



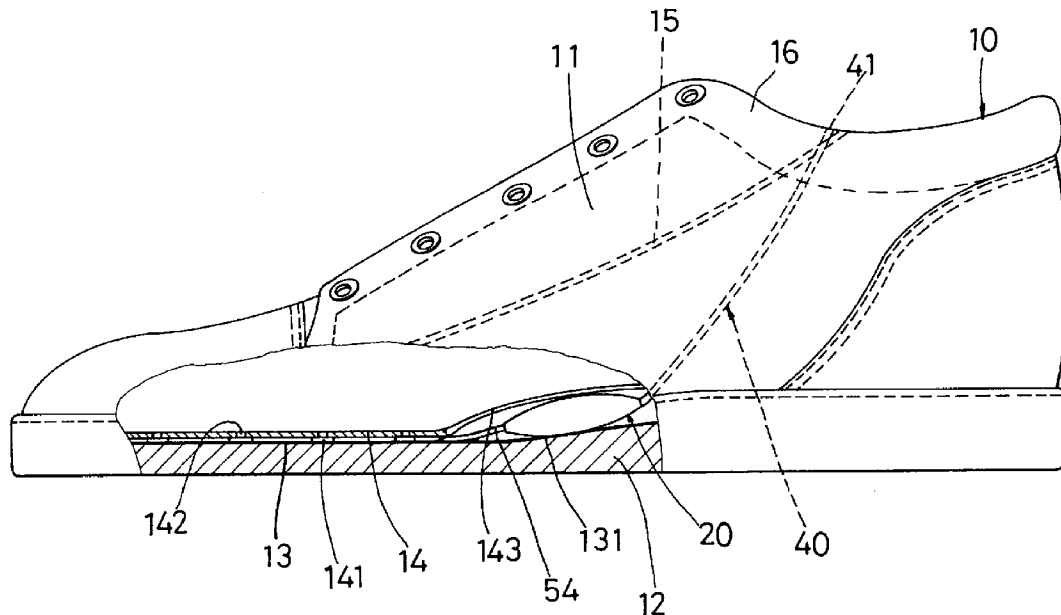
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(54) **CHAUSSURE MUNIE D'UNE POIRE A AIR**

(54) **SHOE WITH AN AIR BULB**



(57) Chaussure comprenant une semelle raccordée à une empeigne et comprenant des trous de ventilation, une poire à air associée à la semelle pour pomper de l'air frais et le distribuer aux trous de ventilation, un premier clapet de retenue monté sur la poire à air permettant à l'air d'y entrer, un deuxième clapet de retenue monté sur la poire à air permettant à l'air de s'en écouler et communiquant avec les trous de ventilation, et un conduit d'air communiquant avec le premier clapet de retenue et exposé à l'empeigne. L'air frais peut être aspiré dans la chaussure par la poire à air alors que l'air vicié de l'intérieur de la chaussure peut être évacué, permettant ainsi une ventilation efficace.

(57) A shoe includes a shoesole which is connected to the shoe vamp and which has ventilation holes, an air bulb which is associated with the shoesole for pumping fresh air and for discharging the same to the ventilation holes, a first check valve which is mounted to the air bulb to permit air to enter the air bulb, a second check valve which is mounted to the air bulb to permit air to flow out from the air bulb and which is communicated with the ventilation holes, and an air conduit which is communicated with the first check valve and which is exposed from the vamp. Fresh air can be drawn into the shoe via the air bulb, while foul air inside the shoe can be forced out from the latter. Thus, effective ventilation can be achieved.

**ABSTRACT OF THE DISCLOSURE**

A shoe includes a shoesole which is connected to the shoe vamp and which has ventilation holes, an air bulb which is associated with the shoesole for pumping fresh air and for discharging the same to the ventilation holes, a first check valve which is mounted to the air bulb to permit air to enter the air bulb, a second check valve which is mounted to the air bulb to permit air to flow out from the air bulb and which is communicated with the ventilation holes, and an air conduit which is communicated with the first check valve and which is exposed from the vamp. Fresh air can be drawn into the shoe via the air bulb, while foul air inside the shoe can be forced out from the latter. Thus, effective ventilation can be achieved.

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**SHOE WITH AN AIR BULB****BACKGROUND OF THE INVENTION**

## 1. Field of the Invention

5 This invention relates to a shoe, more particularly to a shoe which has an air bulb that is placed between a midsole and an insole for pumping fresh air into the shoe so as to dry the foot of the user.

## 2. Description of the Related Art

10 Conventional shoes are generally manufactured not only to satisfy an aesthetic need but also to achieve a comfortable feeling for the user. Accordingly, most shoes have several ventilation holes formed through the side wall of the shoe sole and the vamp of the shoe so  
15 as to allow or cause fresh air to enter and flow around the interior of the shoe.

However, there is still a heavy moist air inside the shoe due to sweating of the foot. As a result, the user feels uncomfortable when the conventional shoe is in  
20 use.

In an attempt to solve the problem, it is proposed that a spring be mounted between a shoe sole and a shoe pad to be compressed by the user's foot so as to move the air inside the shoe. However, the air in the shoe  
25 is foul and fresh air cannot enter the shoe. Therefore, the muggy feeling of the user is still not obviated.

**SUMMARY OF THE INVENTION**

The main object of the present invention is to provide a shoe with an air bulb for pumping fresh air into the shoe so as to cool and dry the foot of the user and so as to obviate a muggy feeling of the user when the shoe is in use.

According to this invention, a shoe includes a shoesole which is connected to the shoe vamp and which has ventilation holes formed therethrough, an air bulb which is associated with the shoesole for pumping fresh air and for discharging the fresh air to the ventilation holes, a first check valve which is mounted to the air bulb to permit air to enter the air bulb, a second check valve which is mounted to the air bulb to permit air to flow out from the air bulb and which is communicated with the ventilation holes, and an air conduit which is communicated with the first check valve and which is exposed from the vamp. Fresh air can be drawn into the shoe via the air bulb, and foul air inside the shoe can be forced out from the shoe. Thus, effective ventilation can be achieved.

**BRIEF DESCRIPTION OF THIS DRAWINGS**

Other features and advantages of the present invention will become apparent in the following detailed description of a preferred embodiment of the invention, with reference to the accompanying drawings, in which:

Fig. 1 is an exploded view of a preferred embodiment of a shoe according to the present invention;

Fig. 2 is a sectional view of an air bulb of the shoe of the preferred embodiment;

5 Fig. 3 is a side view of the shoe with a portion thereof illustrated in section;

Fig. 4 is a sectional view illustrating the air bulb in its compressed position; and

10 Fig. 5 is a sectional view illustrating the air bulb in its released position.

#### **DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT**

Referring to Figs. 1 and 2, a preferred embodiment of a shoe according to the present invention is shown to comprise a shoe 10 incorporating an air bulb 20 which includes first and second check valves 30 and 50, and a first air conduit 40.

15 The shoe 10 has a vamp 11, a liner 111, an outsole 12, a midsole 13 and an insole 14 covering the midsole 13. With reference to Fig. 3, the middle part 131 of the midsole 13 is slightly concaved. The middle part 20 143 of the insole 14 is slightly concaved. The insole 14 is formed with a plurality of ventilation holes 142, and a plurality of intersecting ventilation passages 141 formed at the bottom side thereof to communicate the ventilation holes 142.

25 The air bulb 20 is preferably made of rubber, such as a silicon rubber, and is disposed between the

midsole 13 and the insole 14 at the concaved middle part 143 of the insole 14. The air bulb 20 is formed with two holes for mounting the first and second check valves 30 and 50.

5           The first check valve 30 includes an outer tubular joint portion 32, an inner tubular portion 31 which extends into the air bulb 20, and an annular flange 33 which extends outward from the wall part between the tubular portions 32 and 31. The annular  
10 flange 33 is formed with an annular slot 331 to fittingly receive the hole confining edge 21 of the air bulb 20. The inner tubular portion 31 has a first open end which is formed with two inwardly extending stop lugs 311, a second end which is formed with a valve  
15 seat 312, and a ball 313 which is movable to contact the step lugs 311 or the valve seat 312. The outer tubular portion 32 is connected to the second end of the inner tubular portion 31 and has a serrated part 321.

20           The first air conduit 40 is received between the vamp 11 and the liner 111, and has an outer end 41 which is exposed at the collar portion 16 of the shoe 10 (as shown in Fig. 3) and an inner end which is sleeved sealingly on the serrated part 321.

25           The second check valve 50 includes an outer tubular portion 52, an inner tubular portion 51, and a ring-shaped flange 53 between the portions 51 and 52.

The flange 53 is formed with an annular slot 531 which engages the edge 22 of the air bulb 20. The outer tubular portion 52 has a first end which is formed with two inwardly extending stop lugs 521, a second end which is formed with a valve seat 522 adjacent to the flange 53, and a ball 523 which is movable to contact the stop lugs 521 or the valve seat 522. The inner tubular portion 51 extends into the air bulb 20. In addition, the outer tubular portion 52 has a serrated part 524.

Referring to Figs. 4 and 5, when the user walks, the foot of the user presses and releases alternately the air bulb 20. Fig. 4 shows the air bulb 20 in a compressed state. At this state, air in the air bulb 20 forces the balls 313 and 523 toward the valve seat 312 and the stop lugs 521, respectively. Since the ball 313 contacts tightly the valve seat 312, the first check valve 30 is in a closed position. However, the second check valve 50 is opened since the ball 523 contacts the stop lugs 521, thus permitting the air to flow from the air bulb 20 to the ventilation passages 141 and the ventilation holes 142 of the insole 14.

As illustrated in Fig. 5, as soon as the user lifts his foot to release the air bulb 20, fresh air is suctioned into in the first air conduit 40 through the outer end 41 of the first air conduit 40 (as shown in Fig. 3). The suctioned fresh air forces the ball 313 to

move from the valve seat 312 to the stop lugs 311, thereby opening the first check valve 30. At the same time, the ball 523 is moved to seal the valve seat 522 by the force of the air in the shoe, thus closing  
5 the second check valve 50. As a result, only fresh air enters the air bulb 20. Note that, when the ball 313 is moved to contact the stop lugs 311, the first check valve 30 is not closed because there are gaps between the step lugs 311 for passage of air.

10 Referring again to Fig. 3, a discharge tube 54 has one end sleeved on the serrated part 524 of the second check valve 50 and an opposite end which extends to the ventilation passages 141. As such, the fresh air in the air bulb 20 can be sent to the passages 141 in  
15 a precise manner.

As mentioned above, the present invention utilizes the air bulb 20 as a foot-actuated pump to draw fresh air into the shoe 10 via the first air conduit 40. Because a substantial amount of fresh air can be  
20 drawn into the shoe 10 via the air bulb 20 and the because foul air inside the shoe 10 can be forced out from the latter, effective ventilation can be achieved by the present invention.

While the present invention has been described in  
25 connection with what is considered the most practical and preferred embodiment, it is understood that this invention is not limited to the disclosed embodiment



but is intended to cover various arrangements included within the spirit and scope of the broadest interpretations and equivalent arrangements.

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**I CLAIM:**

1. A shoe comprising:

an upper;

5 a shoesole connected to said upper and having a plurality of ventilation holes;

an air bulb associated with said shoesole for pumping fresh air to said ventilation holes;

a first check valve mounted to said air bulb to permit air to enter said air bulb;

10 a second check valve mounted to said air bulb to permit air to flow out from said air bulb, said second check valve being communicated with said ventilation holes; and

15 a first air conduit having one end communicated with said first check valve and an opposite end exposed from said upper.

2. A shoe as claimed in Claim 1, wherein said shoesole has a midsole and an insole which is disposed on said midsole, said air bulb being disposed between said 20 midsole and said insole at an intermediate part of said midsole.

3. A shoe as claimed in Claim 2, wherein said ventilation holes are provided in said insole, said insole further having a plurality of ventilation 25 passages confronting to said midsole.

4. A shoe as claimed in Claim 1, wherein each of said first and second check valves has an outer tubular

portion, an inner tubular portion extending into said air bulb, a valve seat between said outer tubular portion and said inner tubular portion, and a ball to seat against said valve seat, said outer tubular  
5 portion of said first check valve being connected to said first air conduit.

5. A shoe as claimed in Claim 4, wherein said outer tubular portion of each of said first and second check valves has a serrated part.

10 6. A shoe as claimed in Claim 5, wherein said first air conduit is attached to said serrated part of said first check valve.

7. A shoe as claimed in Claim 5, further comprising a second air conduit attached to said serrated part of  
15 said second check valve and extending to said ventilation passages.

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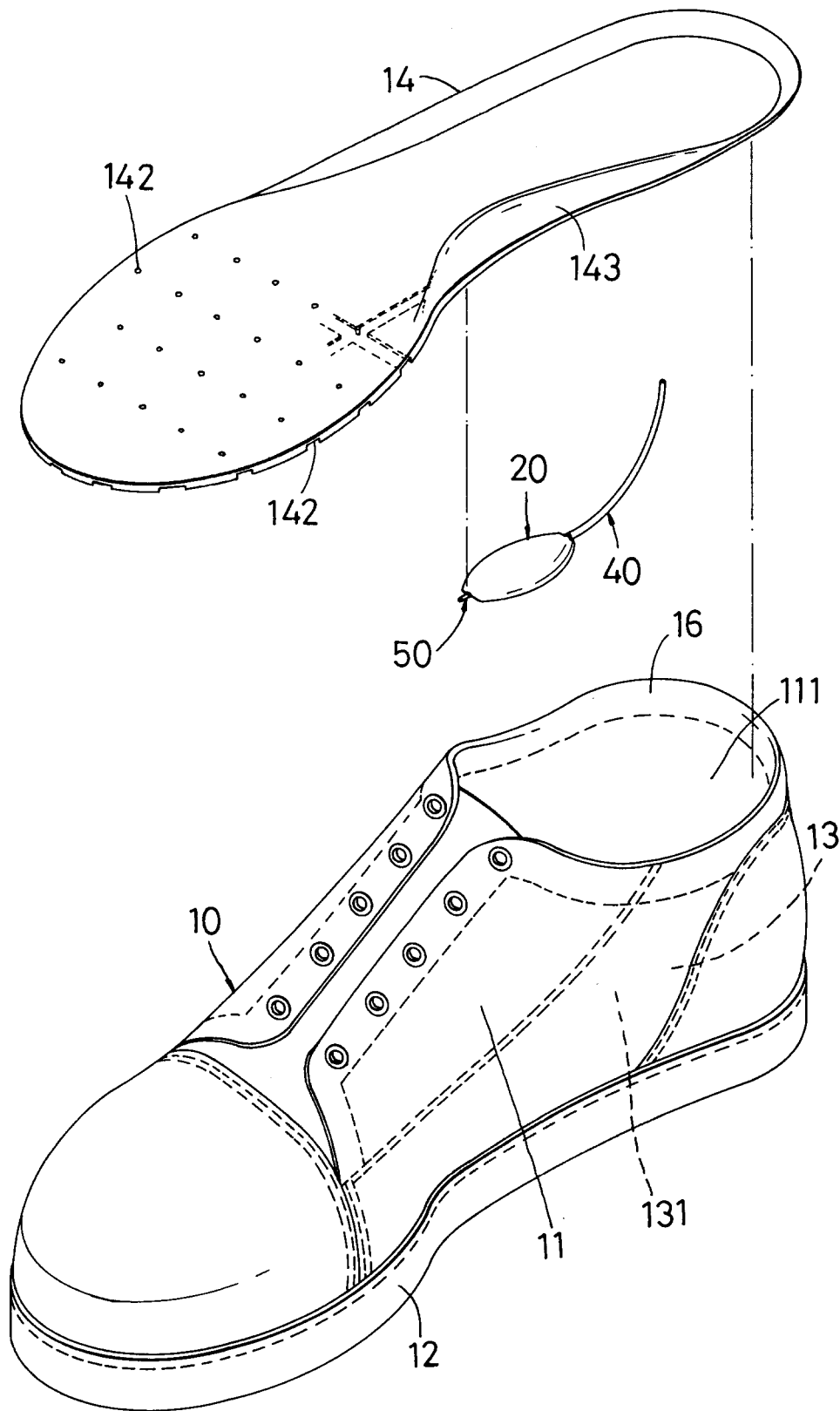


FIG. 1

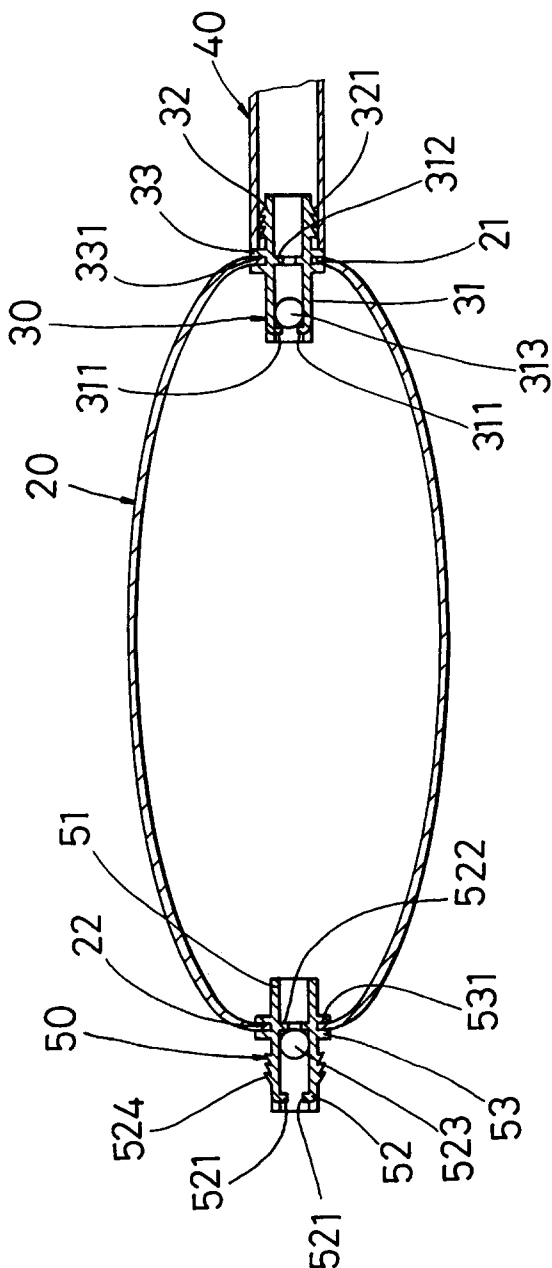


FIG.2

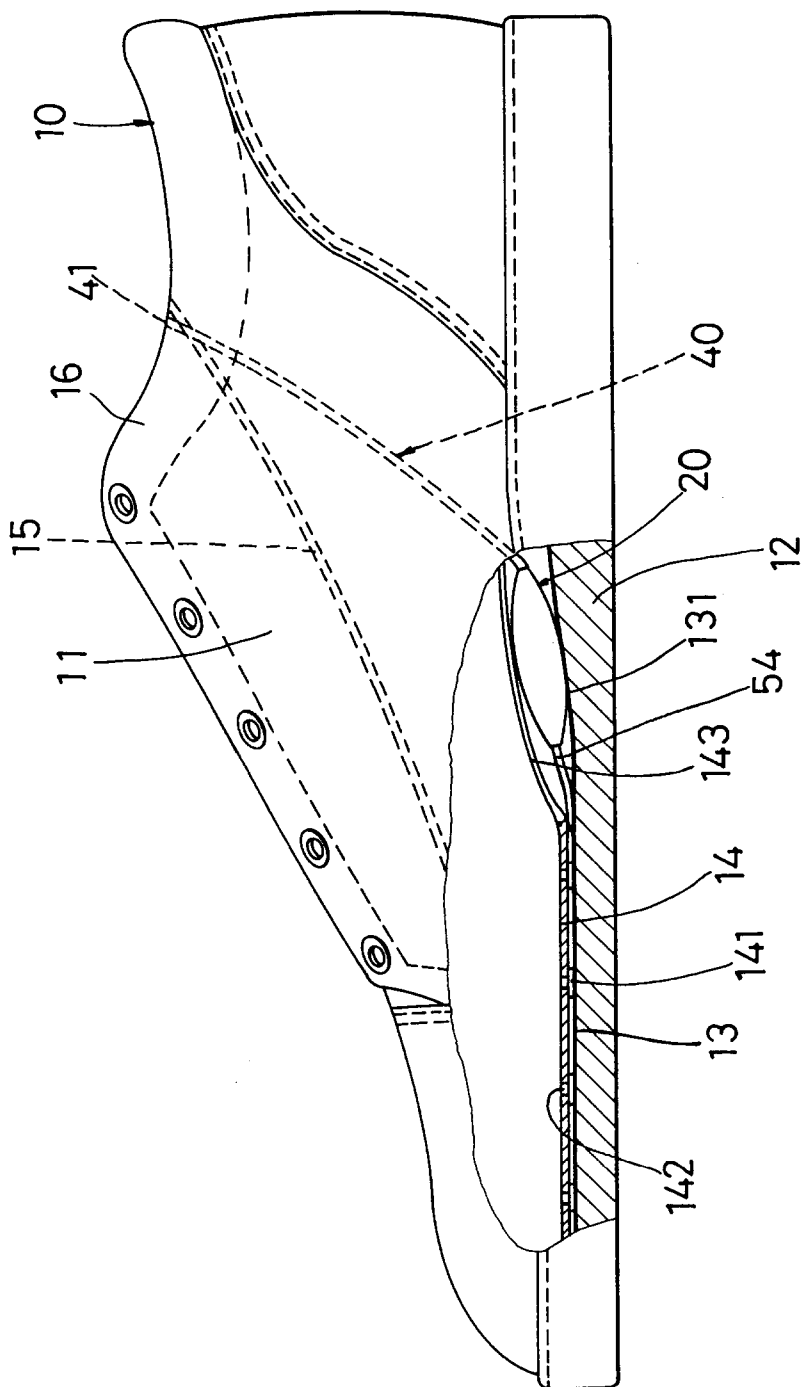


FIG. 3

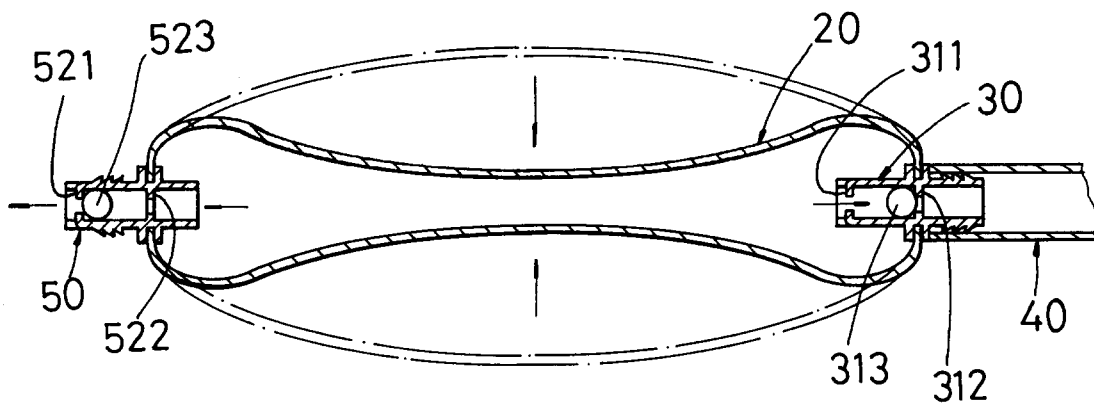


FIG. 4

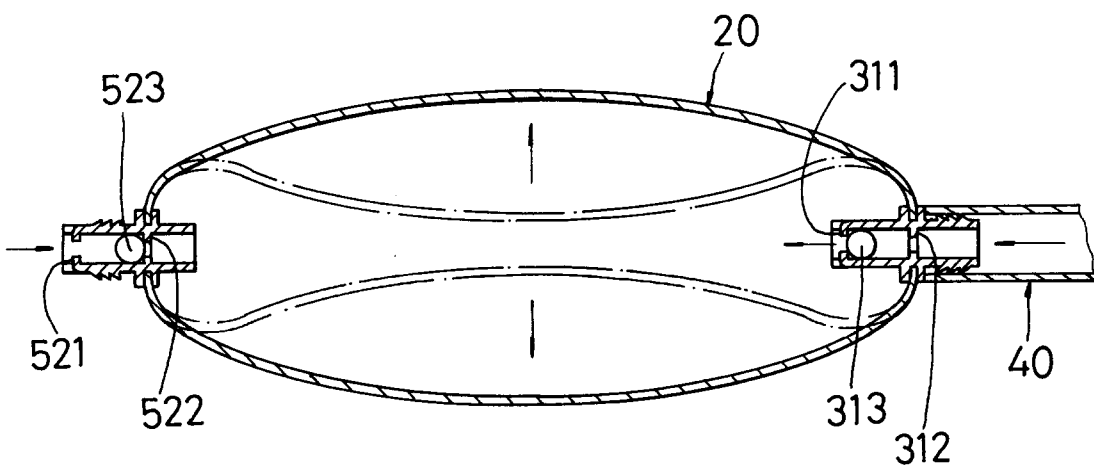


FIG. 5

