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(57) Abstract

A method of manufacturing outsole of sports shoes in which the throughout holes are formed, manufacturing method comprising the steps of forming the midsole so as to be cut and bisected, joining the cut surface after this, and joining midsole by covering the entire lower surface of midsole after this. A molding for forming of the midsole wherein the molding comprises three widely known and disclosed stages, the molding comprises a lower stage molding (12), in which the throughout hole protrusion (15) is fixed in two columns, a middle stage molding (11), in which the throughout holes (15) that is formed in two columns by forming two sheds (18) divided by a separating partition (13) are inclined toward a separating partition (13) of the respective shed (18), and a higher stage molding (10), in which a molding protrusion (14) that is inserted through sheds (18) of the middle molding (11) so as to be placed in parts, where the respective the throughout hole protrusion (15) formed on the middle molding (12) is not formed, is formed. An outsole of a shoe, in which the throughout holes are passing through the front edge and back edge in side direction of the midsole formed in a shooting molding.

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The Outsole of shoe, its manufacturing method, and its molding

BACKGROUND OF THE INVENTION

Field of the Invention

The present invention relates to the outsole of sports shoes, wherein the throughout holes passing through a lateral surface are formed, their manufacturing method, and their molding, and, more particularly, to the outsole of sports shoes wherein the throughout holes passing through a lateral surface are formed, their manufacturing method, and their molding, so that, by forming the throughout holes so as to be through a lateral surface in the side direction of midsole as well as by reducing the weight of sports shoes, it is intended not only to increase the cushion without using air bags, but also to have a good effect keeping warm since the throughout holes are separated from the ground after wearing the sports shoes.

Discussion of Related Art

It is well-known that since in the conventional outsole of sports shoes, the weight of becomes light and, in order to make the comfortable cushion, an air bag is used in the case of manufacturing the midsole, in the case of manufacturing it, it is necessarily required to work in order to fix an additional air bag on the molding in which a midsole is formed, and also since these air bags use the

one that is manufactured as an additional work at the state that air or gas is inserted, it has caused the increase of the manufacturing cost as well as the defective rate of goods and it has a drawback in that it will lose the function as sport shoes in case that air bag is exploded after wearing it, and etc.

Currently, as a way of manufacturing the midsole in the outsole of sports shoes, it has been used that since it is formed at the state that the midsole is placed horizontally, it is molded in a shooting method normally by raising it onto upside and inserting resin, which is used to be shot, to the mold of molding consisting of the 2nd or 3rd stage and heating it up to a fixed temperature.

Accordingly, as a structure of a molding for the manufacture, as normally shown in FIG. 9, it has been used as a way of manufacturing the outsole of sports shoes that the middle stage molding 200, which is amassed continuously upwardly from the lower stage molding 100 and the higher stage molding 300 in which a protrusion 600 is formed, are raised sequentially upwardly.

Also, in order to increase the cushioning force as well as to reduce the weight of shoes today, normally as shown in FIG. 9, molding operation is performed in a shooting way by forming a protruding pin 400 so that an air

bag may be fixed in the side partition of the molding and then fixing the air bag by inserting an air bag between the side partition of the molding and a protruding pin 400, or an air bag is mounted on the midsole, which is molded, by mounting the air bag into the inserting tube 500 by forming the inserting tube 500.

However there is a drawback in that, since additional air or gases are not inserted into an air bag, in the case that air bags is exploded, the cushion function of shoes is probably reduced.

Another drawback is that these kinds of air bags are costly and expensive due to the cost increase since the air bags should be made specially.

SUMMARY OF THE INVENTION

Accordingly, in order to overcome such drawbacks in the conventional art, it is therefore an object of the present invention to provide the outsole of sports shoes, in which the throughout holes, which are passed through a lateral surface, are formed on the lateral surface of the midsole of sports shoes which are constituted with an outsole and a midsole, so that its weight is reduced and its cushion is increased by the throughout holes which are passed through a lateral surface, and the cushioning force is protected as the partition which is created between the throughout holes plays a roll as the reinforcing support.

It is another object to provide a midsole of sports shoes, in which the throughout holes are formed on the lateral direction of the midsole simply by bisecting the midsole at the state that the molding midsole is erected on a lateral surface, molding the respective one, glueing them, and then glueing the midsole in order to form the throughout holes.

It is another object to provide a manufacturing method in which the midsole is formed integrally in a way that the manufacturing molding is formed into two stages, the lower stage molding is divided into a fixed molding and an operational molding, and only the operational molding of a side can be separated in order to manufacture the midsole integrally, wherein the throughout holes are formed in the lateral direction by not molding at the state that the midsole is erected but molding at the horizontal state.

It is another object to provide a manufacturing method which can be manufactured without a coupling line by lifting up at the state that only middle stage molding, among three stage moldings which are manufacturing moldings, is being divided into the right and left side in order not to form the coupling lines or in order to form the coupling lines on the midsole, in which the throughout holes are formed because the fixed molding is separated

from the operational molding in the midsole formed as these.

It is another object to provide the midsole of sports shoes, in which the elastic bar or the elastic tube, which is made of flexible material and has a good elastic force in order to increase a cushion-maintaining force of the throughout holes so that the restoring force of the throughout holes may be reinforced, is formed on the front or the back of the throughout holes.

It is another object to provide the midsole of sports shoes, in which the shapes of the throughout holes are diversified due to these moldings so that a variety of designs can be made while having a different cushioning force

It is another object to provide the midsole of sports shoes, in which a filler or a reinforcing tube for a stopper is formed in these the throughout holes, so that the elastic force can be protected.

It is another object to provide a molding which can manufacture midsoles 22 integrally

To achieve these and other advantages and in accordance with the purpose of the present invention, as embodied and broadly described, there is provided a method of manufacturing the outsole of sports shoes, in which the

throughout holes are formed, comprising the steps of forming the midsole so as to be cut and bisected, joining the cut surface after this, and
joining the midsole by covering the entire lower surface of midsole after this.

According to another aspect of the present invention, there is also provided the outsole of a shoe, in which the throughout holes are passing through the front edge and the back edge in the side direction of midsole formed in a shooting molding.

According to another aspect of the present invention, there is also provided a molding for forming of the midsole, wherein the molding comprises three widely known and disclosed stage moldings, the moldings comprising a lower stage molding 12, in which the throughout hole protrusion 15 is fixed in two columns, a middle stage molding 11, in which the throughout holes 15 that is formed in two columns by forming two sheds 18 divided by a separating partition 13 are inclined toward the separating partition 13 of the respective shed 18, and a higher stage molding 10, in which a molding protrusion 14 that is inserted through the sheds 18 of the middle molding 11 so as to be placed in parts, where the respective throughout hole protrusion 15 formed on the middle molding 12 is not formed.

BRIEF DESCRIPTION OF THE ATTACHED DRAWINGS

A more complete appreciation of the invention, and many of the attendant advantages thereof, will be readily apparent as the same becomes better understood by reference to the following detailed description when considered in conjunction with the accompanying drawings in which like reference symbols represent the same or similar components, wherein:

FIG. 1 is a perspective view showing the manufacturing steps of the outsole of the sports shoes;

FIG. 2 is a perspective view of an example of molding for forming the midsole shown in the first step of FIG. 1;

FIG. 3 is a perspective view showing the configuration state of another molding for forming the midsole;

FIG. 4 is a perspective view showing the configuration state of another molding, in which a fixed molding and a operational molding are closed;

FIG. 5 is a perspective view of the appearance showing the state, in which the molding of FIG. 3 is combined in order to form the midsole;

FIG. 6 is a perspective view showing the state, in which a fixed molding and an operational molding are opened so as to indicate that an air bag can be mounted on the front edge of the molding shown in FIG. 3;

FIG. 7 is a perspective view showing the configuration state of another molding for forming the midsole;

FIG. 8 is a perspective view showing the state, in which the middle stage molding of FIG. 7 is lifted;

FIG. 9 is a perspective view showing the structure of the molding, in which a conventional midsole is formed;

FIG. 10 is a cross sectional view of the state, in which the throughout holes of the midsole are formed to be slanted;

FIG. 11 is a cross sectional view of the state, in which a latticed support is supported in the throughout holes of the midsole;

FIG. 12 is a cross sectional view of the state, in which a three legged support is formed into the throughout holes of the midsole;

FIG. 13 is a cross sectional view of the state, in which a vertical support is formed into the throughout holes of the midsole;

FIG. 14 is a cross sectional view of the state, in which the throughout holes of the midsole are formed entirely;

FIG. 15 is a cross sectional view of the state, in which a plurality of the throughout holes on the midsole are formed into the essential input part;

FIG. 16 is a cross sectional view of the state, in which a plurality of the throughout holes on the midsole

are formed into the essential input part and are covered with the stopper;

FIG. 17 is a cross sectional view of the state, in which the throughout holes of the midsole are formed into two stories;

FIG. 18 is a cross sectional view of the state, in which the throughout holes of the midsole are formed into two stages so as to be zigzagged;

FIG. 19 is a cross sectional view of the state, in which an air bag is mounted upwardly into the throughout holes of the midsole.

FIG. 20 is a cross sectional view of the state, in which a curved elastic plate is mounted upwardly into the throughout holes of the midsole.

FIG. 21 is a perspective view of the state, in which the throughout holes of the midsole are passed through the front edge and the back edge all;

FIG. 22 is a cross sectional view of the state, in which a plurality of fine erecting protrusion is formed into the throughout holes of the front edge on the midsole;

FIG. 23 is a perspective view of the state, in which the curved protrusion is formed into the throughout holes of the midsole;

FIG. 24 is a perspective view showing another shape of the curved protrusion;

FIG. 25 is a perspective view of the state, in which a supporting protrusion is formed on the throughout holes of the midsole;

FIG. 26 is a cross sectional view of the state, in which a shed is formed, in which a lateral part of the throughout holes on the midsole is incised;

FIG. 27 is a cross sectional view of the state, in which a supporting structure is inserted on the shed;

FIG. 28 is a cross sectional view, in which another shape of the shed is indicated;

FIG. 29 is a cross sectional view, in which the outsole is attached into the shed of the midsole;

FIG. 30 is a perspective view of the state, in which an elastic bar is formed for reinforcing the throughout holes of the midsole;

FIG. 31 is a perspective view of the state, in which an elastic bar is formed for reinforcing the throughout holes of the midsole.

FIG. 32 is a cross sectional view showing the state, in which the elastic plate is mounted in the front or the back position of the throughout hole in the midsole.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENT

Hereunder, the most preferred and desirable embodiments of this invention will be in detail described.

As shown in FIG.1, one of the embodiments for the manufacturing method of the invention for forming the throughout holes into the lateral direction of the midsole is the manufacturing method comprising three steps as following.

First of all, in the first step, the left surface and right surface corresponding to the outside lateral surface of the midsole 20 are placed at the lower stage molding 12 and are molded to be divided in half. In the second step, the cut surface 21, which have been formed to be bisected at the above, is attached by the attaching surface. In the third step, the outsole 50 is attached on the lower part of the midsole which is attached and formed.

At this time, the reason why the left side and right lateral surfaces corresponding to the outer lateral surface are placed in the lower part of the lower stage molding 12 is that the beauty of shoes looks good and the throughout holes 22 can be reinforced only when the throughout holes exposed outwardly on the left side and right lateral surfaces corresponding to the outer lateral surface should be widened in the case that the throughout holes 22 are formed since the higher stage molding 10 and the middle stage molding 11 can be lifted up.

As a method of glueing the cut surface 21, there is a way of bonding under the pressure by using an adhesive.

Also, as a way of attaching the outsole 50, there is a way of bonding under the pressure by using an adhesive.

Accordingly, it is possible to form the midsole, in which the throughout holes are drilled in a lateral direction, in a conventional molding method, since a form is taken at the state that the midsole 20, which is to be formed, is elected.

As a molding configuration for forming the midsole 20 which is divided in half, in a widely known and disclosed molding which is constituted with three stage moldings as shown in FIG. 2, the molding configuration comprises a lower stage molding 12, in which the throughout hole protrusion 15, which is protruding selectively according to the position and the shape of the throughout holes 22 formed the front edge and the back edge of the midsole 20 so as to be inclined toward a side, is fixed in two columns, a middle stage molding 11, in which the throughout holes 15 that is formed in two columns by forming two sheds 18 divided by a separating partition 13 are inclined toward the separating partition 13 of respective shed 18, and a higher stage molding 10, in which the molding protrusion 14 that is inserted through sheds 18 of the middle molding 11 so as to be placed in parts, where the respective throughout hole protrusion 15 formed on the middle molding 12 is not formed, is formed.

At this time, the molding protrusion 14 is protruding in an erect state in order to form the sole of the foot of the midsole 20, which is formed in a shooting method, in a lateral surface.

At this time, the pressing surface 17, in which the molding protrusion 14 is not formed in the higher stage molding 10, is adhering closely to the top surface of the throughout holes 15 formed in the lower stage molding 12 in the case that the higher stage molding 10 is shut up.

Accordingly, in the molding configured as this, if forming the midsole 20, the respective midsole 20 is formed at the state that the cut surface 21 is symmetrized so as to be formed and is bisected, as shown in FIG. 1, and then, after the cut surfaces of both sides, is glued each other, the outsole 50 is attached on a bottom of the midsole 20.

At this time, since the throughout holes 22, which is drilled in a lateral direction of the midsole, is designed to be widened in an outer lateral surface, the beauty of the shoes looks good and the restoring force of the throughout holes 22 can be maintained. Also it is possible not only to increase the cushioning force of the throughout holes 22 since the partition 24 formed between the throughout holes 22 plays a roll of reinforcing support,

but also to provide goods in a variety of design by transforming the throughout hole protrusion 15 in the case of forming the throughout holes 22.

Also, in the case that the midsole is not manufactured to be bisected, but to be integral, the structure of the molding, as shown in FIG. 3 and FIG. 6, is a structure which lifts up the higher stage molding 10, as the molding is divided into two stages, divides the lower stage molding 12 into the fixed molding 40 and the operable molding 41, so that, by making only the operable molding 41 pulled off in direction of a side, the midsole 20, in which the throughout holes 22 is formed, can be manufactured integrally.

At this time, the throughout holes 15 mounted on the fixed molding 40 and the operational molding 41 is designed to be protruding in the lateral direction at the state that it is fixed on the lateral surface, and the throughout holes 15 formed on the fixed molding 40 and the operational molding 41 is designed to be geared with each other. At this time, as a method of being geared, there is a method, in which the front edge of the throughout protrusion 15 comes in contact with each other, and the method, in which the front edge is inserted and combined because of the protrusion 15a and the essential input part 15b.

At this time, the throughout holes 15 is formed on the center of the lateral surface in the case that it is formed on the lateral surface of the fixed molding 40 and the operational molding 41 and, in the higher stage molding, the forming protrusion 14 is protruding on the plane in order to form the sole of the foot in the midsole 20 on its upper surface.

Also, in the case that the throughout holes 15 are formed only on the fixed molding 40 of the lower stage molding 12, even though there is a difficulty in pulling out the formed midsole 20, it is possible to pull out easily the baby shoes in which the width of the midsole is narrow.

Also, in the case that the operational molding 41 is pulled out in the lateral direction, as it goes down due to the weight of the operational molding 41 itself, in the case that the moldings are required to be combined once again, in order to prevent the throughout protrusion 15 from not coming in contact with each other, a guide support plate 42 is formed in a fixed width on the place where the operational molding sinks.

In the case that the throughout holes 22 of the midsole 20, which is formed by the throughout hole protrusion 15, is greatly formed, the air bag 23 can be

mounted only on the upper surface of the throughout holes 22 in the midsole 20 at the time of forming by forming the fixed pin 43 into a side of the throughout hole protrusion 15 and inserting to fix the air bag 23 between the fixed pin 43 and the throughout hole protrusion 15 so that the air bag 23 may be mounted on the top surface of the throughout holes 22 in order to restore the cushion completely. Also, at this time, instead of the air bag 23, the curved elastic plate 23a can be mounted.

Also, the air bag 23 can be mounted on the center of the throughout hole, in which it is passed on the front edge, at the time of forming it by fixing air bag 23 in the case that the operational molding 41 is shut up, and by placing the air bag 23 on the throughout hole protrusion 15c, with the throughout holes 15 not being attached closely, on the front edge, in which the throughout hole protrusion 15 is formed, in the case that the fixed molding 40 and the operational molding 41 are shut up.

Also as the right an left sides of the middle stage molding 11 are widened 11 by three stage moldings as shown in FIG. 7 and FIG. 8, the coupling line 28 can be designed not to be indicated on the midsole 20.

For this, a molding, in which a coupling line 28 cannot be indicated on the formed midsole 20, wherein the

middle stage molding, in which a fixed space is formed so that the molding protrusion 14 of higher stage molding 10 may be inserted, is divided into the left-sided middle stage molding 40 and the right-sided middle stage molding 41, and is pulled off so that it may be widened into the left and the right directions and the respective throughout protrusion 15 is protruding in the side direction of the left middle stage molding 40 and the right middle stage molding 41 and, in the case that the left-sided middle stage molding 40 and the right-sided middle stage molding 41, in which the respective throughout protrusion 15 is formed, are opened and then shut, so that it may be gathered in the exact position; and in the case that the left-sided middle stage molding 40 and the right-sided middle stage molding 41 are gathered by forming the higher side protrusion 45, in which a protrusion jaw 44 is formed on the lower stage molding 12, so that it may be adhering exactly by the protrusion jaw 44 and the support surface 46 having a fixed width may be formed in order to maintain the left and the right balance at time of adherence.

Also, the midsole manufactured as the above can form the throughout holes so as to have a fixed diameter and shape normally on the front edge and the back edge, but, in the case that these the throughout holes are formed, the partition 24, which is made between the throughout holes 22 and the throughout holes 22, can have an increased cushion and can maintain a restoring force according to the

position of the throughout hole and the partition 24 in the case that a user wears it and walks.

Also, the shape of the throughout holes 22 in the midsole 20 which is formed in a shooting method as shown in FIG.10 is slanted in the front direction and formed to be slanted in the back direction, so that it is possible to achieve the increased cushion and restoring force as well.

Also, as shown in FIG. 11, not only it is possible to increase the cushion but also to prevent alien substance from being inserted by allowing a large the throughout hole 22 to be formed on the back edge of the midsole 20 so as to form the latticed support 25. Also, as shown in FIG. 12, the cushion can be reinforced by forming a triangle area 25a on the great throughout holes 22. Also as shown in FIG. 13, in the case that a vertical support 25b is formed on the large throughout holes 22, it is possible to make goods having diversified designs, which can increase a restoring force as well as which can increase the cushioning force.

Also as shown in FIG. 14, the width of a hole, which receives much force, can be increased or the width of a hole, which receives less force, can be decreased by differentiating the width of holes from the throughout holes 20 having the same size on the entire surface of the

midsole 20. At this time, if the shape of the throughout holes 22 should be maintained horizontally on the bottom surface which comes in contact with the ground and it should be slanted upwardly on the sole of the foot, it will be good for maintaining the same cushion. In this case, the shape of the throughout hole is shown as an angled shape, but the angled shape can be made as a round shape.

Also, as shown in FIG. 15, the beauty of the shoes can be graceful by forming the tiny the throughout holes which gather several the throughout holes 22 in a fixed appearance and forming these tiny the throughout holes 22 into inside of the essential input groove 26 which is grooved in a fixed size and a stopper 27 can be used on this essential input groove 26 as shown in FIG. 16.

At this time, in the case that stoppers 27 are formed, in order to prevent alien substance from inserted into the throughout holes 22, stoppers 27 can be formed for all the throughout holes 22.

Also, the throughout holes 22, as shown in FIG. 17, forms the back edge in a multi layer as shown in FIG. 17 or the throughout holes 22 can be multilayered in order to be placed in a zigzagged form as shown in FIG. 18.

By mounting the air bag 23 on the upper side of the throughout holes 22 as shown in FIG. 19, at the time of walking, the restoring force can be increased by the cushion of the air bag 23. Also, the elastic plate 23a which is curved as a substitute of the air bag 23 can be mounted as shown in FIG. 23.

Also, the throughout holes 22, as shown in FIG. 21, can be used by passing through the entire parts of the front edge and the back edge. The fine erect protrusions 29 can be formed on the throughout holes of the front edge as shown in FIG. 22.

The curved protrusions 29a, which are different in size, can be formed as shown in FIG. 23 and FIG. 24. Also, the supporting protrusions 29b can be formed as shown in FIG. 25

In the above the throughout holes, a filler which has good cushion can be filled and the elastic tube made in tube type cane inserted for protecting the throughout holes.

Also, as shown in FIG. 26 and FIG. 28, the lower surface of the midsole 20 is cut and a shed 22a is formed. The shed 22a forms the support 22b so that it may be supported. In the case that the support 22b is not formed, as shown in FIG. 29, cushioning force can be increased by

glueing the outsole 50 and the supporting structure 23b can be formed inside of the throughout hole 22, in which a shed 22a is formed.

Also, as shown in FIG. 30 and FIG. 32, by placing the elastic plate 31 or the elastic bar 30 in the front or the back of the throughout hole 22, the elastic force of the throughout hole 22 will be protected.

Also, in order to form the throughout hole on the midsole, the throughout holes can be formed by inserting and glueing a shed which is formed in the midsole.

Accordingly, it will be an effect that cushions can be increased by the elastic force of the throughout hole due to the throughout hole, which is passed through the lateral direction of the midsole. Another effect is that the partition is endowed with the restoring force by cushion because of the throughout holes which are holes. Another further effect will be not only increasing the cushion because of the throughout holes, but also preventing a foot from being cold because the foot is separated from the ground because of the reinforcing support and the throughout holes even in the case that a user stands on the ice or snow at the state that he wears the shoes. Still, another effect will be that a user can use shoes which give him a refreshing feeling because the shoes can be separated

from the hot ground due to radiant heat during a summer season.

Finally, if the throughout holes which are passed through the lateral direction of the midsole are formed according to this invention, it is possible to increase the cushion and to reduce weight. Also, it is possible to manufacture them easily because of the improvement of the manufacturing step and the development of molding for these the throughout holes. Also, due to the improvement of the manufacturing step and the development of molding for these the throughout holes, the outsole for a variety of sports shoes can be provided.

It will be apparent to those skilled in the art that various modifications can be made in the [title] of the present invention, without departing from the spirit of the invention. Thus, it is intended that the present invention covers such modifications as well as variations thereof, within the scope of the appended claims and their equivalents.

What is claimed is:

1. A method of manufacturing outsole of sports shoes in which the throughout holes are formed, said manufacturing method comprising the steps of:
forming the midsole so as to be cut and bisected,
joining the cut surface after this, and
joining midsole by covering entire lower surface of midsole after this.

2. A molding for forming of midsole, wherein the molding comprises three widely known and disclosed stage moldings, the molding comprises:
a lower stage molding 12, in which a throughout hole protrusion 15 is fixed in two columns,
a middle stage molding 11, in which throughout holes 15 that is formed in two columns by forming two sheds 18 divided by a separating partition 13 are inclined toward a separating partition 13 of respective shed 18, and
a higher stage molding 10, in which a molding protrusion 14 that is inserted through sheds 18 of said middle molding 11 so as to be placed in parts, where respective throughout hole protrusion 15 formed on said middle molding 12 is not formed, is formed.

3. The molding which can manufacture midsoles 22 integrally, in which throughout holes 22 are formed by:
lifting up higher stage molding 10,

dividing lower stage molding 12 into fixed molding 40 and operable molding 41, protruding throughout hole protrusion 15, which is mounted on fixed molding 40 and operable molding 41, in direction of a side at fixed state on a side, and making only operable molding 41 being pulled off in direction of a side.

4. The molding, in which a coupling line 28 cannot be indicated on formed midsole 20, wherein said middle stage molding,in which a fixed space is formed so that molding protrusion 14 of said higher stage molding 10 may be inserted, is divided into left-sided middle stage molding 40 and right-sided middle stage molding 41, and is pulled off so that it may be widened into left and right directions;

and respective throughout protrusion 15 is protruding in side direction in left middle stage molding 40 and right middle stage molding 41; and in case that left-sided middle stage molding 40 and right-sided middle stage molding 41, in which respective throughout protrusion 15 is formed, are opened and then shut, so that it may be gathered in exact position; and in case that left-sided middle stage molding 40 and right-sided middle stage molding 41 are gathered by forming higher side protrusion 45, in which a protrusion jaw 44 is formed on lower stage molding 12, so that it may be adhering exactly by protrusion jaw 44 and support

surface 46 having a fixed width may be formed in order to maintain left and right balance at time of adherence.

5. An outsole of a shoe, in which the throughout holes are passing through front edge and back edge in side direction of midsole formed in a shooting molding.

6. The outsole of a shoe according to claim 5, wherein a vertical support is formed into throughout holes of a midsole.

7. The outsole of a shoe according to claim 5, wherein stoppers are formed on throughout holes of midsole.

8. The outsole of a shoe according to claim 5, wherein throughout holes are formed at state that lower surface of midsole is opened.

9. The outsole of a shoe according to claim 5, wherein throughout holes are formed by attaching outsole on opened midsole.

10. The outsole of a shoe according to claim 5, wherein elastic plates or elastic bar is formed in front or back of throughout holes of midsole.

11. The outsole of a shoe according to claim 5, wherein erect protrusions are formed into throughout holes of the midsole.

FIG 1

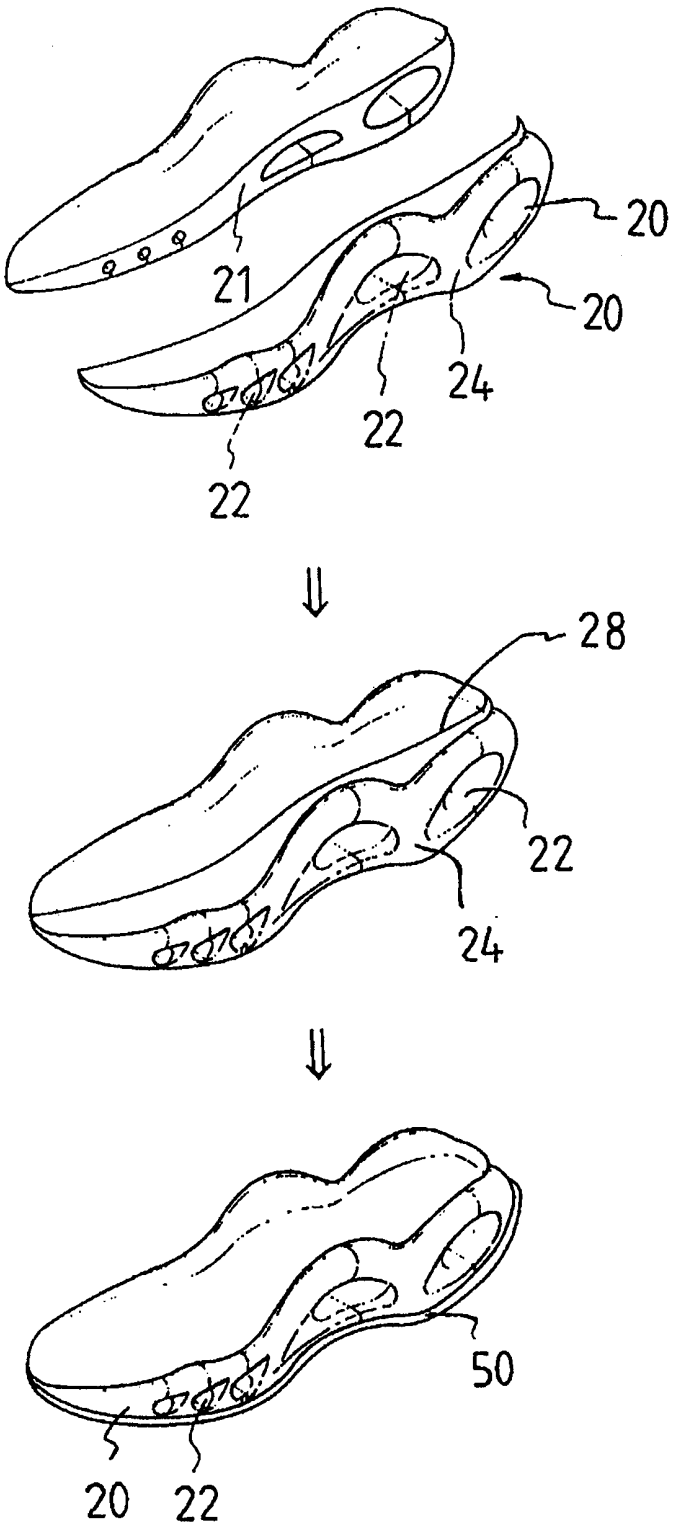


FIG 2

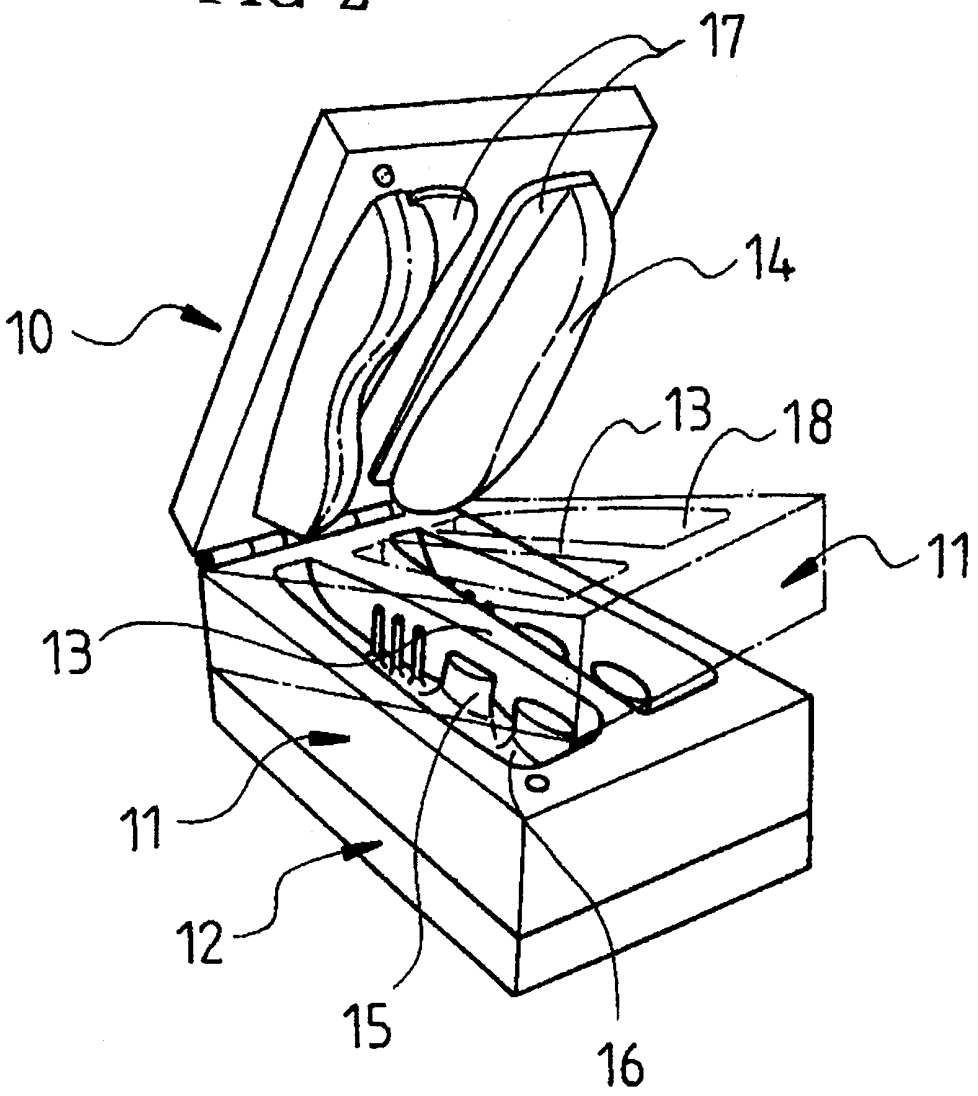


FIG 3

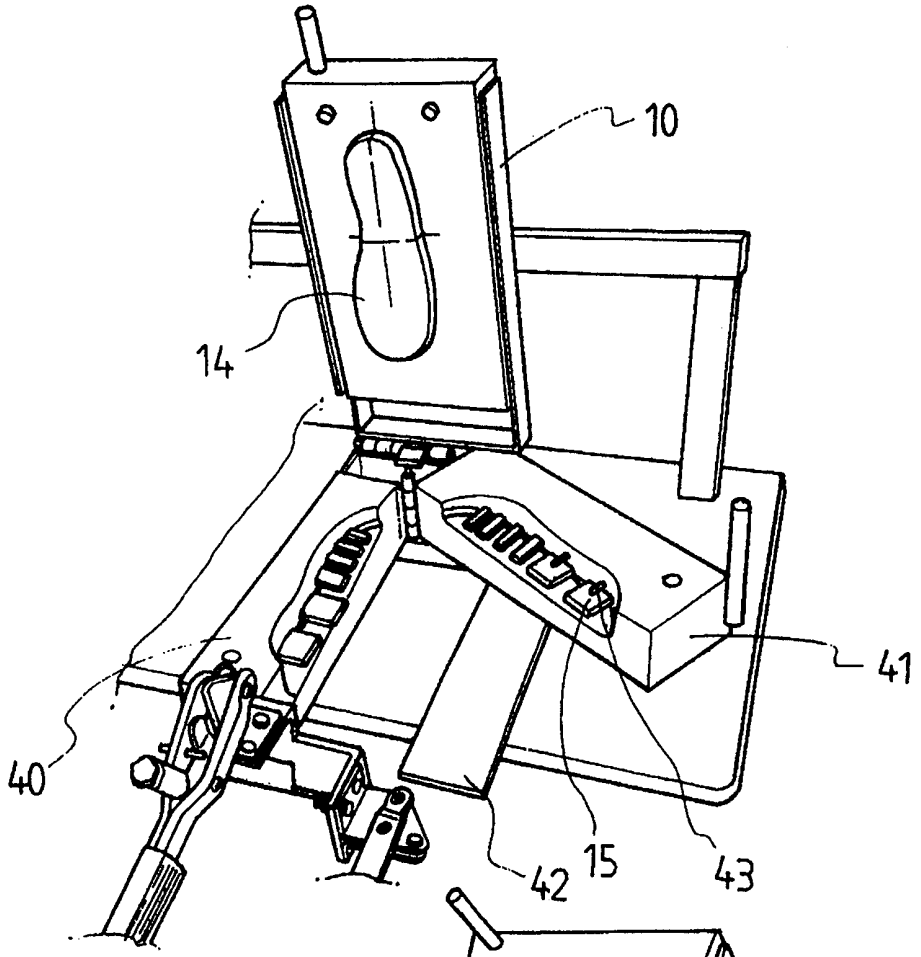


FIG 4

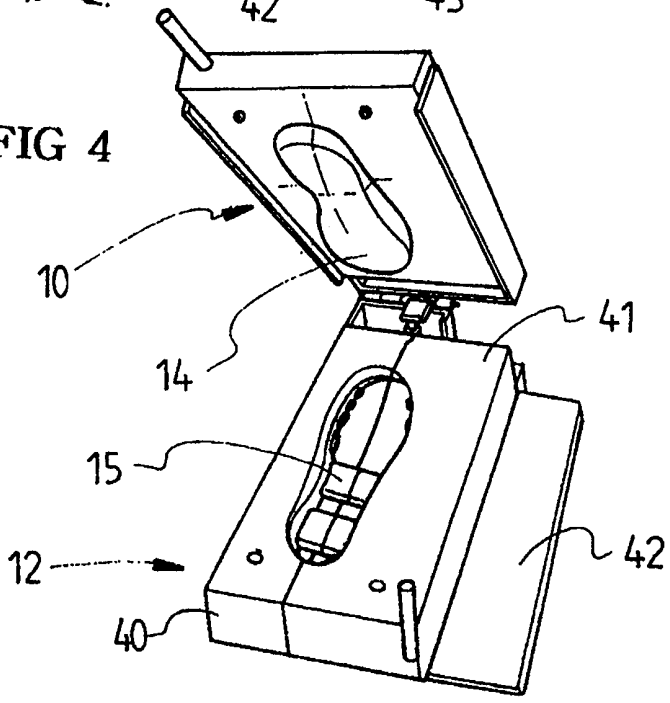


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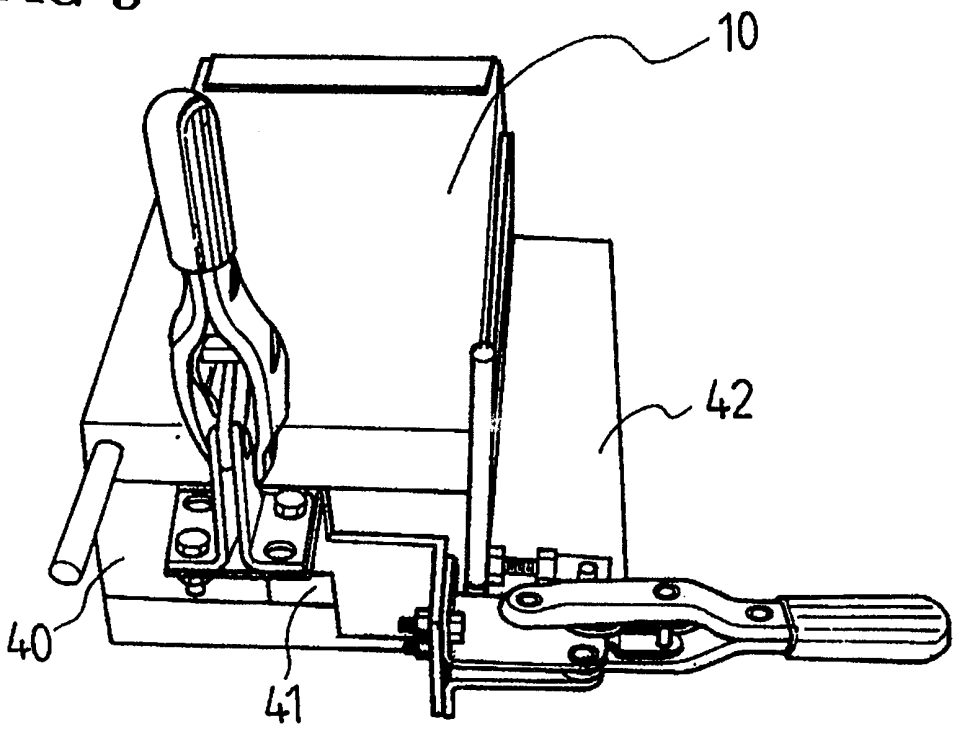


FIG 6

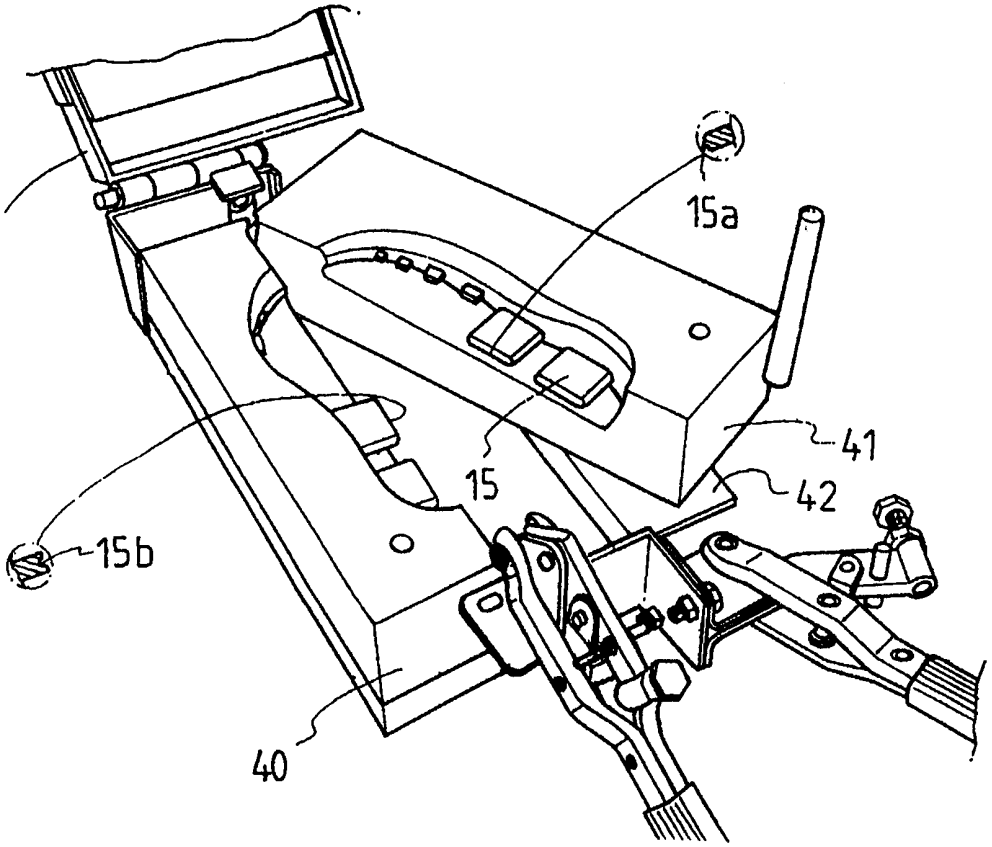


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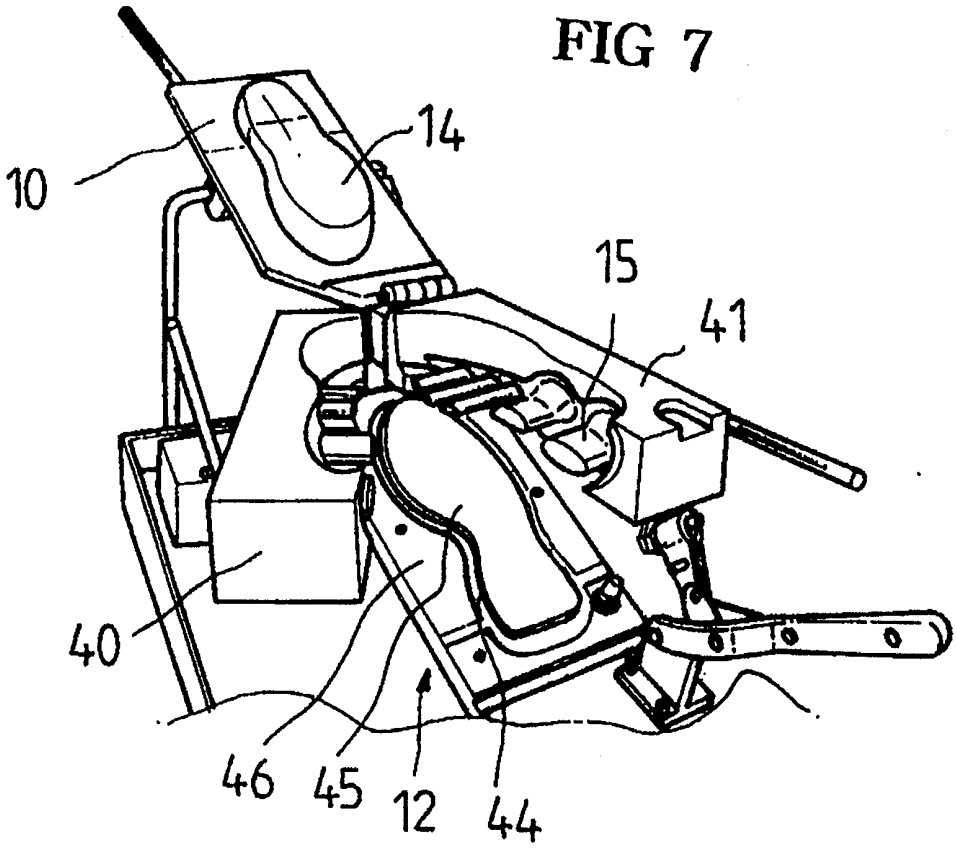


FIG 8

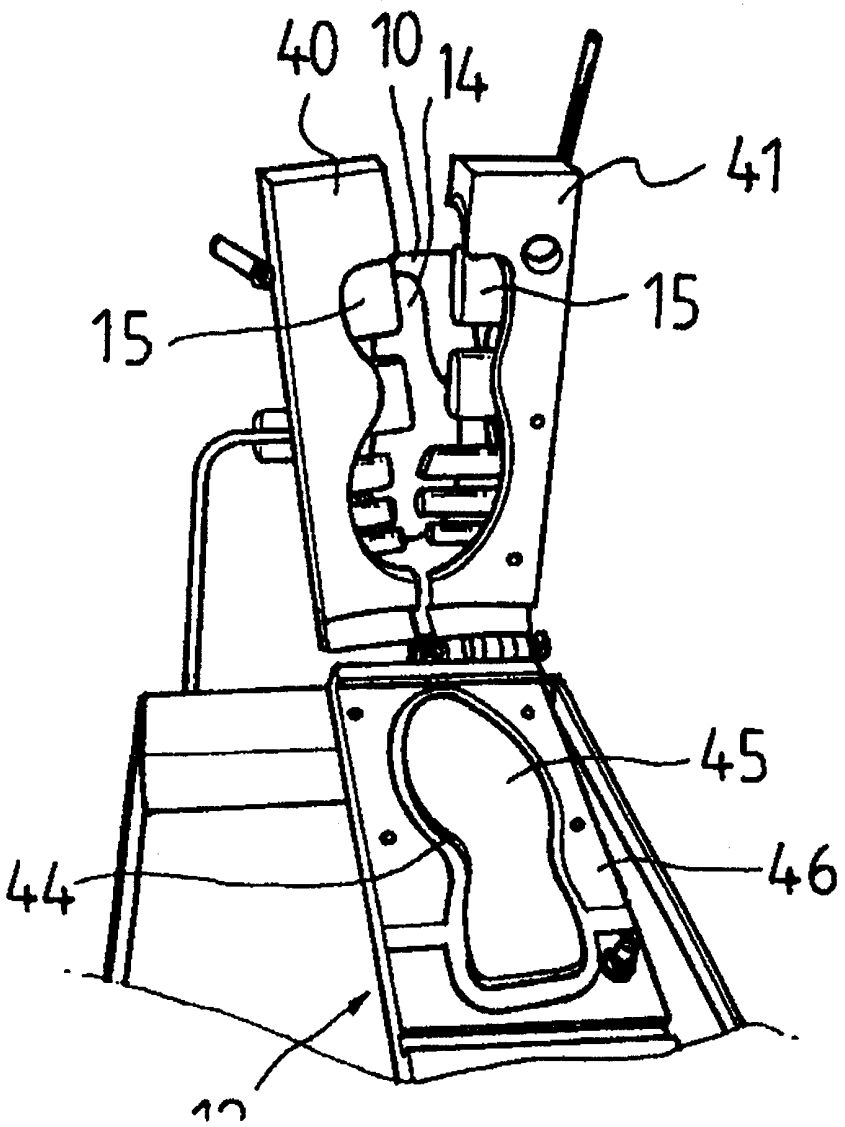


FIG 9

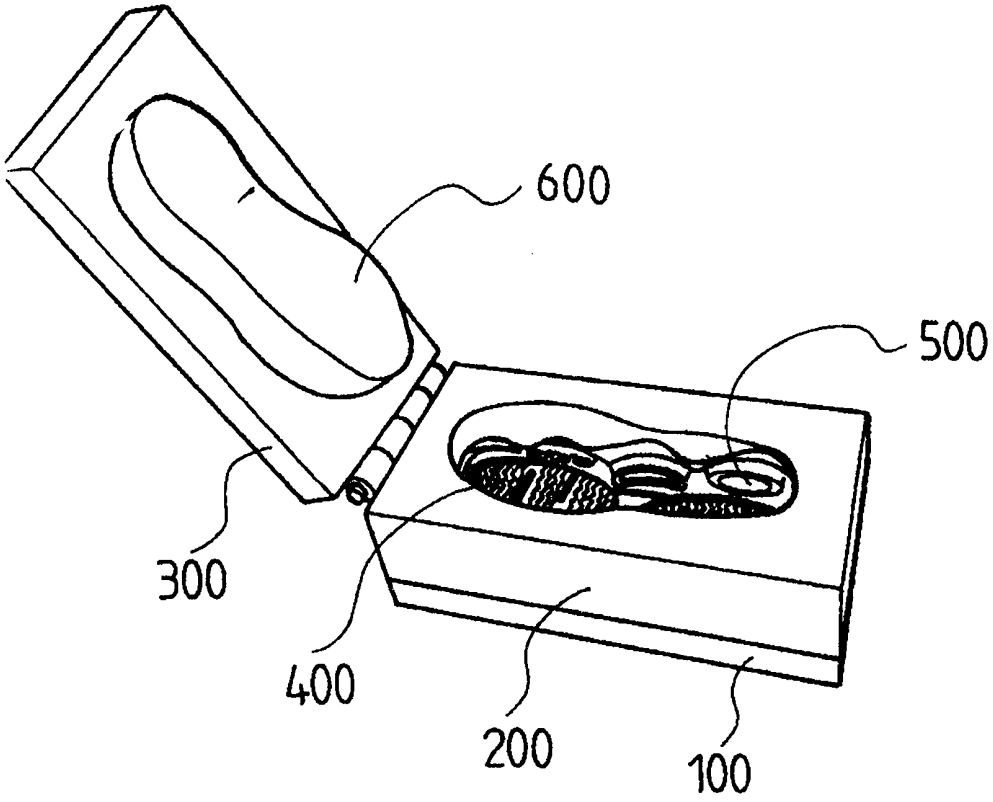


FIG 10

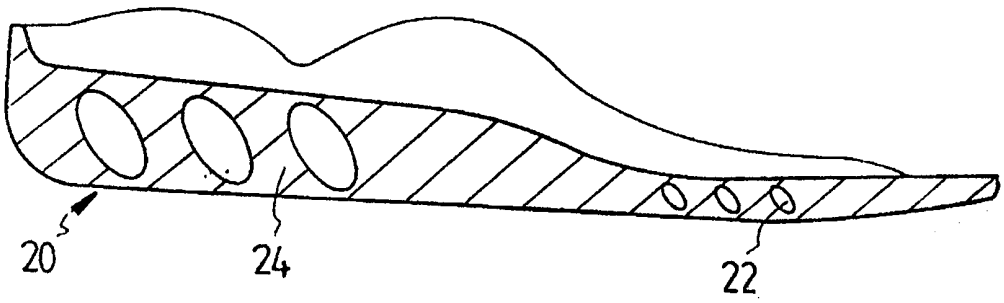


FIG 11

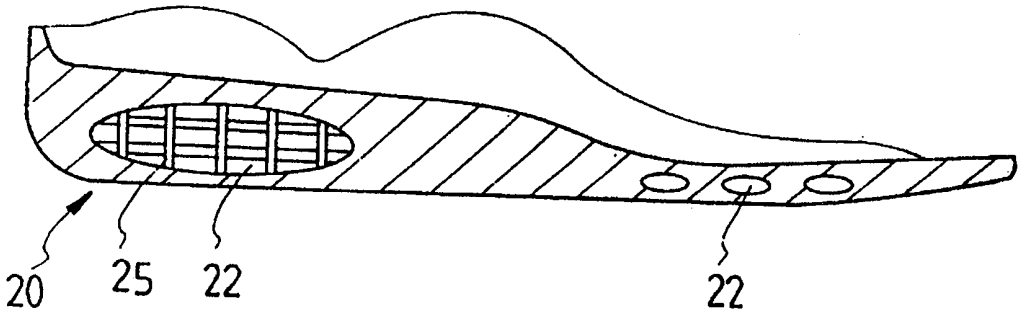


FIG 12

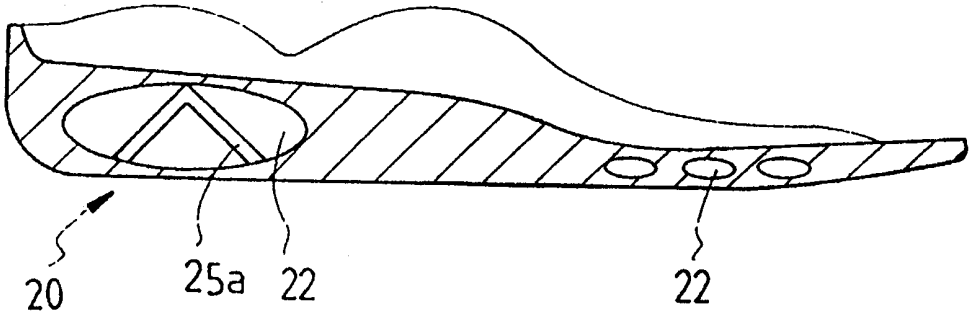


FIG 13

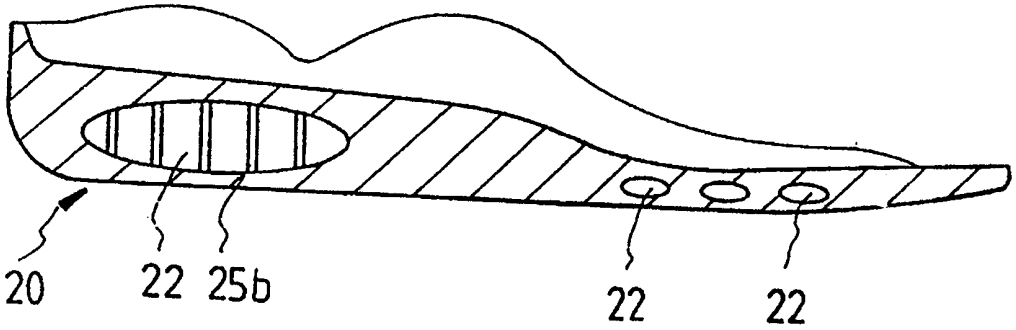


FIG 14

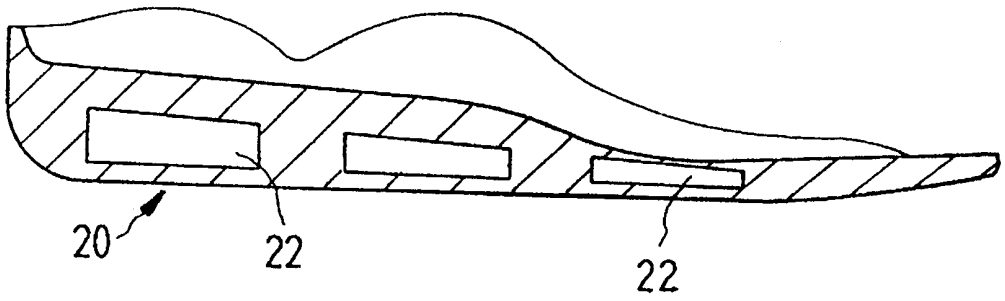


FIG 15

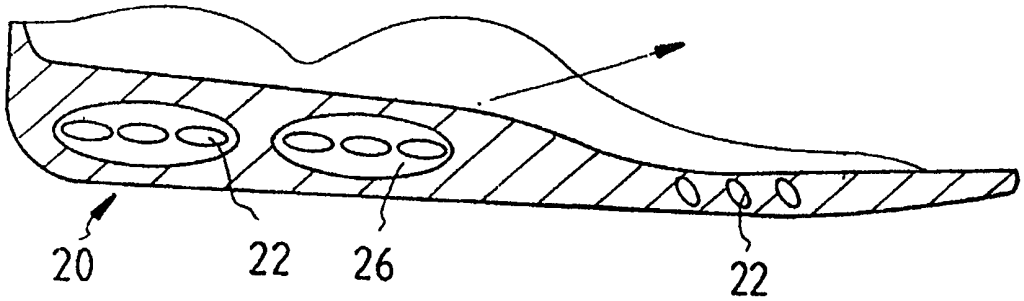


FIG 16

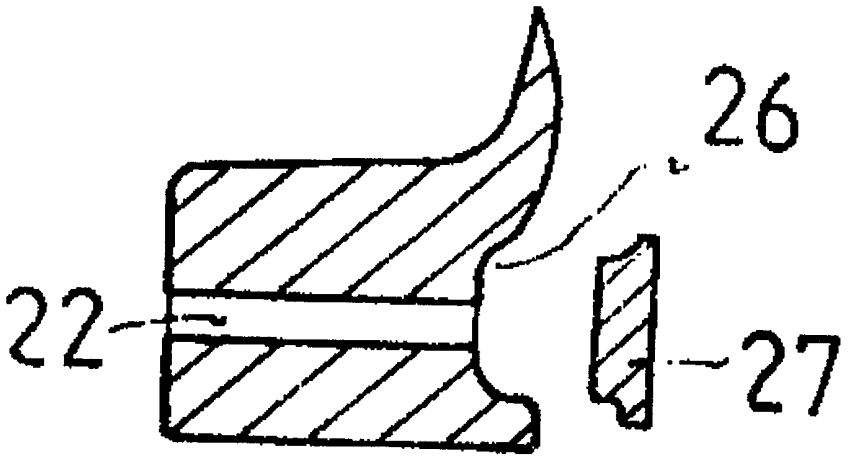


FIG 17

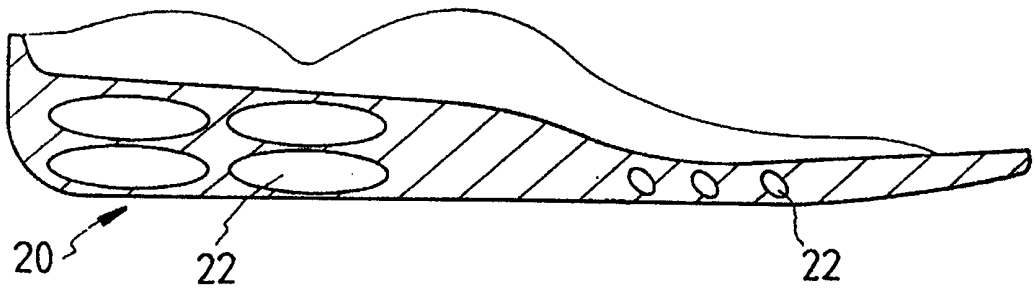


FIG 18

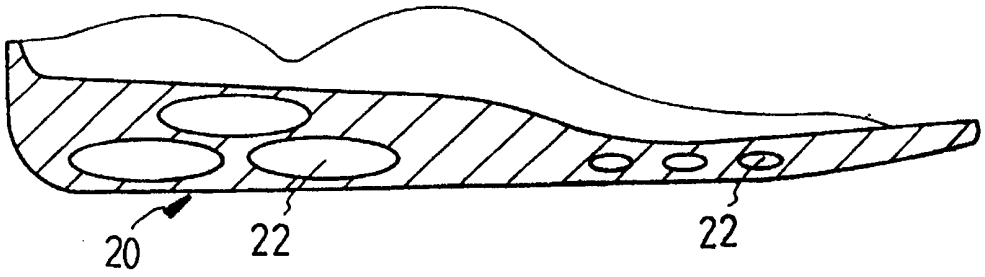


FIG 19

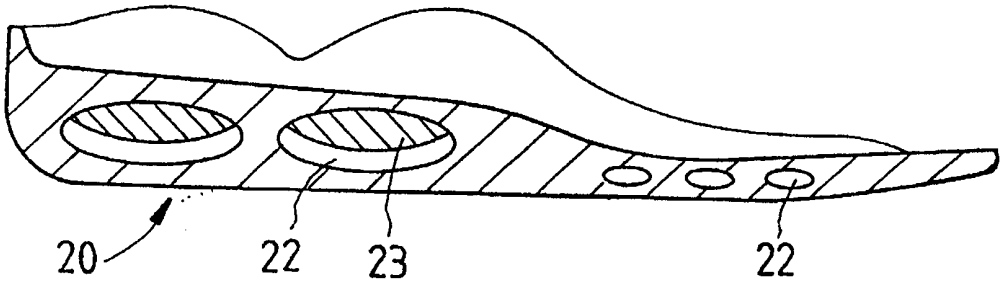


FIG 20

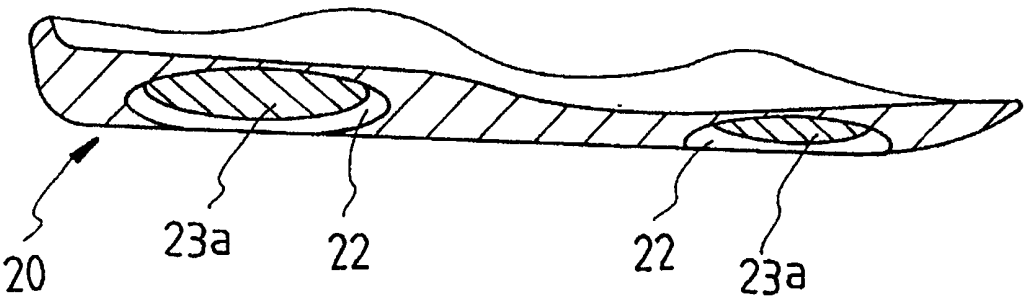


FIG 21

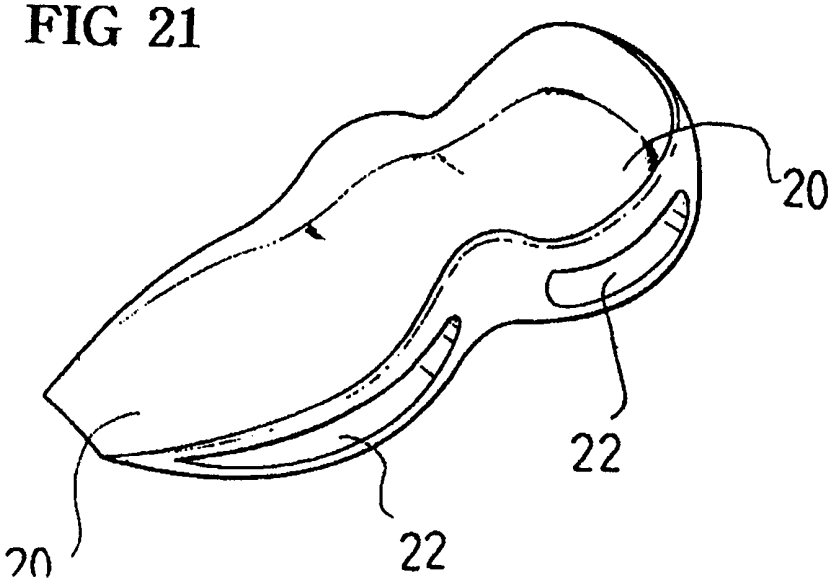


FIG 22

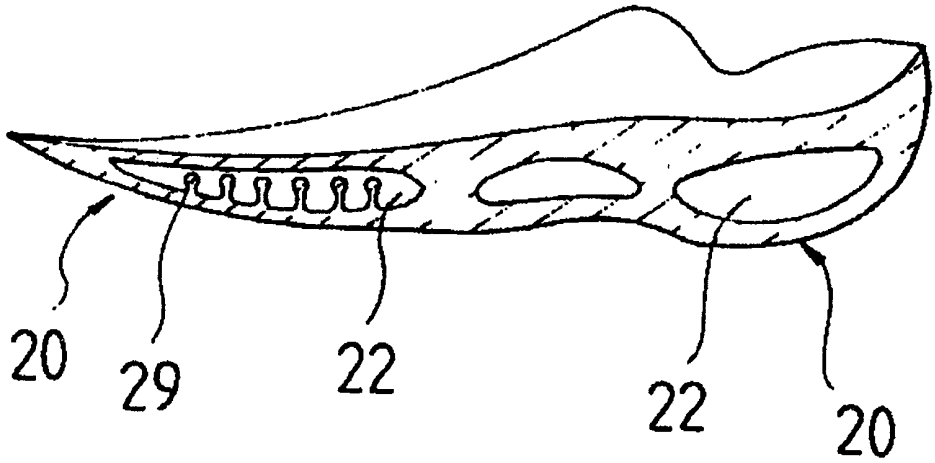


FIG 23

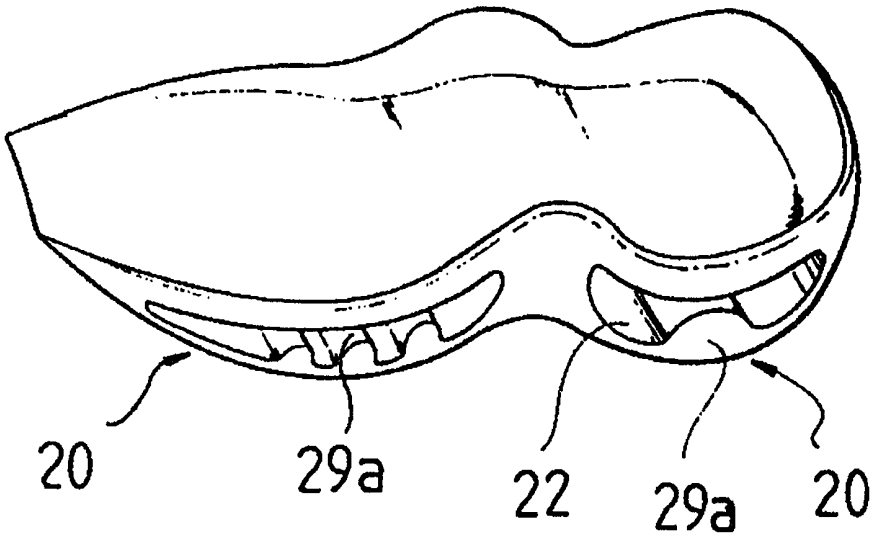


FIG 24

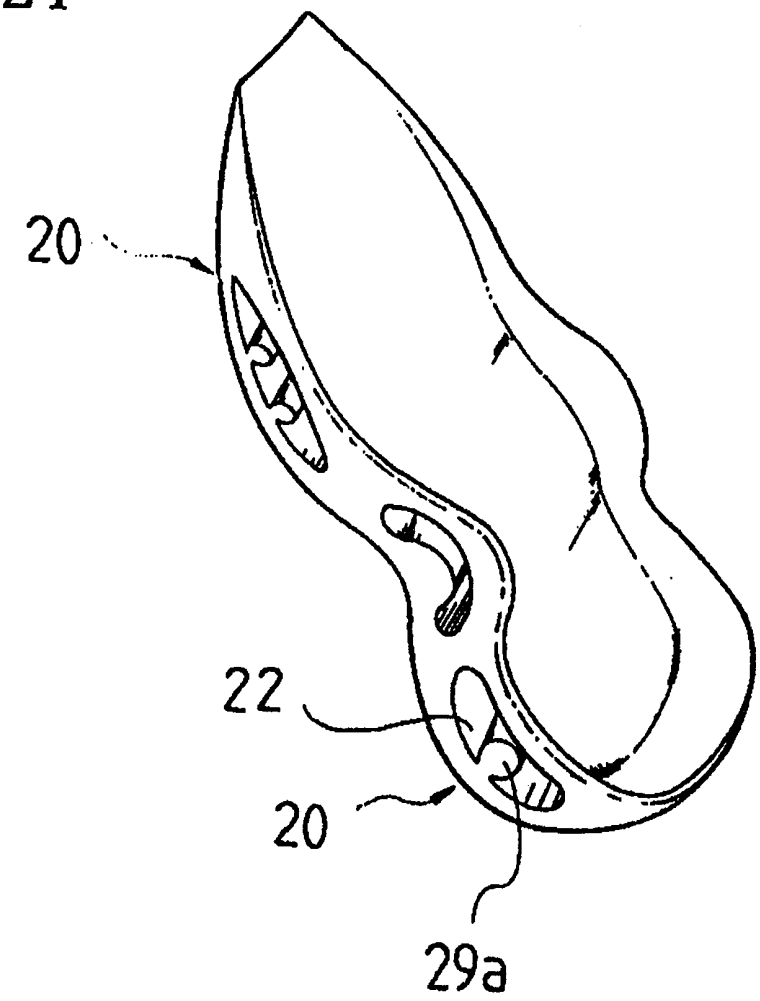


FIG 25

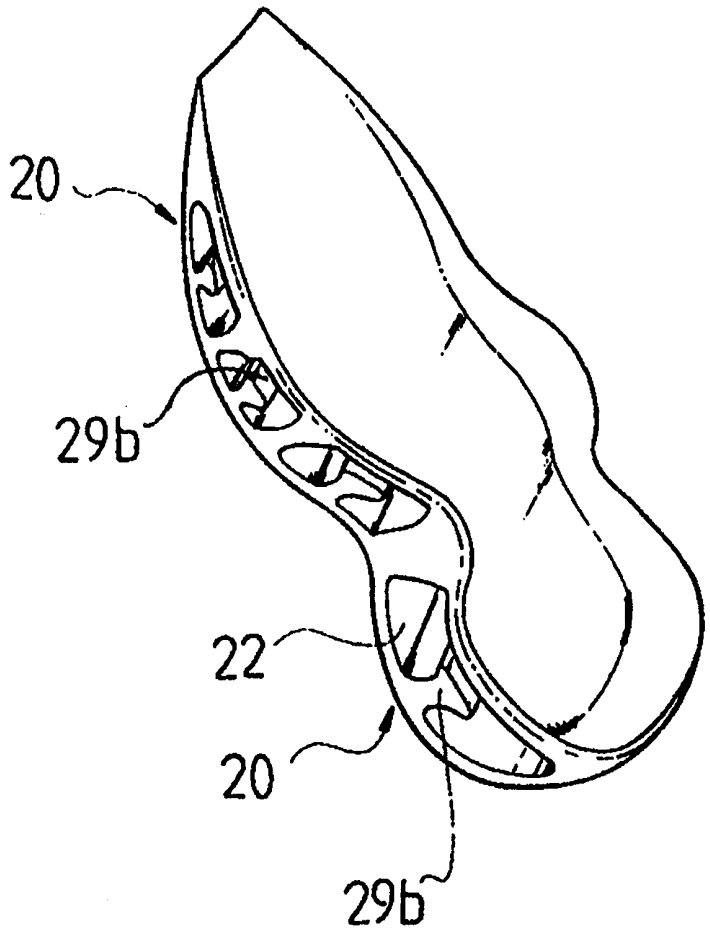


FIG 26

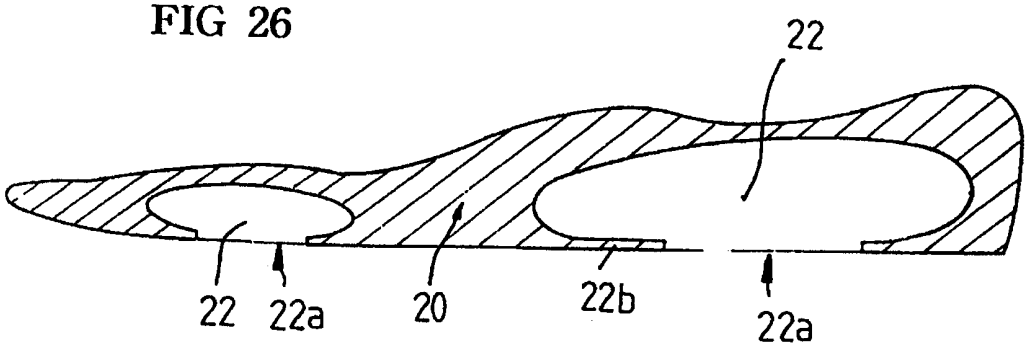


FIG 27

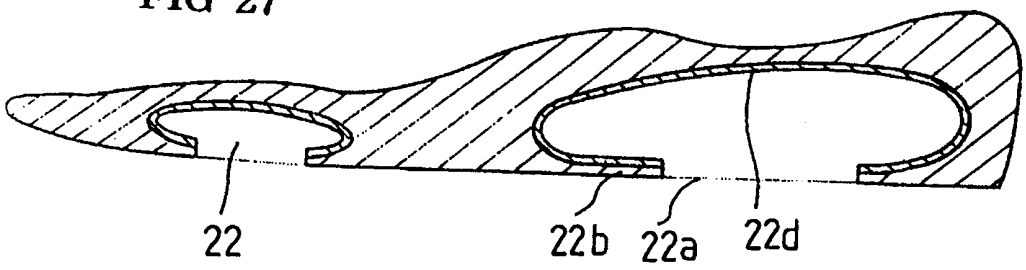


FIG 28

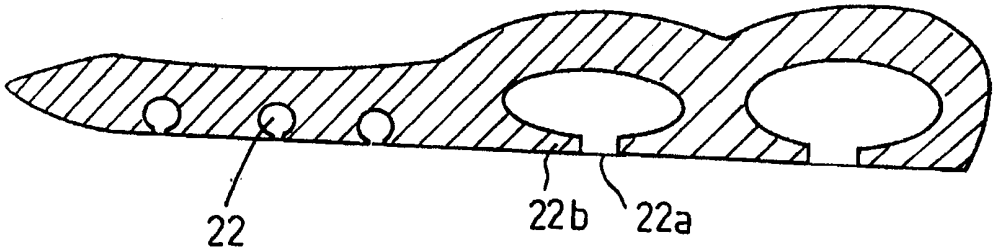


FIG 29

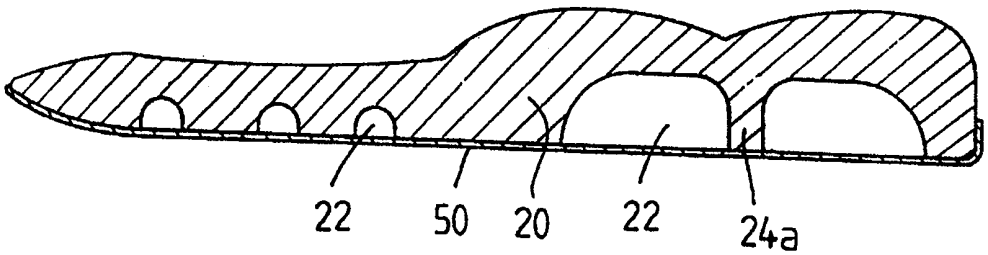


FIG 30

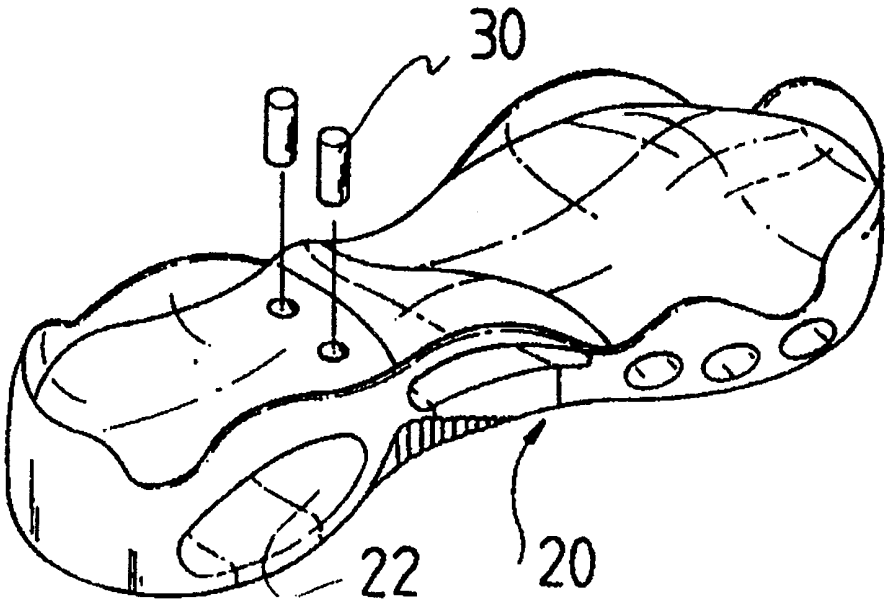


FIG 31

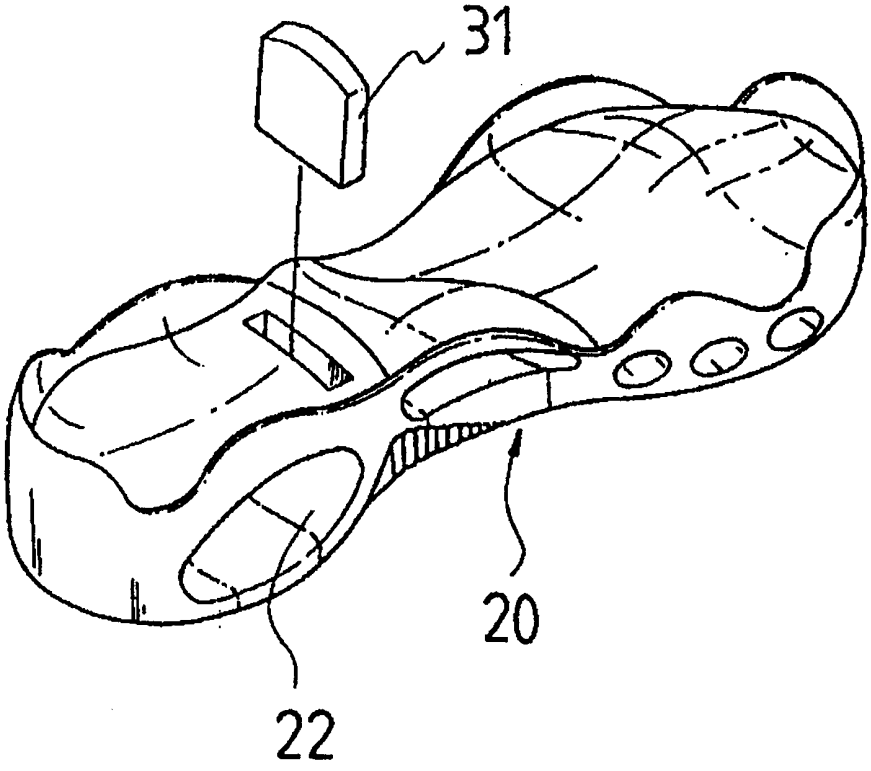


FIG 32

