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(54) Abstract Title
Guide and mould

(57) There is provided a guide 10 for supporting a strip-shaped member (fastener member 12) inside a mould (50) (figure 3 - not shown) in order to attach the member to a moulded main body 62 by insert-moulding.

The guide 10 includes a bottom wall 20 and a pair of side walls 22, 24 provided uprightly on the bottom wall 20. The bottom wall 20 and the side walls 22, 24 define a channel 26 therebetween for detachably receiving a fastener member 12.

An outer surface 22a of at least one of the side walls 22, 24 extends in a direction as to intersect at an acute angle α with an outer surface 20a of bottom wall 20.

The guide 10 is arranged on a molding surface in such a manner that the side wall 22 including the slanted outer surface 22a is positioned outside of the guide 10 as seen from a pivot axis of a mold.

The slanted outer surface 22a allows moulded main body 62 including the insert 12 to be removed form the mould.

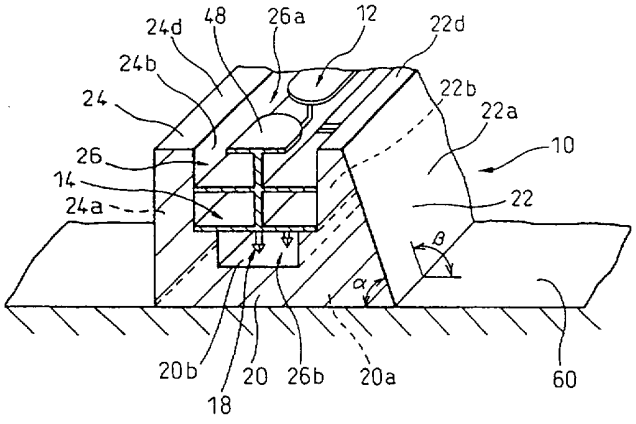

Fig. 2

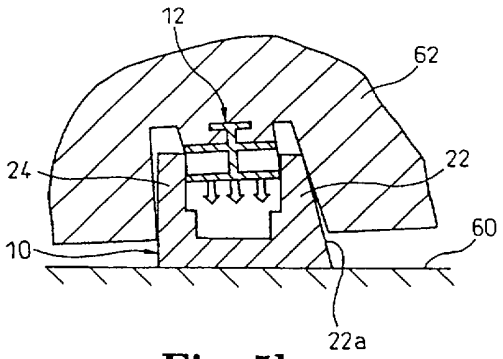

Fig. 5b

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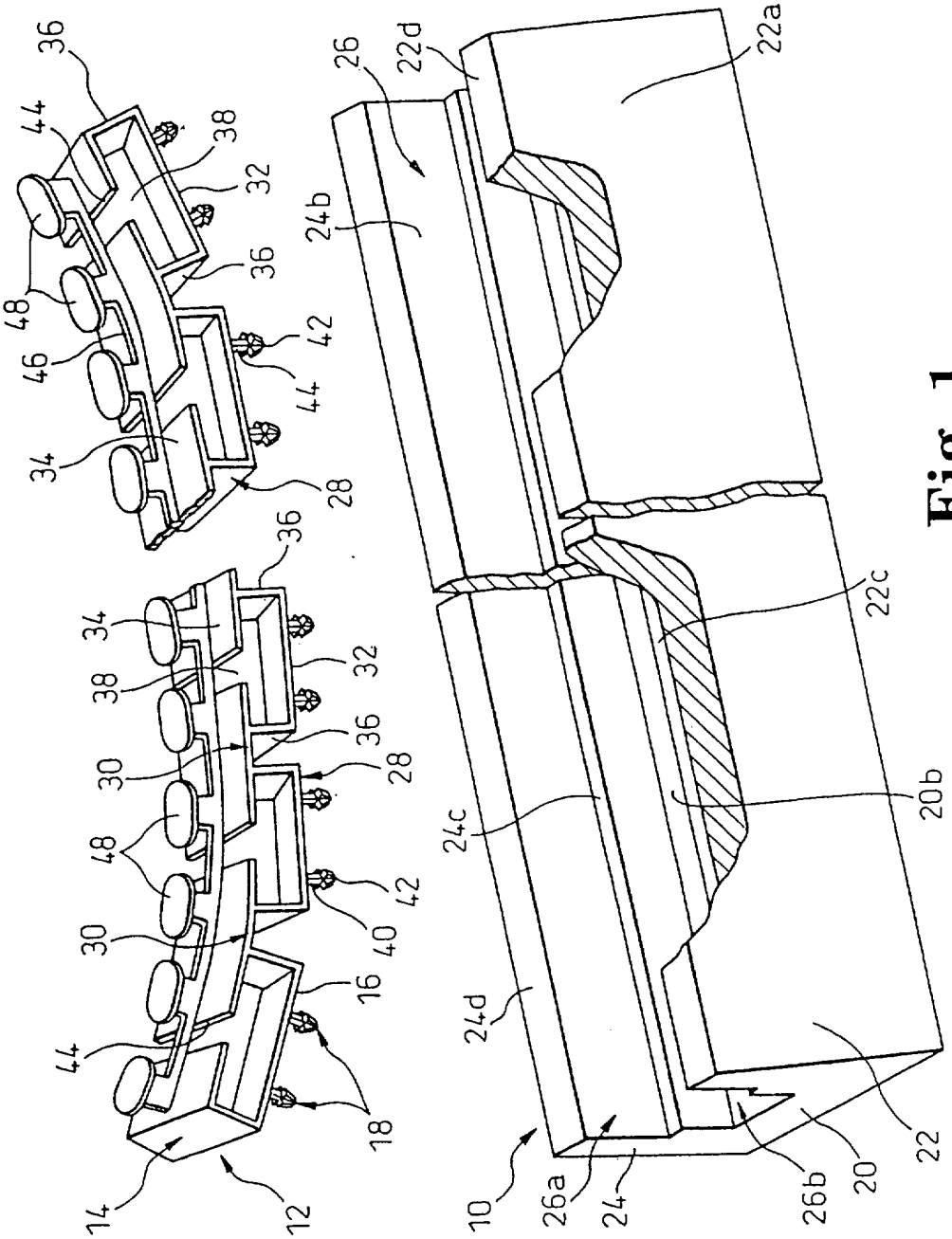
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30
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16
44
18
14
12
26
22d
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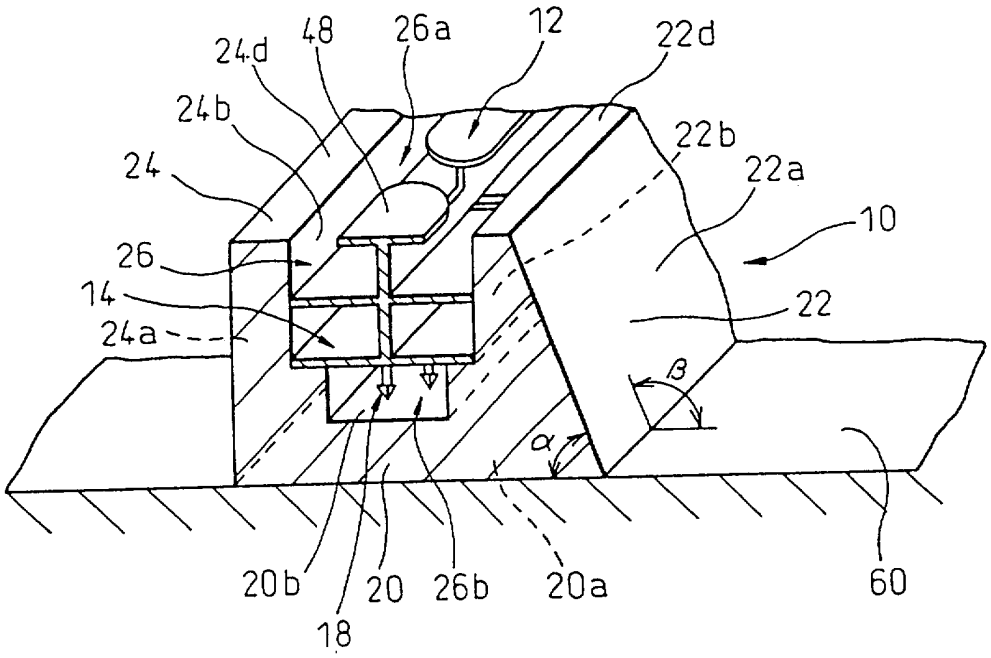
24b
22c
24c
20b
24d
10
26a
24
26b
20
22

Fig. 1


24d
48
26a
12
22d
24b
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24
22a
10
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14
22
24a
β
α
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18
20
26b
20a
60

Fig. 2

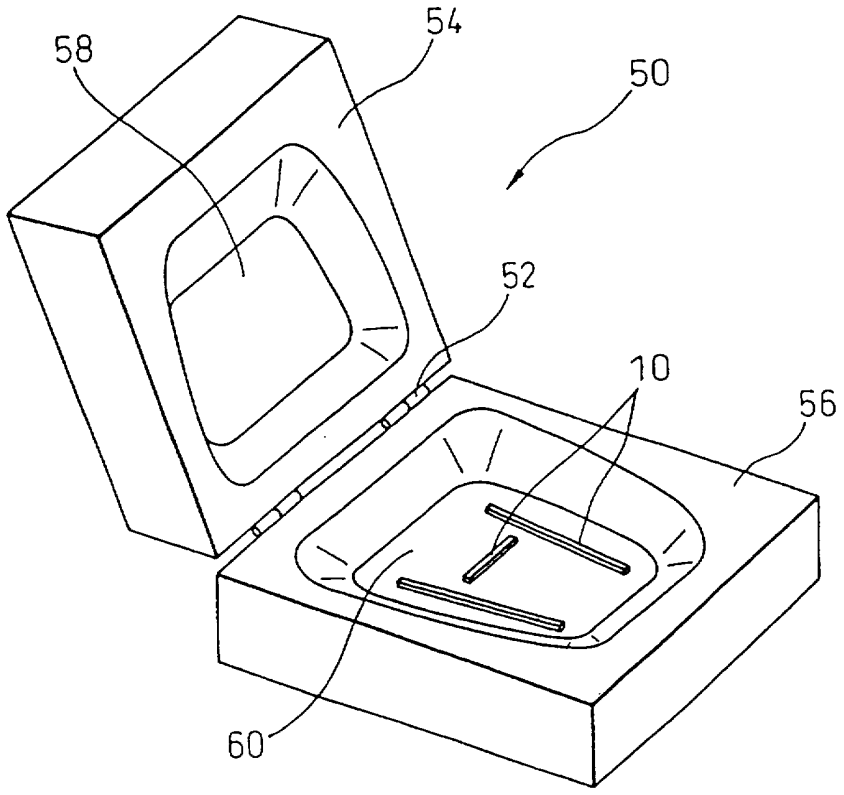

Fig. 3

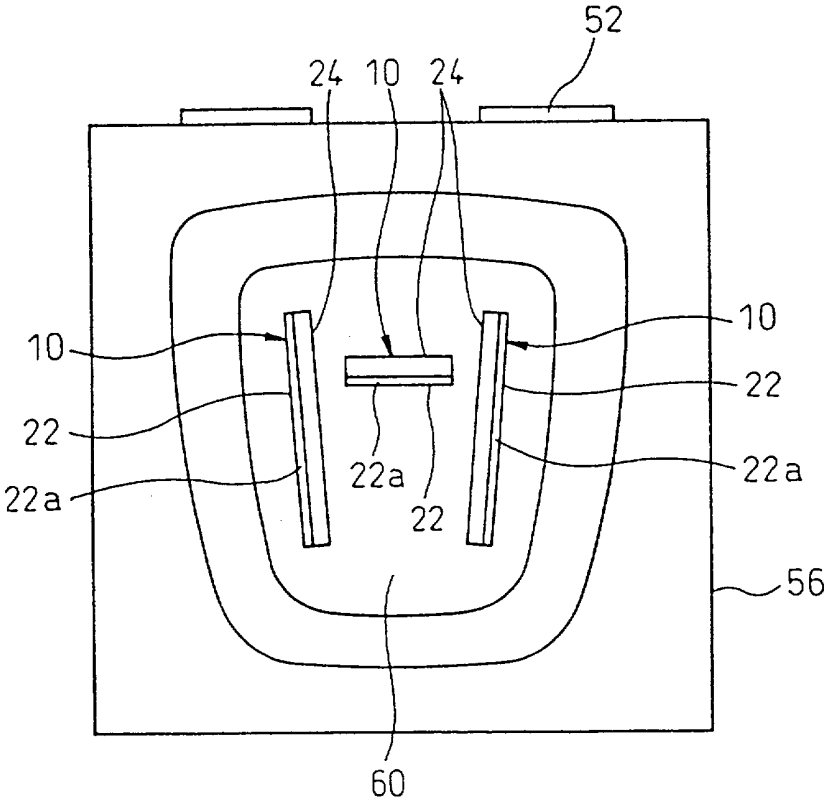

Fig. 4

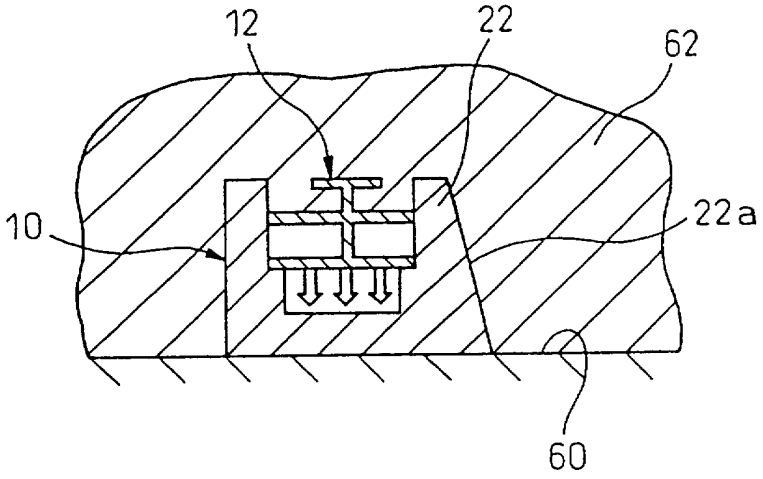

Fig. 5a

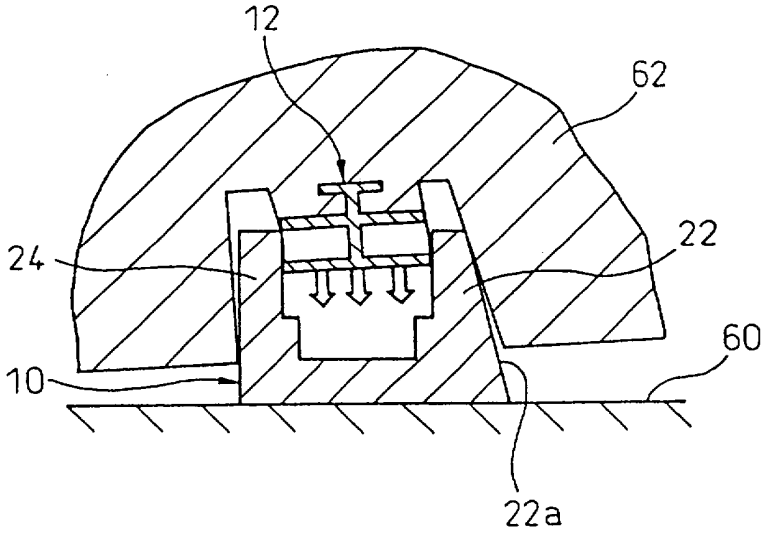

Fig. 5b

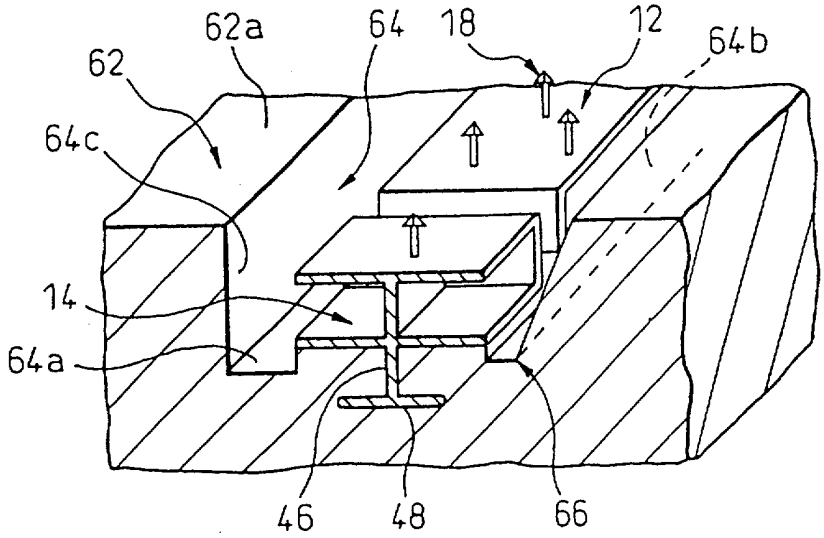

Fig. 6

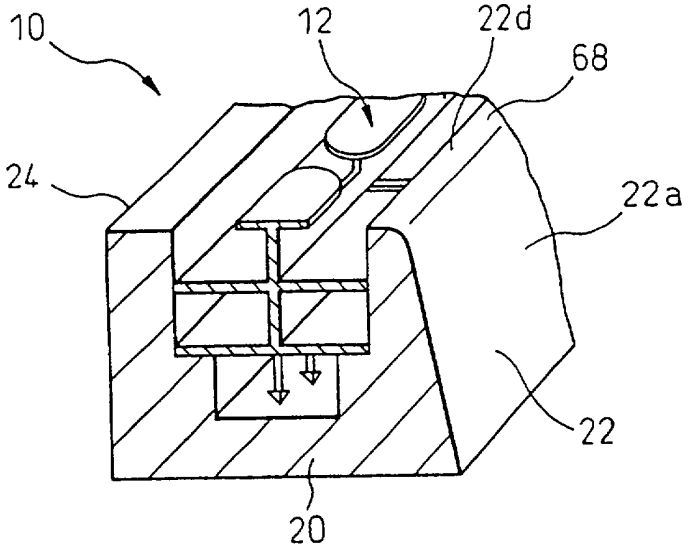

Fig. 7

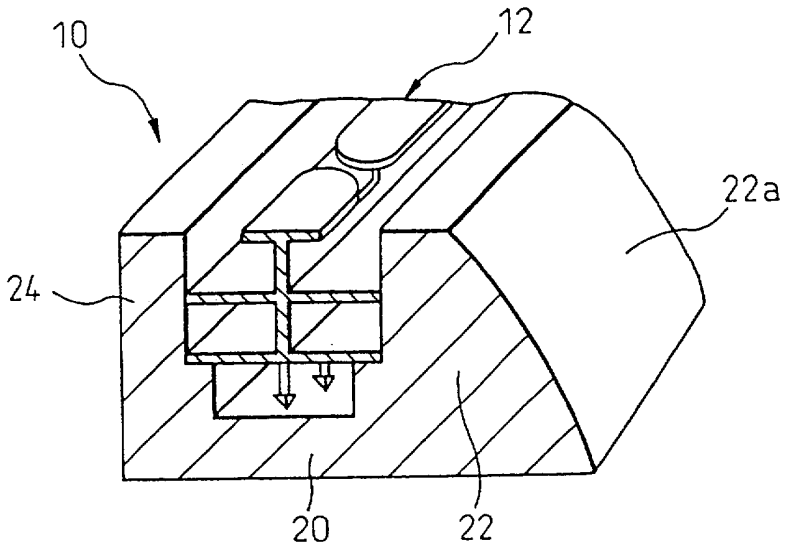

Fig. 8

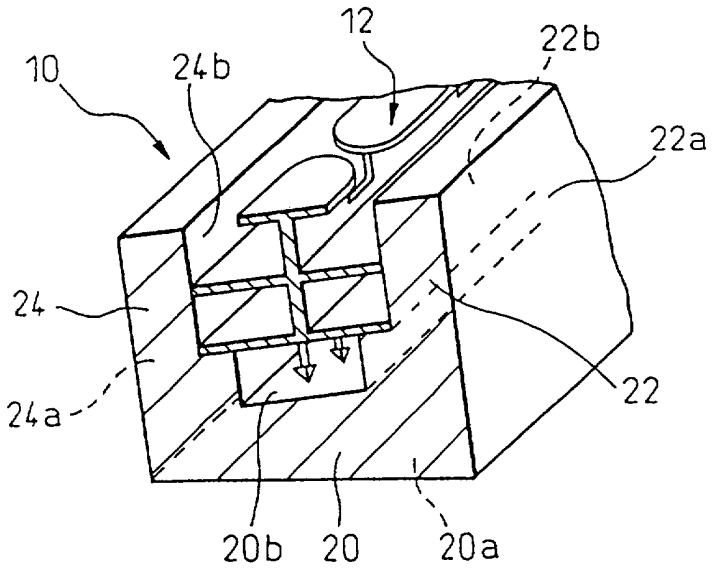

Fig. 9

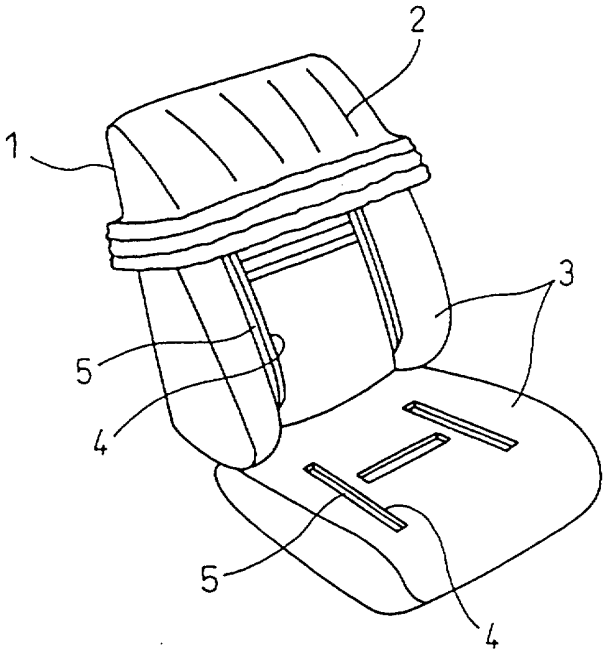

Fig. 10

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Guide and Mold

Field of the Invention

The present invention relates to a guide useful for integrally mounting a strip-shaped member on a molded main body. Further, the present invention relates to a mold having such a guide.

Background of the Invention

In articles such as vehicle seats, office or home chairs and mattresses having a cushiony core material made of a mold of an expandable resin material, for example, and a soft cloth or leather cover for the surface of the core material, it is known that a fastener member of face-to-face engagement type (so-called a face fastener) with a plurality of engaging elements arranged on one surface of a base is used in order to securely attach the cover material to the core material (see Japanese Unexamined Patent Publication (Kokai) No. 9-224720, for example).

Especially with articles such as seats and chairs, which desirably provide a great comfort to the user, an elongate strip-shaped fastener member adapted to be arranged in a groove formed in the surface of the core material along the seam of the cover material tends to be used as a means for securely attaching the cover material to the core material. As an example, Fig. 10 shows a vehicle seat in which elongate strip-shaped fastener members 5 are arranged in grooves 4 formed in the surface of core members 3 along the seams 2 or the like of a cover material 1. In order to securely arrange these strip-shaped fastener members, with the engaging elements thereof exposed, at the desired positions on the surface of the core material, an insert-molding process is advantageously implemented in which the fastener members are arranged as inserts in a mold of the core material making up a molded main body and secured to the core material at the same time that the core material is molded. Japanese Patent No. 2704859, for example, discloses a guide for supporting each fastener member in the mold of the core material according to the insert-molding method.

The guide described in the aforementioned patent publication has a groove adapted to detachably receive the fastener member in substantially extended state (i.e. in a state not wound nor folded). The groove is formed with the bottom wall of the guide and a pair of

side walls erected upright integrally from the bottom wall along the two longitudinally-extending edges of the bottom wall. Further, the guide includes a partitioning wall in proximity to each of the longitudinal ends of the groove for preventing the intrusion of the expandable liquid material into the groove at the time of molding the core material.

Each guide is fixed at the desired position on the molding surface with the bottom wall thereof in contact with the molding surface of the mold of the core material. The fastener member is received in the groove, with the engaging elements inserted in the space between the side wall pair and the partitioning wall pair of the guide. Under this condition, the core material is molded by injecting the expandable liquid material into the molding cavity of the mold thereby to securely mount the fastener member at a predetermined position on the surface of the core material.

The mold of the molded main body used in the molding process is generally so configured that the top and bottom parts are rotatably coupled to each other through an axis to facilitate the job of opening/closing the mold. In such a case, the worker mounts the fastener members on the guides fixed on the molding surface of one or both of the top and bottom parts in open state, and then closing the top and bottom parts by rotating them, molds the molded main body. After the molding process, the top and bottom parts are opened by rotating them, and the molded main body attached to one of the forces is recovered.

Summary of the Invention

The aforementioned conventional guide used for mounting the strip-shaped fastener member integrally on the molded main body has generally a profile with the flat outer surface of the bottom wall orthogonal to the flat outer surface of each side wall. In the case where the guide is fixed on the molding surface with the bottom wall in contact with the molding surface of the mold, therefore, the outer surface of each side wall of the guide is arranged orthogonally to the molding surface of the mold. When the molded main body is molded using this guide, a recessed portion having a substantially rectangular section in the shape corresponding to the profile of the guide is formed on the surface of the molded main body, and the fastener member is fixedly mounted on the bottom surface of the recessed portion.

With this configuration, the molded main body attached to one of the top and bottom parts may be separated from the guide fixed on the other force as the mold is opened after molding the molded main body. In the case where the guide is fixed on the molding surface with the side walls thereof arranged substantially parallel to the rotary axis of the top and bottom parts, the side wall located outside of the guide as viewed from the rotary axis may be caught by the molded main body when releasing the latter from the guide by opening the mold, with the probable result that the molded main body develops a crack or is otherwise damaged. This damage due to what is called the release resistance is more liable to occur, the smaller the distance between the rotary axis of the forces and the guide on the molding surface. Also, as long as the side walls of the guide are arranged at an angle to a surface orthogonal to the rotary axis, if not substantially in parallel to the rotary axis, a similar damage, small or large, due to the release resistance is liable to occur.

Further, as the mold is opened after molding the molded main body, the molded main body may be left on the force on which the guide is fixed. In such a case, the molded main body is manually separated from the mold, and in the process, one or both of the side walls of the guide may be caught by the molded main body with the result that the molded main body may be similarly damaged. In any way, this damage due to the release resistance tends to be caused by the stress concentrated at that part of the recessed portion having a substantially rectangular section formed in the molded main body in which the bottom surface corresponding to the top surface of the outer side wall of the guide intersects with the side surface corresponding to the outer surface of the same outer side wall of the guide.

An object of the present invention can be to provide a guide used for mounting a strip-shaped member integrally on a molded main body, which guide allows the molded main body to be easily removed therefrom without damaging the molded main body after the molded main body has been molded.

Another object of the invention can be to provide a mold having a guide for mounting a strip-shaped member integrally on a molded main body, in which the molded main body can be easily removed without being damaged after being molded.

To accomplish one or both of the above objects, a guide is provided that comprises a bottom wall, a pair of side walls provided uprightly on the bottom wall and a channel defined between the bottom wall and the side walls. The channel is capable of detachably

receiving a strip-shaped member. An outer surface of at least one of the side walls extends in such a direction as to intersect at an acute angle with an outer surface of said bottom wall.

It can be desirable for at least a part of the outer surface of the at least one side wall to be a convexly curved surface.

In another aspect of the present invention, a mold is provided that includes a guide fixedly provided on a molding surface. The guide comprises a pair of side walls provided uprightly on the molding surface and a channel defined between the side walls. The channel of the guide is capable of detachably receiving a strip-shaped member. An outer surface of at least one of the side walls of the guide extends in such a direction as to intersect at an obtuse angle with the molding surface.

Brief Description of the Drawings

Fig. 1 is a partially cut-away perspective view showing a guide according to an embodiment of the invention, together with a fastener member to be supported.

Fig. 2 is a partially sectional perspective view showing the guide of Fig. 1 with the fastener member received therein.

Fig. 3 is a perspective view showing a mold in open state, according to an embodiment of the invention.

Fig. 4 is a plan view of the bottom part of the mold shown in Fig. 3.

Fig. 5 is a sectional views for explaining the operation of the guide in the mold of Fig. 3, in which (a) shows the state of the molded main body after being molded, and (b) is a partially sectional perspective view showing the molded main body being released.

Fig. 6 is a partially sectional view showing, in enlarged form, the portion of the molded main body molded by using the mold of Fig. 3, to which a fastener member is mounted.

Fig. 7 is a partially sectional perspective view showing a guide according to a modification.

Fig. 8 is a partially sectional perspective view showing a guide according to another modification.

Fig. 9 is a partially sectional perspective view showing a guide according to still another modification.

Fig. 10 is a perspective view schematically showing a seat of a vehicle, to which the present invention is applicable.

Detailed Description of the Invention

An embodiment of the invention will be described in detail below with reference to the accompanying drawings. In the drawings, the same or similar component elements are designated by the same reference numerals, respectively.

Figs. 1 and 2 show a guide 10 and a fastener member 12 supported by the guide 10 according to an embodiment of the invention. The fastener member 12 is of face-to-face engagement type having such an flexibility as capable of following the polygonal surface of a molded main body, and as described later, includes a strip-shaped base portion 14 and a plurality of engaging elements 18 erected at predetermined intervals on one surface 16 of the base portion 14. The guide according to this invention is applicable to various strip-shaped members including fastener members having other structures as well as the fastener member having the shown structure.

The guide 10 is a bar-shaped block member for supporting the fastener member 12 of the desired length, and includes a bottom wall 20 and a pair of side walls 22, 24 erected integrally from the bottom wall 20 along the two longitudinally extending edges of the bottom wall 20. The bottom wall 20 and the side wall pair 22, 24 form a groove 26 over the whole length of the guide 10, which groove 26 can detachably receive the fastener member 12 in a substantially extended state (i.e. in a state not wound or folded).

The bottom wall 20 of the guide 10 has an outer surface 20a and an inner surface 20b which are flat and rectangular and extend in parallel to each other, and the inner surface 20b makes up the bottom surface of the groove 26. The side wall 22 has a flat rectangular outer surface 22a intersecting with the outer surface 20a of the bottom wall 20 at an acute angle α and a stepped rectangular inner surface 22b orthogonal to the inner surface 20b of the bottom wall 20. The inner surface 22b makes up one side surface of the groove 26. The other side wall 24 has a flat rectangular outer surface 24a orthogonal to the outer surface 20a of the bottom wall 20 and a stepped rectangular inner surface 24b orthogonal to the inner surface 20b of the bottom wall 20. The inner surface 24b constitutes the other side surface of the groove 26. The inner surfaces 22a, 24a of the side

walls 22, 24 are arranged in opposed relation to each other at a uniform interval in longitudinal direction.

The stepped inner surface 22b of the side wall 22 is formed with a support surface 22c extending in the direction orthogonal to the inner surface 22b over the whole length of the inner surface 22b at position a predetermined distance from the inner surface 20b of the bottom wall 20. In a similar fashion, the stepped inner surface 24b of the other side wall 24 is formed with a support surface 24c extending in the direction orthogonal to the inner surface 24b over the whole length of the guide 10 at the same distance as the support surface 22c from the inner surface 20b of the bottom wall 20. As a result, the groove 26 is divided functionally into a first portion 26a capable of receiving the base portion 14 of the fastener member 12 above the support surfaces 22c, 24c of the side walls 22, 24 and a second portion 26b capable of receiving a plurality of engaging elements 18 of the fastener member 12 under the support surfaces 22c, 24c. By the way, the side walls 22, 24 of the guide 10 have top surfaces 22d, 24d, respectively, extending substantially in parallel to the outer surface 20a of the bottom wall 20.

The intervals between the inner surfaces 22b, 24b of the side wall pair 22, 24 is substantially the same as the transverse size of the base portion 14 of the fastener member 12 to be supported. Once the fastener member 12 is snugly fitted in the groove 26 of the guide 10, therefore, the inner surfaces 22b, 24b of the side walls 22, 24 are in close contact with the longitudinally extending side edges of the base portion 14 of the fastener member 12 received in the first portion 26a of the groove 26. Also, the support surfaces 22c, 24c of the side walls 22, 24 are in contact with the neighborhood of the side edge of the surface 16 of the base portion 14 of the fastener member 12 received in the first portion 26a of the groove 26. In this way, the guide 10 holds the fastener member 12 at a predetermined position by the friction force with a plurality of the engaging elements 18 of the fastener member 12 received in the second portion 26b of the groove 26 and with the base portion 14 fitted in the first portion 26a of the groove 26. As a result, when the molded main body is molded with the fastener member 12 supported by the guide 10, the intrusion of the liquid material into the second portion 26b of the groove 26 is prevented.

The guide 10 having the aforementioned configuration is fabricated integrally by cutting from a bar-shaped metal stock such as aluminum, aluminum alloy or iron. In such a case, the groove 26 can be cut by the T-slot cutter (trade name) mounted on the NC

milling machine, for example, in accordance with a predetermined program. Nevertheless, the guide 10 can be fabricated also by various other well-known methods.

The fastener member 12 representing an example of the strip-shaped member received in the guide 10 has the strip-shaped base portion 14 thereof configured with a plurality of box-shaped portions 28 aligned in spaced relation with each other along the longitudinal direction and a plurality of coupling portions 30 for coupling the box-shaped portions 28 integrally to each other. Each of the box-shaped portions 28 is a substantially hollow structure including an upper plate portion 32 and a lower plate portion 34 which are flat and extending substantially parallel to each other, a pair of side plate portions 36 interconnecting the upper and lower plate portions 32, 34, and a partitioning plate portion 38 extending longitudinally between the plate portions 32, 34, 36. A plurality of the engaging elements 18 each include a leg portion 40 protruded substantially upright from the upper plate portion 32 of each box-shaped portion 28 and a plurality of engaging pieces 42 protruded sideways in the neighborhood of the forward end of the leg portion 40, so that each of the engaging pieces 42 at the forward end of each engaging element 18 is adapted to detachably engage the corresponding engaging element of the mating engaging member.

The lower plate portion 34 of each box-shaped portion 28 is formed with a transversely-extending slit 44 at the substantial longitudinal center thereof. Further, a rib 46 extending longitudinally across the slit 44 is protruded over the whole section of the base portion 14. The rib 46 is formed with two thin anchors 48, for each box-shaped portion 28, which extend substantially parallel to the lower plate portion 34. The rib 46 and the anchor 48 are coupling elements embedded in the molded main body through the insert-molding process described later, and make up a portion of the fastener member 12 mechanically coupled with the molded main body.

The base portion 14 of the fastener member 12 having this structure can generally be bent with comparative ease in the horizontal direction, i.e. in the direction parallel to the surface 16 due to the action of stress distribution of the hollow box-shaped portions 28. Also, the thin coupling portions 30 each act as a hinge and makes it possible to bend the whole of the base portion 14 in the vertical direction, i.e. in the direction perpendicular to the surface 16 with comparative ease. In this way, the base portion 14 of the fastener member 12 can be bent easily in either horizontal or vertically direction, and therefore can

be installed accurately in three-dimensional fashion on the desired surface portion of an object having a complex polygonal surface. Preferably, the fastener member 12 is formed integrally of a resin material such as nylon, polyethylene or polypropylene.

The height of the inner surfaces 22b, 24b of the side walls 22, 24 of the guide 10 from the support surfaces 22c, 24c to the upper end thereof is desirably as thick as or slightly thicker than the base portion 14 of the fastener member 12. This configuration makes it possible to visually or tactually make sure that the base portion 14 of the fastener member 12 is fitted in the groove 26 of the guide 10 accurately, i.e. in such a way that the neighborhood of the edges of the surface 16 of the base portion 14 is in contact with the pair of the support surfaces 22c, 24c. Excessive protrusion of the side walls 22, 24 of the guide 10 from the lower plate portion 34 of the base portion 14 of the fastener member 12, however, may adversely affect the smooth flow of the molten material at the time of molding the molded main body as described later. Therefore, the difference between the height of the side walls 22, 24 of the guide 10 from the support surfaces 22c, 24c and the thickness of the base portion 14 of the fastener member 12 is desirably about 1 mm.

Fig. 3 shows a mold 50 with the guides 10 having the aforementioned configuration according to an embodiment of the invention. The mold 50 has a structure for molding the core material (cushion) of the main seat portion of a vehicle seat from a foamed resin material, for example. The mold according to the invention, however, is not limited to the shown structure but includes other various molds for molding the main body.

The mold 50 has a top part 54 and a bottom part 56 rotatably coupled to each other through an axis 52. The top part 54 and the bottom part 56 have molding surfaces 58 and 60, respectively, for molding the core material making up the molded main body. Three guides 10 are arranged at predetermined positions on the molding surface 60 of the bottom part 56. Each guide 10 has the outer surface 20a of the bottom wall 20 thereof in contact with the molding surface 60 of the bottom part 56 fixedly using a well-known fixing means such as putty, bolt or magnet (Fig. 2). Especially, fixing the guides 10 on the bottom part 56 using magnetic means has the advantage that the work of receiving the fastener member 12 can be carried out outside of the mold 50.

Once the guides 10 are fixed on the molding surface 60 in this way, as shown in Fig. 2, the outer surface 22a of the side wall 22 of each guide 10 is arranged at an obtuse

angle β to the molding surface 60, and the outer surface 24a of the other side wall 24 is arranged orthogonally to the molding surface 60. The groove 26 of the guide 10 is opened to the molding cavity formed between the molding surface 58 of the top part 54 and the molding surface 60 of the bottom part 56.

As evidently shown in Fig. 4, the two side walls 22, 24 of one of the guides 10 are arranged substantially parallel to the rotary axis 52, while the two side walls 22, 24 of the other two guides 10 are arranged diagonally to the rotary axis 52 of the top part 54 and the bottom part 56 in the mold 50. Each guide 10 is oriented on the molding surface 60 in such a manner that the side wall 22 having the slanted outer surface 22a thereof is located outside of the guide 10 as viewed from the rotary axis 52.

Now, an explanation will be given of the insert-molding process for molding the core material 62 making up a molded main body with the mold 50 having the structure described above. First, the worker mounts the fastener member 12 on each of the three guides 10 fixed on the molding surface 60 with the top part 54 and the bottom part 56 open. In the process, a plurality of the engaging elements 18 of each fastener member 12 are received in the second portion 26b of the corresponding guide 10, and the base portion 14 is received in the first portion of the groove 26 with the longitudinally extending side edges and the neighborhood of the two edges of the surface 16 thereof in close contact with the inner surfaces 22b, 24b of the side walls 22, 24 of the guide 10.

Then, the top part 54 and the bottom part 56 are closed to each other rotationally, and heated to and maintained at a predetermined temperature, after which the molten resin material (the expandable liquid resin material such as polyurethane) is supplied into the molding cavity between the molding surfaces 58 and 60. After that, the top part 54 and the bottom part 56 are cooled to the room temperature thereby to solidify the molten resin material, thus forming a core material making up the molded main body. Upon complete molding of the core material, the fastener member 12 is securely coupled to a predetermined position on the surface of the core material with a plurality of the engaging elements 18 exposed. Fig. 5(a) shows the core material 62 molded in the mold 50 in this way, together with the guide 10 and the fastener member 12.

Then, the top part 54 and the bottom part 56 are opened by being rotated. The core material 62 tends to be kept attached to one of the molding surfaces 58, 60 of the forces 54, 56. Assuming that the core material 62 is attached to the molding surface 58 of the top

part 54 and is moved with the top part 54 away from the bottom part 56, the three fastener members 12 integrally mounted on the core material 62 are separate from the corresponding guides 10 with the movement of the core material 62. In the process, each guide 10 of the mold 50 is oriented on the molding surface 60 with the side wall 22 having the slanted outer surface 22a directed outward as viewed from the rotary axis 52. While the top part 54 and the core material 62 are moving about the rotary axis 52, therefore, the chance of the core material 62 and the outer side wall 22 of each guide 10 being caught with each other is effectively reduced or avoided (See Fig. 5(b)). As a result, the portion of the core material 62 where the fastener member is mounted is prevented from being cracked or otherwise damaged when the core material 62 is released from the mold 60. By the way, the core material 62 attached to the molding surface 58 of the top part 54 can be easily separated manually from the top part 54.

Fig. 6 shows an enlarged view of the portion of the core material 62 where the fastener member 12 is integrally mounted at a predetermined position through the insert-molding process described above. The core material 62 includes a recessed portion 64 formed at a predetermined position on the surface 62a corresponding to the guide 10, and the fastener member 12 is fixedly mounted on the bottom surface 64a of the recessed portion 64. A plurality of the engaging elements 18 formed on the surface 16 of the base portion 14 of the fastener member 12 are arranged exposed in the recessed portion 64, and a rib 46 and a plurality of anchors 48 formed on the other surface of the base portion 14 are embedded in the core material 62.

The recessed portion 64 formed on the core material 62 has a side surface 64b formed in conformance with the outer surface 22a of the side wall 22 of the guide 10, and the other side surface 64c formed in conformance with the outer surface 24a of the other side wall 24 of the guide 10. The side surface 64b of the recessed portion 64 intersects at an obtuse angle with the surface 62a of the core material 62 and the bottom surface 64a of the recessed portion 64, while the other side surface 64c of the recessed portion 64 intersects substantially orthogonally with the surface 62a of the core material 62 and the bottom surface 64a of the recessed portion 64. With the recessed portion 64 shaped this way, the concentration attributable to the release resistance concentrated at the portion 66 of the recessed portion 64 where the bottom surface 64a and the side surface 64b intersect with each other when the guide 10 is separated from the core material 62 is effectively

reduced (Fig. 5(b)), and therefore the intersecting portion 66 is not easily cracked or otherwise damaged.

As described above, with this configuration of the guides 10 and the mold 50 having the guides 10, the guides 10 are each arranged in the mold 50 in such a manner that the side wall 22 having the slanted outer surface 22a is located outside of the guide 10 as viewed from the rotary axis 52. Therefore, the core material 62 making up the molded main body, after being molded, can be easily removed from the mold 50 without damaging, in particular, the portion of the core material 62 where the fastener member is mounted.

The preferable angle α at which the outer surface 20a of the bottom wall 20 and the outer surface 22a of the side wall 22 of the guide 10 intersect with each other is in the range of, for example, 1° to 10°, depending on the distance from the rotary axis 52 of the mold 50 to the guide 10 and the angle at which the side wall 22 of the guide 10 is arranged with respect to the rotary axis 52. Also, as shown in Fig. 7, at least a part of the outer surface 22a of the side wall 22 of the guide 10 (the boundary portion between the outer surface 22a and the top surface 22d in the drawing) may be formed with a convexly curved surface 68. With this configuration, the portion 66 where the side surface 64b and the bottom surface 64a of the recessed portion 64 of the core material 62 described above is formed as a convexly curved surface, and therefore the stress concentration at the intersecting portion 66 is more effectively reduced. Further, as shown in Fig. 8, the whole of the outer surface 22a of the side wall 22 of the guide 10 can be formed as a convexly curved surface having a radius of curvature corresponding to the distance from the rotary axis 52 of the mold 50 to the outer surface 22a of the side wall 22.

By the way, in the insert-molding process described above, the core material 62 may be left attached to the molding surface 60 of the bottom part 56 when the top part 54 and the bottom part 56 is opened after molding the core material 62. In such a case, the core material 62 is manually separated subsequently from the bottom part 56. The direction of this separation, unlike in the aforementioned case in which it is specified by the rotary axis 52, can be variously selected freely by the worker. In order to prevent the core material 62 from being damaged by the side walls 22, 24 of the guide 10 at the time of this separation, it is advantageous to form the outer surface 24a of the other side wall 24 of the guide 10 similarly as a surface extending in the direction at an acute angle to the

outer surface 20a of the bottom wall 20. In addition, each of the two longitudinal end surfaces of the guide 10 may also be formed as a slanted surface.

In the configuration described above, as shown in Fig. 5(b), when the core material 62 is released from the guide 10, the side wall 24 positioned inside of the guide 10 as viewed from the rotary axis 52 tends to interfere with the portion of the core material 62 where the fastener member is mounted in the recessed portion 64 of the core material 62. For avoiding this interference, the whole of the guide 10 is advantageously formed slanted in one direction, for example, as shown in Fig. 9. In this configuration, the bottom wall 20 of the guide 10 has the outer surface 20a and the inner surface 20b assumed to extend in such a direction as to intersect with each other at an acute angle, the side wall 22 has the outer surface 22a intersecting at an acute angle with the outer surface 20a of the bottom wall 20 and the stepped inner surface 22b orthogonal to the inner surface 20b of the bottom wall 20, and the other side wall 24 has the outer surface 24a intersecting at an obtuse angle with the outer surface 20a of the bottom wall 20 and the stepped inner surface 24b orthogonal to the inner surface 20b of the bottom wall 20. When mounting this guide 10 on the mold 50, it is oriented on the molding surface 60 in such a manner that the side wall 22 having the outer surface 22a slanted at an acute angle is positioned outside of the guide 10 as viewed from the rotary axis 52.

By the way, the mold according to this invention is not limited to the aforementioned configurations, but a guide having a similar configuration to the guide 10 may be integrally formed on the molding surface. Such a mold has a feature that a guide having a pair of side walls formed upright on the molding surface and a groove formed between the side walls is fixedly provided on the molding surface so that a strip-shaped member may be detachably received in the groove of the guide, and the outer surface of at least one of the side walls of the guide extends in the direction intersecting at an obtuse angle with the molding surface.

From this viewpoint, a mold according to this invention having a guide of substantially the same configuration as that shown in Fig. 9 can be provided in such a manner that the conventional guide of a profile having the outer surface of the bottom wall orthogonal with the outer surface of each side wall thereof is integrally fixed on the molding surface through a hinge-shaped member made of such a material as putty between the bottom wall and the molding surface of the mold.

As apparent from the foregoing description, according to the present invention, there is provided a guide used for mounting a strip-shaped member integrally on a molded main body and a mold having such a guide, wherein the molded main body can be easily detached without being damaged after being molded.

We claim:

1. A guide comprising a bottom wall, a pair of side walls provided uprightly on the bottom wall and a channel defined between the bottom wall and the side walls, the channel being capable of detachably receiving a strip-shaped member, characterized in that:

an outer surface of at least one of said side walls extends in such a direction as to intersect at an acute angle with an outer surface of said bottom wall.

2. A guide as set forth in claim 1, wherein at lest a part of said outer surface of said at least one side wall is a convexly curved surface.

3. A mold including a guide fixedly provided on a molding surface, the guide comprising a pair of side walls provided uprightly on the molding surface and a channel defined between the side walls, the channel of the guide being capable of detachably receiving a strip-shaped member, characterized in that:

an outer surface of at least one of said side walls of said guide extends in such a direction as to intersect at an obtuse angle with said molding surface.

4. A guide as claimed in Claim 1 substantially as herein described with reference to the accompanying drawings.

5. A mould as claimed in Claim 3 substantially as herein described with reference to the accompanying drawings.

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Claims searched: 1-5

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Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.S): B5A (AF35C, AF35E, AF35J, AF35L, AF35X)

Int Cl (Ed.7): B29C 33/44 39/10 45/14

Other: Online: WPI EPODOC JAPIO

Documents considered to be relevant:

Category	Identity of document and relevant passage		Relevant to claims
X	GB 1361684	(OLIVETTI) page 3 and lines 15-30, page 4 and lines 14-20 etc.	1, 3 at least
A	WO 98/02331 A1	(MINNESOTA MINING)	
A	WO 88/00559 A1	(SUN COAST)	

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