



(22) Date de dépôt/Filing Date: 2003/09/05

(41) Mise à la disp. pub./Open to Public Insp.: 2004/03/25

(45) Date de délivrance/Issue Date: 2010/06/08

(62) Demande originale/Original Application: 2 498 252

(30) Priorité/Priority: 2002/09/10 (US10/238,495)

(51) Cl.Int./Int.Cl. *A47L 23/22* (2006.01),
E04F 15/10 (2006.01)

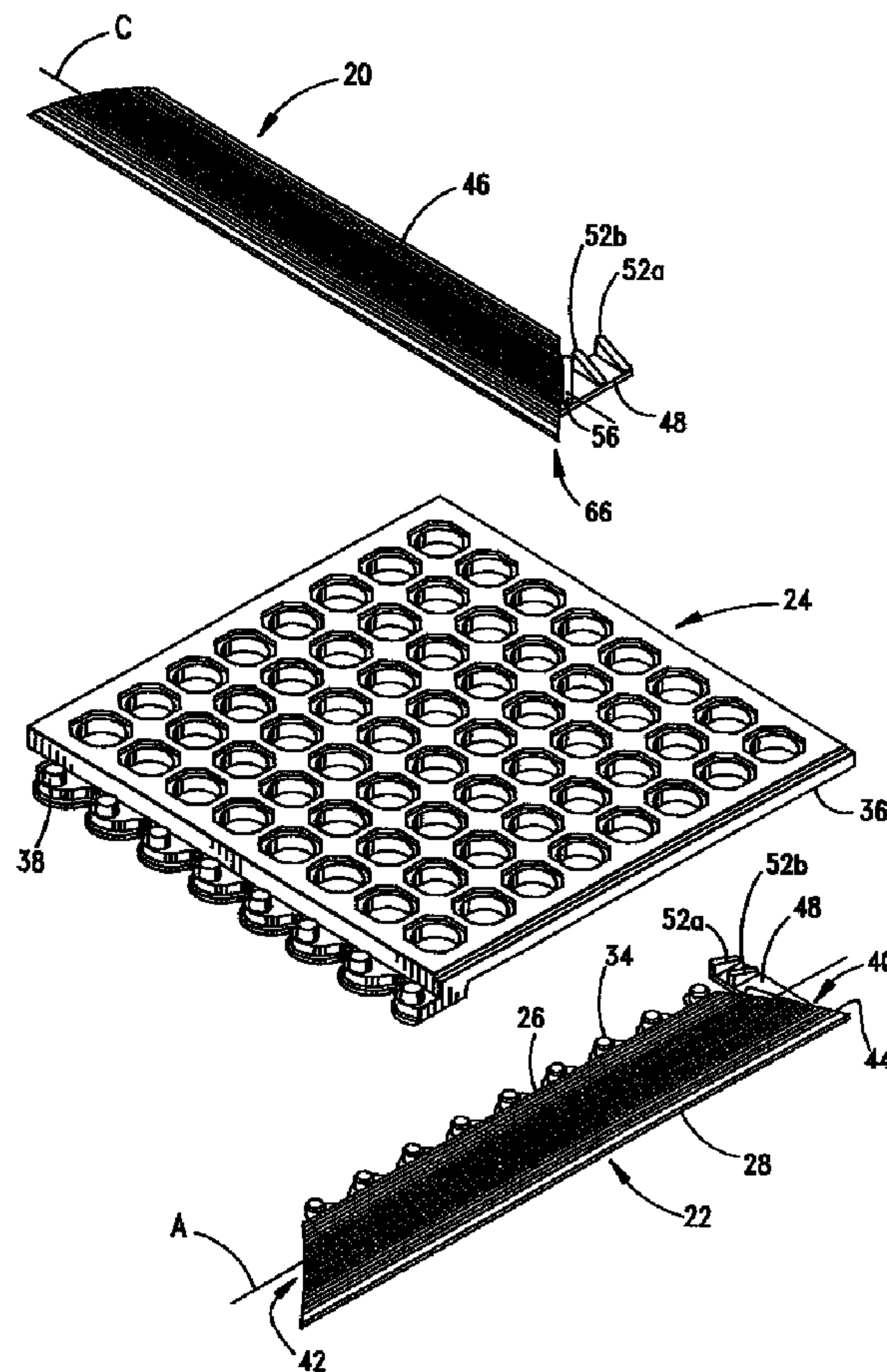
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(54) Titre : FIXATION D'UNE RAMPE DE TAPIS ET PROCEDE ASSOCIE

(54) Title: MAT RAMP SECUREMENT AND METHOD



(57) Abrégé/Abstract:

A ramp member (20, 22) is provided for attachment with an edge of a floor mat (24) to facilitate transportation of an object from a floor to an upper surface of the mat. A tab (48) is provided which extends from the ramp member and defines a plane. Two

(57) **Abrégé(suite)/Abstract(continued):**

projections (52a, 52b) extend from the plane of the tab out of alignment with the plane. Additionally, two cavities (58, 60) are formed in the ramp member adapted for receiving at least one of the two projections (52a, 52b) therein. A method of providing the same is included.

ABSTRACT OF THE DISCLOSURE

A ramp member (20, 22) is provided for attachment with an edge of a floor mat (24) to facilitate transportation of an object from a floor to an upper surface of the mat. A tab (48) is provided which extends from the ramp member and defines a plane. Two projections (52a, 52b) extend from the plane of the tab out of alignment with the plane. Additionally, two cavities (58, 60) are formed in the ramp member adapted for receiving at least one of the two projections (52a, 52b) therein. A method of providing the same is included.

MAT RAMP SECUREMENT AND METHOD

This application is a divisional application of Canadian Patent File No. 2,498,252 filed September 5, 2003.

FIELD OF THE INVENTION

This invention relates to a ramp for abutment with an edge of a floor mat to facilitate transportation of an object from a floor to an upper surface of the mat.

SUMMARY OF THE INVENTION

The invention in one broad aspect provides a method for connecting two ramp members adapted for attachment to an edge of a floor mat. The method comprises the steps of providing a first ramp member including an end having an edge formed at an acute angle with respect to a longitudinal axis of the first ramp member, the first ramp member also including an integral tab extending in a first direction from the edge of the first ramp member. Two projections are provided extending from the tab in a second direction, and a second ramp member is provided having two cavities each adapted for receiving therein at least one of the two projections.

Another aspect of the invention provides a ramp member comprising an attachment to connect the ramp member to a floor mat, an end including an edge formed at an acute angle with respect to a longitudinal axis of the ramp member, a tab extending from the edge of the ramp member and defining a plane, at least one projection extending from the plane of the tab out of alignment with the plane, and at least one cavity adapted for receiving therein a projection formed on a second ramp member for connecting the ramp member to the second ramp member.

Still further, the invention a floor mat assembly comprising a floor mat, and a ramp system including a plurality of ramp members, wherein each ramp member includes an attachment to connect the ramp member to a floor mat, an end having an edge formed at an acute angle with respect to a longitudinal axis of the ramp member, a tab extending from the edge of the ramp member and defining a plane, at least one projection extending from the plane of the tab out of alignment with the plane, and at least one cavity positioned in the ramp member adapted for receiving therein at least one projection formed on the tab of a second ramp member within the plurality of ramp members for connecting the ramp member to the second ramp member.

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BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of ramp members of the present invention coupled to a mat;

FIG. 2 is a front elevational view of a ramp member of the present invention;

FIG. 3 is an exploded view of the ramp members and mat shown assembled in FIG. 1;

FIG. 4 is a partial top plan view of a first end of a ramp member of the present invention showing a tab formed on the ramp member end;

FIG. 5 is a partial top plan view of the ramp member end shown in FIG. 4 showing the tab detached from the ramp member end;

FIG. 6 is a partial top plan view of the ramp member end shown in FIG. 5 showing a first portion of the tab detached from a second portion of the tab;

FIG. 7 is a partial bottom plan view of the bottom surface of a first end of a ramp member of the present invention;

FIG. 8 is a partial bottom plan view of the bottom surface of a second end of a ramp member of the present invention;

FIG. 9 is a partial bottom plan view of the first and second ends of separate ramp members of the present invention showing detachment of portions of the ramp

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members for forming an extended straight section comprising two adjacent ramp members;

FIG. 9A is a partial bottom plan view of the first and second ends of separate ramp members of FIG. 9 abutting one another, and a tab portion for connecting the first and second ends together;

FIG. 10 is a partial bottom plan view of the first and second ends of separate ramp members of the present invention showing detachment of portions of the ramp members for forming an inside corner;

FIG. 10A is a partial bottom plan view of first and second ends of FIG. 10 abutting one another, and a tab portion for connecting the first and second ends of FIG. 10 together; and

FIG. 11 is a plan view of the first and second ends of separate ramp members of the present invention showing connection of the ramp members ends to form an outside corner.

DETAILED DESCRIPTION

Referring now to the drawings, FIGS. 1 - 3 show ramp members 20 and 22 adapted for attachment to an edge of a floor mat 24. Ramp members 20 and 22 are utilized to provide a gradual inclination from a floor surface to an upper surface of floor mat 24, thereby removing abrupt changes in elevation between the surfaces.

Referring to ramp member 22 of FIGS. 2 and 3, ramp member 22 has a mat attachment edge 26, a floor edge 28, a top surface 30 into which the ramp is incorporated and a bottom surface 32 which makes contact with a floor or other surface on which the mat and ramp members are to be placed.

As seen in FIG. 3, a series of upwardly-extending bosses 34 may be formed in mat attachment edge of ramp member 22. Bosses 34 are configured to project and secure into corresponding cavities (not shown) in bottom side 36 of mat 24.

Alternatively, the attachment edge ramp member 20 incorporate a series of cavities

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(not shown) formed on the bottom side of ramp member 20 for receiving therein corresponding ones of a series of bosses 38 formed in mat 24.

For simplicity, the features of ramp member 22 will be discussed in detail. It is understood that the features discussed in the following description may be common to either of ramp members 20 or 22, and that the main difference between ramp members 20 and 22 shown in FIG. 3 is the provision of bosses 34 in mat attachment edge 26 of ramp member 22, and the provision of cavities (not shown) in mat attachment edge 46 of ramp member 20 for receiving mat bosses 38 therein. In FIG. 3, ramp member 22 includes bosses 34 for projecting into cavities in bottom side of mat 24, and ramp member 20 has cavities incorporated into its bottom surface for receiving therein bosses 38 formed in mat 24.

In one embodiment, ramp member 22 is longitudinal and has a first end 40, a second end 42 opposite first end 40 and a longitudinal axis A. First end 40 may include an edge 44 formed at an acute angle with respect to longitudinal axis A. Edge 44 is configured for positioning adjacent and/or in abutment with an edge of an end portion of another ramp member, in a manner to be described in detail later. One example is demonstrated in FIG. 1. Angled edge 44 may form a 45 degree angle with longitudinal axis A. As seen in FIG. 2, top surface 30 slopes upward from a floor or other resting surface toward mat attachment edge 26. Ramp member 22 may be formed from any moldable material having properties suitable for a desired application of the ramp. For example, a plastic or rubber compound possessing sufficient mechanical toughness and chemical resistance may be used to handle domestic, commercial or even industrial applications.

Referring to FIGS. 3 and 4, a tab, generally designated 48, projects in a first direction from ramp member first end 40. Generally, tab 48 is formed unitarily with ramp member 22 and may extend from first end angled edge 44. As seen in Figs. 4 - 6 and 9 - 10A, tab 48 comprises a first tab portion 50 from which first and second projections 52a, 52b extend and a second tab portion 54 connecting first tab portion 50 with ramp member first end 40. Projections 52a, 52b may extend from a

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plane defined by tab 48 in a direction out of alignment with the plane and generally transverse to the plane in this embodiment. In one embodiment, first tab portion 50 with projections 52a, 52b extending therefrom forms a connector for coupling together a pair of ramp members 20, 22, in a manner to be described in detail later.

Referring to FIGS. 3 and 4, first projection 52a and second projection 52b are generally longitudinal in configuration. However, projections 52a, 52b may be formed in any desired configuration. In one embodiment, first and second projections 52a, 52b also extend generally perpendicular to ramp member longitudinal axis and are spaced a predetermined distance B apart. A third projection 56 may be incorporated into second tab portion 54. Third projection 56 may extend from the plane defined by tab 48 in a direction out of alignment with the plane and this embodiment is generally perpendicular to the plane and may form an acute angle with ramp member longitudinal axis A.

Referring to FIG. 7, a pair of cavities 58, 60 are formed in bottom surface 32 proximate first end 40 of ramp member 22. Cavities 58, 60 are configured to receive either one of projections 52a or 52b extending from tab 48 of ramp member 20, in a manner to be described in detail later. It should be understood that cavities formed in bottom surface 32 of ramp member 22 generally extend into bottom surface 32 to a pre-determined depth to form a blind hole. However, any of the cavities formed in bottom surface 32 may extend completely through a body of ramp member 22 to form a through hole if desired. As cavities 58, 60 shown in FIG. 7 are adapted to receive either one of projections 52a or 52b, these cavities are correspondingly generally longitudinal. However, cavities 58, 60 may be formed in any shape suitable for receiving projections extending from tab 48.

As seen in FIG. 7, grooves 62, 64 may be formed in bottom side 32 of ramp member 22 proximate respective ones of cavities 58, 60 at ramp member first end 40. Grooves 62, 64 act as a guides for aligning a cutting tool for cutting off a portion of ramp member first end 40 along either of grooves 62, 64, for purposes to be described in detail later. Each of grooves 62, 64 is spaced apart from a respective

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cavity 58, 60 approximately one half of the predetermined distance B (FIG. 4) separating projections 52a, 52b on first tab portion 50.

Referring to FIG. 8, a series of cavities 78, 80, 82, 84 are formed in bottom surface 32 proximate ramp member second end 42. Cavities 80, 82, 84 are configured to receive therein either one of projections 52a or 52b extending from first tab portion 50 of tab 48. Cavity 78 is configured to receive therein projection 56 extending from tab 48. As cavities 80, 82, 84 shown in FIG. 8 are adapted to receive either one of projections 52a or 52b, these cavities are correspondingly generally longitudinal. However, cavities 78, 80, 82, 84 may be formed in any shape suitable for receiving projections extending from tab 48.

As seen in FIG. 8, grooves 86, 88 may be formed in bottom side 32 of ramp member 22 proximate respective ones of cavities 82, 84 at ramp member second end 42. Grooves 86, 88 act as a guides for aligning a cutting tool for cutting off a portion of ramp member second end 42 along either of grooves 86, 88, for purposes to be described in detail later. Each of grooves 86, 88 is spaced apart from a respective cavity 82, 84 approximately one half of the predetermined distance B separating projections 52a, 52b on first tab portion 50.

Methods of connecting multiple ramp members together to form a border extending around one or more outer edges of a mat will now be discussed.

A pair of ramp members 20, 22 as described above may be connected to form an extended straight section (FIGS. 9, 9A). Alternatively, as seen in FIGS. 1, 10, 10A and 11, a second ramp member 22 may be connected to a first ramp member 20 such that longitudinal axis A of second ramp member 22 forms an angle with respect to longitudinal axis C of first ramp member 22, thereby forming a corner. This enables a border to be formed around mats having any one of a variety of shapes.

Generally, in order to ensure that ramp member edges positioned so as to abut each other have substantially the same length, ramp member edges which are to abut each other will be formed such that the angles that the abutting edges make with respective longitudinal axes of the ramp members are approximately the same.

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Alternatively, it may be desired, for purposes of forming an intersection defining a predetermined angle between two ramp members, to form adjacent ramp member abutting edges oriented at different angles with respect to their respective longitudinal axes.

Generally, for attachment to a first ramp member 20, a second ramp member 22 will be positioned such that a longitudinal axis A of second ramp member 22 forms a predetermined angle with a longitudinal axis C of first ramp member 20. One example is shown in FIG. 3.

A method for attaching two ramp members 20, 22 together to form an extended straight section will now be discussed. In this embodiment, the predetermined angle between the longitudinal axes of ramp members 20 and 22 is approximately 180 degrees. It is contemplated that the following description of cuts of the ramp members and corresponding portions can be done in a number of ways and order of cuts to obtain the desired result. The following is merely one way of accomplishing the desired result. Referring to FIGS. 3, 9, 9A, to form an extended straight section, tab 48 is cut from first end 66 of first ramp member 20. First tab portion 50 is separated from second tab portion 54 to form a connector. A portion of first ramp member first end 66 is cut off along groove 62 (see FIG. 7) to form a mating edge 68. Also, a portion of second ramp member second end 42 is cut off along groove 86 (see FIG. 8) to form a mating edge 70. First ramp member first end mating edge 68 and second ramp member second end mating edge 70 are then positioned adjacent each other. In the embodiment shown, mating edges 68 and 70 are positioned so as to actually abut each other (FIG. 9A). When mating edge 68 and mating edge 70 abut each other, cavity 58 formed in the bottom surface of first ramp member 20 (see FIG. 7) and cavity 82 formed in the bottom surface of second ramp member 22 (see FIG. 8) will reside adjacent each other. One of projections 52a, 52b of first tab portion/connector 50 is then inserted into cavity 58, and the remaining one of projections 52a, 52b is inserted into cavity 82, thereby coupling first member 20 and second member 22 together via first tab portion/connector 50.

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A method for attaching two ramp members 20, 22 together to form an outside corner bordering the mat will now be discussed and shown in FIG. 11. In this embodiment, tab 48 remains connected to first ramp member 20 and the predetermined angle between the longitudinal axes C and A of ramp members 20 and 22 respectively is approximately 90 degrees. Referring to FIGS. 3, 7, 8 and 11, to form an outside corner bordering the mat, projections 52a, 52b and 56 of tab 48 are inserted into cavities 82, 80 and 78, respectively, to join first ramp member 20 first end 66 and second ramp member 22 second end 42 together.

A method for attaching two ramp members 20, 22 together to form an inside corner will now be discussed and shown in FIGS. 10 and 10A. In this embodiment, the predetermined angle between the longitudinal axes of ramp members 20 and 22 is also approximately 90 degrees.

Again it is contemplated that the following description of cuts of the ramp members and corresponding portions can be done in a number of ways and order of cuts to obtain the desired result. The following is merely one way of accomplishing the desired result. Referring to FIGS. 3, 7, 8, 10 and 10A, to form an inside corner, tab 48 is cut from first ramp member first end 66. First tab portion 50 is then separated from second tab portion 54 to form a connector. A portion of first ramp member first end 66 is then cut off along groove 64 (FIG. 7) to form a mating edge 72. Also, a portion of second ramp member 22 second end 42 is cut off along groove 88 to form a mating edge 74. First member mating edge 72 and second member mating edge 74 are then positioned adjacent each other. In the embodiment shown, mating edges 72 and 74 are positioned so as to actually abut each other (FIG. 10A). When mating edge 72 and mating edge 74 abut each other, cavity 60 formed in the bottom surface of first ramp member 20 and cavity 84 formed in the bottom surface of second ramp member 22 will reside adjacent each other. One of projections 52a, 52b of first tab portion/connector 50 is then inserted into cavity 60, and the remaining one of projections 52a, 52b is inserted into cavity 84, thereby coupling first member 20 and second member 22 together via first tab portion/connector 50.

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Thus, it may be seen from the methods described above that by appropriate trimming of a single, standardized ramp member piece, a variety of ramp configurations may be achieved. If it is desired to position first member first end 66 adjacent, but separated from, second member second end 42 when forming any of the ramp member configurations described above, the predetermined distance separating projections 52a and 52b of first tab portion 50 may be adjusted prior to fabrication of the ramp member to increase the predetermined separation distance between projections 52a and 52b in correspondence with the desired separation distance of the ramp member ends. First tab portion 50 is then used to connect second member 22 with first member 20 as previously described.

It should be understood that the preceding is merely a detailed description of one embodiment of this invention and that numerous changes to the disclosed embodiment can be made in accordance with the disclosure herein without departing from the spirit or scope of the invention. The preceding description, therefore, is not meant to limit the scope of the invention. Rather, the scope of the invention is to be determined only by the appended claims and their equivalents.

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

1. A method for connecting two ramp members adapted for attachment to an edge of a floor mat comprising the steps of:

providing a first ramp member including an end having an edge formed at an acute angle with respect to a longitudinal axis of the first ramp member, the first ramp member also including an integral tab extending in a first direction from the edge of the first ramp member;

providing two projections extending from the tab in a second direction; and

providing a second ramp member having two cavities each adapted for receiving therein at least one of the two projections.

2. The method of claim 1 further comprising providing a groove on a surface of the first ramp member.

3. The method of claim 2 further comprising the step of detaching a portion of the first ramp member along the groove to produce a mating edge on the first ramp member.

4. The method of claim 3 further comprising the step of detaching a portion of the tab which includes the two projections from the first ramp member.

5. The method of claim 3 further comprising the step of detaching a portion of the second ramp member along a groove on a surface of the second ramp member to produce a mating edge on the second ramp member.

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6. The method of claim 5 further comprising the step of positioning the first ramp member mating edge adjacent to the second ramp member mating edge.

7. The method of claim 2 wherein the groove is substantially perpendicular to the longitudinal axis of the first ramp member.

8. The method of claim 2 wherein the groove is formed at an acute angle relative to the longitudinal axis of the first ramp member.

9. The method of claim 1 further comprising providing first and second grooves on a surface of the first ramp member.

10. The method of claim 9 wherein the first groove is substantially perpendicular to the longitudinal axis of the first ramp member and the second groove is formed at an acute angle relative to the longitudinal axis of the first ramp member.

11. The method of claim 10 further comprising the step of detaching a portion of the first ramp member along one of the first groove and the second groove to produce a mating edge on the first ramp member.

12. The method of claim 1 further comprising the step of positioning the second ramp member such that a longitudinal axis of the second ramp member forms a predetermined angle with the longitudinal axis of the first ramp member.

13. The method of claim 12 wherein the predetermined angle is approximately 180 degrees.

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14. The method of claim 1 wherein the tab extends from the edge of the first ramp member substantially perpendicular to the longitudinal axis of the first ramp member.

15. The method of claim 1 further comprising providing an attachment to connect the first ramp member to a floor mat.

16. The method of claim 15 further comprising providing a plurality of attachments to connect the first ramp member to a floor mat.

17. The method of claim 15 wherein the attachment is a boss projecting from a mat attachment edge of the first ramp member, the mat attachment edge of the first ramp member positionable adjacent the edge of the floor mat when the first ramp member is attached to the floor mat.

18. The method of claim 17 wherein the boss is positionable in a cavity in a bottom surface of the floor mat.

19. The method of claim 15 wherein the first ramp member includes a cavity in a bottom surface thereof for receiving a mat attachment projecting from the mat.

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20. A ramp member comprising:
- an attachment to connect the ramp member to a floor mat;
 - an end including an edge formed at an acute angle with respect to a longitudinal axis of the ramp member;
 - a tab extending from the edge of the ramp member and defining a plane;
 - at least one projection extending from the plane of the tab out of alignment with the plane; and
 - at least one cavity adapted for receiving therein a projection formed on a second ramp member for connecting the ramp member to the second ramp member.
21. The ramp member of claim 20 further comprising a groove formed on a surface of the ramp member.
22. The ramp member of claim 21 wherein a portion of the ramp member is detached along the groove to produce a mating edge on the ramp member.
23. The ramp member of claim 22 wherein a portion of the tab, which includes the two projections from the ramp member, is detached.
24. The ramp member of claim 22 wherein a portion of the second ramp member along a groove on a surface of the second ramp member is detached to produce a mating edge on the second ramp member.
25. The ramp member of claim 21 wherein the groove is substantially perpendicular to the longitudinal axis of the ramp member.

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26. The ramp member of claim 21 wherein the groove is formed at an acute angle relative to the longitudinal axis of the ramp member.

27. The ramp member of claim 21 further comprising a second groove formed on the surface of the ramp member.

28. The ramp member of claim 27 wherein the first groove is substantially perpendicular to the longitudinal axis of the ramp member and the second groove is formed at an acute angle relative to the longitudinal axis of the ramp member.

29. The ramp member of claim 28 wherein a portion of the first ramp member is detached along one of the first groove and the second groove to produce a mating edge on the ramp member.

30. The ramp member of claim 20 wherein the tab extends from the edge of the ramp member substantially perpendicular to the longitudinal axis of the ramp member.

31. The ramp member of claim 20 further comprising a plurality of attachments to connect the ramp member to a floor mat.

32. The ramp member of claim 20 wherein the attachment is a boss projecting from a mat attachment edge of the ramp member, the mat attachment edge of the ramp member positionable adjacent an edge of the floor mat when the ramp member is attached to the floor mat.

33. The ramp member of claim 32 wherein the boss is positionable in a cavity in a bottom surface of the floor mat.

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34. The ramp member of claim 20 wherein the ramp member includes a cavity in a bottom surface thereof for receiving a mat attachment projecting from the mat.

35. A floor mat assembly comprising:

a floor mat; and

a ramp system including a plurality of ramp members;

wherein each ramp member includes an attachment to connect the ramp member to a floor mat, an end having an edge formed at an acute angle with respect to a longitudinal axis of the ramp member, a tab extending from the edge of the ramp member and defining a plane, at least one projection extending from the plane of the tab out of alignment with the plane, and at least one cavity positioned in the ramp member adapted for receiving therein at least one projection formed on the tab of a second ramp member within the plurality of ramp members for connecting the ramp member to the second ramp member.

36. The floor mat assembly of claim 35 wherein each ramp member further comprises a groove formed on a surface of each ramp member.

37. The floor mat assembly of claim 36 wherein a portion of each ramp member is detached along the groove to produce a mating edge on each ramp member.

38. The floor mat assembly of claim 36 wherein the groove on each ramp member is substantially perpendicular to the longitudinal axis of each ramp member.

39. The floor mat assembly of claim 36 wherein the groove on each ramp member is formed at an acute angle relative to the longitudinal axis of each ramp member.

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40. The floor mat assembly of claim 36 wherein each ramp member further comprises a second groove formed on the surface of each ramp member.

41. The floor mat assembly of claim 40 wherein the first groove on each ramp member is substantially perpendicular to the longitudinal axis of each ramp member and the second groove on each ramp member is formed at an acute angle relative to the longitudinal axis of each ramp member.

42. The floor mat assembly of claim 41 wherein a portion of each ramp member is detached along one of the first groove and the second groove to produce a mating edge on each ramp member.

43. The floor mat assembly of claim 35 wherein the tab extends from the edge of each ramp member substantially perpendicular to the longitudinal axis of each ramp member.

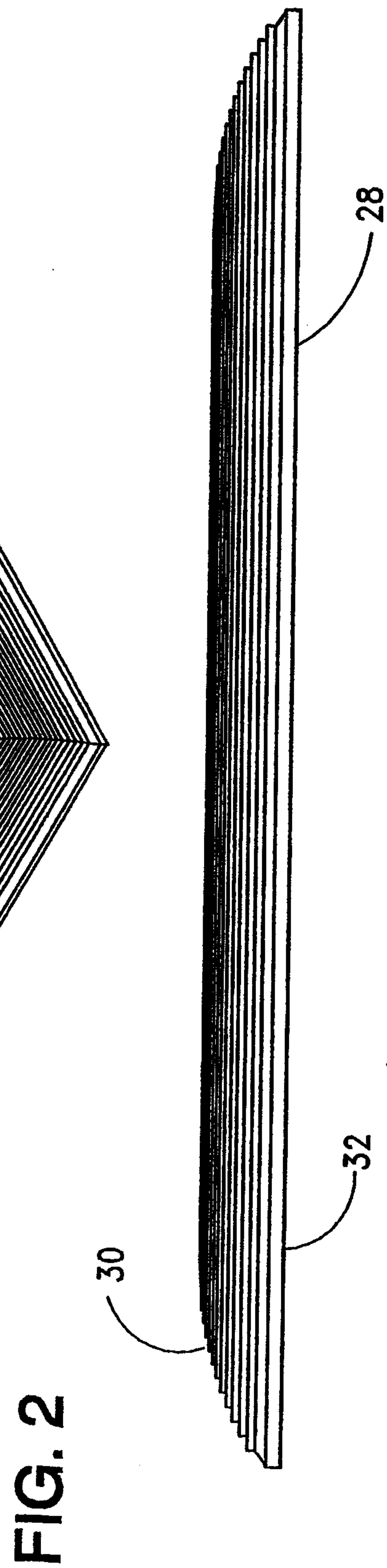
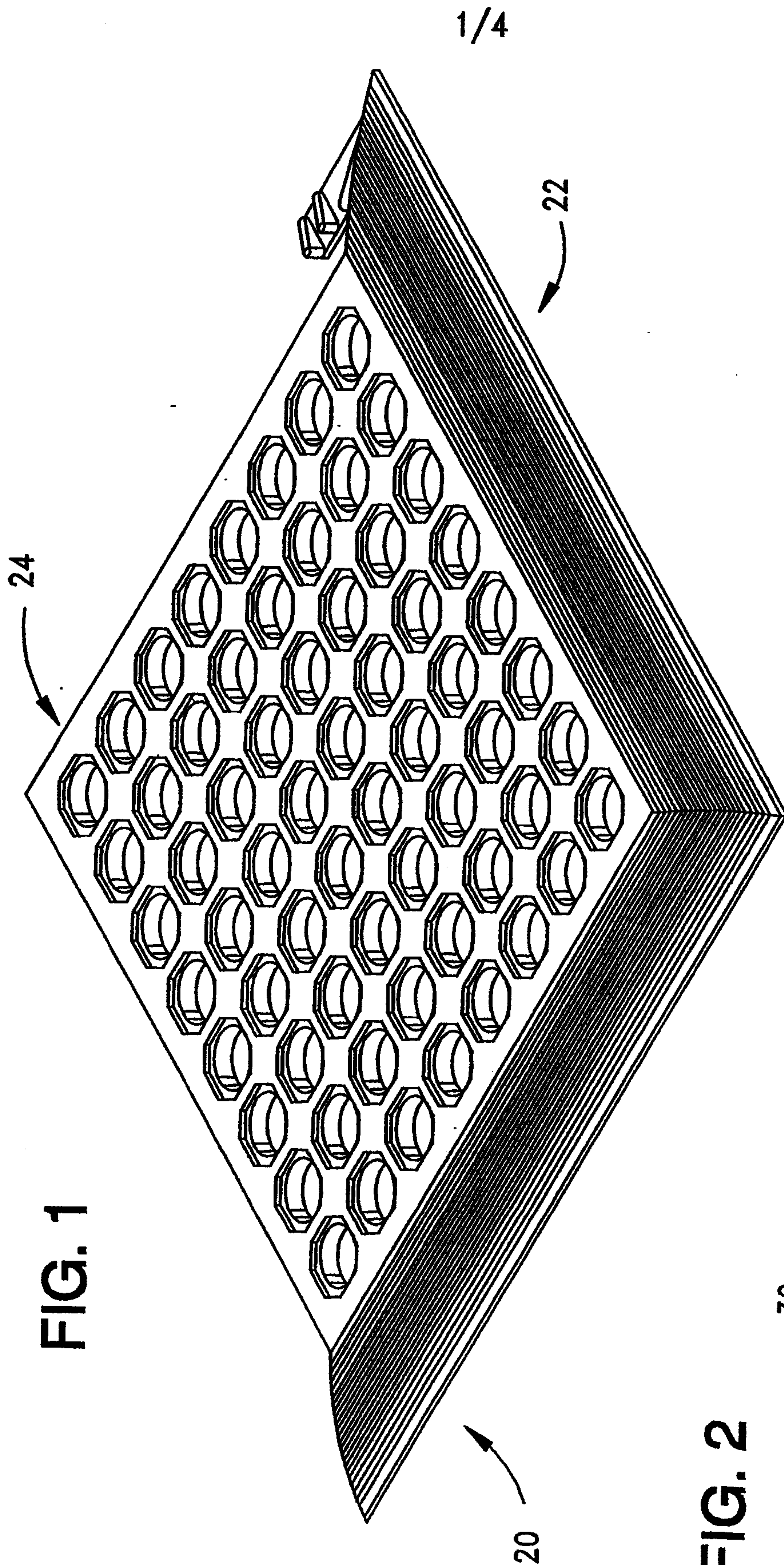
44. The floor mat assembly of claim 35 wherein each ramp member further comprises a plurality of attachments to connect each ramp member to a floor mat.

45. The floor mat assembly of claim 35 wherein each attachment is a boss projecting from a mat attachment edge of each ramp member, the mat attachment edge is positionable adjacent an edge of the floor mat when the ramp member is attached to the floor mat.

46. The floor mat assembly of claim 45 wherein the boss is positionable in a cavity in a bottom surface of the floor mat.

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47. The floor mat assembly of claim 35 wherein each ramp member further comprises a cavity in a bottom surface thereof for receiving a mat attachment projecting from the mat.

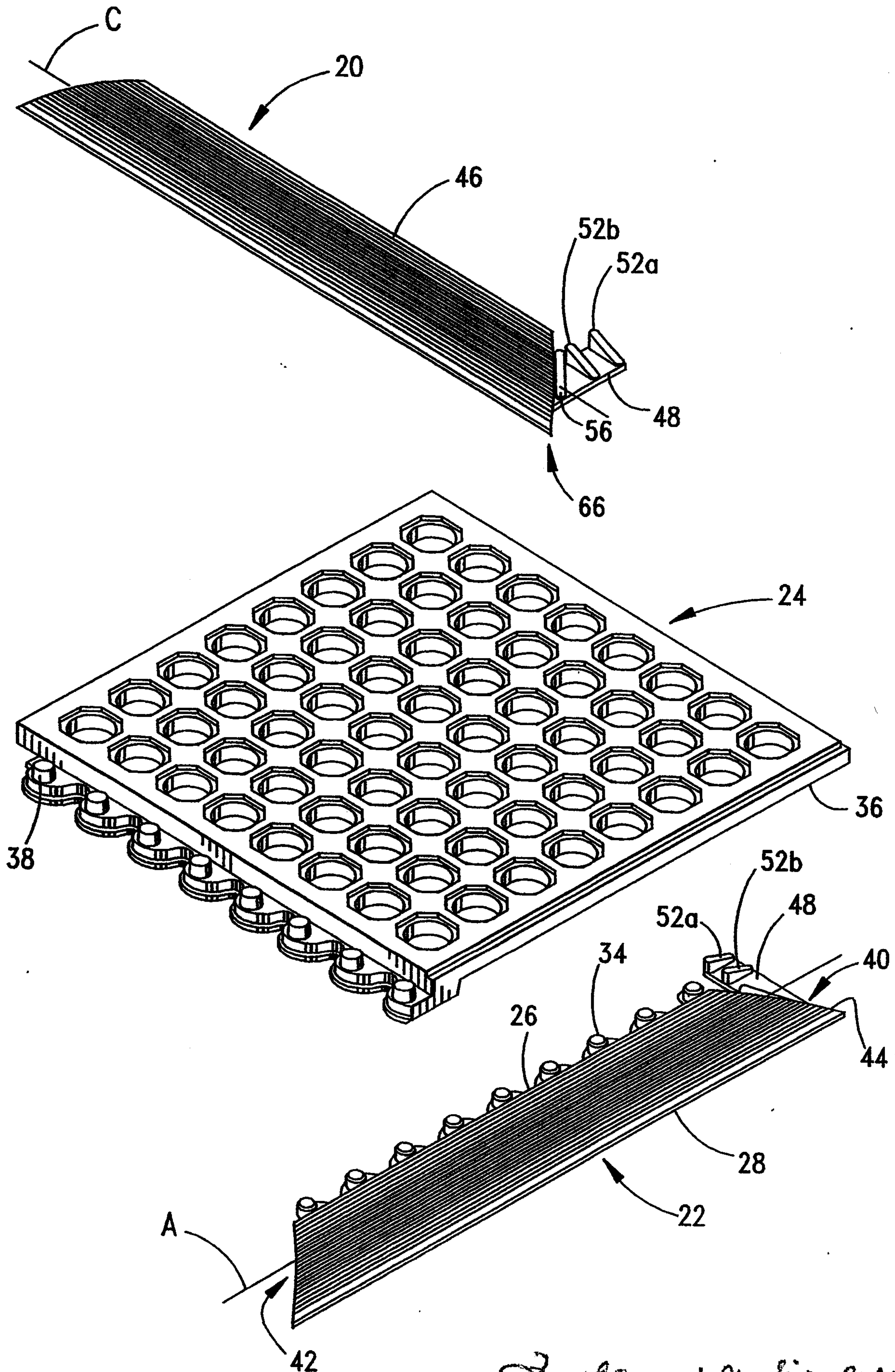


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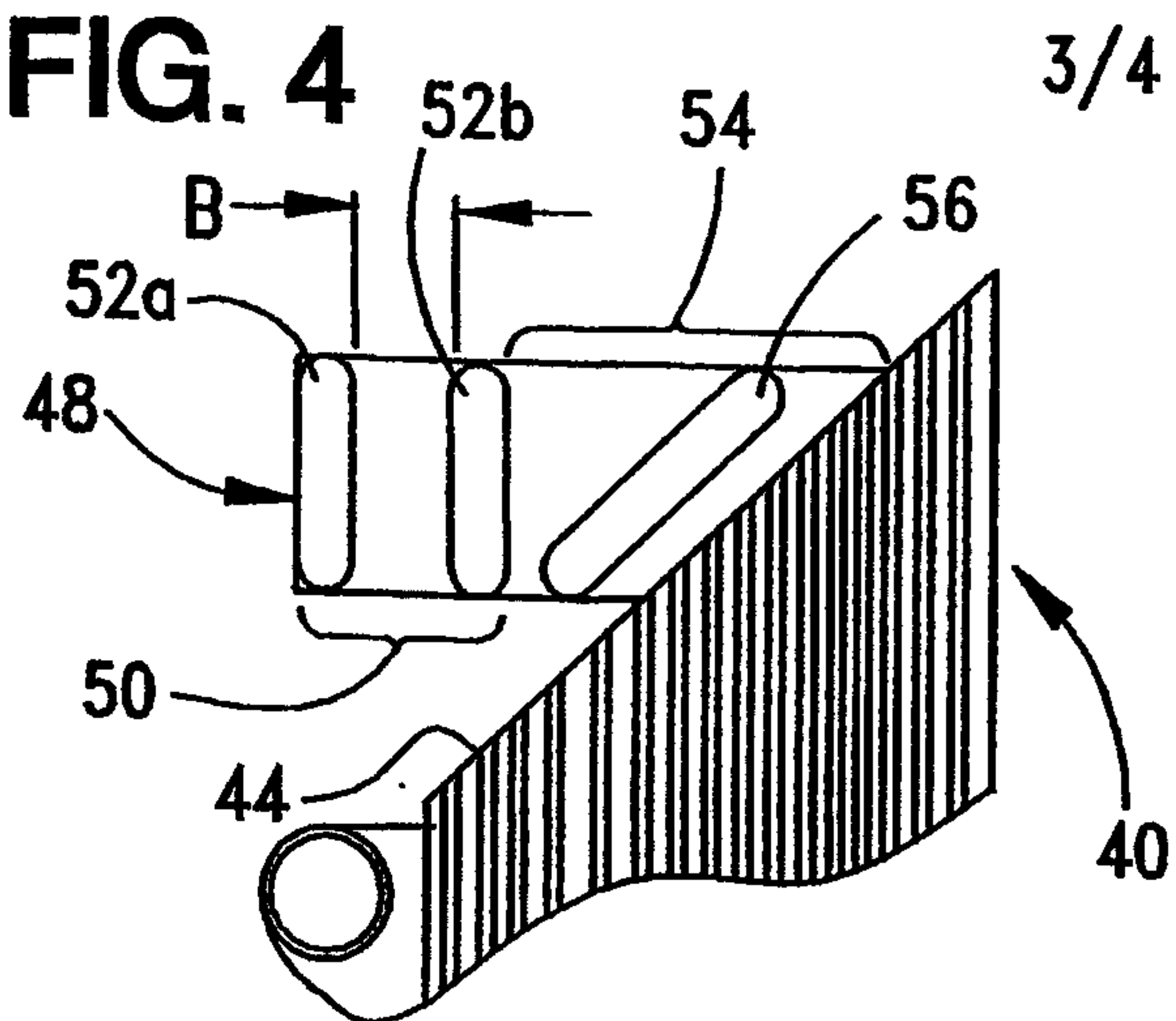
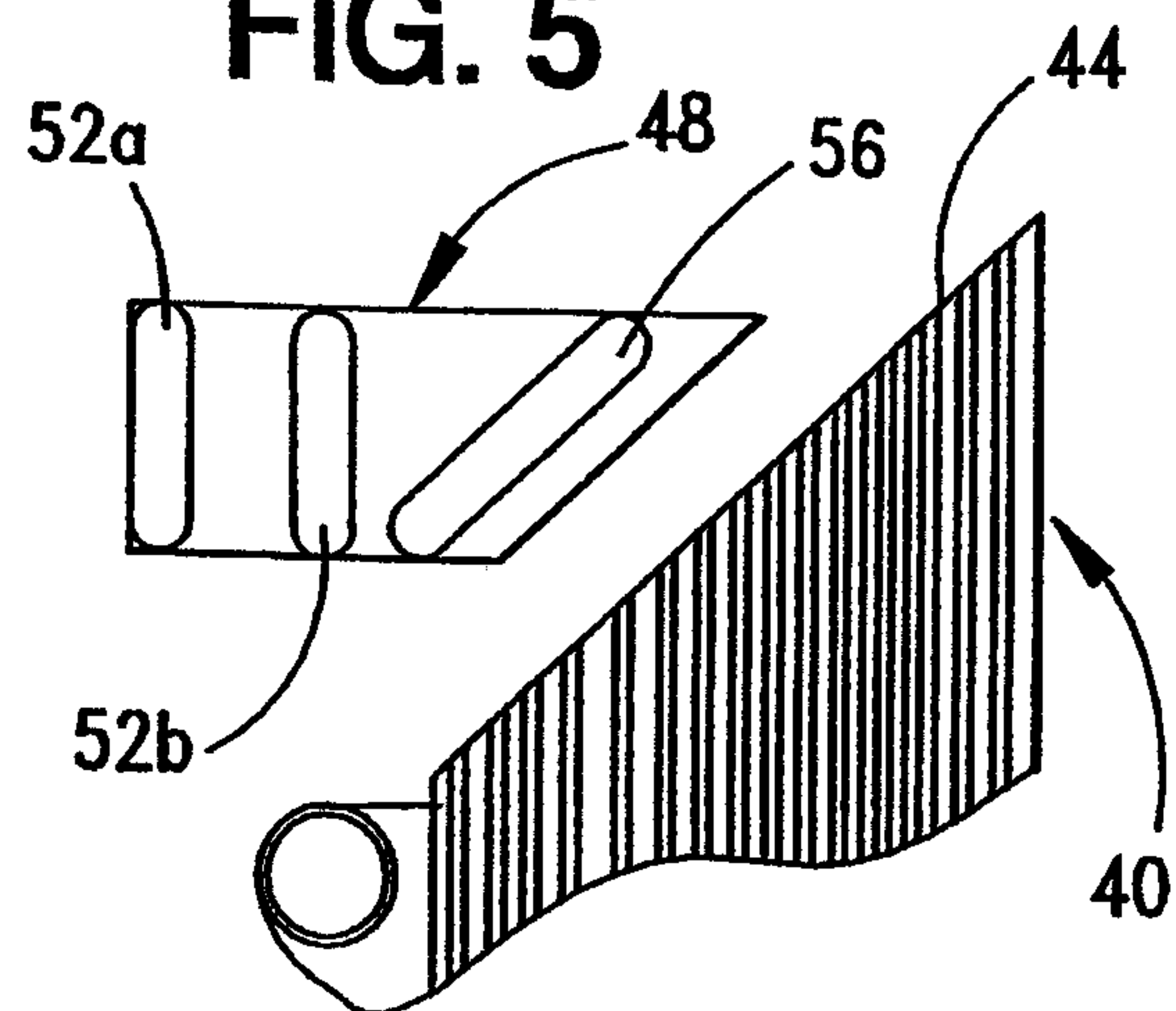
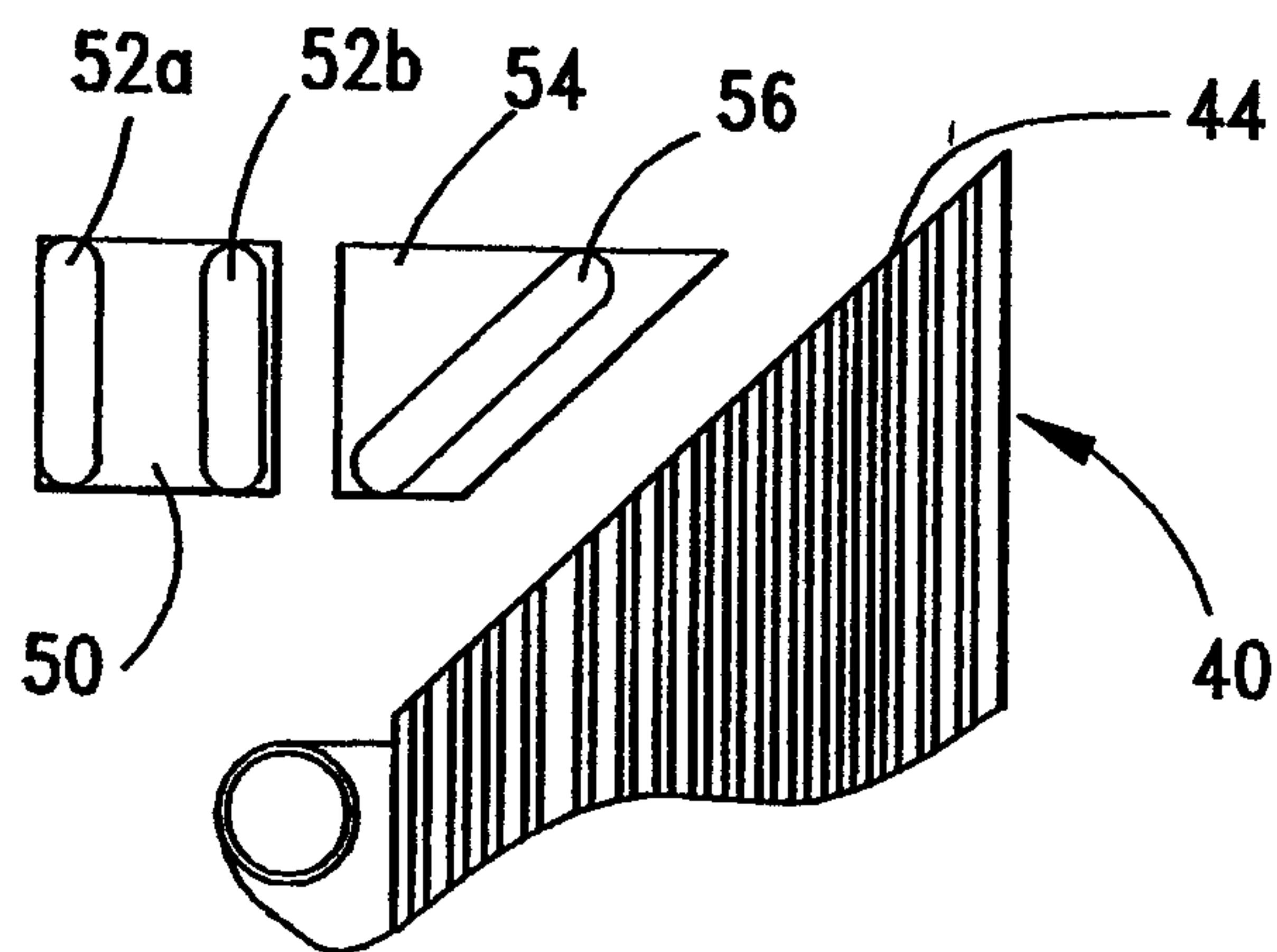
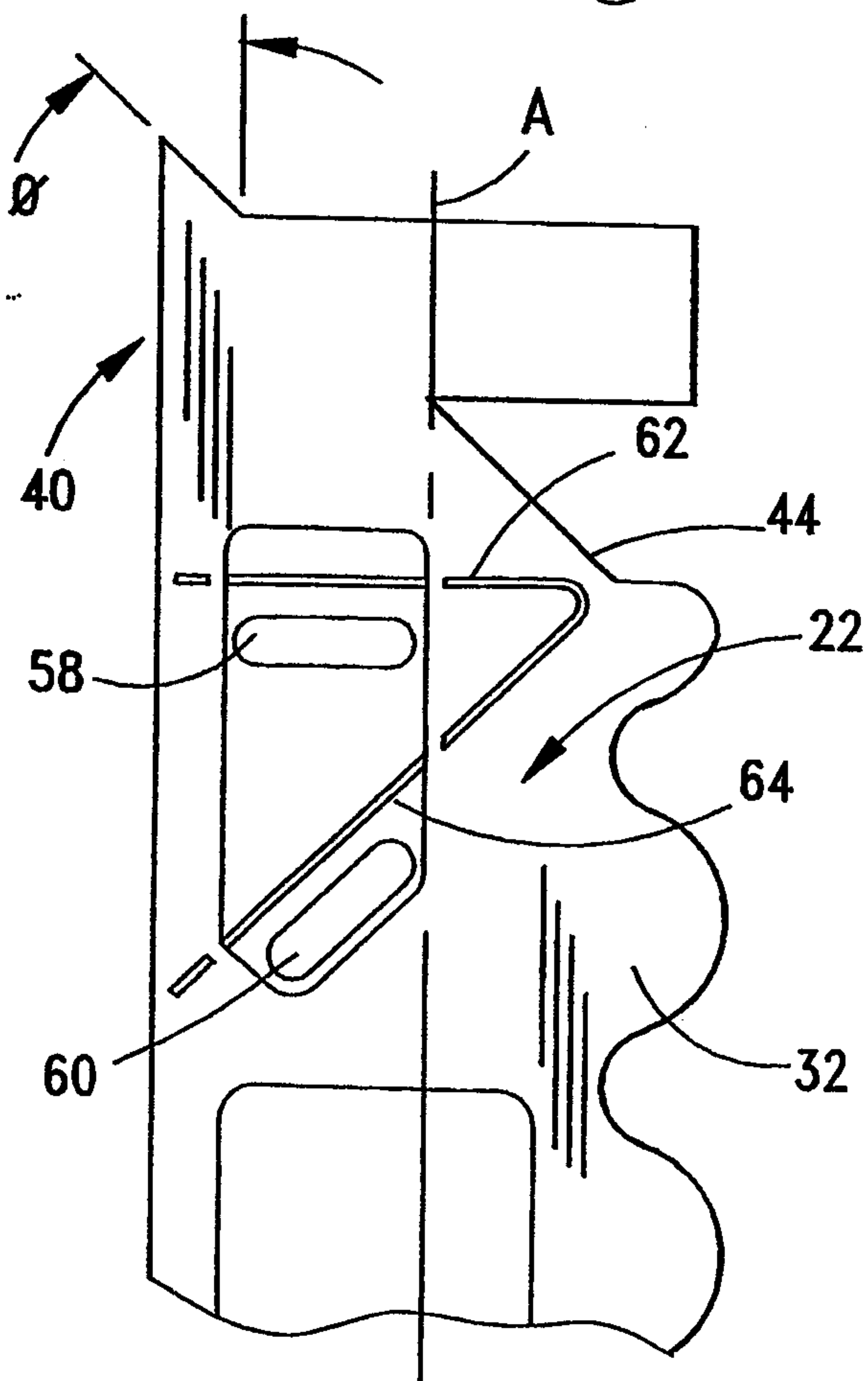
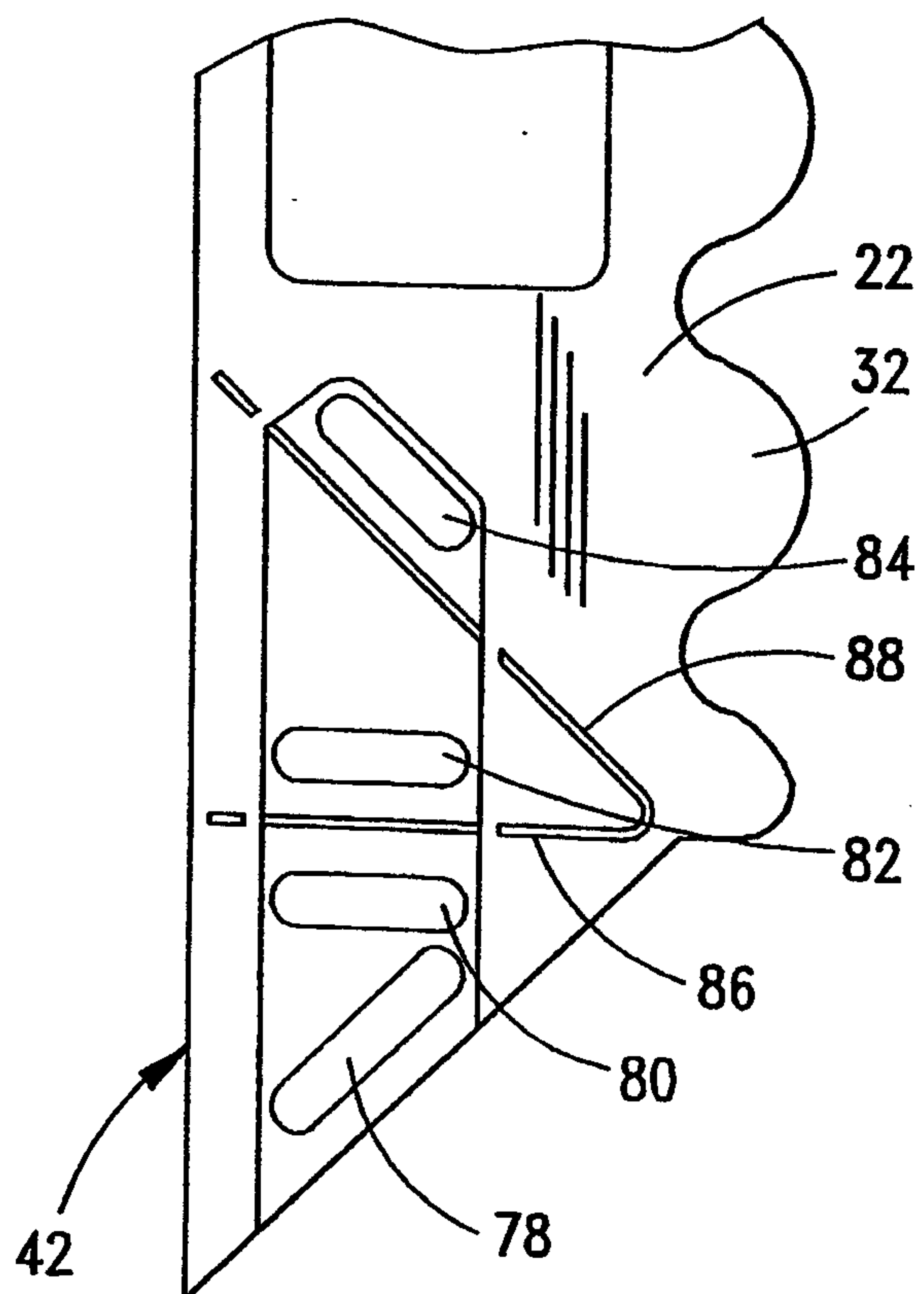
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FIG. 3

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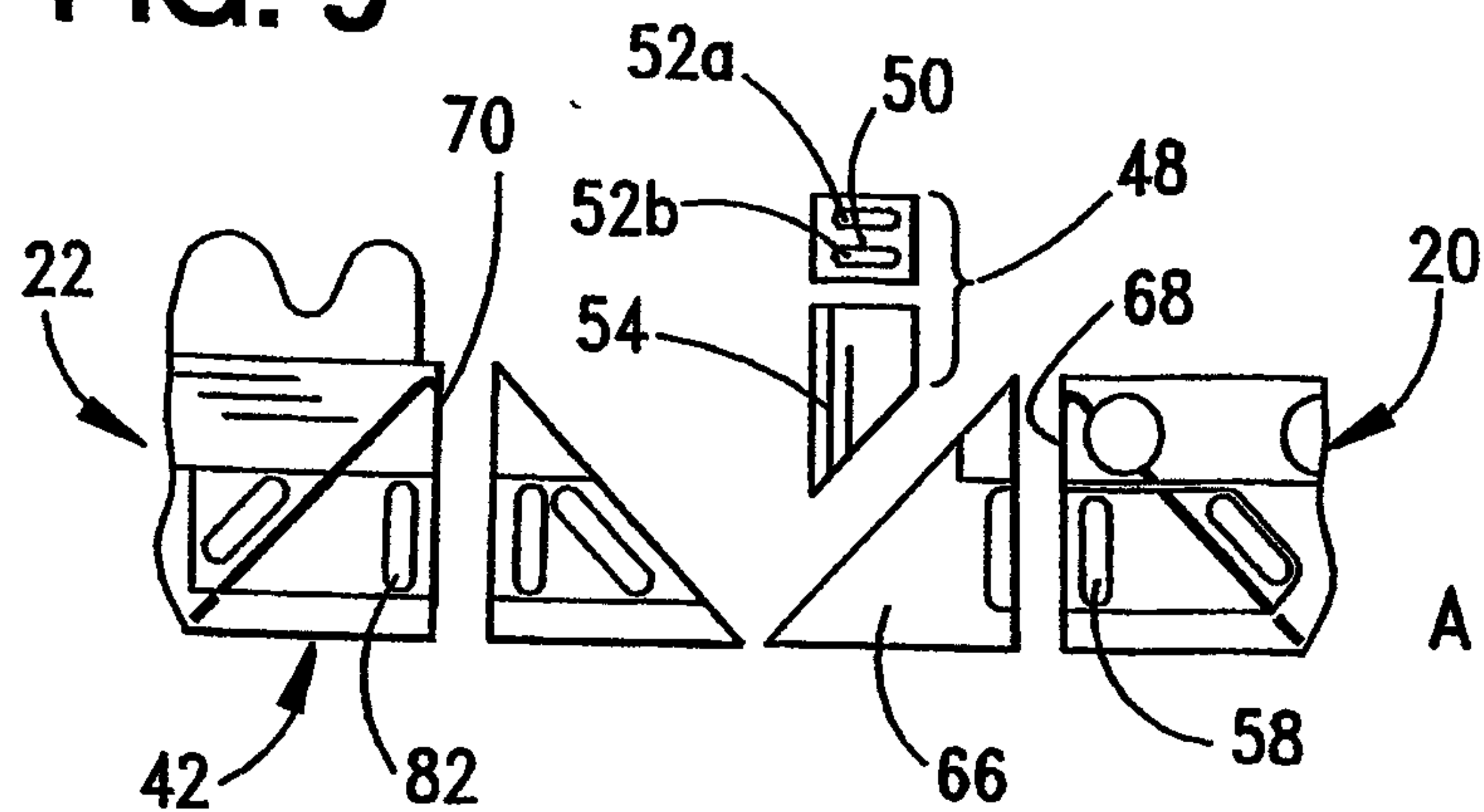
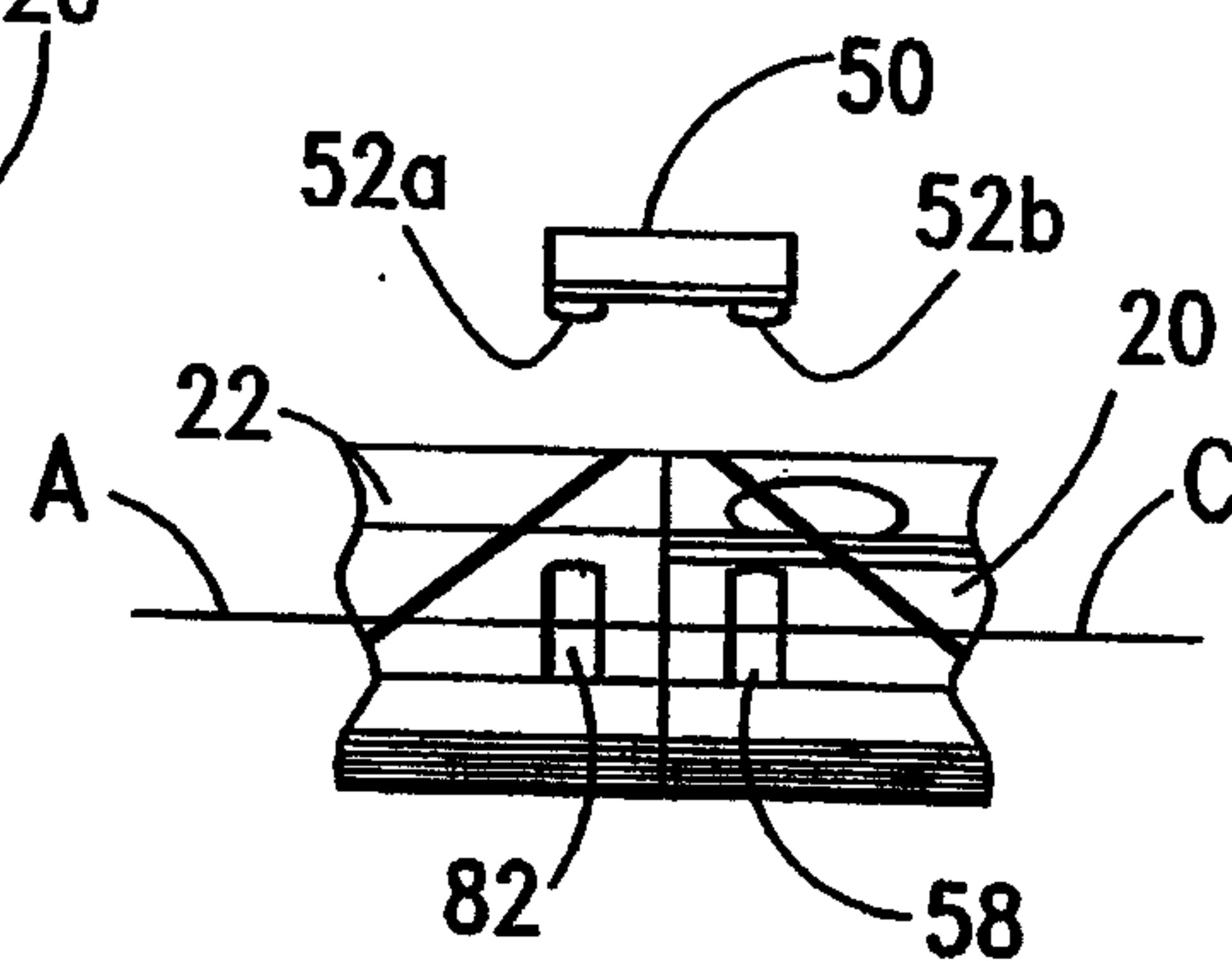
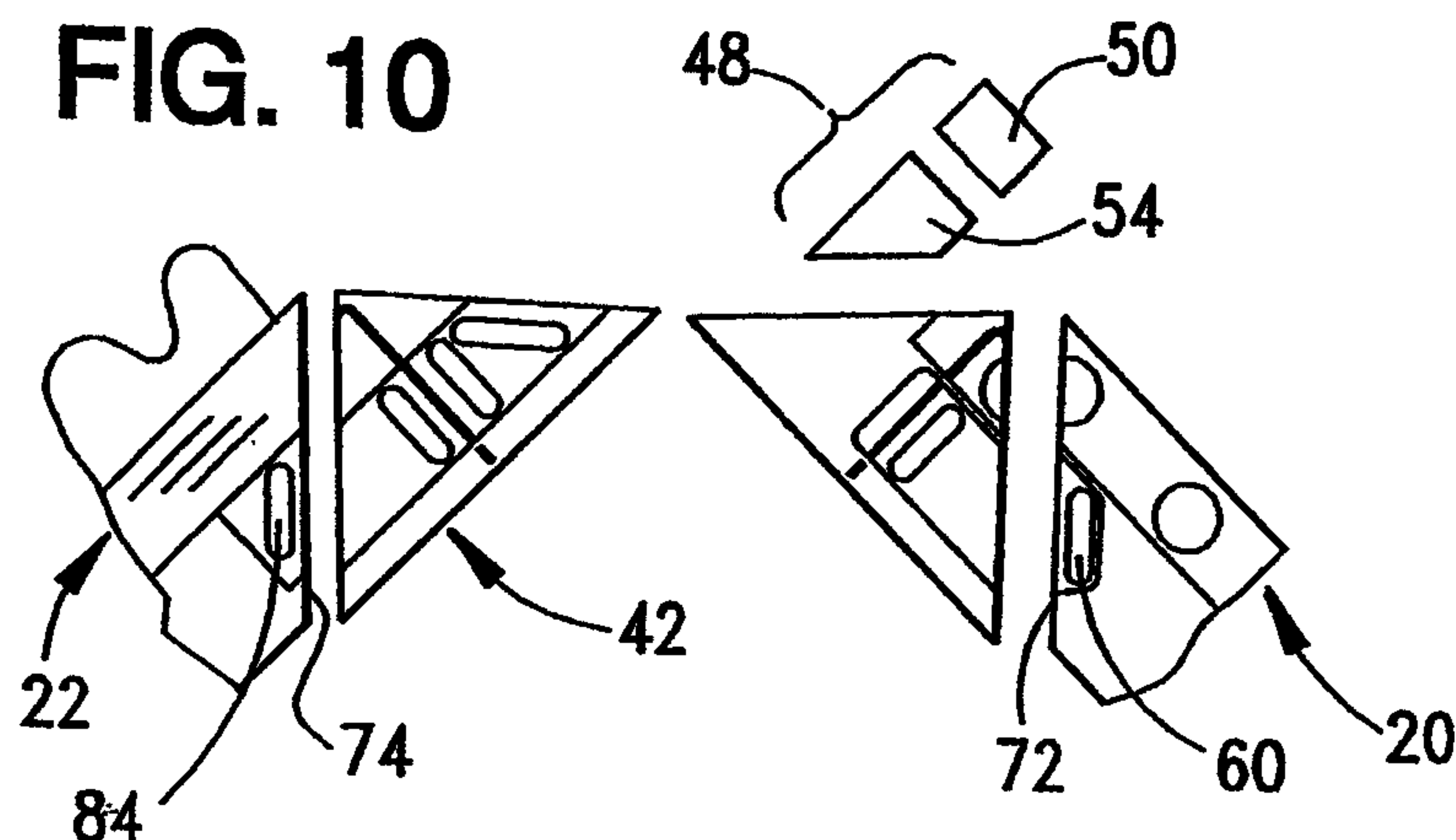
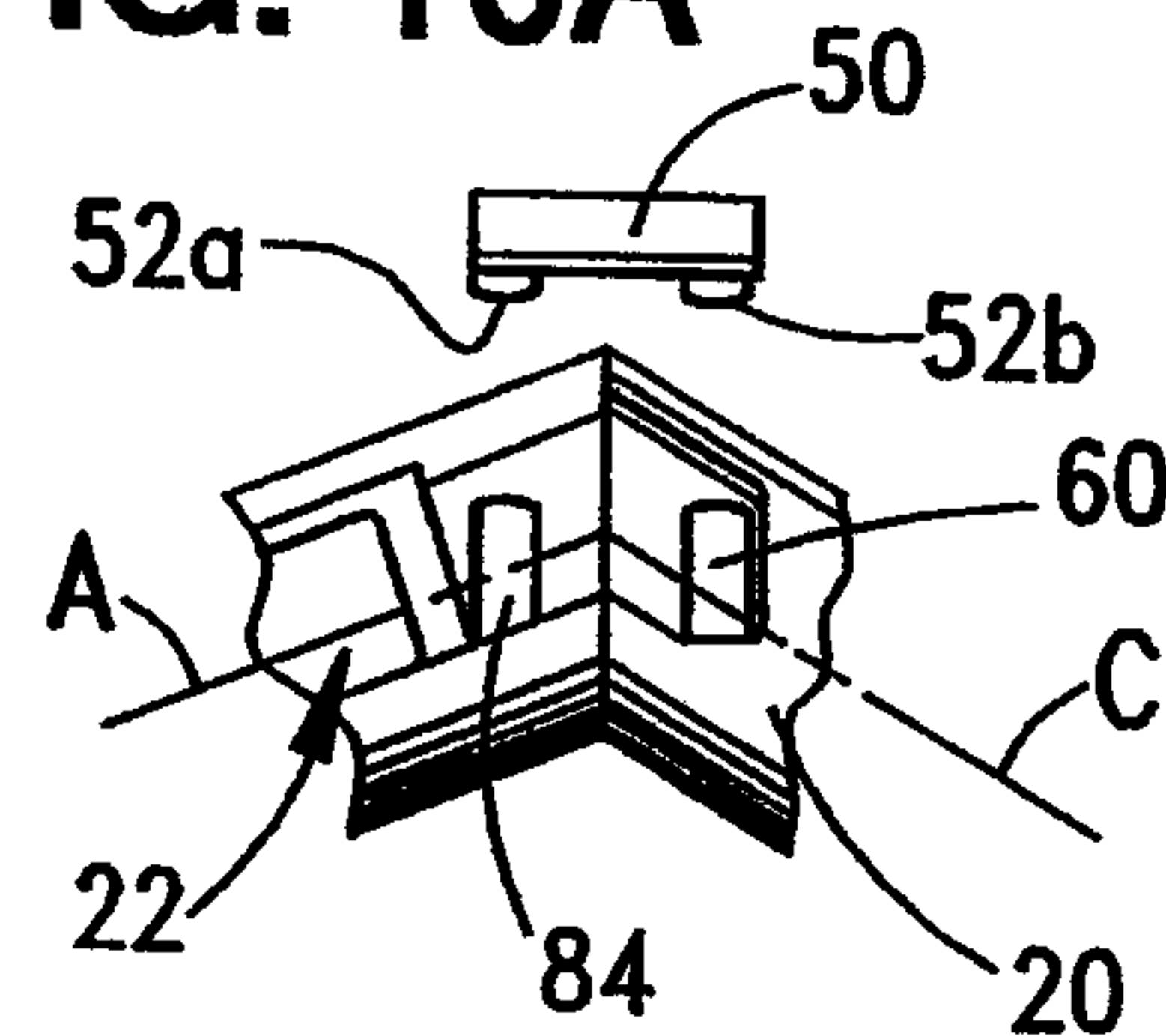
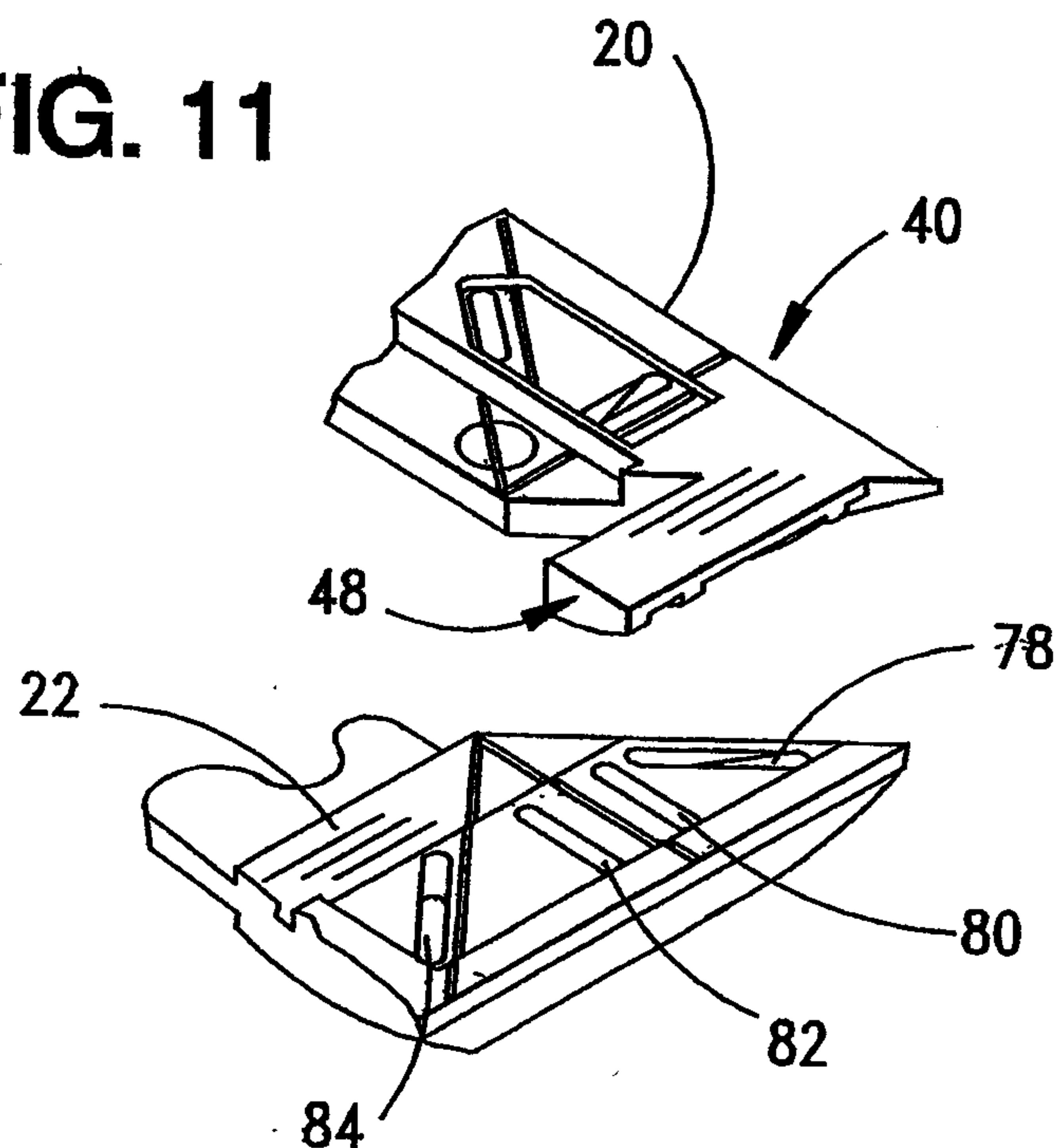
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FIG. 4**FIG. 5****FIG. 6****FIG. 7****FIG. 8**

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FIG. 9

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**FIG. 9A****FIG. 10****FIG. 10A****FIG. 11**

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