

[54] **INNER SOLE**  
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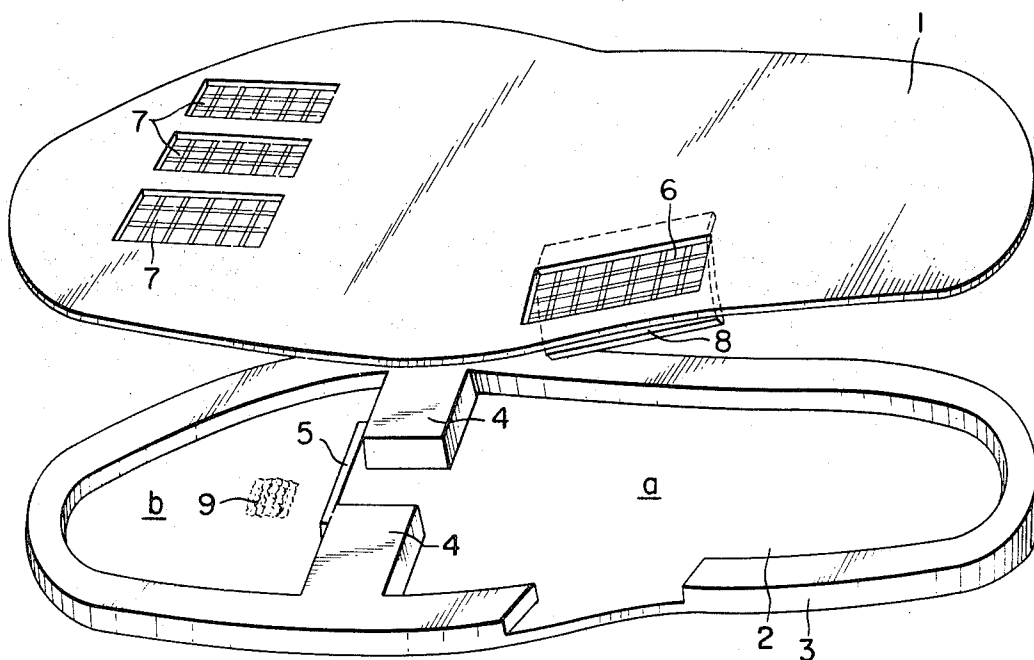
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 [58] Field of Search..... 36/3 B, 3 R, 44, 29

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[57] **ABSTRACT**  
 An inner sole consisting of an upper sheet of leather having openings for air inlet and outlet, a lower sheet of leather, a rectangular elastic member having a valve at a central part of the sole and placed between said upper and lower sheets of leather along the rims of them and a piece of tape combining the three. Air is compulsorily passed through the inner sole so that the toes in a shoe are kept dry while walking and helps in preventing athlete's foot.

6 Claims, 9 Drawing Figures



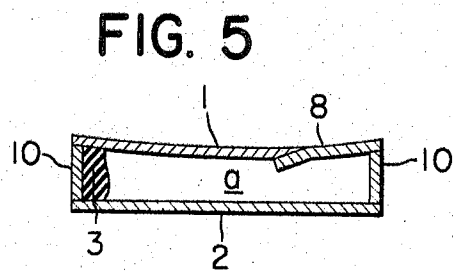
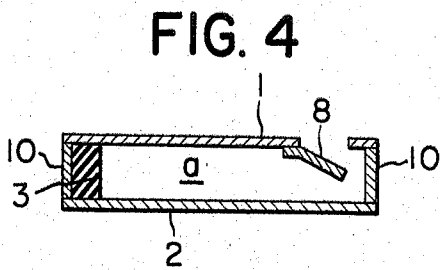
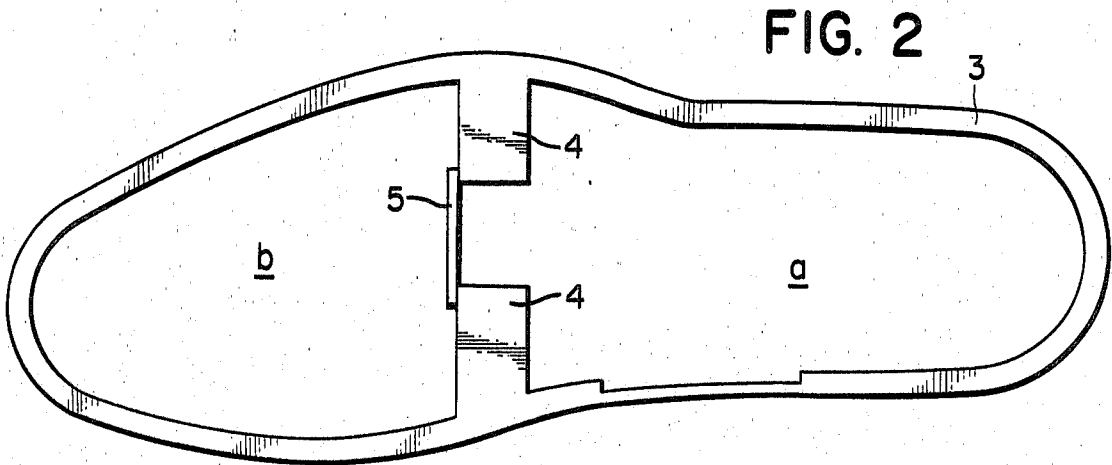
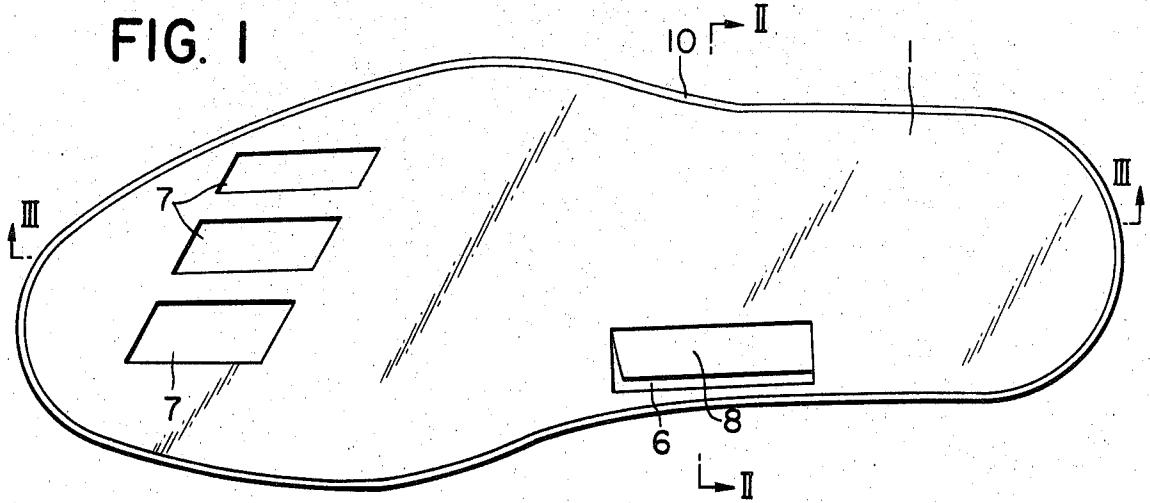


FIG. 3

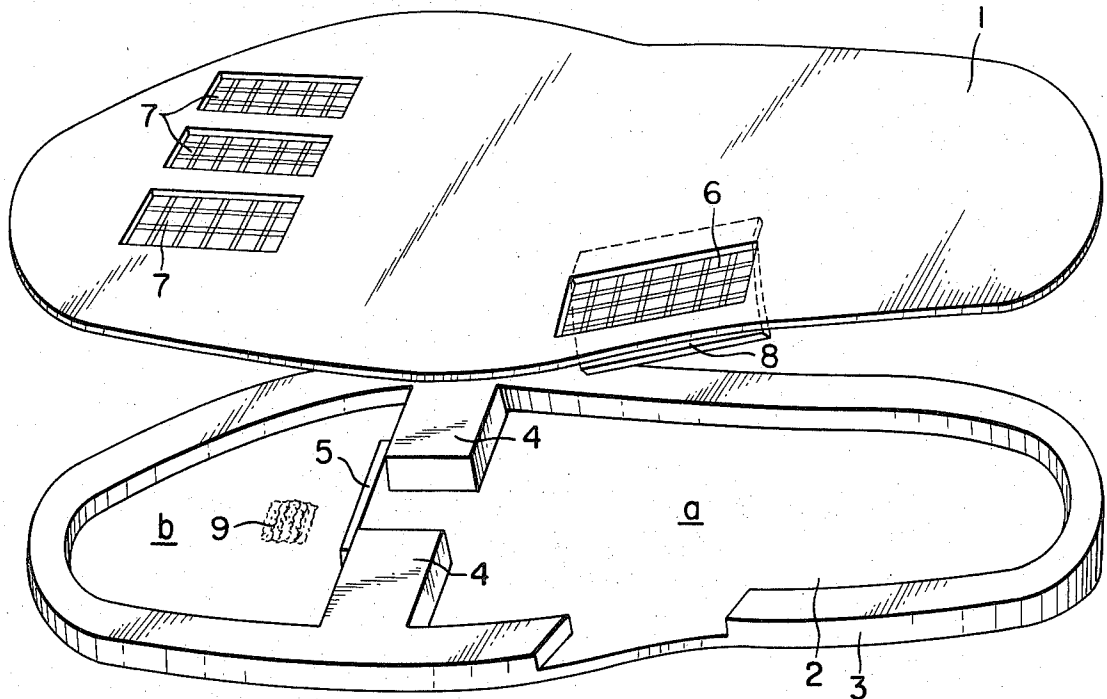


FIG. 6

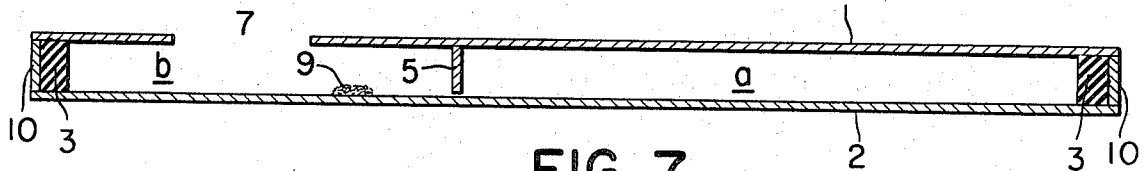


FIG. 7

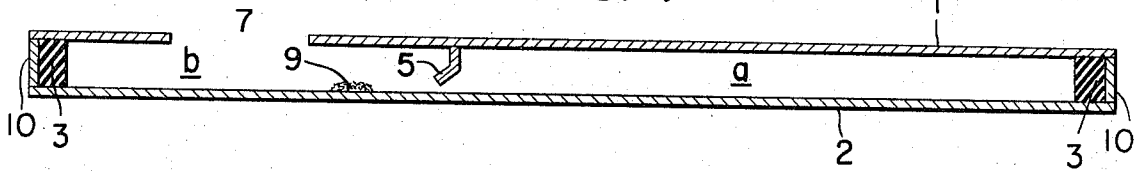


FIG. 8

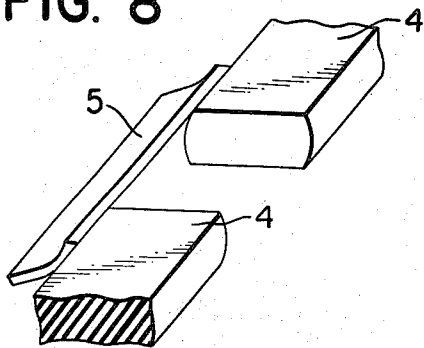
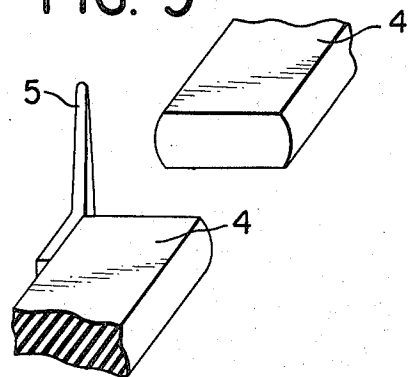


FIG. 9



# 1

## INNER SOLE

### SUMMARY OF THE INVENTION

This invention relates to an inner sole. More particularly this invention relates to an inner sole which prevents the toes from athlete's foot by passing air compulsorily through the toes and by keeping them dry.

### BRIEF REVIEW OF THE PRIOR ART

Athelete's foot or ringworm of the feet is a very unpleasant and hardly curable skin disease which is prolific in the damp atmosphere caused by sweat from the foot in a shoe. No shoes which can prevent the toes from the athlete's foot have been proposed except for sandals.

### OBJECT OF THE INVENTION

An object of the present invention is to provide an inner sole which can prevent the toes from athlete's foot. A further object of the present invention is to provide an inner sole which can keep the toes dry by passing air compulsorily through them in walking. A still further object of the present invention is to provide an inner sole which makes man comfortable in walking.

Other objects and further advantages of the invention will become more apparent from the following specification and claims when taken together with the drawings, in which:

FIG. 1 is a plan view of an inner sole.

FIG. 2 is a plan view of an elastic member which is placed between an upper sheet of leather and a lower sheet of leather.

FIG. 3 is a perspective view showing the inner part of an inner sole.

FIG. 4 is a cross-sectional view taken along the line II — II in FIG. 1.

FIG. 5 is a cross-sectional view taken along the line II — II in FIG. 1 under the pressure of the foot.

FIG. 6 is a cross-sectional view taken along the line III — III in FIG. 1.

FIG. 7 is a cross-sectional view taken along the line III — III in FIG. 1 under the pressure of the foot.

FIG. 8 is a perspective view of projecting parts of an elastic member and a valve attached to them on an enlarged scale wherein the valve is the same open condition as that of FIG. 7.

FIG. 9 is a perspective view of projecting parts of an elastic member and a valve attached to one of them on an enlarged scale wherein the valve is an open condition under the pressure of the foot.

### DETAILED DESCRIPTION

The inner sole of the present invention comprises an upper sheet of leather 1, a lower sheet of leather 2, a rectangular elastic member 3 placed between said upper and lower sheets of leather and a piece of tape 10 combining the former three as shown in FIG. 1 and FIG. 3.

The upper sheet of leather 1 has an opening 6 for air inlet at the shank part thereof and several openings 7 for air outlet at the toe part thereof. These openings may be covered with net-like materials. The shapes of these openings may be rectangular, elliptic, and the like. Along one side of the opening 6, there is a valve 8 which can easily open downwards and shut again eas-

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ily. As the upper sheet of leather, leather-like materials such as artificial leather may also be used.

The elastic member 3 takes the form as shown in FIG. 2. The projecting parts 4, 4, attaching a valve 5 thereto as shown in FIG. 8 or in FIG. 9, separate the vacant space into two compartments, the rear compartment *a* and the front compartment *b*. As the elastic member, soft rubber, foamed polystyrene and the like may be used.

The lower sheet of leather 2 may attach, if necessary, a piece of sponge-like material 9, thereto at the front part thereof. As the lower sheet of leather, leather-like materials such as artificial leather may also be used.

A piece of tape 10 combines the upper sheet of leather 1, the elastic member 3 and the lower sheet of leather 2. As the tape, such materials as nylon, cloth and the like may be used.

In an unloaded state, both the compartment *a* and *b* are filled with air. When the upper sheet of leather 1 is pressed by the load of the foot, the air in the compartment *a* is compressed, which makes the valve 8 shut and the valve 5 open. The air in the compartment *a* flows to the room *b* through the opened valve 5 and then the air in the room *b* flows to the toes through the openings 7. When unloaded, the upper sheet of leather 1 rises to the original level by the recovering strength of the elastic member 3. The resulting reduced pressure in the compartment *a* makes the valve 5 shut and the valve 8 open and air flows through the opened valve 8 to the compartment *a* and fills it.

By repeating loading and unloading, air flows compulsorily from the opening 6 through the compartments *a* and *b* to the openings 7. The openings 7 may be set between each toe, or may be set as shown in FIG. 1.

When the inner sole of the present invention is placed on the insole of a shoe and used for walking, the toes are kept dry by air stream resulted from the special operation of the inner sole as hereinbefore mentioned, even when the toes remain in the shoe for a long period. Therefore, the inner sole of the present invention can not only prevent the foot from athlete's foot but also be used for remedy of it. Moreover, when perfume is impregnated in the sponge-like material 9, the hygienic toes can be covered with pleasant smell. Further the elastic member 3 of the inner sole hardly gives fatigue to the foot in walking. Thus the inner sole of the present invention is preferable to the foot from the viewpoint of human engineering.

What is claimed is:

1. An inner sole with a shank and toe comprising in combination:

- a. an upper sheet of leather (1) with an outer rim defining the shape of a sole having one opening (6) for air inlet on the shank part and a plurality of openings (7) for air outlet on the toe part thereof;
- b. a valve (8) on the shank part of said upper sheet along one side of said one opening (6) which shuts on loading and opens downwards on unloading;
- c. a lower sheet of leather shaped to correspond to said upper sheet;
- d. an elastic member (3) of rectangular cross-section placed between said upper and lower sheets of leather between the rims thereof and having two inwardly projecting parts (4) holding a second valve (5) at the central part thereof, said projecting parts and second valve separating the vacant space between said upper and lower sheets into a forward

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compartment and a heel compartment, said second valve opening on loading and shutting on unloading of said heel compartment; and, tape means (10) holding said upper and lower sheets and said elastic member at said rims.

2. The inner sole according to claim 1 wherein the lower sheet of leather has a piece of sponge-like material attached thereto on the toe part thereof.

3. The inner sole according to claim 1, wherein the opening for air inlet and the openings for air outlet are

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covered with net-like material.

4. The inner sole according to claim 1 wherein at least one of the upper and lower sheets of leather is artificial leather.

5. The inner sole according to claim 1, wherein the second valve is attached to both of the projecting parts.

6. The inner sole according to claim 1 wherein the second valve is attached to one of the projecting parts.

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