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(54) SHOE INSOLE WITH FLEXIBLE INSERTS

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(57) **ABSTRACT**

Footwear includes an insole provided with inserts of resilient material at the heel-strike and ball areas of the insole. The resilient material may be formed integrally with the insole. The resilient material of the inserts is made up of a smooth upper surface **15** and a lower surface comprising a plurality of spaced-apart, downwardly-extending hemispheres. The hemispheres are spaced, in uncompressed condition, but will touch upon compression. The hemispheres have a vertical aperture that can be widened to the point where the hemisphere is completely hollow. The apertures in the hemispheres allow them to collapse into the void, dispel air, flex and spread, thus making these areas much softer to the feel. The durometer value of these heel-strike and ball areas will vary, depending on how hollow the hemispheres are. The material does not lose memory as with many cushioning foams.

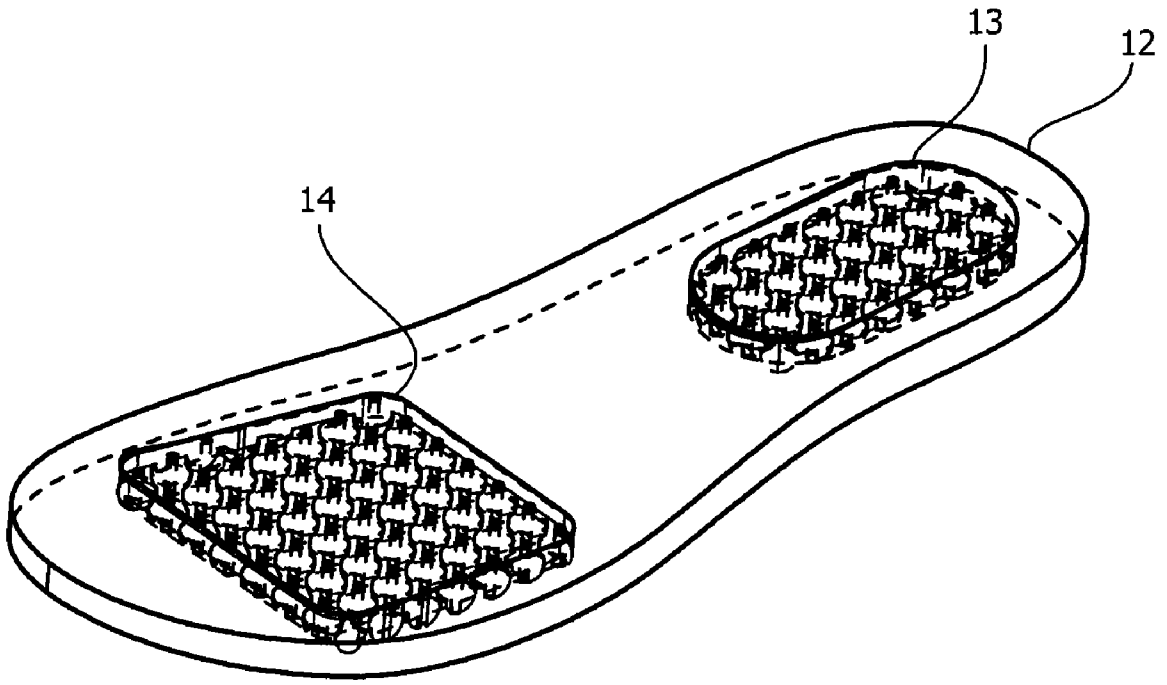
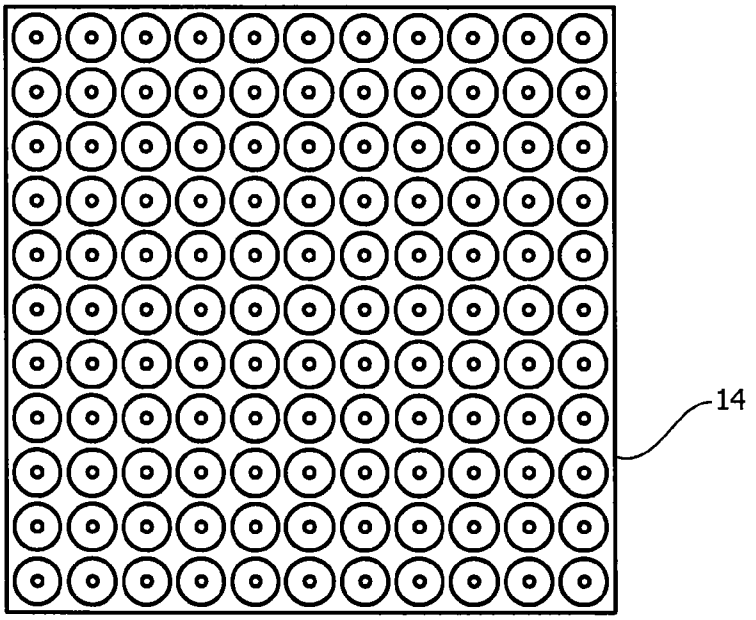


FIG. 1



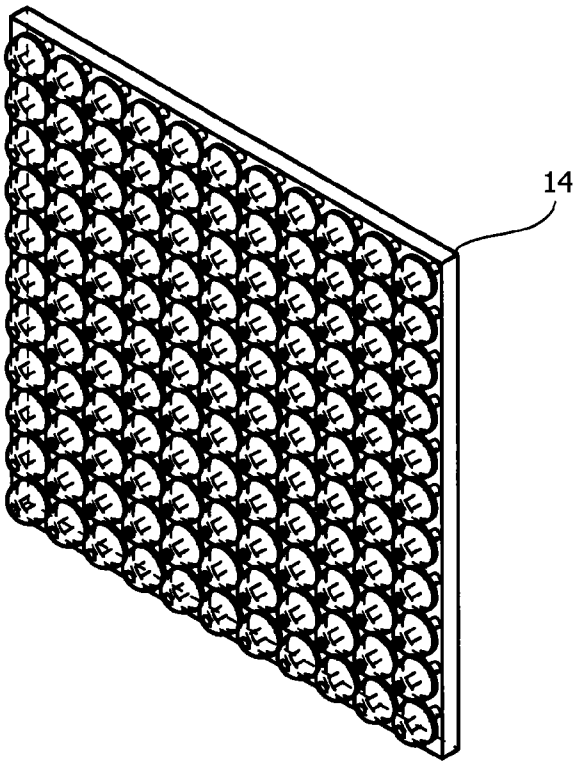


FIG. 2

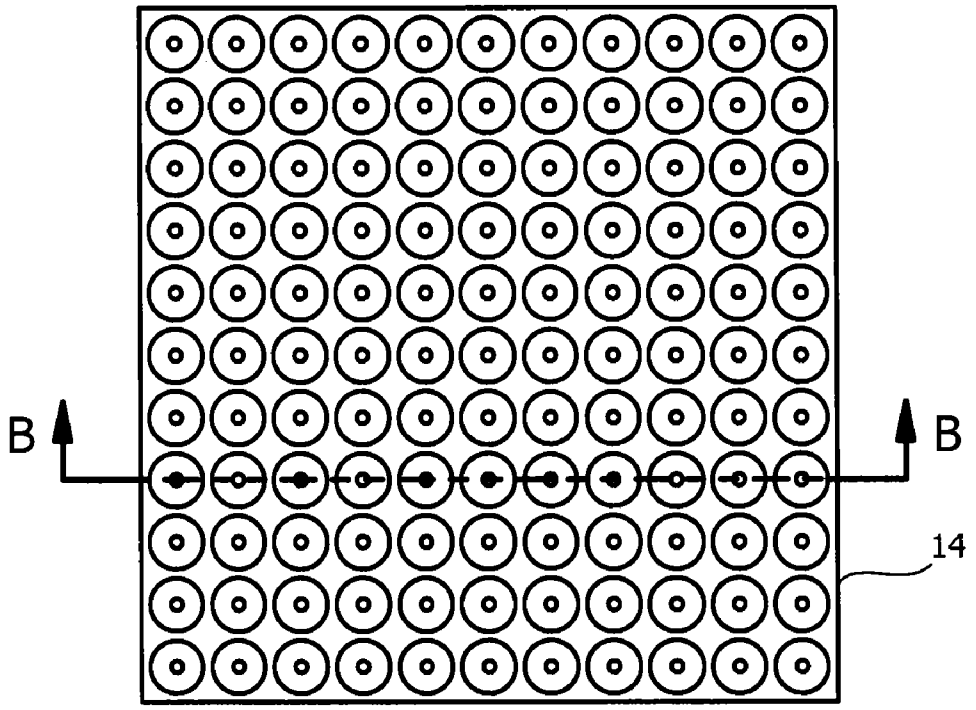


FIG. 3

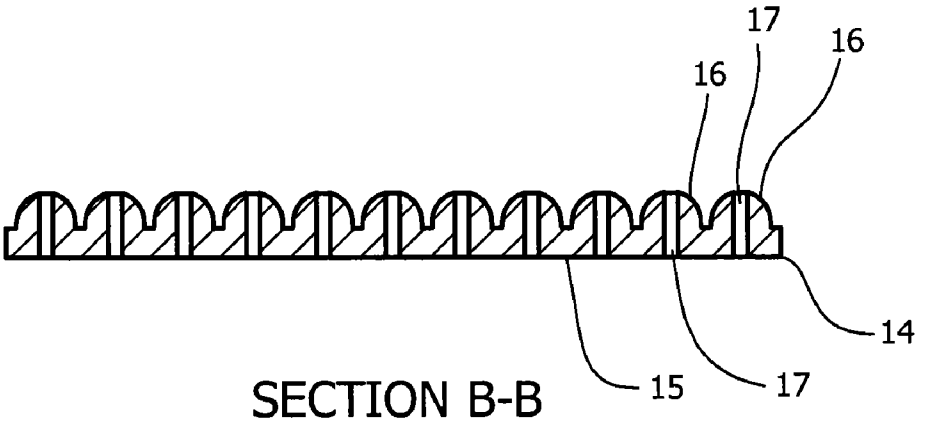


FIG. 4

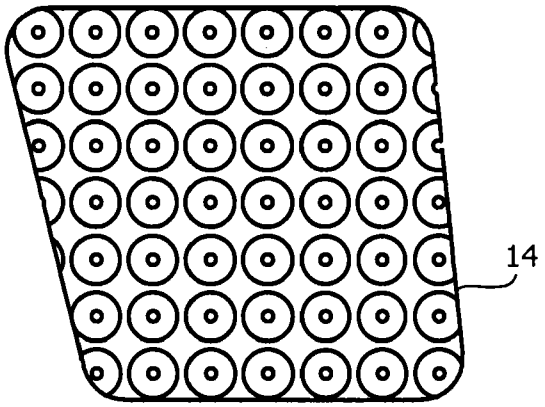


FIG. 5

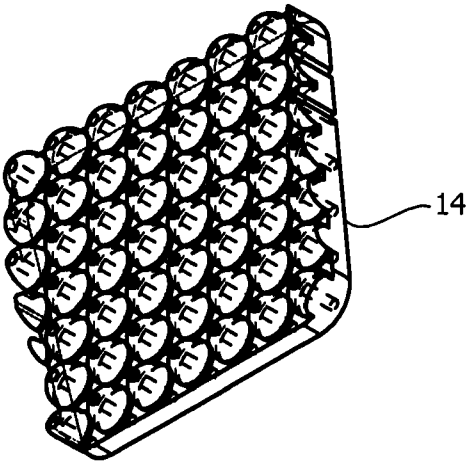


FIG. 6

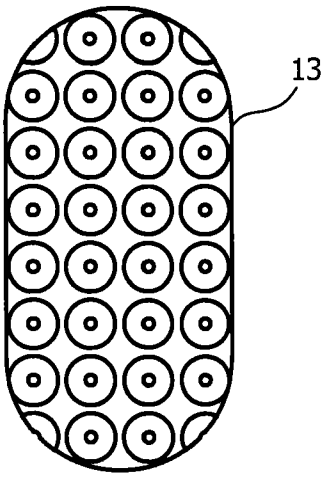


FIG. 7

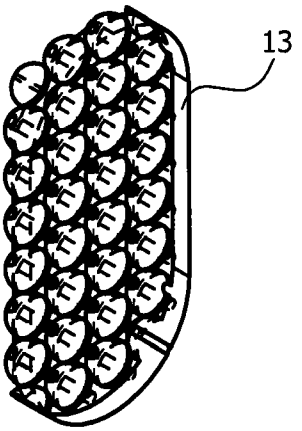


FIG. 8

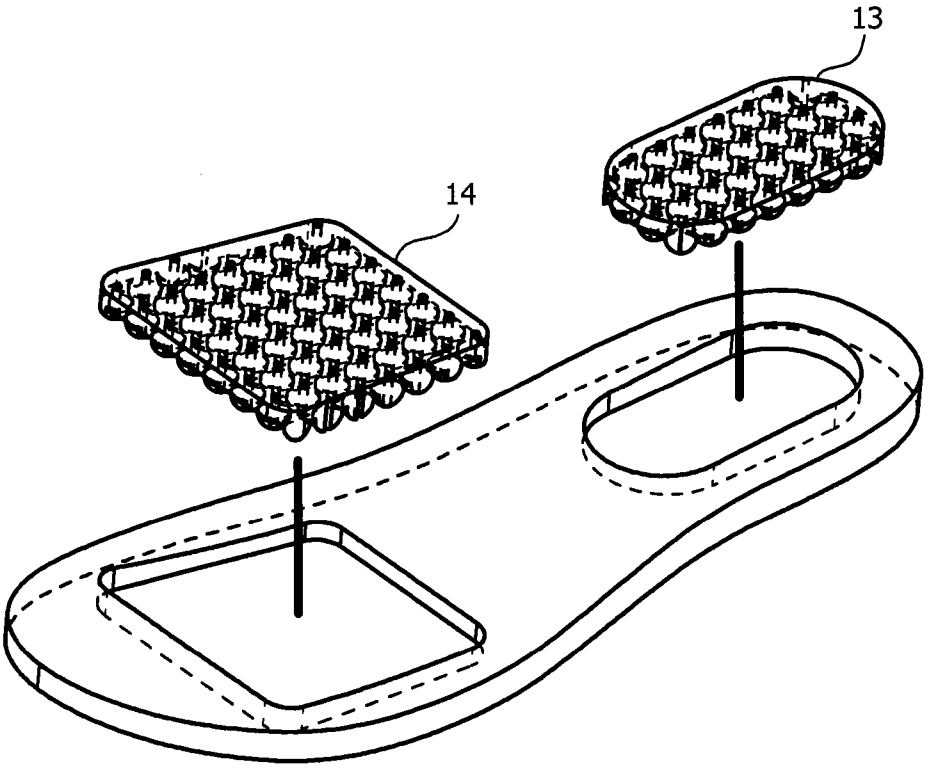


FIG. 9

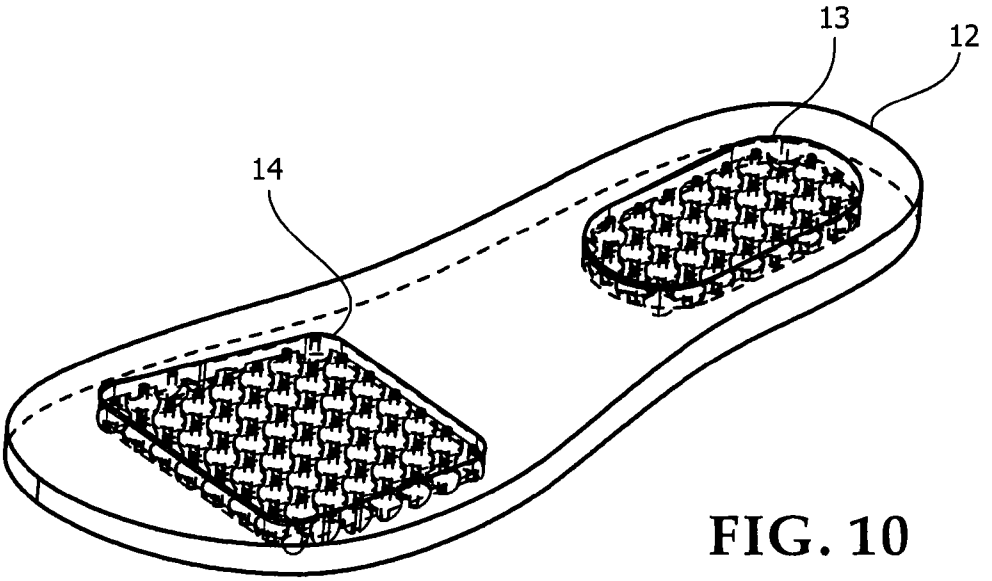


FIG. 10

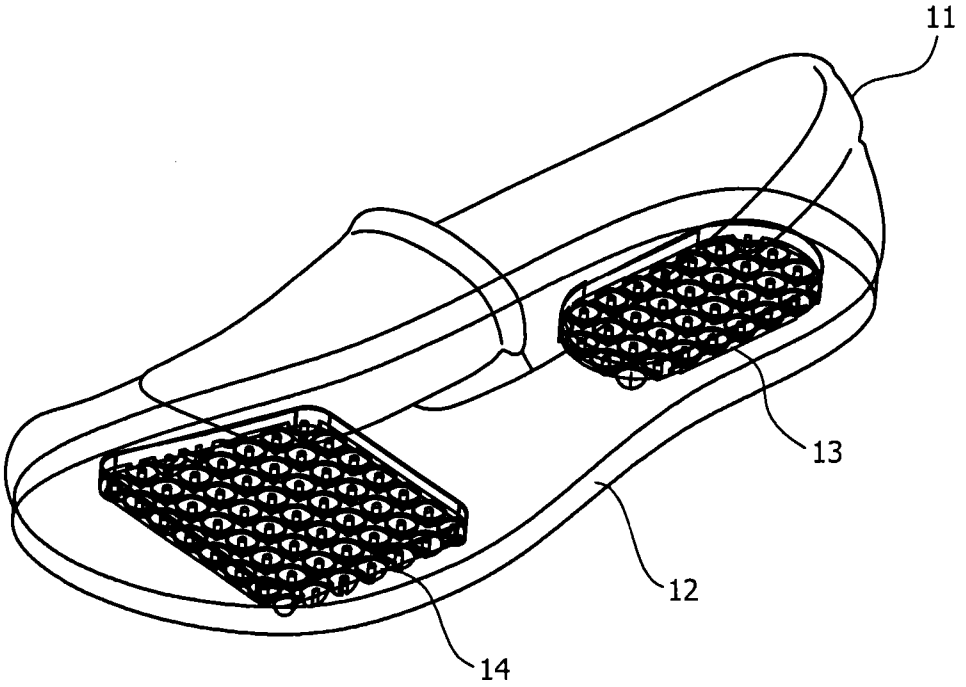


FIG. 11

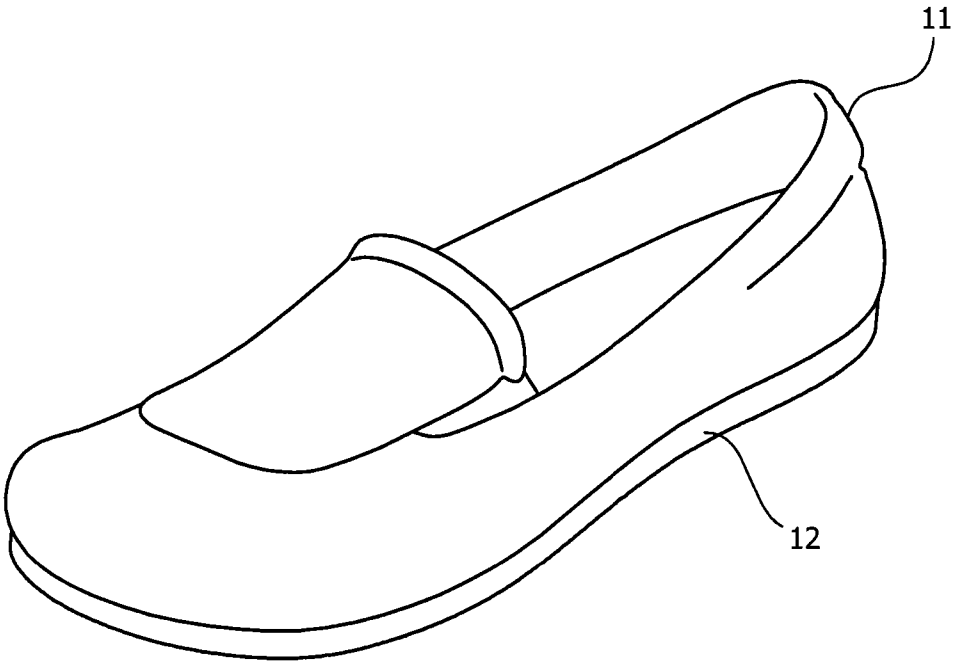


FIG. 12

SHOE INSOLE WITH FLEXIBLE INSERTS

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] This invention relates generally to footwear and, in particular, to such footwear with an insole construction to provide added softness in the heel-strike and ball areas.

[0003] 2. Description of the Prior Art

[0004] The placement of cushioning materials in the heel-strike and/or ball areas of footwear is known in the prior art. Examples of same may be found in: U.S. Pat. Pub. No. US2006/0026867 to Polcek; U.S. Pat. Pub. Pub. No. US2003/0061733 to Karsten; U.S. Pat. No. 6,519,874 to Dean; U.S. Pat. No. 6,301,805 to Howlett, et al.; U.S. Pat. No. 6,050,001 to Ditrtrich; U.S. Pat. No. 5,933,982 to Chen; U.S. Pat. No. 5,689,902 to Juang; U.S. Pat. No. 5,517,770 to Martin, et al.; U.S. Pat. No. 5,367,791 to Gross, et al.; and, U.S. Pat. No. 4,942,679 to Brandon, et al.

The present invention represents an improvement over the prior art in terms of cushioning.

SUMMARY

[0005] The primary object of the invention is to provide cushioning at the heel-strike and ball areas of footwear.

[0006] These and other objects, features and advantages are accomplished in accordance with the teachings of the present invention, one illustrative embodiment of which comprises footwear that includes an insole provided with inserts of resilient material at the heel-strike and ball areas of the insole. The resilient material may be formed integrally with the insole. The resilient material of the inserts is made up of a smooth upper surface and a lower surface comprising a plurality of spaced-apart, downwardly-extending hemispheres. The hemispheres are spaced, in uncompressed condition, but will touch upon compression. The hemispheres have a vertical aperture that can be widened to the point where the hemisphere is completely hollow. The apertures in the hemispheres allow them to collapse into the void, dispel air, flex and spread, thus making these areas much softer to the feel. The durometer value of these heel-strike and ball areas will vary, depending on how hollow the hemispheres are. The material does not lose memory as with many cushioning foams.

BRIEF DESCRIPTION OF THE DRAWING

[0007] Other objects, features and advantages of the present invention will be apparent from the following detailed description and accompany drawing, wherein:

[0008] FIG. **1** is a front view of the flexible material used in the heel-strike and ball locations of the insole for a footwear;

[0009] FIG. **2** is a perspective view of the flexible material used in the heel-strike and ball locations of the insole;

[0010] FIG. **3** is a front view of the flexible material used in the heel-strike and ball locations of the insole, showing the cross-sectional plane B-B;

[0011] FIG. **4** is a cross-sectional view of the flexible material used in the heel-strike and ball locations of the insole, taken along the line B-B of FIG. **3**;

[0012] FIG. **5** is a front view of the flexible material used in the heel-strike location of the insole;

[0013] FIG. **6** is a perspective view of the flexible material used in the heel-strike location of the insole;

[0014] FIG. **7** is a front view of the flexible material used in the ball location of the insole;

[0015] FIG. **8** is a perspective view of the flexible material used in the ball location of the insole;

[0016] FIG. **9** shows the flexible material used in the heel-strike and ball locations aligned with the openings in the insole;

[0017] FIG. **10** shows the flexible material used in the heel-strike and ball locations located within the openings in the insole;

[0018] FIG. **11** is a transparent, perspective view of the footwear with the flexible material shown in place; and,

[0019] FIG. **12** is a perspective view of a completed footwear.

DETAILED DESCRIPTION

[0020] Referring to the drawing, there is shown footwear **11** encompassing the features of the present invention.

[0021] As best seen in FIGS. **9** and **10** the footwear **11** is seen as including an elongated, flexible insole **12**. The insole, typically, is made of fiber board as with cement constructed shoes, or of non woven material as with strobel stitched shoes and for a woman's shoe might have a thickness of 1.25 mm, but thickness varies, depending upon material.

[0022] Insole **12** is provided with inserts **13**, **14** of resilient material for insertion in cavities at the heel-strike and ball areas of the insole **12**. While shown as inserts in the drawing, more commonly the resilient material will be formed integrally with the insole **12**. The resilient material may be thermal plastic rubber, polyurethane or soft rubber, and the like.

[0023] As best seen in FIGS. **3** and **4** the resilient material of the ball area insert **14** (and the heel-strike area as well) is made up of a smooth upper surface **15** and a lower surface comprising a plurality of spaced-apart, downwardly-extending hemispheres **16**. The thickness of the inserts is on the order of 5 mm. Hemisphere spacing is on the order of 4 mm, in uncompressed condition, but the hemispheres will touch. upon compression. As illustrated, the hemispheres **16** have a vertical aperture **17**, but the aperture can be widened to the point where the hemisphere is completely hollow, having a wall thickness of no more than 2 mm.

[0024] The apertures **17** in the hemispheres **16** allow them to collapse into the void, dispel air, flex and spread, thus making these areas much softer to the feel. The durometer value of these heel-strike and ball areas will vary, depending on how hollow the hemispheres are. The material does not lose memory as with many cushioning foams. In use, the wearer's foot, upon contact with the heel-strike and ball areas, compresses the hemispheres of the resilient material. The resilient material has a dampening effect and adds softness at these heel-strike and ball areas, providing a more comfortable feel for the user.

It should be obvious that changes, additions and omissions may be made in the details and arrangement of parts without departing from the spirit and scope of the invention as hereinafter claimed.

What is claimed is:

1. An insole for use in footwear construction to provide added softness in the heel-strike and ball areas, comprising:

a flexible insole, the insole having heel-strike and ball areas;

the insole further including resilient material at the heel-strike and ball areas;

the resilient material made up of a smooth, upper surface portion and a lower portion comprising a plurality of spaced-apart, downwardly-extending, apertured hemispheres.

2. An insole for use in footwear construction to provide added softness in the heel-strike and ball areas, comprising:

a flexible insole, the insole having cavities at the heel-strike and ball areas;

the insole further including inserts of resilient material for placement within the heel-strike and ball area cavities;

the resilient material made up of a smooth, upper surface portion and a lower portion comprising a plurality of spaced-apart, downwardly-extending, apertured hemispheres.

3. An insole for use in footwear construction to provide added softness, comprising:

a flexible insole, the insole including resilient material;

the resilient material made up of a smooth, upper surface portion and a lower portion comprising a plurality of spaced-apart, downwardly-extending, apertured hemispheres.

4. The insole of claim **3** having a heel-strike area and wherein the resilient material is disposed at the heel-strike area of the insole.

5. The insole of claim **3** having a ball area and wherein the resilient material is disposed at the ball area of the insole.

6. The insole of claim **3** wherein the resilient material is disposed at the heel-strike and ball areas of the insole.

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