

Dec. 7, 1971

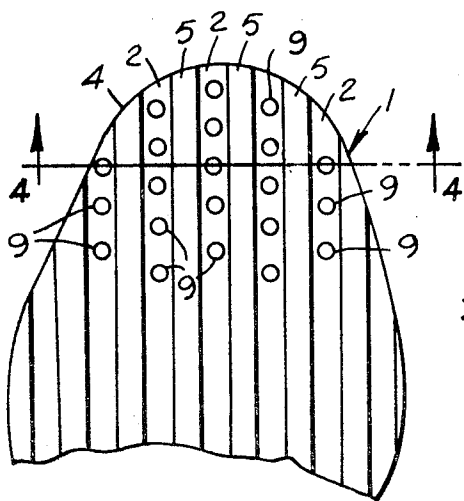
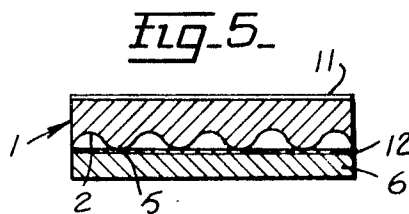
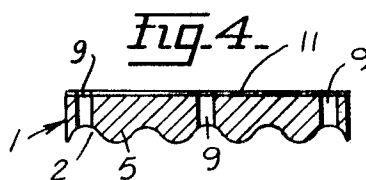
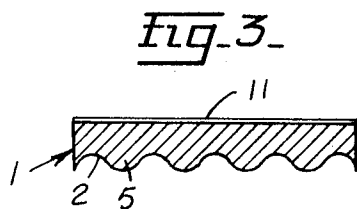
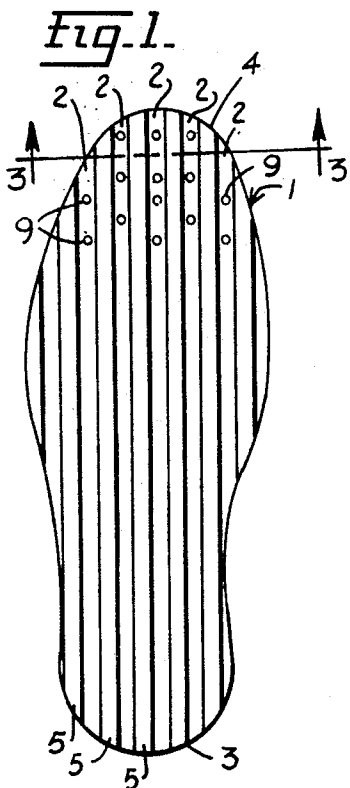
O. A. JOHNSON ET AL

3,624,930

INSOLE WITH VENTILATING PASSAGES

Filed July 30, 1969

2 Sheets-Sheet 1



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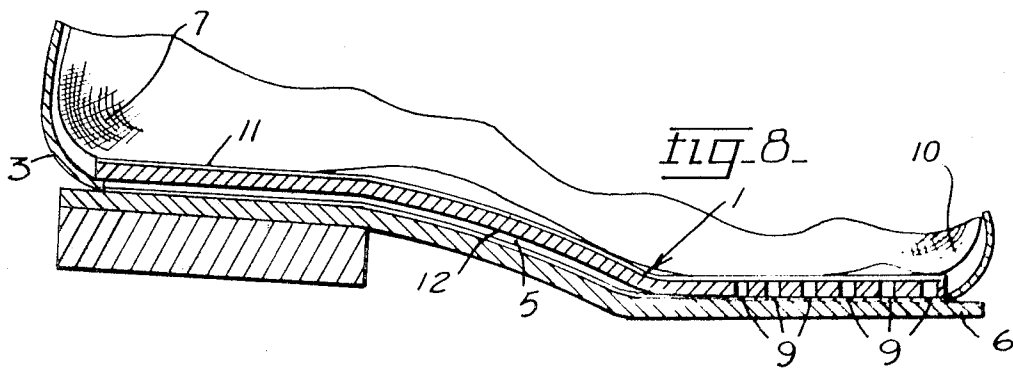
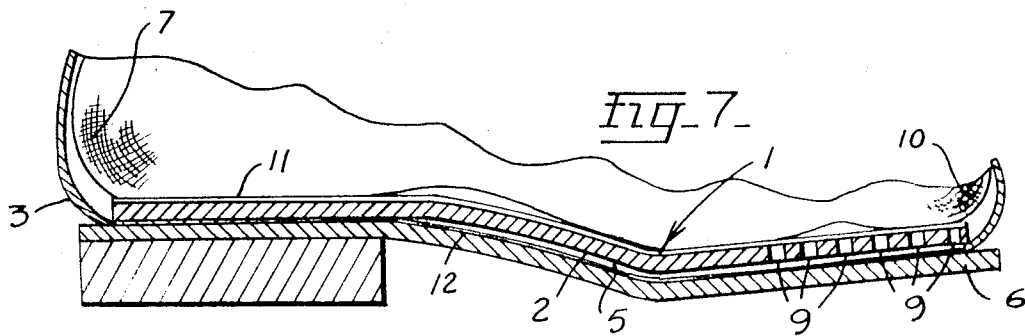
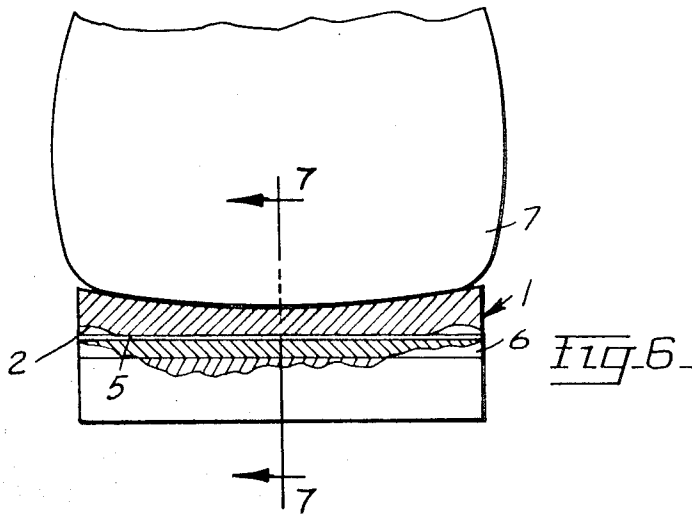
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2 Sheets-Sheet 2



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# United States Patent Office

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## INSOLE WITH VENTILATING PASSAGES

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Int. Cl. A43b 13/38

U.S. Cl. 36-43

4 Claims

### ABSTRACT OF THE DISCLOSURE

An inner sole for a shoe, provided with longitudinal resiliently compressible ribs along its underface forming longitudinal open channels throughout the entire length of the insole from the heel end to the toe end, so that alternating foot pressure thereon from the heel to the toe, pumps air toward the toe; ventilating holes extend through the insole from the channels upwardly to direct air to the toes.

### BACKGROUND OF THE INVENTION

The problem of self-venting shoes was heretofore approached by cellular sole structures, or by a single longitudinal vent passage within the shoe sole itself, or waffle design cells on the bottoms of insoles, or two layer inserts, or just simple holes through insoles, but previous solutions proved either too complex and expensive, or resulted in defective venting or accomplished little or no air circulation at all. The primary object of this invention is to provide a simple, inexpensive insole which can be easily made and inserted in a shoe without need for alteration of the shoe or the shoe sole, and which functions efficiently and consistently as alternately compressed and relieved by the foot during usual walking motion, to intake air at the open heel ends of the channels and then by gradual flattening of ribs between channels from the heel toward the toe pump air toward and out through the toe ends of the open channels and up through holes at the toe end of the insole.

### DESCRIPTION OF DRAWINGS

FIG. 1 is a bottom plan view of the insole.

FIG. 2 is a fragmental bottom view of the toe end of the insole.

FIG. 3 is a cross-sectional view of the insole, the section being taken on lines 3-3 of FIG. 1.

FIG. 4 is a cross-sectional view of the toe portion of the insole, the section being taken on lines 4-4 of FIG. 2.

FIG. 5 is a fragmental cross-sectional view of the insole resting on the sole of a shoe.

FIG. 6 is a fragmental cross-sectional view of the insole pressed and the ribs flattened against the sole of a shoe.

FIG. 7 is a longitudinal sectional view illustrating the compressing of the insole at the heel.

FIG. 8 is a longitudinal sectional view illustrating the compression of the insole toward the toe.

### DETAILED DESCRIPTION

The body 1 of the inner sole is of the usual contour to fit into a shoe. A plurality of parallel channels 2 are formed in the underface of the body 1. The channels 2 extend longitudinally the entire length of the portion on which they are respectively located. The middle channels 2 extend the entire length of the insole from the heel end 3 to the toe end 4. The channels 2 near the side edges or side portions of the inner sole body 1 extend the full length of those side portions from the heel-ward edge to the toe-ward edge, as shown in FIG. 1.

2

The channels 2 are separated by longitudinal ribs 5 which are resiliently compressible so that the ribs 5 can be flattened against the shoe sole 6 and then released by parts of the foot during the usual rocking motion of the foot 7.

Near the toe portion of the insole are a plurality of vent holes 9 arranged in staggered pattern, each hole 9 extending from a channel 2 upwardly through the body 1 of the insole to conduct air directly under the toes 10 of the foot 7.

The insole is faced on its top with a cloth fabric facing 11. For optimum venting, the channels 2 are of uniform cross-sectional area and are spaced uniformly from one another. The resiliently compressible material herein used may be of sponge rubber, foam latex, or similar material which does not deteriorate under the usual heat generated in a shoe. The undersides of the ribs bear on a usually non-porous surface 12 on the sole of the shoe.

### Operation

The insole is inserted in the shoe in the position shown in FIGS. 7 and 8, so that the resiliently compressible ribs 5 rest on the non-porous surface 12 of the sole of the shoe. The ribs 5 are of sufficient firmness to keep the channels 2 normally open for their full lengths with the foot off the ground. When walking the person usually places his entire weight first on the heel of the forward foot and as the foot rocks forward the weight is shifted gradually toward the ball of the foot and the toes, whereby the ribs 5 are compressed and flattened gradually from the heel end of the insole to its toe end expelling the air from the channels 2 through the open toe ends of the channels 2 and through vent holes 9.

The foot rocks during walking, alternately placing full weight on the heel and on the ball of the foot and the toes, and thus the ribs 5 are compressed and expanded alternately at the heel end and the toe end of the insole producing a pumping action circulating air through the channels 2 for ventilating the foot.

We claim:

1. An insole for removable insertion in a shoe comprising:

an insole body formed of a sheet of material in the usual contour of the inside of the sole of a shoe and having a heel end and a toe end,

integral resiliently compressible ribs on the underface of said body forming substantially parallel longitudinal channels throughout the entire length of the insole body from the heel end to the toe end thereof, said channels being uncovered throughout their entire lengths and at both ends, whereby said ribs are adapted to be pressed directly on the inside bottom of the shoe and released alternately for pumping air through said channels,

the resilient compressibility of the ribs being such as to be flattened progressively by the pressure exerted thereon for expelling air from said channels into the shoe at the toe end of said insole body.

2. The invention defined in claim 1:

and a plurality of vent holes extended from certain of the channels upwardly through said body at the toe end of the insole.

3. The invention defined in claim 1:

and said channels being of uniform cross-sectional area throughout their length, and said ribs being of uniform cross-sectional area throughout their length.

4. The invention defined in claim 3:

and said body is being flat and is being made of resiliently compressible material.

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**3**

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ALFRED R. GUEST, Primary Examiner  
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