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(54) **SHOE WITH AN INFLATABLE SOLE LINING**

SCHUH MIT EINER AUFBLASBAREN INNENSOHLE

CHAUSSURE AVEC UNE SEMELLE INTERIEURE GONFLABLE

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Description

Field of the Invention

This invention relates to a shoe with an inflatable sole lining and, in particular, with a simple inflatable lining, which includes an on-board inflation system with a wearer accessible air pump and release valve.

Brief Statement of the Prior Art

U.S. patent 3,000,616 discloses a body warmer having an air bag which lies over the wearer's abdomen and is connected with flexible tubing to inflatable sole linings in the wearer's shoes. Normal walking circulates the air through the shoes and tubing. European patent 0 229 273 discloses an inflatable bladder between the inner and outer boots of a ski boot including an air pump and two release valves.

Brief Description of the Invention

This invention comprises a sporting shoe such as a basketball or tennis shoe with an inflatable sole lining as defined in claim 1, said sole lining having a vertical tab which extends to the upper portion of the shoe to support the air pump and release valve. The sole lining has discontinuous transverse seams forming internal tubular passageways. Unseamed areas at the heel and arch form supporting pillows. The sole lining can be combined with an inflatable side lining which is received against the inside of the upper of the shoe.

Brief Description of the Drawings

The invention will be described with reference to the FIGURES, of which:

FIGURE 1 is a view of an inflatable lining for a shoe with an air pump included with the lining;
 FIGURE 2 is a view of an alternative inflatable lining of the shoe with air pump and air bag;
 FIGURE 3 is another alternative inflatable lining of the shoe with an air pump and air pillows;
 FIGURE 4 illustrates the inflatable lining of FIGURE 3 installed in a shoe;
 FIGURE 5 illustrates an inflatable sole lining for a shoe; and
 FIGURE 6 is a sectional view of an air pump and release valve used with the inflatable linings.

DESCRIPTION OF PREFERRED EMBODIMENTS

The inflatable lining for a shoe which is shown in FIGURE 1 is formed as a laminate of two flexible sheets of plastic which are laminated together by bonding a continuous seal about their peripheral edges also forming interconnecting tubular passageway 62. The channels are formed in the laminated lining by heat bonded seams

109 which extend laterally of lining 64 and longitudinally of lining 58. The seams could also be arranged vertically in lining 64, however, the illustrated lateral alignment is preferred. If desired, the heat bonded seams 109 of lining 58 can be discontinuous over the instep region to provide an air pillow 91 that will give additional comfort to the wearer. Discontinuous seams 109 form internal tubular passageways and which provide channels for air passage.

At the toe end, channel 73 is formed to communicate with the air bag 68 through the distributor 65. The air bag 68 functions to maintain a sense and feeling of tight lacing or binding of the shoe, while permitting a limited freedom of movement within the shoe.

The lining has an air pump 92 on the base 22 on the upper rear part of the side lining 64. On the sole lining 58, bonded seams 109 are interrupted to provide an unseamed area 91 which will form an arch-supporting air pillow. A second unseamed area 71 can be provided to form an air pillow at the heel area for shock absorbance and wearer comfort. The inflatable lining can have an air bag 68 which will lie over the wearer's foot. Air from sole lining 58, especially from air pillow 71, when pressured by wearer's foot, will flow between the air bag 68 and the lining 58.

The lining is seamed together in a flat sheet configuration, as shown, and then folded into a shape conforming to the inside of the shoe. For this purpose, a triangularly shaped cutout 74 is made in the lining 64 to permit bending it to be folded across the toe portion of the shoe.

If desired, the lining can be provided without the lining 64 for the sides of the shoe. This embodiment is shown in FIGURE 2, and comprises sole lining 58 which communicates with an air bag 68 and a passageway 193 which communicates with an air pump 92 to provide an inflatable lining for a shoe. The air pump is shown in FIGURE 6 and includes a flexible bulb 92 mounted on a base 102 with the check valves 87 and 89 and release valve 85. The inflatable sole lining 58 can have unseamed areas 91 and 71 at to provide an air pillow for wearer comfort.

Referring now to FIGURE 3, sole lining 58 is similar to that shown in FIGURE 2 except that it is provided with two air pillows 114 and 116 which are formed on top of two lateral wings 117 and 119. This lining is very useful for any shoe, particularly for sporting shoes such as tennis or basketball shoes, for the purpose of comfort.

If desired, the linings which can be provided with a radiant heat barrier such as a laminate of a film of polypropylene film bonded between outer layers of aluminum foil. This barrier can also be glued inside the shoe or just inserted into the shoe, rather than being bonded to the outside of the air inflatable linings.

FIGURE 4 illustrates the lining of FIGURE 3 folded together and positioned within a shoe. In this installation, the lateral wings 117 and 119 are folded under the instep area of the upper of the shoe, thus over the instep of the

wearer. The vertical tab 102 extends upwardly to the top of the shoe to provide access to the air pump 92.

If desired, the inflatable lining can be provided only for the sole of a shoe, as shown in FIGURE 5. In this embodiment, the sole 58 is substantially as previously described, however, it does not communicate with the lateral wings such as shown in FIGURES 3 and 4. Instead, it only communicates with an air pump 92 which is mounted on a vertical tab 102 at the heel end of the inflatable sole lining. As with the previously described embodiments, the tab has a passageway 193 formed therein which communicates between the sole 58 and air pump 92.

Referring now to FIGURE 6, the air pump 92 comprises a flexible bulb 95 which is received over the end of conduit 193. The bulb 95 receives air through the inlet valve 89 and discharges the air under pressure through outlet valve 87. The air system is also provided with a relief valve 85, which when depressed will relieve the air pressure within the the inflatable lining.

Claims

1. A shoe, in particular a sporting shoe such as a basketball or tennis shoe having a sole, an upper, and an inflatable sole lining (58) characterized in that said sole lining (58) comprises a laminate of upper and lower sheets of plastic film having the size and shape of the sole of said shoe and bonded together about their peripheral edges by seams to provide a sealed interior and having a plurality of discontinuous seams (109) traversing their opposed surfaces to divide said sealed interior into tubular passageways, including passages in open communication between adjacent tubular passageways, an air pump (92) carried on a tab (102) attached to said inflatable lining, said tab comprising a tubular passage (193) connecting the discharge of said air pump with the tubular passageways of said lining (58), and an adjustable pressure release valve (85) in said passage, said tab extending upwardly from said inflatable lining to the top of said shoe to provide access to said air pump and release valve, whereby said air pump and relief valve can be used to adjust the inflation pressure of the sealed interior of said sole lining for shock absorbency and the comfort of the wearer.
2. A shoe according to claim 1 with a side lining (64) of the size and shape of the inside walls of the upper of said shoe and formed of opposite sheets of plastic film bonded together about their peripheral edges to form a sealed interior, and with at least one tubular passageway (62) communicating between the sealed interiors of said sole lining (58) and side lining (64).
3. A shoe according to claim 1 or 2 wherein the discontinuous seams are interrupted to provide an

unseamed area (71) of said sole lining which forms an air pillow at the heel of said sole lining for shock absorbency and wearer comfort.

4. A shoe according to any of the preceding claims wherein the discontinuous seams are interrupted to provide an unseamed area (91) of said sole lining at the arch area of said sole lining which forms an arch inflatable pillow.
5. A shoe according to any of the preceding claims including at least one air bag (68) to be positioned over the foot of a wearer and having an inlet port which is in communication with said tubular passageways of said sole lining.
6. A shoe according to claim 1 or 3, or 4, or 5 wherein said sole lining (58) includes a pair of lateral wings (117, 119) disposed at opposite sides of said sole lining, each having an unseamed area (114, 116) in communication with the tubular passageways of said sole lining to form air pillows located over the foot of the wearer.

Patentansprüche

1. Schuh, insbesondere ein Sportschuh, wie zum Beispiel ein Basketball- oder Tennisschuh mit einer Sohle, einem Oberen bzw. Obermaterial, und einer aufblasbaren Sohlenauskleidung (58), dadurch **gekennzeichnet**, daß die Sohlenauskleidung (58) folgendes aufweist: ein Laminat aus oberen und unteren Flächenelementen aus Kunststoffolie mit der Größe und Form der Sohle des Schuhs, die zusammen um ihre Umfangskanten durch Säume verbunden sind, um ein abgedichtetes Inneres vorzusehen und mit einer Vielzahl von diskontinuierlichen Säumen (109), die deren gegenüberliegende Oberflächen kreuzen, um das abgedichtete Innere in zwei rohrförmige Durchlaßwege zu teilen, die Durchlässe in offener Verbindung zwischen benachbarten rohrförmigen Durchlaßwegen aufweisen, eine Luftpumpe (92), die auf einer Lasche (102) getragen ist, die an der aufblasbaren Auskleidung angebracht ist, wobei die Lasche einen rohrförmigen Durchlaß (193), der den Auslaß der Luftpumpe mit den rohrförmigen Durchlaßwegen der Auskleidung (58) verbindet, und ein einstellbares Druckablaßventil (85) in dem Durchlaß aufweist, wobei die Lasche sich nach oben von der aufblasbaren Auskleidung zu der Oberseite des Schuhs erstreckt, um einen Zugang zu der Luftpumpe und dem Ablaßventil vorzusehen, wodurch die Luftpumpe und das Begrenzungsventil verwendet werden können, um den Aufblasdruck des abgedichteten Inneren der Sohlenauskleidung einzustellen, und zwar zur Dämpfung von Stoß bzw. Erschütterung und für den Komfort des Tragenden.

2. Schuh nach Anspruch 1, mit einer Seitenauskleidung (64) der Größe und Form der Innenwände des oberen Teils des Schuhs und gebildet aus gegenüberliegenden Flächenelementen aus Kunststoffolie, die zusammen um ihre Umfangskanten haften, um ein abgedichtetes Inneres zu bilden, und mit mindestens einem rohrförmigen Durchlaßweg (62), der eine Verbindung zwischen den abgedichteten Innenräumen der Sohlenauskleidung (58) und der Seitenauskleidung (64) vorsieht.
3. Schuh nach Anspruch 1 oder 2, wobei die diskontinuierlichen Säume unterbrochen sind, um ein ungesäumtes Gebiet (71) der Sohlenauskleidung vorzusehen, das ein Luftpolster bei dem Absatz der Sohlenauskleidung bildet, und zwar zur Dämpfung von Stoß bzw. Erschütterung und für den Komfort des Tragenden.
4. Schuh nach einem der vorhergehenden Ansprüche, wobei die diskontinuierlichen Säume unterbrochen sind, um ein ungesäumtes Gebiet (91) der Sohlenauskleidung bei dem Bogengebiet der Sohlenauskleidung vorzusehen, das ein aufblasbares Bogenpolster bildet.
5. Schuh nach einem der vorhergehenden Ansprüche, der mindestens einen Airbag bzw. ein Luftkissen (68) aufweist, das über den Fuß eines Tragenden positioniert werden soll, und das einen Einlaßanschluß besitzt, der in Verbindung mit den rohrförmigen Durchlaßwegen der Sohlenauskleidung ist.
6. Schuh nach Anspruch 1 oder 3, oder 4, oder 5, wobei die Sohlenauskleidung (58) ein Paar von seitlichen Flügeln (117, 119) aufweist, und zwar angeordnet an gegenüberliegenden Seiten der Sohlenauskleidung, wobei jeder ein ungesäumtes Gebiet (114, 116) in Verbindung mit den rohrförmigen Durchlaßwegen der Sohlenauskleidung besitzt, um Luftpolster zu bilden, die über den Fuß des Tragenden angeordnet sind.

Revendications

1. Chaussure, en particulier chaussure de sport telle qu'une chaussure de basket-ball ou de tennis, ayant une semelle, un dessus, et une garniture de semelle gonflable (58), caractérisée en ce que la garniture de semelle (58) comprend un stratifié de feuilles supérieure et inférieure en matière plastique ayant la dimension et la forme de la semelle de chaussure et liées ensemble, au niveau de leur bord périphérique, par des coutures pour fournir un intérieur scellé, et comportant une pluralité de coutures discontinues (109) traversant leurs surfaces opposées pour diviser l'intérieur scellé en passages tubulaires, incluant des passages en communication ouverte entre passages tubulaires adjacents, une pompe à

air (92) portée par une languette (102) fixée à la garniture gonflable, ladite languette comprenant un passage tubulaire (193) reliant l'évacuation de la pompe à air aux passages tubulaires de la garniture (58), et un clapet de sûreté réglable (85) dans ledit passage, la languette s'étendant vers le haut depuis la garniture gonflable vers le haut de la chaussure pour assurer un accès à la pompe à air et au clapet de sûreté, d'où il résulte que la pompe à air et le clapet de sûreté peuvent être utilisés pour régler la pression de gonflage de l'intérieur scellé de la garniture de semelle pour absorber des chocs et pour le confort du porteur.

2. Chaussure selon la revendication 1, munie d'une garniture de côté (64) ayant la dimension et la forme des parois intérieures du dessus de la chaussure et constituée de feuilles opposées de film en matière plastique liées ensemble selon leur bord périphérique pour former un intérieur scellé et au moins un passage tubulaire (62) faisant communiquer des parties intérieures scellées de la garniture de semelle (58) et de la garniture de côté (64).
3. Chaussure selon l'une des revendications 1 ou 2, dans laquelle les coutures discontinues sont interrompues pour fournir une zone (71) non-cousue de la garniture de semelle qui forme un coussin d'air au niveau du talon de la garniture de semelle pour absorber des chocs et améliorer le confort du porteur.
4. Chaussure selon l'une quelconque des revendications précédentes, dans laquelle les coutures discontinues sont interrompues pour former une zone non-cousue (91) de la garniture de semelle au niveau de la cambrure du pied de la garniture de semelle qui forme un coussin gonflable de cambrure.
5. Chaussure selon l'une quelconque des revendications précédentes, comprenant au moins un coussin d'air (68) destiné à être positionné au dessus du pied du porteur et ayant un accès d'entrée qui communique avec les passages tubulaires de la garniture de semelle.
6. Chaussure selon l'une quelconque des revendications 1, 3, 4 ou 5, dans laquelle la garniture de semelle (58) comprend une paire d'ailes latérales (117, 119) disposées au niveau des côtés opposés de la garniture de semelle, comportant chacune une zone non-cousue (114, 116) qui communique avec des passages tubulaires de la garniture de semelle pour former des coussins d'air situés au-dessus du pied du porteur.

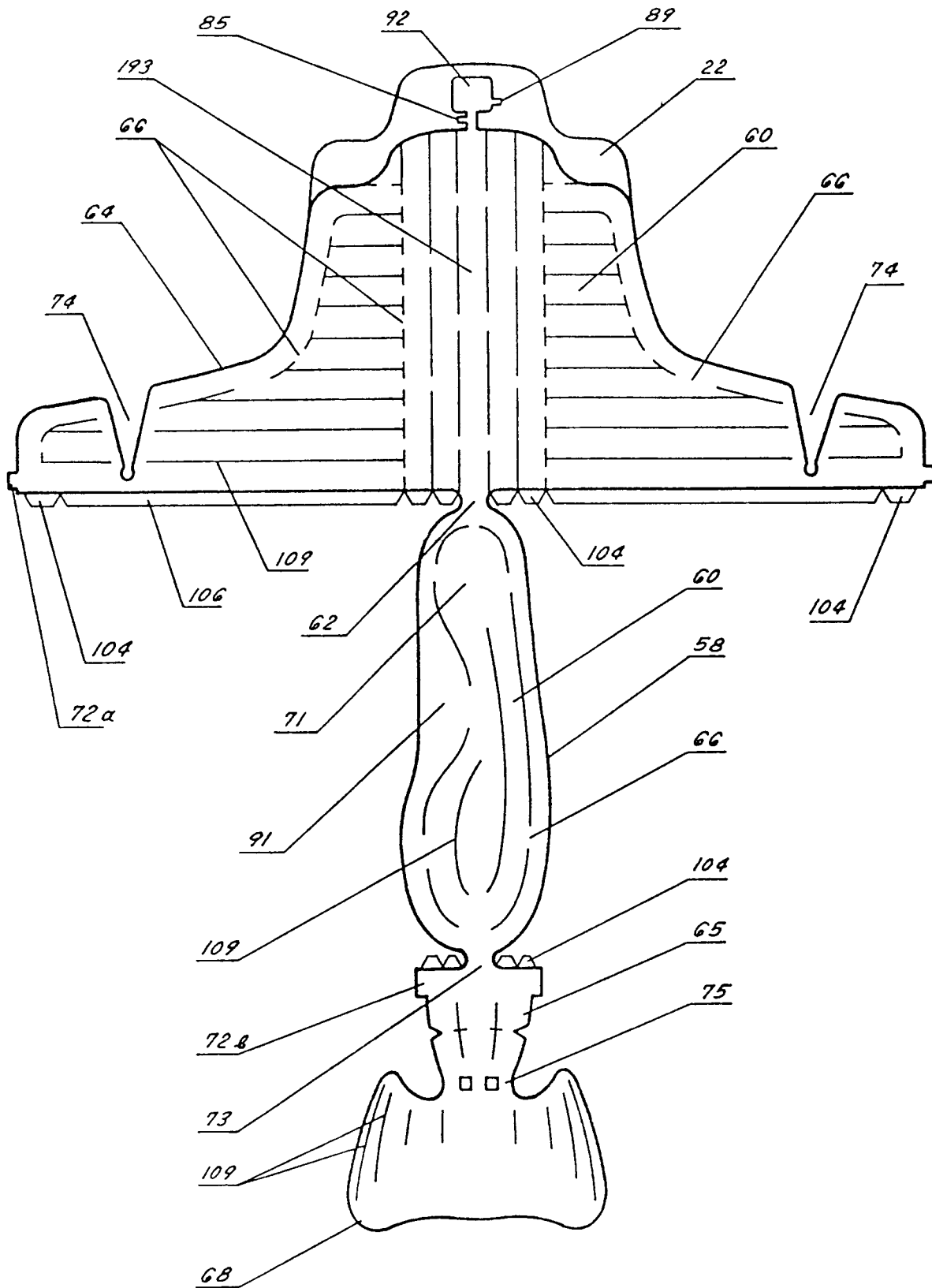


FIG. 1

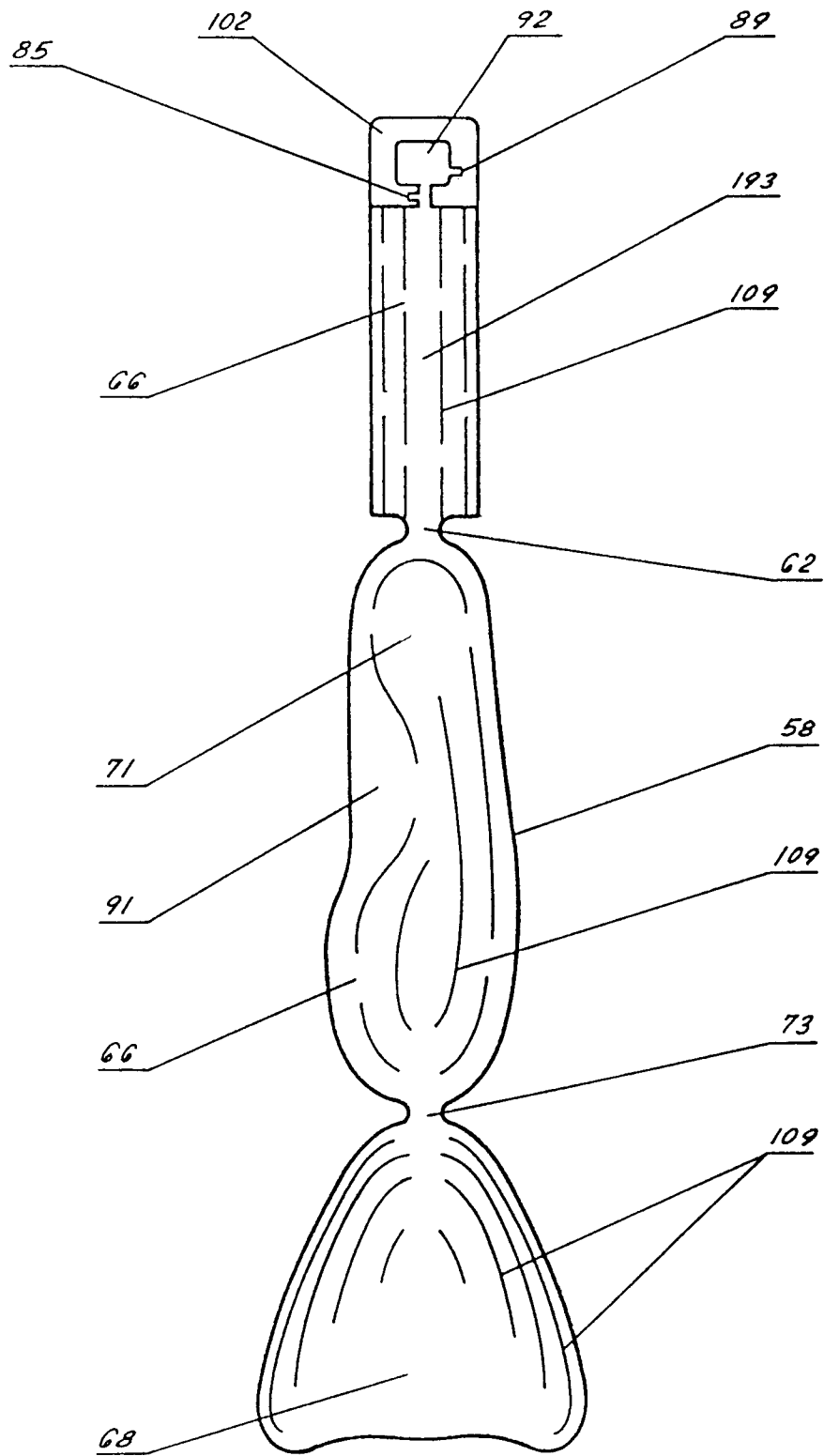


FIG. 2

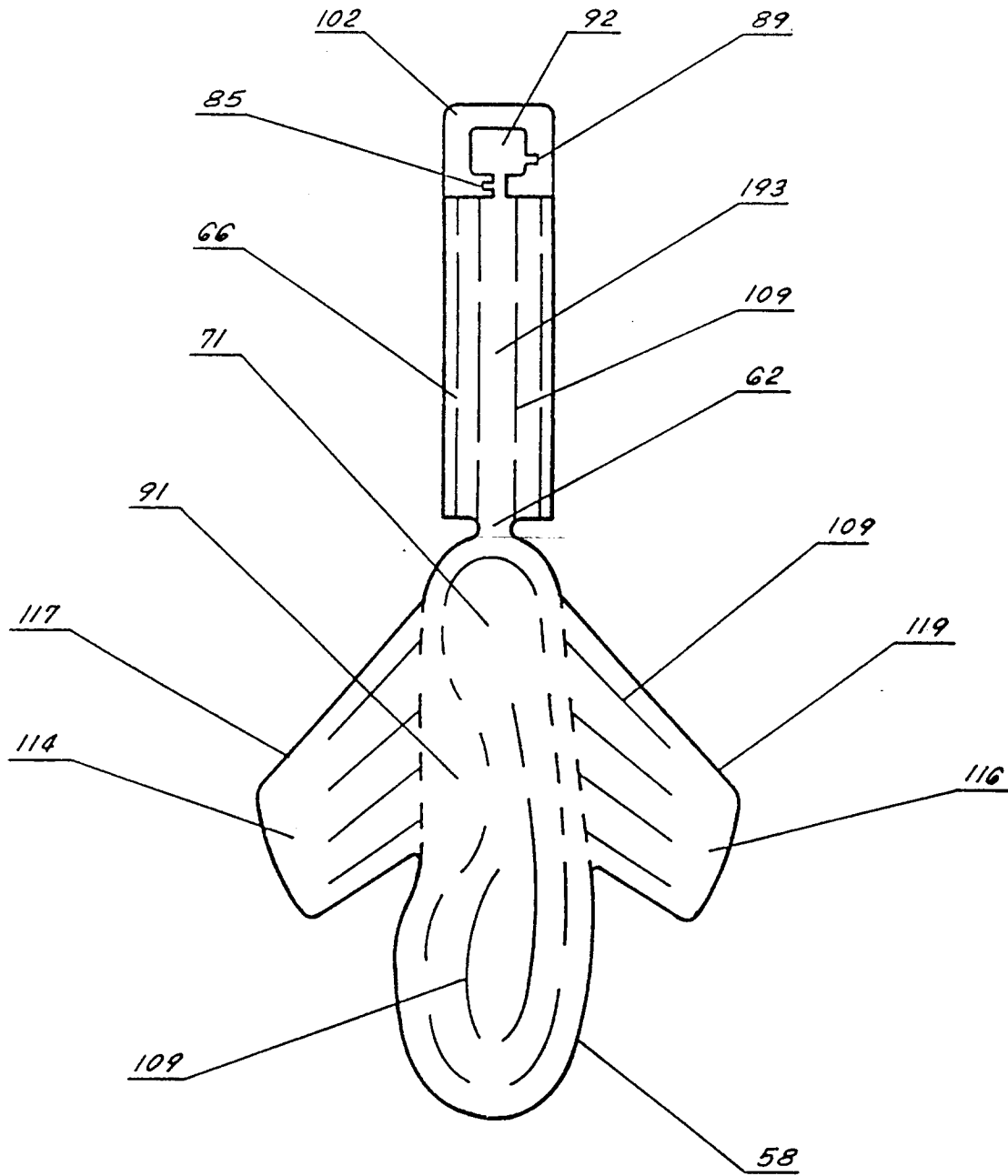


FIG. 3

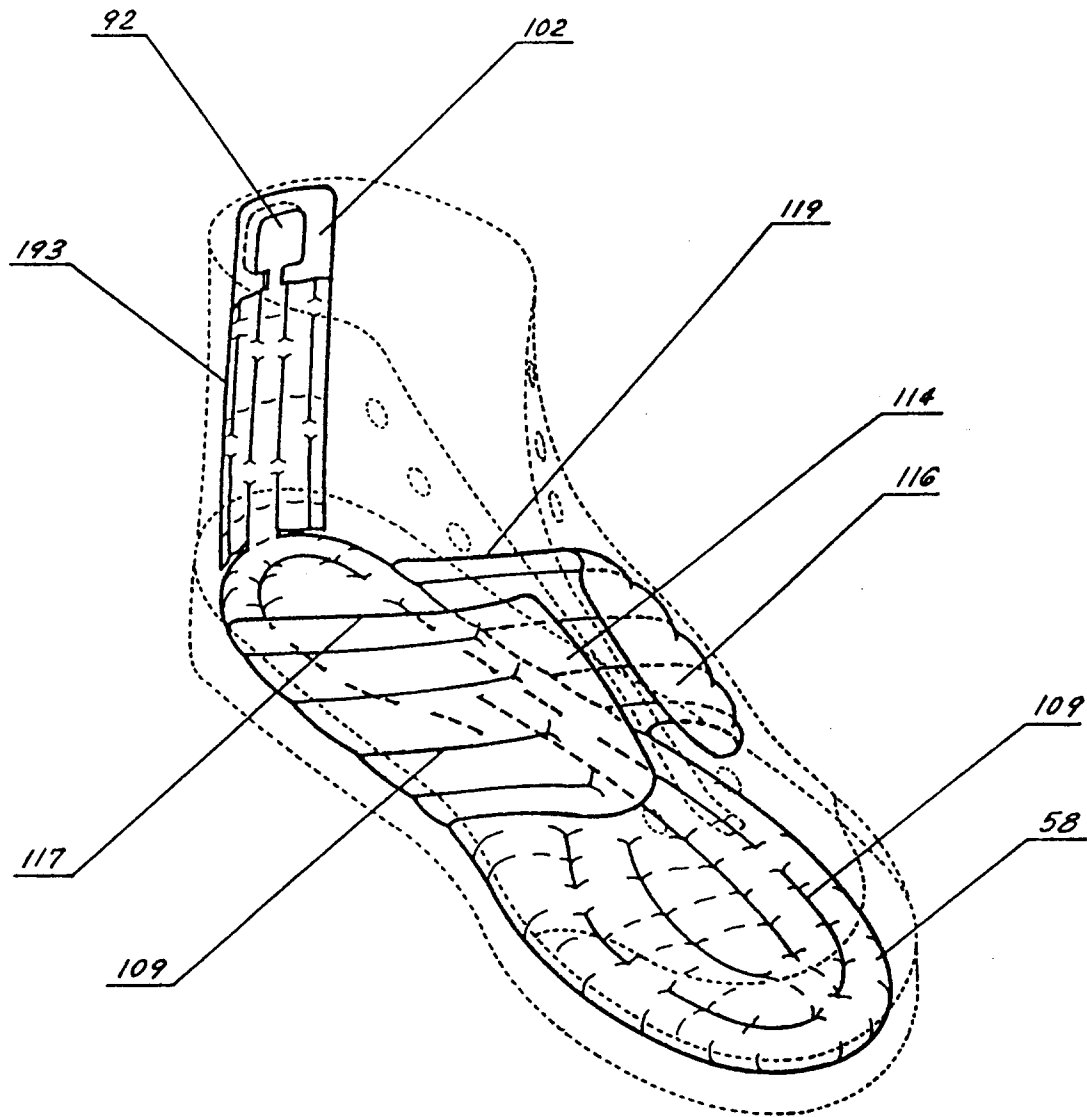


FIG. 4

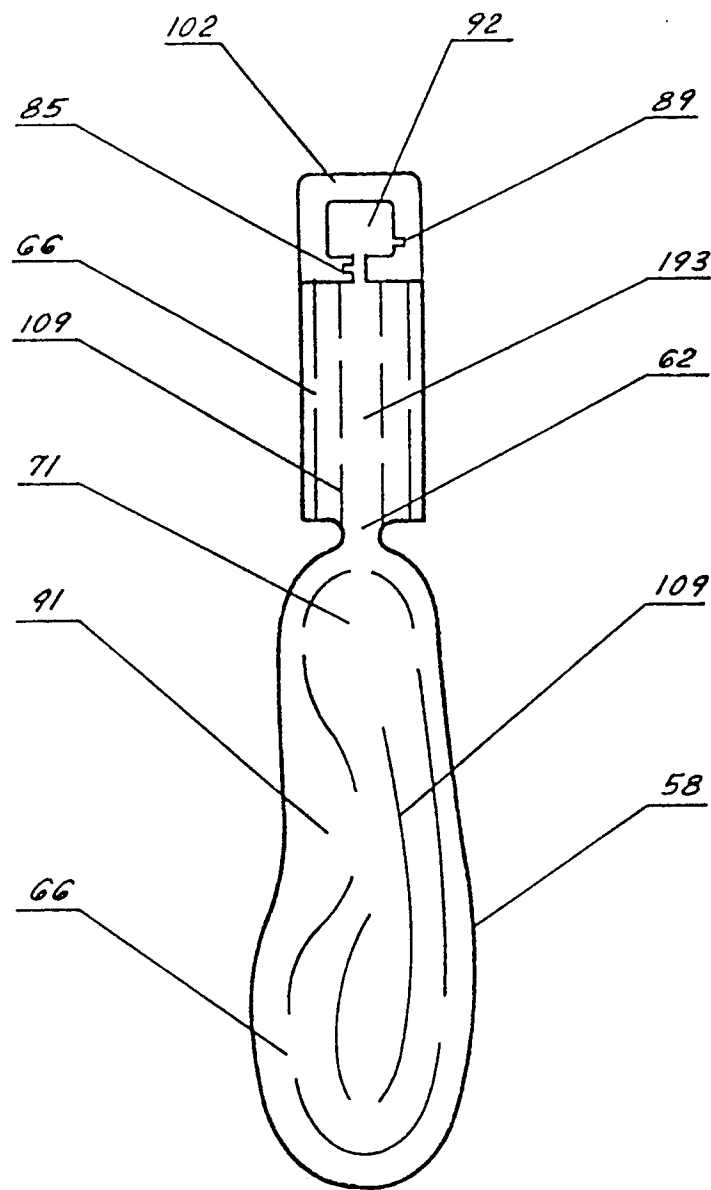


FIG. 5

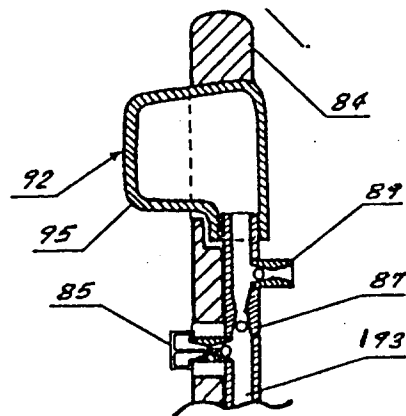


FIG. 6