3 passageway of greater cross-section would
4 require a thicker ankle portion, which would
5 result in opening the seam wider, thereby
6 inducing an unacceptable degree of flooding;
7 - In addition, it is desirable, with resilient
8 flooring and carpet, to apply some of the
9 sealant to the undersurface of the marginal
10 portions of the floorcovering, to enhance
11 the strength and durability of the seam.
12 Attempts to accomplish this end with the
13 prior tip, by delivering more adhesive,
14 simply result in more excess adhesive
15 reaching the top surface of the seam;
16 - Since the sub-floor is normally coated with
17 a tacky adhesive, when the prior tip is
18 pressed down against the sub-floor and
19 pulled along the seam, the sub-floor
20 adhesive will drag on the tip and also ball
21 up beneath it. This commonly causes the
22 installer using the tip to lift it out of
23 contact with the sub-floor during use.
24 Several problems can then result. The
25 floorcovering side edges can be spread too
26 far apart, with the consequence that severe
27 flooding will follow. Furthermore, the
28 installer will have to manually press down
29 the wetted edges as he proceeds. This means
30 that the installer has to hold the bottle
31 and tip with one hand, using that hand to
32 squeeze the bottle, while he uses the other
33 hand to press down the wetted side edges.
34 All of this is tiring over time and requires
35 a significant level of skill on the part of
36 the installer. In addition, when the prior
37 tip is lifted, it has a tendency to skew,

- 1 with the result that the application of
2 adhesive to the two side edges is somewhat
3 uneven and erratic;
- 4 - As previously stated, it is desirable to
5 apply beads of adhesive to the undersurface
6 of the floorcovering, both along the
7 abutment line of the seam and laterally
8 spaced therefrom. In the prior tip there is
9 provided an internal passageway extension
10 having an outlet in the bottom surface of
11 the foot portion. However, it is found that
12 there is insufficient pressure created in
13 the passageway to consistently deliver
14 adhesive through this outlet for the purpose
15 of wetting the undersurfaces;
- 16 - When working with carpet, the pile tends to
17 shield or hide the "work area" (where the
18 outlet is discharging the adhesive) from the
19 view of the installer, making it difficult
20 to know how hard to work the squeezing of
21 the supply bottle; and
- 22 - As a final point, the tip and attached
23 bottle are unstable and tend to topple over
24 if left in the seam.

25 It is therefore applicant's objective to modify
26 the prior tip to overcome these problems and produce a
27 better tip which can be used with floorcoverings such as
28 carpet and resilient flooring and which is adapted to be
29 used with high viscosity, water base liquid adhesive
30 (sealant).

31 SUMMARY OF THE INVENTION

32 The present invention is embodied in two distinct
33 tips, one being suited for use with resilient flooring
34 and the other for use with carpet. However both tips
35 incorporate certain novel features, as described below.

1 In the essential feature of the invention, a
2 laterally extending barrier or wall is positioned close
3 to and rearwardly of the adhesive outlet, so as to
4 restrict or prevent the direct rearward flow of sealant
5 along the longitudinal axis of the open seam. In
6 effect, by providing such a barrier, the single,
7 rearwardly opening outlet of the prior tip has been
8 converted into a pair of side-opening outlets which
9 discharge the sealant laterally from the direction of
10 tip motion and directly at the adjacent vertical side
11 edge of the floorcovering.

12 As a result of this modification, unrestrained
13 flooding of the open seam has been substantially reduced
14 or eliminated. This has then made it possible to make
15 the ankle portion sufficiently thick (now typically
16 5/16") so as to accommodate an internal passageway and
17 outlet of sufficient diameter (typically 200/1000
18 inches) to enable successful application of water-based
19 sealant.

20 In a preferred embodiment, the tip incorporates
21 means for engaging the top surfaces of the upraised
22 marginal portions of the floorcovering, most preferably
23 to slightly deflect or bend said upwardly slanted
24 portions toward horizontal, to thereby cooperate with
25 the underlying wedges to bracket and guide the
26 floorcovering marginal portions to bring their side
27 edges into close-fitting engagement with the side
28 surfaces of the ankle portion and thus with the side-
29 opening outlets.

30 In one embodiment, the deflecting means comprises
31 a pair of elongate wing-like members, one of which
32 projects out laterally from each side surface of the
33 ankle portion. The wing members are positioned above
34 the sealant outlets and extend forwardly and rearwardly
35 therefrom. The wing members further are in spaced,
36 generally parallel relation with the top surfaces of the
37 wedges. Each wing member is adapted, as previously

1 stated, to cooperate with its underlying wedge to
2 bracket the upraised marginal portion of floorcovering
3 and guide it into close-fitting engagement with the
4 adjacent ankle portion side surface.

5 Alternatively, the tip may simply have a pair of
6 side grooves formed in its body, which grooves function
7 to create the narrow ankle portion. The top wall of the
8 groove can also function as the deflecting means.

9 By modifying the tip in this fashion, the
10 following results follow:

- 11 - The barrier acts to restrict the ready
12 escape of sealant down the open seam,
13 thereby reducing flooding;
- 14 - The deflecting means and wedges cooperate to
15 bracket the upraised marginal portions of
16 floorcovering and hold the side edges
17 thereof in close-fitting engagement with the
18 sealant outlets in the side surfaces of the
19 ankle portion;
- 20 - The barrier and the now close-fitting
21 floorcovering side edges combine to restrict
22 sealant flow and thereby create backpressure
23 in the internal passageways of the tip;
- 24 - The thickness of the ankle portion and the
25 size of the internal passageway and sealant
26 outlet can now be increased;
- 27 - Viscous sealant (such as water-base sealant)
28 can now be applied uniformly and at a
29 suitable rate to the side edges of the
30 floorcovering layers; and
- 31 - The deflecting means further function, in
32 the case of carpet, to bend the pile of the
33 upraised marginal portions outwardly, so
34 that the work area is now visible to the
35 installer.

1 In another preferred aspect, the foot portion
2 passageway is formed to provide a pair of outlets spaced
3 to each side of the line of abutment. As a result of
4 the backpressure now obtainable in the passageway
5 system, it is possible to deliver beads of sealant
6 through the foot portion outlets on to the sub-flooring,
7 in spaced parallel relationship with the line of
8 abutment.

9 In another preferred aspect, the top surface of
10 each wedge is undercut to provide a shallow channel
11 leading out laterally from the sealant outlet. These
12 channels function to bring sealant into wetting contact
13 with the undersurfaces of the upraised portions of the
14 floorcovering, immediately adjacent the line of
15 abutment.

16 In another preferred aspect, a narrow, elongate
17 keel is provided to project downwardly from the bottom
18 surface of the foot portion. The keel may be centrally
19 located and aligned with the seam. Alternatively, a
20 pair of "outrigger" keels may be provided, one to each
21 side of the central axis of the foot portion bottom
22 surface. By this addition, it is now feasible to press
23 the tip down firmly against the sub-flooring while
24 moving it along the seam, without incurring significant
25 drag or balling up of the sub-flooring adhesive. As a
26 result of this modification, the elevation of the tip
27 remains constant when in use and the positioning of the
28 floorcovering side edges is stabilized. The end result
29 is that the sealant can be applied in a more consistent
30 and even manner.

31 In another preferred aspect, a pair of rearwardly
32 located wiper blades are provided on the carpet tip.
33 These wiper blades are supported by the wing members at
34 their rear or trailing ends. The wiper blades extend
35 downwardly, so as to scrape against the upper margins of
36 the side edges of the carpet. The blades function as

1 wipers, to bias excess sealant downwardly so that it
2 moves to the base of the carpet side edges.

3 In still another preferred aspect, the wiper
4 blades are mounted to and depend from a crossbar
5 connecting the trailing ends of the wing members. As a
6 result of this construction, the wing members are
7 reinforced and a "window" is defined between the rear
8 ends of the wing members, the ankle portion and the
9 crossbar. This window enables the installer to visually
10 monitor the application of the adhesive as he draws the
11 tip along the seam.

12 When all of the components of the various aspects
13 of the invention are combined, an applicator tip is
14 provided which is characterized by the following
15 advantages:

- 16 - flooding is reduced;
- 17 - the floorcovering side edges are now
18 positively guided into comparatively tight
19 engagement with the passageway side-opening
20 outlets;
- 21 - the combination of the downstream transverse
22 barrier close to the sealant outlet and the
23 tight engagement with the floorcovering side
24 edges contributes to creating backpressure
25 in the passageway system, which enables the
26 parallel beads of sealant to be applied to
27 the sub-flooring, parallel to but outwardly
28 spaced from the line of abutment;
- 29 - the undercutting of the wedge faces and the
30 provision of the sealant beads as aforesaid
31 provide lines of adhesive between the
32 floorcovering undersurface and the sub-
33 flooring, both at the seam and outwardly
34 spaced therefrom on both sides, thereby
35 improving the sturdiness of the seam when
36 compared to that obtained with the prior
37 tip;

- 1 - by reducing flooding and thereby enabling
2 the ankle portion to be thicker, the tip is
3 now capable of handling viscous sealants,
4 such as water-based sealants; and
5 - the tip is now consistently referenced in
6 elevation to the sub-flooring, making it
7 more consistent in quality of performance as
8 well as making it easier to handle.

9 DESCRIPTION OF THE DRAWING

10 Figure 1 is a perspective view of a tip for use
11 with carpet;

12 Figure 2 is a side view of the tip of Figure 1;

13 Figure 3 is a top plan view of the tip of Figure
14 1;

15 Figure 4 is a sectional side view of the tip of
16 Figure 1;

17 Figure 5 is a sectional view taken along the
18 line V---V of Figure 2;

19 Figure 6 is a sectional view taken along the
20 line VI---VI of Figure 2, showing the passageways for
21 sealant flow;

22 Figure 7 is a bottom plan view of the foot
23 portion of the tip of Figure 1;

24 Figure 8 is a front view of an alternative form
25 of a tip for use with resilient flooring, said tip
26 having a keel and being viewed from the rear, the tip
27 being shown in use;

28 Figure 9 is a side view of the tip of Figure 8;

29 Figure 10 is a perspective view showing the tip
30 of Figure 1 in place for seaming between layers of
31 carpet floorcovering;

32 Figure 11 is a perspective view showing the tip
33 of Figure 8 in place for seaming between layers of
34 resilient flooring;

1 Figure 12 is a perspective view showing the
2 resilient flooring tip of Figure 8, said tip having a
3 wedge top surface and adjacent sealant outlet, the
4 surface of the wedge having been grooved to create a
5 shallow channel for sealant flow;

6 Figure 13 is a side view of the carpet tip of
7 Figure 1, but in this case it is equipped with outrigger
8 keels projecting from the base of the foot portion, the
9 passageways being shown in broken lines;

10 Figure 14 is a sectional view of part of the tip
11 of Figure 13, taken along the line A--A and, shown in
12 use; and

13 Figure 15(a), 15(b) and 15(c) are simplified side
14 views showing three alternative embodiments of barrier
15 walls that can partially restrict rearward flow of
16 sealant.

17 DESCRIPTION OF THE PREFERRED EMBODIMENT

18 The applicator tip 1 comprises, from top to
19 bottom, a leg portion 2, ankle portion 3 and foot
20 portion 4. The tip 1 has a front or leading edge 5 and
21 a rear or trailing edge 6 when in use. The tip 1 is
22 adapted for seaming adjacent layers 7 of floorcovering.
23 The layers 7 are in linear, side-by-side, abutting
24 relationship along a line of abutment or seam 8. Once
25 formed, a finished seam 9 extends along the line of
26 abutment.

27 The tip 1 is adapted for use with a plastic
28 squeeze bottle or other container (not shown) containing
29 a supply of liquid adhesive or sealant.

30 The leg portion 2 forms an internally threaded
31 coupling 10 at its upper end, for connection with the
32 sealant supply bottle. The leg portion 2 further forms
33 a leg passageway 11 extending longitudinally
34 therethrough.

1 Turning now to the carpet tip of Figures 1 - 7,
2 the ankle portion 3 is generally rectangular in section.
3 It is narrow from its leading edge to its trailing edge,
4 relative to the leg and foot portions 2,4. The ankle
5 portion 3 forms an ankle passageway 12 which extends
6 longitudinally therethrough and communicates at its
7 upper end with the leg passageway 11. The ankle
8 passageway 12 has side-opening outlets 13 at the
9 juncture of the ankle and foot portions 3,4. An
10 upstanding, laterally extending wall 14 forms a
11 transverse barrier for preventing or restricting direct
12 rearward flow of sealant issuing from the outlets 13.
13 Stated otherwise, the wall 14 causes the sealant to
14 discharge laterally.

15 The foot portion 4 comprises a pair of downwardly
16 and laterally slanting wedges 15. The wedges 15 have
17 top surfaces 16 and a common bottom surface 17. The
18 foot portion 4 forms an internal foot passageway 18
19 extending longitudinally therethrough. The foot
20 passageway 18 communicates at its upper end with the
21 ankle passageway 12 and has outlets 19 in the bottom
22 surface 17. The central outlet 19 is positioned to
23 coincide with the seam 8. The remaining outlets 19 are
24 laterally spaced on each side of the longitudinal center
25 line of the bottom surface 17. Thus the central outlet
26 19 may deliver a bead of sealant along the seam 8 and
27 the other outlets 19 deliver beads that are parallel to
28 but laterally spaced from the seam.

29 A removable bottom plate 20 is attached to the
30 upper wall of the foot portion 4, by screws 21, to
31 provide the bottom surface 17 of said foot portion 4.

32 A pair of wing members 23 project laterally from
33 the side surfaces 24 of the ankle portion 3. Each wing
34 member 23 is positioned above its adjacent side-opening
35 outlet 13 and extends longitudinally in a generally
36 horizontal plane both forwardly and rearwardly of the
37 outlet. Thus each adjacent associated pair consisting

1 of a wing member 23 and wedge 15 creates means for
2 bracketing and guiding the upraised marginal portion 25
3 of floorcovering into the desired close-fitting
4 engagement with the ankle portion side surfaces 24. The
5 wing member 23 is also operative to bend the pile 26
6 outwardly when the tip is being used to seam carpet, as
7 shown in Figure 10.

8 At their rear ends, the wing members 23 are
9 connected by a cross-member 27. The cross-member 27
10 functions both to brace the wing members 23 and to serve
11 as a support for the wiper 28.

12 The wing members 23 and cross-member 27 combine
13 to form a window 29, to provide visual access to the
14 "work area" or the open seam 30 immediately downstream
15 of the side-opening outlets 13.

16 The wiper 28 comprises a pair of blades 31
17 arranged in an upstanding and rearwardly opening V-like
18 configuration. The blades 31 are positioned and adapted
19 to scrape excess sealant from the upstanding side edges
20 32 of the floorcovering layers 7 and to cause this
21 scraped sealant to move downwardly. Some of the
22 conveyed sealant reaches the undersurface 33 of the
23 floorcovering layer 7, immediately adjacent the seam 8.

24 As shown in Figure 12, each wedge top surface 16
25 may be recessed to form a shallow channel 35 extending
26 laterally from the adjacent side-opening outlet 13.
27 Sealant can enter this channel 35 to wet the
28 undersurface 33 of the floorcovering at the seam 8.

29 Turning now to the alternative embodiment shown
30 in Figures 8, 9, 11 and 12, a downwardly projecting,
31 narrow, elongate keel 36 of small height is provided and
32 extends along the longitudinal center line of the foot
33 portion bottom surface 17. The provision of the keel 36
34 greatly reduces drag if the tip 1 is pressed down
35 against the adhesive-coated sub-floor 34 and is pulled
36 therealong in steady contact therewith. This provision
37 enables the installer to maintain the tip parts at a

1 consistent elevation, thereby improving the quality of
2 sealant application.

3 In the tip version of Figures 13 and 14 a pair of
4 shallow outrigger keels 37 project downwardly from the
5 two bottom side edges of the foot portion 4.

6 While the preferred form of the barrier is the
7 wall 14 of Figure 2, which joins and is integral with
8 both the ankle and foot portions 3,4, it is contemplated
9 that partial wall members, as shown in Figures 15(a),
10 15(b) and 15(c) could also be used.

11 In operation, the wedges 15 of the tip 1 are
12 inserted at the seam 8 beneath adjacent marginal
13 portions 25 of the floorcovering layers 7. The wedges
14 15 function to raise and tilt the marginal portions 25,
15 so that an open seam 30 results. The wing members 23
16 contact the top surfaces of the upraised marginal
17 portions 25 and bend the floorcovering downwardly a
18 slight amount to bring the side edges 32 into snug
19 engagement with the side surfaces 24 of the ankle
20 portion 3 and with the side-opening outlets 13 formed
21 therein. The sealant flow out of the leg and ankle
22 passageways 11, 12 is thus delivered laterally to the
23 side edges 32. The wall 14 acts as a barrier to reduce
24 the escape of sealant directly downstream into the open
25 seam 30. The close-fitting floorcovering side edges 32
26 and barrier wall 14 combine to create a closely enclosed
27 chamber or plenum. As a result, manual squeezing of the
28 supply bottle creates backpressure in the passageways
29 11, 12, 18. Sealant moves into the foot passageway 18
30 and is extruded through the foot outlets 19 and is
31 delivered as elongate beads to the sub-floor, not only
32 beneath the finished seam 9 but also in spaced parallel
33 alignment on each side thereof. As previously stated,
34 the keel 36 or keels 37 can be used, to enable the
35 installer to press the tip 1 into contact with the sub-
36 floor 34 and maintain a consistent elevation. The wing
37 members 23 bend the pile 26 away and to the side in the

1 region of the seam 8, thereby rendering the area of
2 sealant application visible through the window 29. The
3 wiper blades 31 function to scrape excess sealant from
4 the top area of the seam 8 and convey it downwardly
5 between the floor covering side edges 32, while
6 simultaneously pressing down the treated marginal
7 portions 25.

8 The foregoing description has been directed to
9 the specific best mode embodiment of the tip. The
10 scope of the invention is now defined by the claims
11 following below.

1 THE EMBODIMENTS OF THE INVENTION IN WHICH AN
2 EXCLUSIVE PROPERTY OR PRIVILEGE IS CLAIMED ARE DEFINED
3 AS FOLLOWS:

4 1. An applicator tip for seaming linearly
5 abutting side-by-side layers of floorcovering with
6 liquid adhesive to form a seam extending along the line
7 of abutment, comprising:

8 an upright body having, from top to bottom, a leg
9 portion, a relatively narrow ankle portion and a foot
10 portion, said body having a leading edge and a trailing
11 edge which are aligned with the line of abutment;

12 the leg portion forming a passageway extending
13 longitudinally therethrough and having means at its
14 upper end for connection with an adhesive supply
15 container, whereby adhesive may flow downwardly through
16 the leg portion to the ankle portion;

17 the foot portion having a bottom surface having
18 a longitudinal center line aligned with the seam, said
19 foot portion comprising first means for uplifting and
20 tilting marginal portions of the floorcovering layers,
21 to bring the floorcovering side edges close to the ankle
22 portion side surfaces as the tip is advanced along the
23 seam;

24 the ankle portion having a longitudinal
25 passageway communicating at its upper end with the leg
26 passageway, said ankle portion forming ankle passageway
27 outlet means for discharging adhesive immediately above
28 the central part of the foot portion first means, said
29 body forming a laterally extending barrier immediately
30 to the rear of the outlet means for directing adhesive
31 flow laterally as it issues from the outlet means,
32 whereby the adhesive is directed toward the adjacent
33 upraised and tilted floorcovering side edge.

1 2. The applicator tip as set forth in claim 1
2 wherein:

3 the first means comprises a pair of side-by-
4 side, outwardly slanting wedges having top surfaces, a
5 central apex positioned to substantially coincide with
6 the line of abutment and a flat common bottom surface.

7 3. The applicator tip as set forth in claim 1
8 comprising:

9 second means, extending out laterally from each
10 side surface of the ankle portion in spaced relation
11 above the sealant outlet and first means, for contacting
12 the uplifted marginal portions to guide their side edges
13 into close-fitting engagement with the ankle portion
14 side surfaces.

15 4. The applicator tip as set forth in claim 2
16 comprising:

17 second means, extending out laterally from each
18 side surface of the ankle portion in spaced relation
19 above the top surfaces of the wedges, for contacting the
20 uplifted marginal portions to guide their side edges
21 into close-fitting engagement with the ankle portion
22 side surfaces.

23 5. The applicator tip as set forth in claim 1
24 comprising:

25 said foot portion forming a passageway
26 communicating with the ankle passageway, said foot
27 passageway having outlets in the bottom surface of said
28 foot portion, said outlets being spaced laterally on
29 each side of the center line, whereby beads of sealant
30 may be deposited beneath the floorcovering layers and
31 parallel to but laterally spaced from the seam.

1 6. The applicator tip as set forth in claim 3
2 comprising:

3 said foot portion forming a passageway
4 communicating with the ankle passageway, said foot
5 passageway having outlets in the bottom surface of said
6 foot portion, said outlets being spaced laterally on
7 each side of the center line, whereby beads of sealant
8 may be deposited beneath the floorcovering layers and
9 parallel to but laterally spaced from the seam.

10 7. The applicator tip as set forth in claim 4
11 comprising:

12 said foot portion forming a passageway
13 communicating with the ankle passageway, said foot
14 passageway having outlets in the bottom surface of said
15 foot portion, said outlets being spaced laterally on
16 each side of the center line, whereby beads of sealant
17 may be deposited beneath the floorcovering layers and
18 parallel to but laterally spaced from the seam.

19 8. The applicator tip as set forth in claim 2
20 wherein:

21 the top surface of each wedge is recessed to form
22 a laterally extending, shallow channel extending from
23 the adjacent sealant outlet, whereby sealant entering
24 the channel may contact the undersurface of the upraised
25 marginal portion of the floorcovering.

26 9. The applicator tip as set forth in claim 3
27 wherein:

28 the top surface of each wedge is recessed to form
29 a laterally extending, shallow channel extending from
30 the adjacent sealant outlet, whereby sealant entering
31 the channel may contact the undersurface of the upraised
32 marginal portion of the floorcovering.

1 10. The applicator tip as set forth in claim 4
2 wherein:

3 the top surface of each wedge is recessed to form
4 a laterally extending, shallow channel extending from
5 the adjacent sealant outlet, whereby sealant entering
6 the channel may contact the undersurface of the upraised
7 marginal portion of the floorcovering.

8 11. The applicator tip as set forth in claim 5
9 wherein:

10 the top surface of each wedge is recessed to form
11 a laterally extending, shallow channel extending from
12 the adjacent sealant outlet, whereby sealant entering
13 the channel may contact the undersurface of the upraised
14 marginal portion of the floorcovering.

15 12. The applicator tip as set forth in claim 6
16 wherein:

17 the top surface of each wedge is recessed to form
18 a laterally extending, shallow channel extending from
19 the adjacent sealant outlet, whereby sealant entering
20 the channel may contact the undersurface of the upraised
21 marginal portion of the floorcovering.

22 13. The applicator tip as set forth in claim 7
23 wherein:

24 the top surface of each wedge is recessed to form
25 a laterally extending, shallow channel extending from
26 the adjacent sealant outlet, whereby sealant entering
27 the channel may contact the undersurface of the upraised
28 marginal portion of the floorcovering.

1 14. The applicator tip as set forth in claim 1
2 comprising:

3 at least one narrow elongate keel projecting
4 downwardly from the bottom surface of the foot portion
5 and being disposed parallel to or coincident with the
6 longitudinal center line of the bottom surface of the
7 foot portion.

8 15. The applicator tip as set forth in claim 2
9 comprising:

10 at least one narrow elongate keel projecting
11 downwardly from the bottom surface of the foot portion
12 and being disposed parallel to or coincident with the
13 longitudinal center line of the bottom surface of the
14 foot portion.

15 16. The applicator tip as set forth in claim 3
16 comprising:

17 at least one narrow elongate keel projecting
18 downwardly from the bottom surface of the foot portion
19 and being disposed parallel to or coincident with the
20 longitudinal center line of the bottom surface of the
21 foot portion.

22 17. The applicator tip as set forth in claim 4
23 comprising:

24 at least one narrow elongate keel projecting
25 downwardly from the bottom surface of the foot portion
26 and being disposed parallel to or coincident with the
27 longitudinal center line of the bottom surface of the
28 foot portion.

1 18. The applicator tip as set forth in claim 5
2 comprising:

3 at least one narrow elongate keel projecting
4 downwardly from the bottom surface of the foot portion
5 and being disposed parallel to or coincident with the
6 longitudinal center line of the bottom surface of the
7 foot portion.

8 19. The applicator tip as set forth in claim 6
9 comprising:

10 at least one narrow elongate keel projecting
11 downwardly from the bottom surface of the foot portion
12 and being disposed parallel to or coincident with the
13 longitudinal center line of the bottom surface of the
14 foot portion.

15 20. The applicator tip as set forth in claim 7
16 comprising:

17 at least one narrow elongate keel projecting
18 downwardly from the bottom surface of the foot portion
19 and being disposed parallel to or coincident with the
20 longitudinal center line of the bottom surface of the
21 foot portion.

22 21. The applicator tip as set forth in claim 8
23 comprising:

24 at least one narrow elongate keel projecting
25 downwardly from the bottom surface of the foot portion
26 and being disposed parallel to or coincident with the
27 longitudinal center line of the bottom surface of the
28 foot portion.

1 22. The applicator tip as set forth in claim 9
2 comprising:

3 at least one narrow elongate keel projecting
4 downwardly from the bottom surface of the foot portion
5 and being disposed parallel to or coincident with the
6 longitudinal center line of the bottom surface of the
7 foot portion.

8 23. The applicator tip as set forth in claim 10
9 comprising:

10 at least one narrow elongate keel projecting
11 downwardly from the bottom surface of the foot portion
12 and being disposed parallel to or coincident with the
13 longitudinal center line of the bottom surface of the
14 foot portion.

15 24. The applicator tip as set forth in claim 11
16 comprising:

17 at least one narrow elongate keel projecting
18 downwardly from the bottom surface of the foot portion
19 and being disposed parallel to or coincident with the
20 longitudinal center line of the bottom surface of the
21 foot portion.

22 25. The applicator tip as set forth in claim 12
23 comprising:

24 at least one narrow elongate keel projecting
25 downwardly from the bottom surface of the foot portion
26 and being disposed parallel to or coincident with the
27 longitudinal center line of the bottom surface of the
28 foot portion.

29 26. The applicator tip as set forth in claim 4
30 wherein:

31 the second means comprises a pair of elongate
32 wing members adapted to extend parallel to the seam
33 along each side of the ankle portion; and comprising

1 wiper blade means for scraping sealant from the
2 upper segments of the floorcovering side edges of the
3 upraised marginal portions and conducting said scraped
4 sealant downwardly, whereby part of it may reach the
5 undersurface of the floorcovering;

6 a crossbar connecting the rear portions of the
7 wing members;

8 said wiper blade means depending downwardly from
9 the crossbar.

10 27. The applicator tip as set forth in claim 7
11 wherein:

12 the second means comprises a pair of elongate
13 wing members adapted to extend parallel to the seam
14 along each side of the ankle portion; and comprising

15 wiper blade means for scraping sealant from the
16 upper segments of the floorcovering side edges of the
17 upraised marginal portions and conducting said scraped
18 sealant downwardly, whereby part of it may reach the
19 undersurface of the floorcovering;

20 a crossbar connecting the rear portions of the
21 wing members;

22 said wiper blade means depending downwardly from
23 the crossbar.

24 28. The applicator tip as set forth in claim 10
25 wherein:

26 the second means comprises a pair of elongate
27 wing members adapted to extend parallel to the seam
28 along each side of the ankle portion; and comprising

29 wiper blade means for scraping sealant from the
30 upper segments of the floorcovering side edges of the
31 upraised marginal portions and conducting said scraped
32 sealant downwardly, whereby part of it may reach the
33 undersurface of the floorcovering;

34 a crossbar connecting the rear portions of the
35 wing members;

1 said wiper blade means depending downwardly from
2 the crossbar.

3 29. The applicator tip as set forth in claim 17
4 wherein:

5 the second means comprises a pair of elongate
6 wing members adapted to extend parallel to the seam
7 along each side of the ankle portion; and comprising
8 wiper blade means for scraping sealant from the
9 upper segments of the floorcovering side edges of the
10 upraised marginal portions and conducting said scraped
11 sealant downwardly, whereby part of it may reach the
12 undersurface of the floorcovering;

13 a crossbar connecting the rear portions of the
14 wing members;

15 said wiper blade means depending downwardly from
16 the crossbar.

17 30. The applicator as set forth in claim 26
18 wherein:

19 the wing members and crossbar form an open window
20 extending rearwardly of the ankle portion sealant
21 outlets, whereby the outlets are visually observable
22 from above when the applicator tip is in use.

23 31. The applicator as set forth in claim 27
24 wherein:

25 the wing members and crossbar form an open window
26 extending rearwardly of the ankle portion sealant
27 outlets, whereby the outlets are visually observable
28 from above when the applicator tip is in use.

1 32. The applicator as set forth in claim 28
2 wherein:

3 the wing members and crossbar form an open window
4 extending rearwardly of the ankle portion sealant
5 outlets, whereby the outlets are visually observable
6 from above when the applicator tip is in use.

7 33. The applicator as set forth in claim 29
8 wherein:

9 the wing members and crossbar form an open window
10 extending rearwardly of the ankle portion sealant
11 outlets, whereby the outlets are visually observable
12 from above when the applicator tip is in use.

Fig. 1.

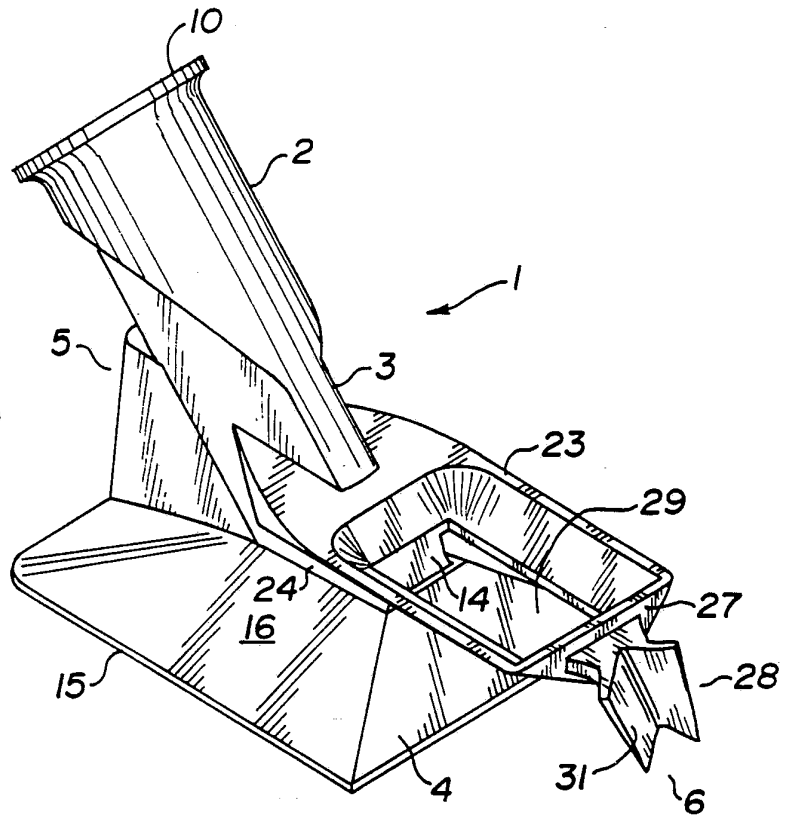
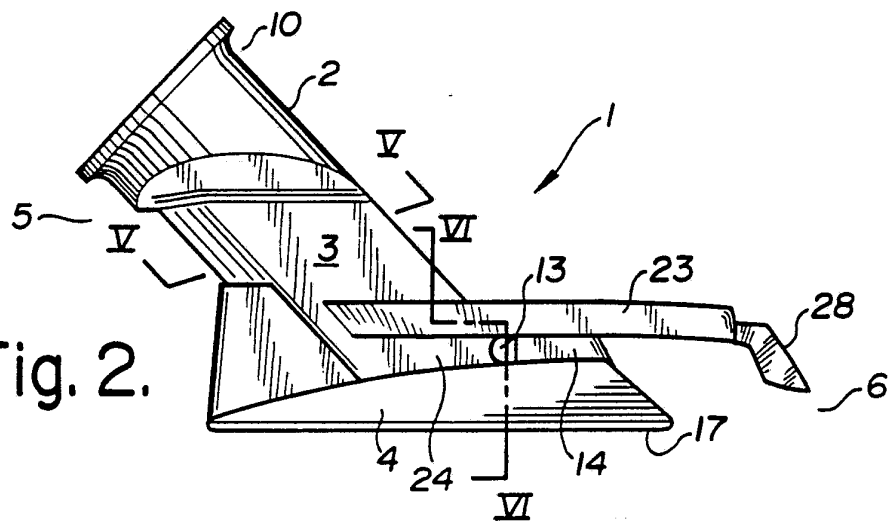


Fig. 2.



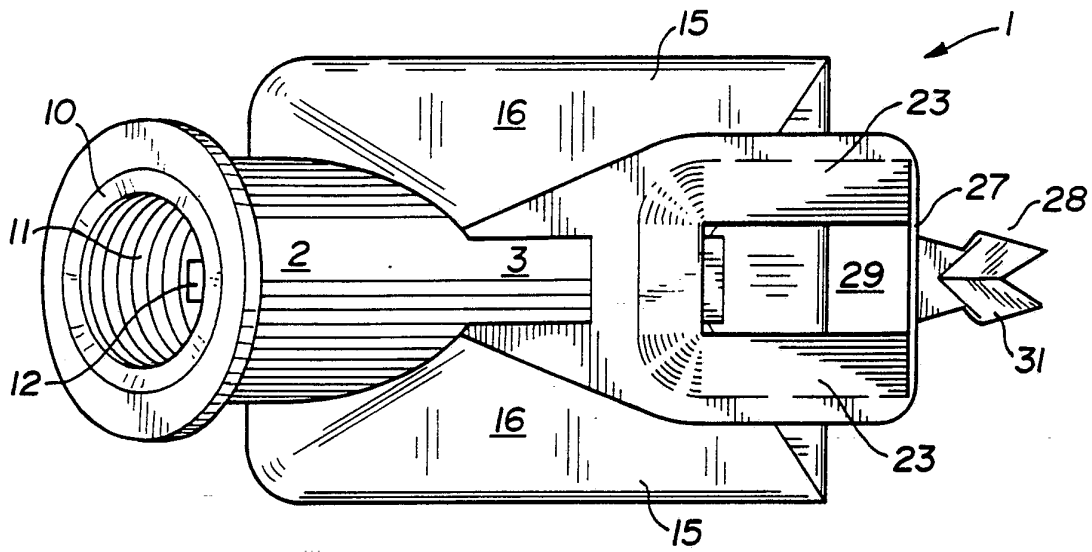


Fig. 3.

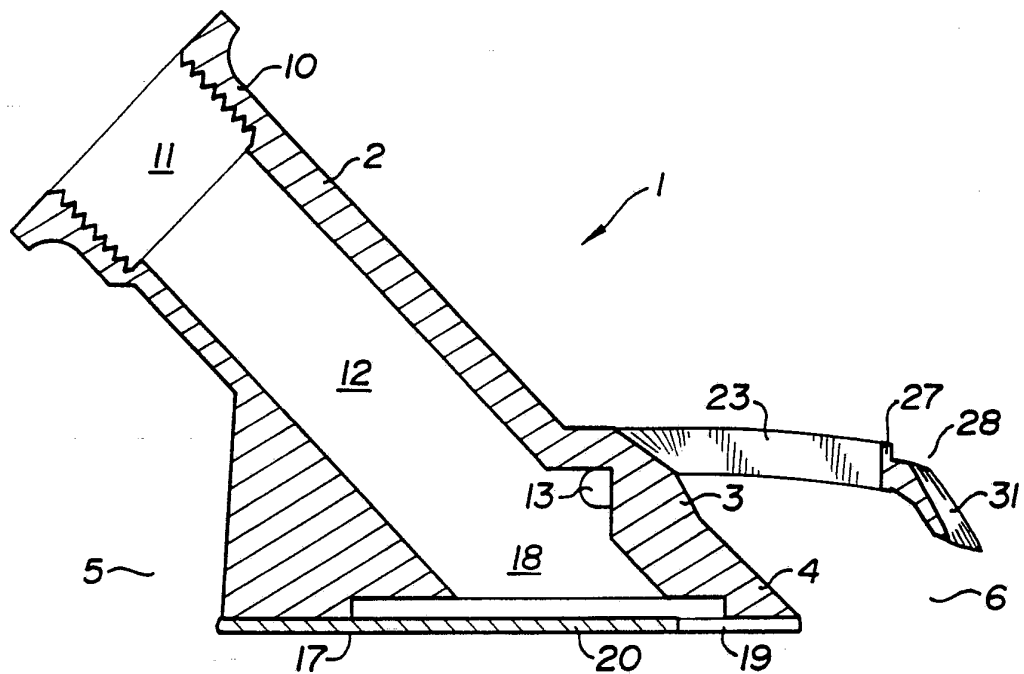


Fig. 4.

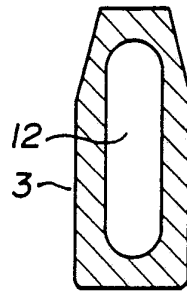


Fig. 5.

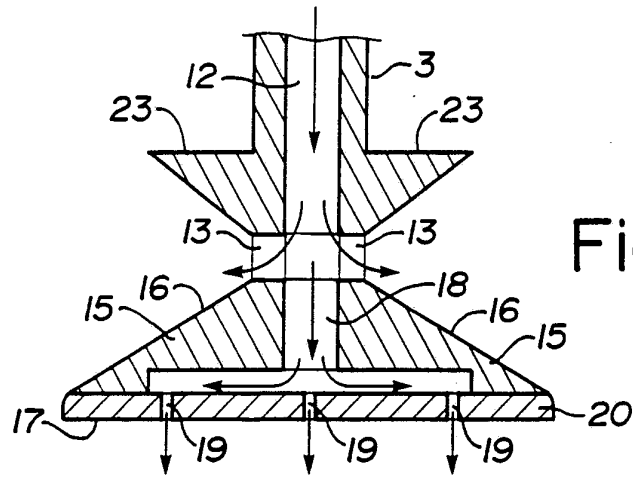


Fig. 6.

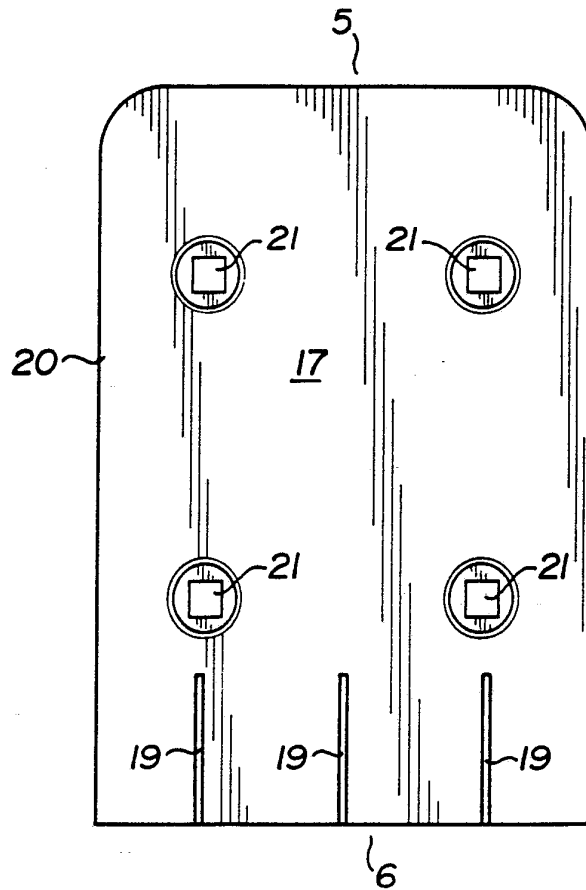


Fig. 7.

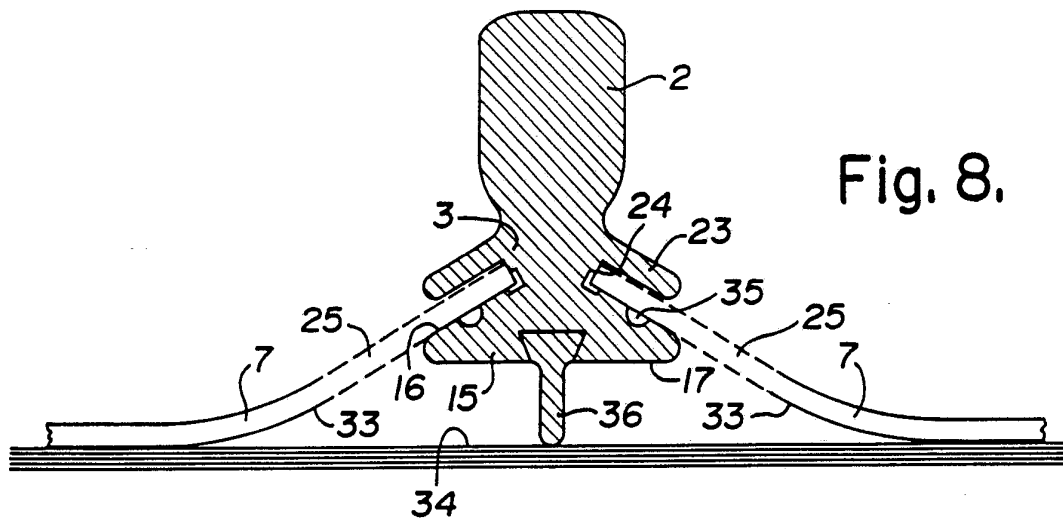


Fig. 8.

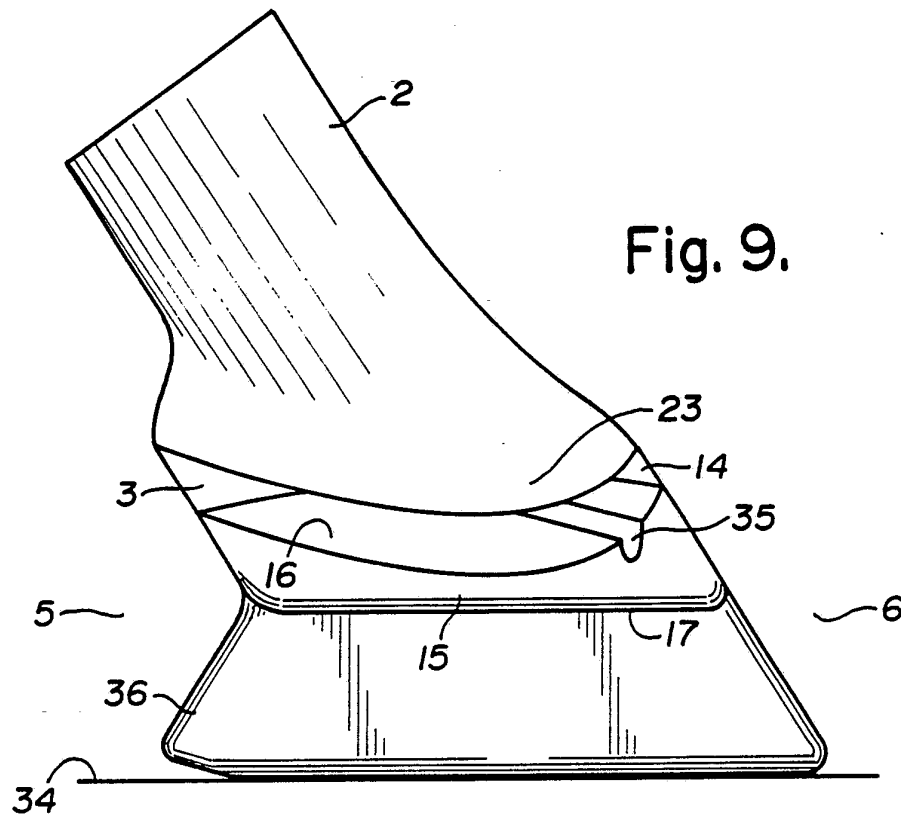


Fig. 9.

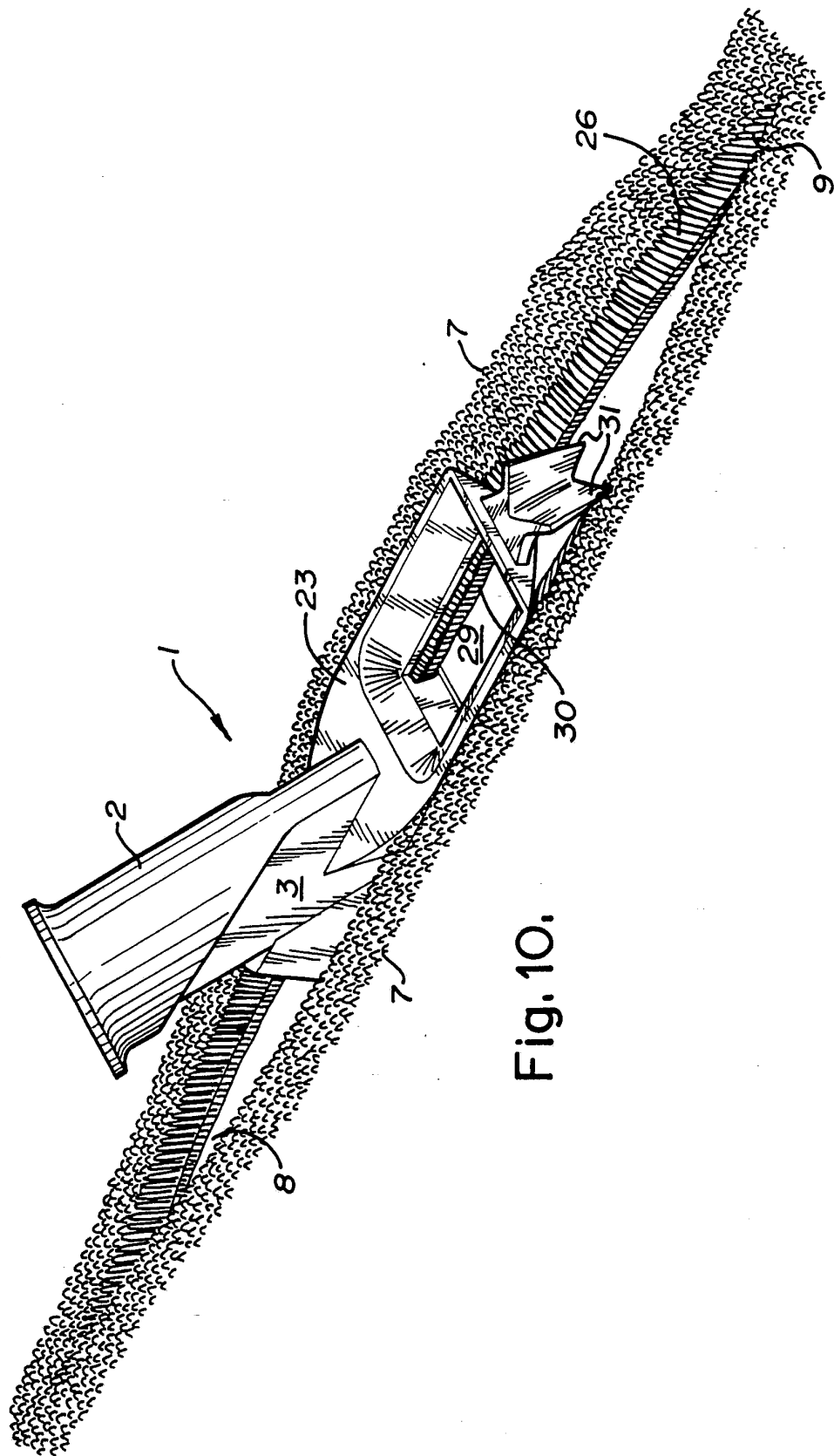


Fig. 10.

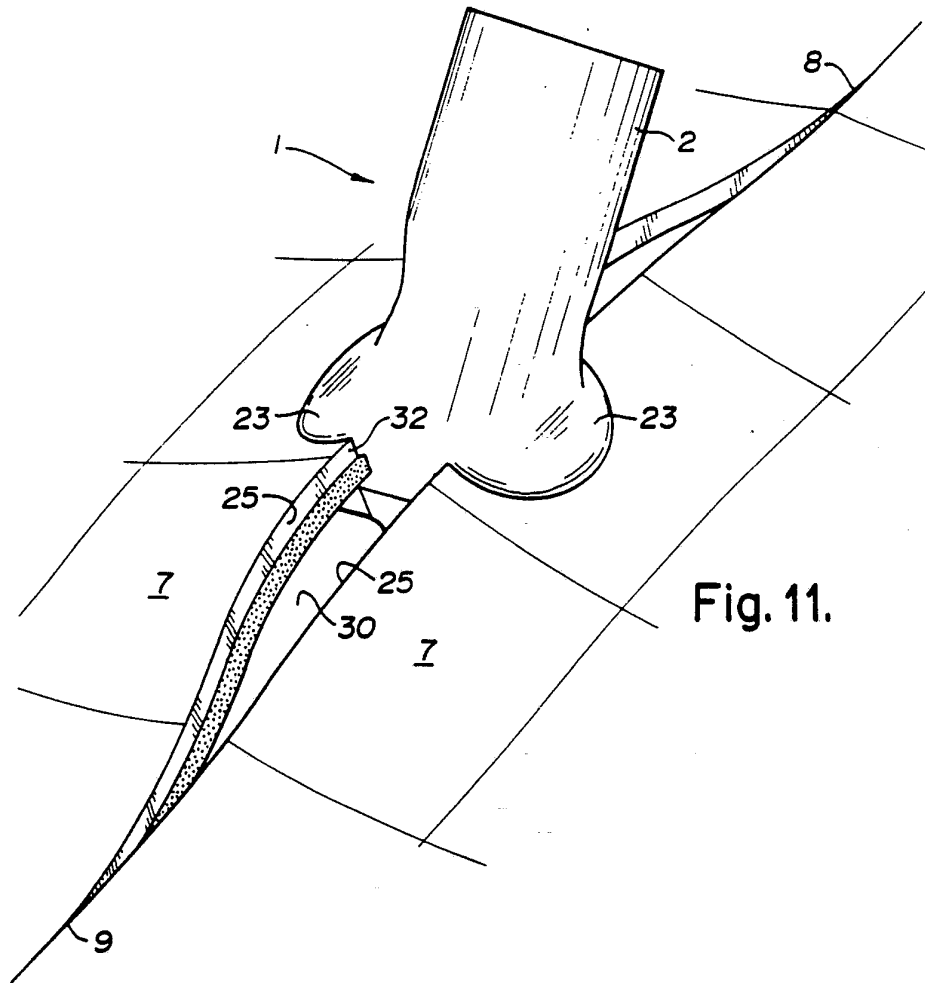


Fig. 11.

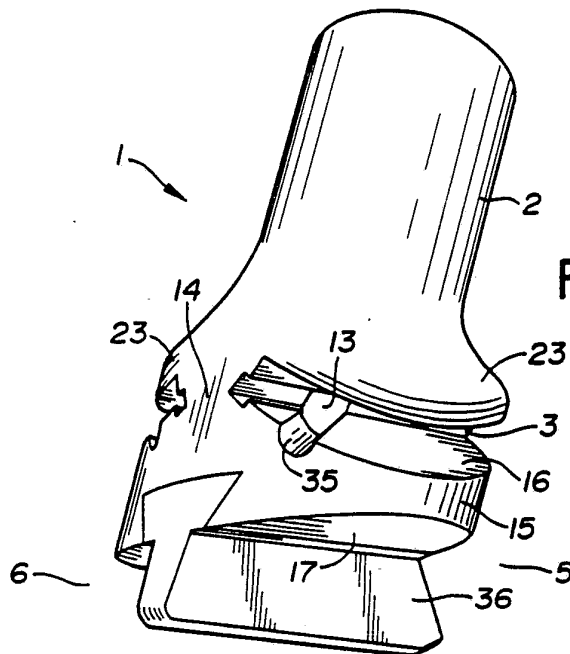


Fig. 12.

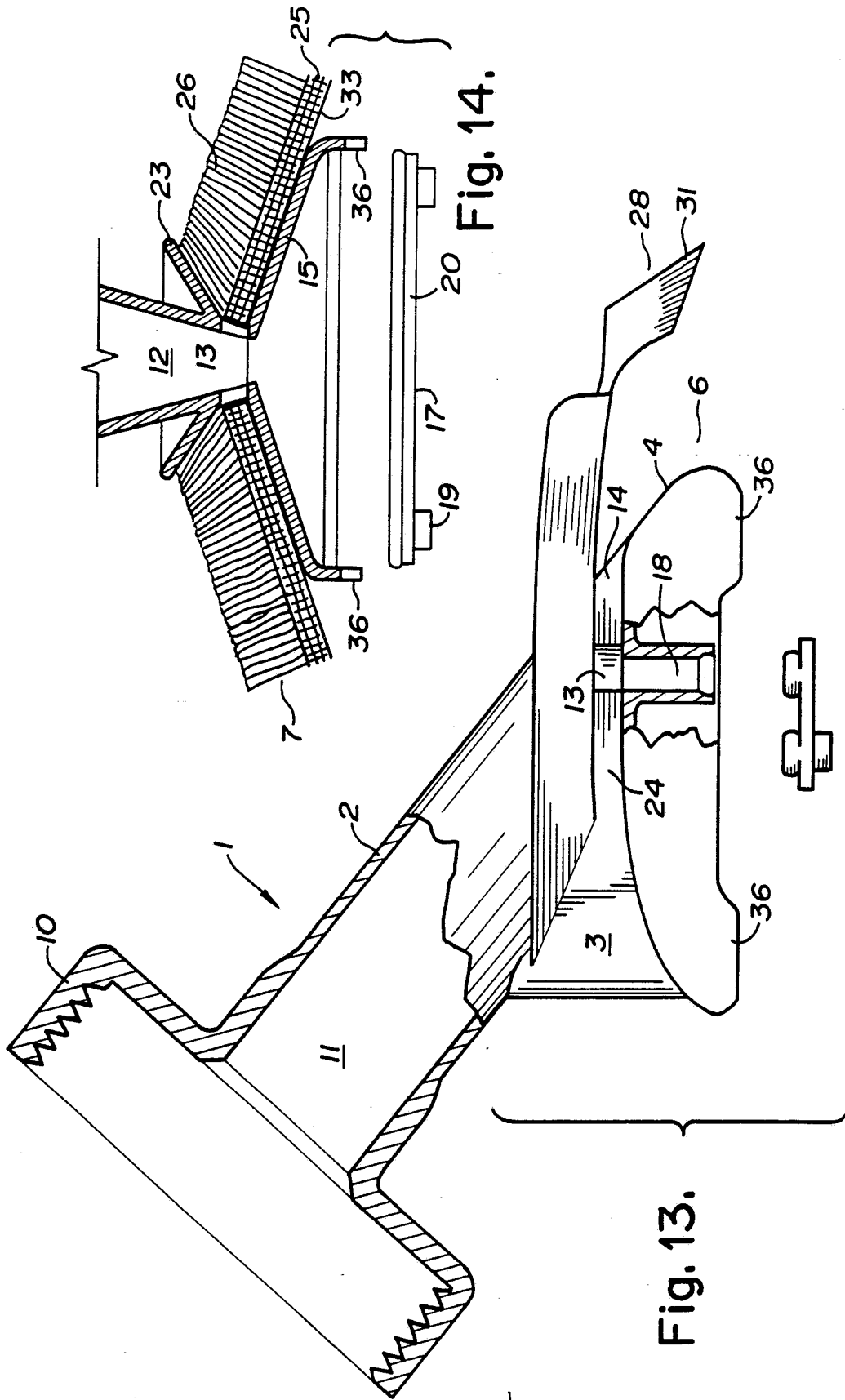


Fig. 14.

Fig. 13.

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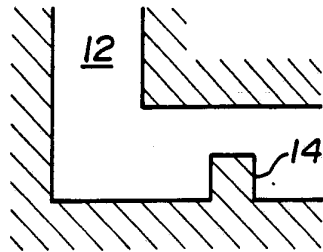


Fig. 15a.

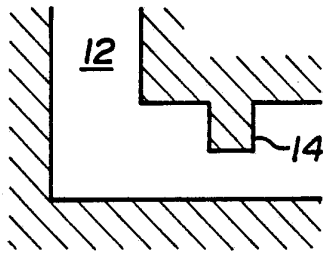


Fig. 15b.

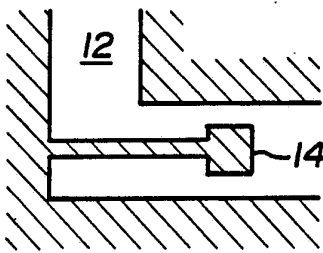


Fig. 15c.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/CA 92/00386

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) ⁶ According to International Patent Classification (IPC) or to both National Classification and IPC Int.Cl. 5 E04F21/22; B05C17/005		
II. FIELDS SEARCHED Minimum Documentation Searched ⁷		
Classification System	Classification Symbols	
Int.Cl. 5	E04F ; B05C	
Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched ⁸		
III. DOCUMENTS CONSIDERED TO BE RELEVANT⁹		
Category ¹⁰	Citation of Document, ¹¹ with indication, where appropriate, of the relevant passages ¹²	Relevant to Claim No. ¹³
A	US,A,4 484 976 (DESPINS) 27 November 1984 cited in the application see column 2, line 63 - column 5, line 47; figures 1-13 ---	1,2,5,8, 11
A	FR,A,1 553 815 (SOMMER S.A.) 17 January 1969 see page 2, left column, line 1 - page 3, left column, line 33; figures 1-4 ---	1-4,26
A	GB,A,2 229 655 (EVODE LIMITED) 3 October 1990 see page 2, line 25 - page 4, line 10; figures 1-5 ---	1,5,14, 18
	-/--	
<p>¹⁰ Special categories of cited documents :</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.</p> <p>"&" document member of the same patent family</p>		
IV. CERTIFICATION		
Date of the Actual Completion of the International Search 15 DECEMBER 1992		Date of Mailing of this International Search Report 21. 01. 93
International Searching Authority EUROPEAN PATENT OFFICE		Signature of Authorized Officer AYITER J.

III. DOCUMENTS CONSIDERED TO BE RELEVANT (CONTINUED FROM THE SECOND SHEET)		
Category °	Citation of Document, with indication, where appropriate, of the relevant passages	Relevant to Claim No.
A	GB,A,2 127 283 (EVODE LIMITED) 11 April 1984 see page 3, line 64 - page 5, line 105; figures 1-15 -----	1,5

**ANNEX TO THE INTERNATIONAL SEARCH REPORT
ON INTERNATIONAL PATENT APPLICATION NO. CA 9200386
SA 64429**

This annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report. The members are as contained in the European Patent Office EDP file on The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information. 15/12/92

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US-A-4484976	27-11-84	None	
FR-A-1553815	17-01-69	None	
GB-A-2229655	03-10-90	None	
GB-A-2127283	11-04-84	AU-B- 554768	04-09-86
		AU-A- 1924983	29-03-84
		EP-A, B 0106387	25-04-84
		JP-A- 59130967	27-07-84
		US-A- 4570834	18-02-86

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82