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(54) **SHOE SOLE HAVING HEEL CUSHIONING DEVICE**

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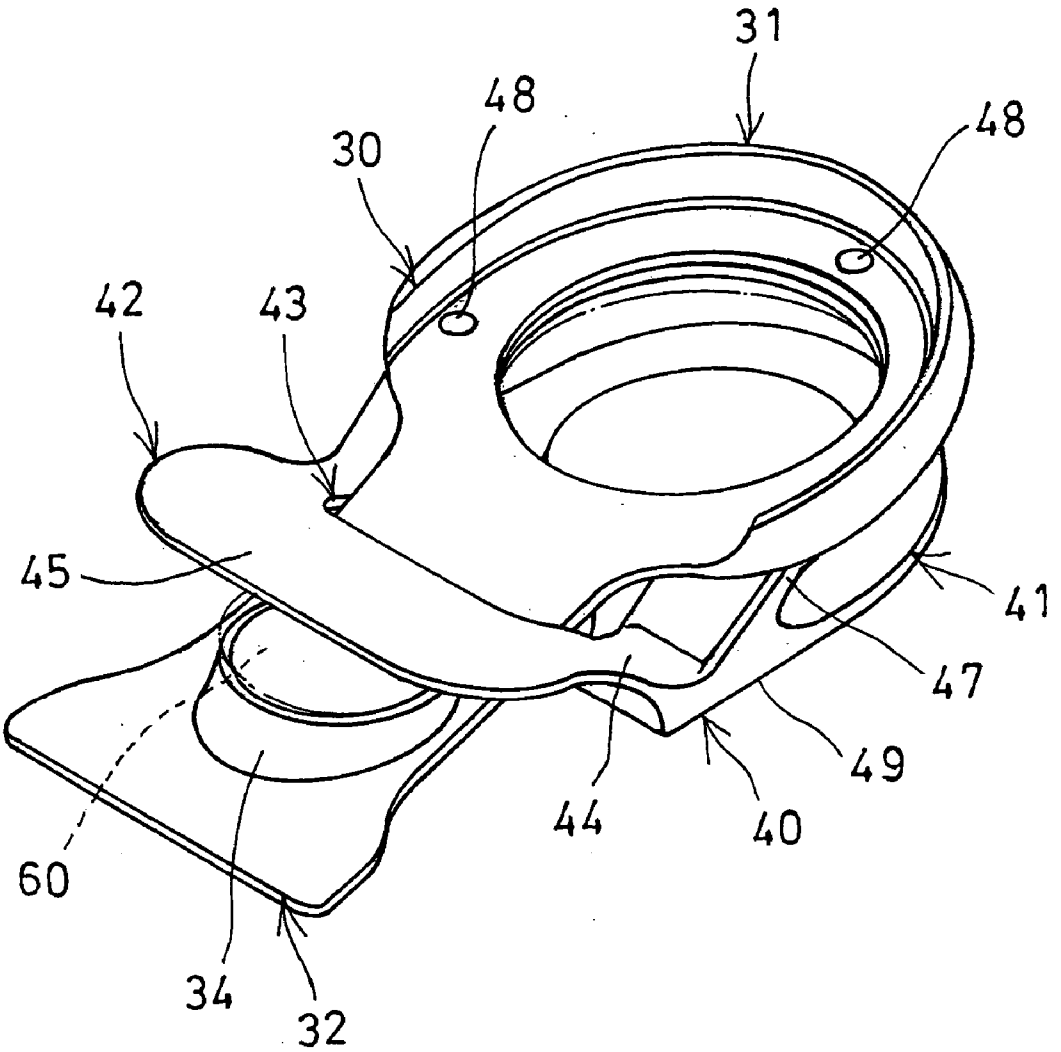
(57) **ABSTRACT**

A shoe sole includes a resilient cushioning device engaged in the heel portion for cushioning heel portions of users, the resilient cushioning device includes two frame members cross to each other to form an X-shape structure as seen from side portion and each having an inclined structure and each having a front portion and a rear portion. Each of the frame members has a portion suspended in the shoe sole, to provide a resilience to cushion and support the heel portions of the users. One of the frame members includes one or more arms to support the other frame member. One or more resilient members may further be used to cushion the frame members.



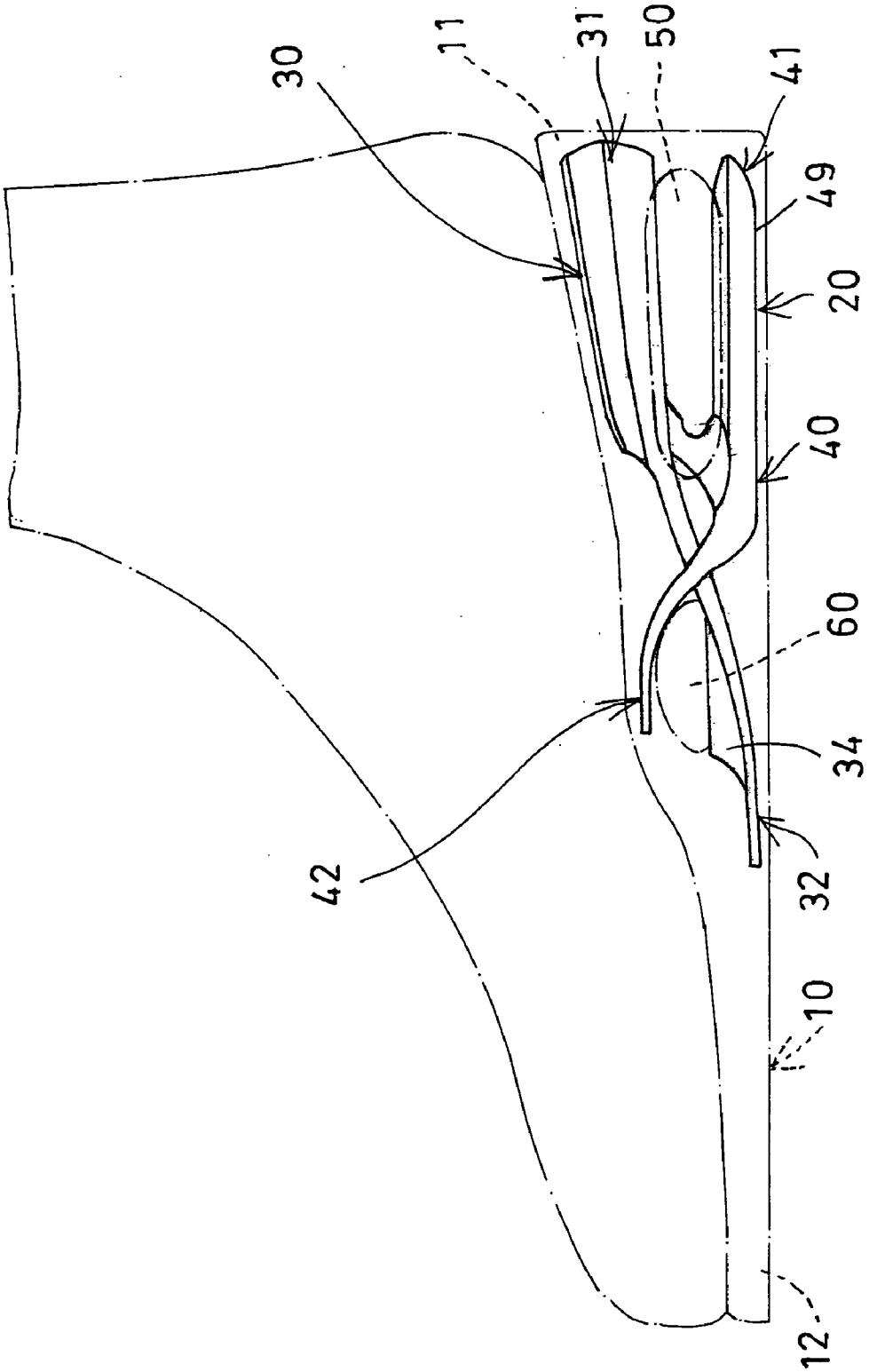
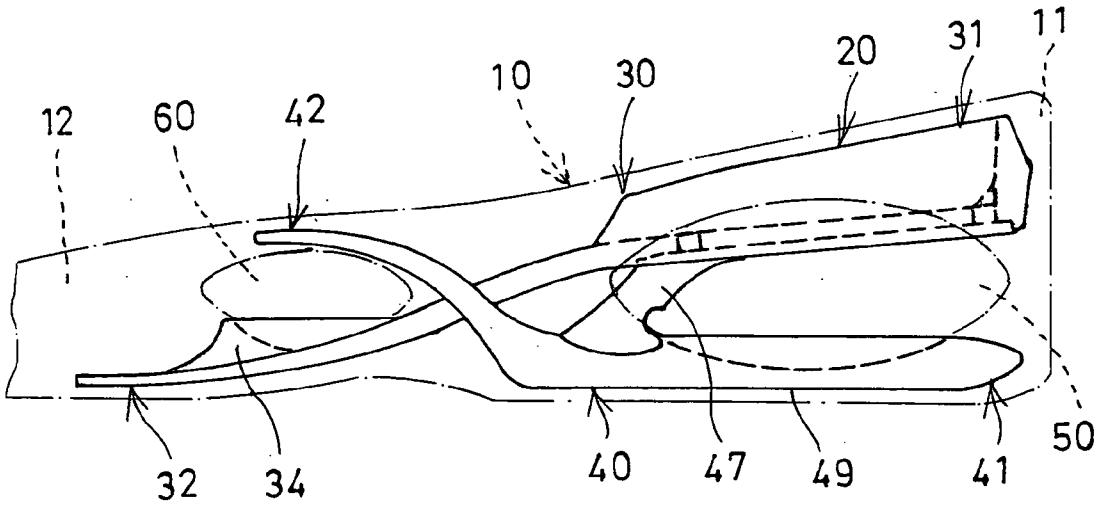


FIG. 1


12
60
42
10
30
20
31
11
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34
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49
41

FIG. 2

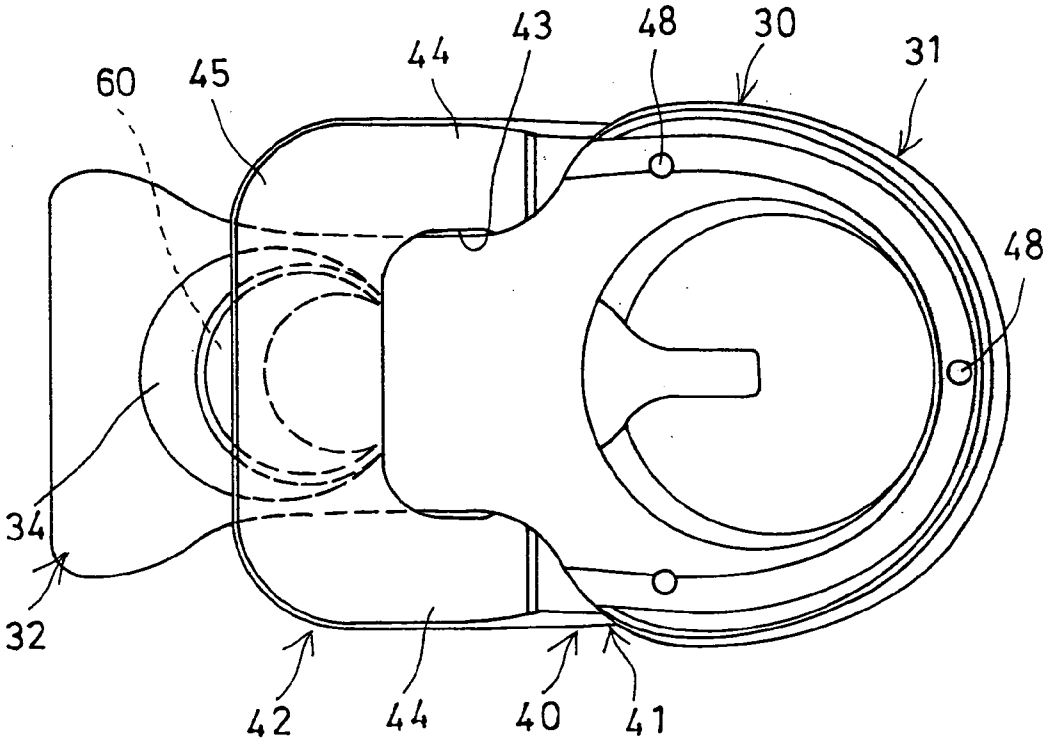
60
45
44
43
48
30
31
48
34
32
42
44
40
41

FIG. 3

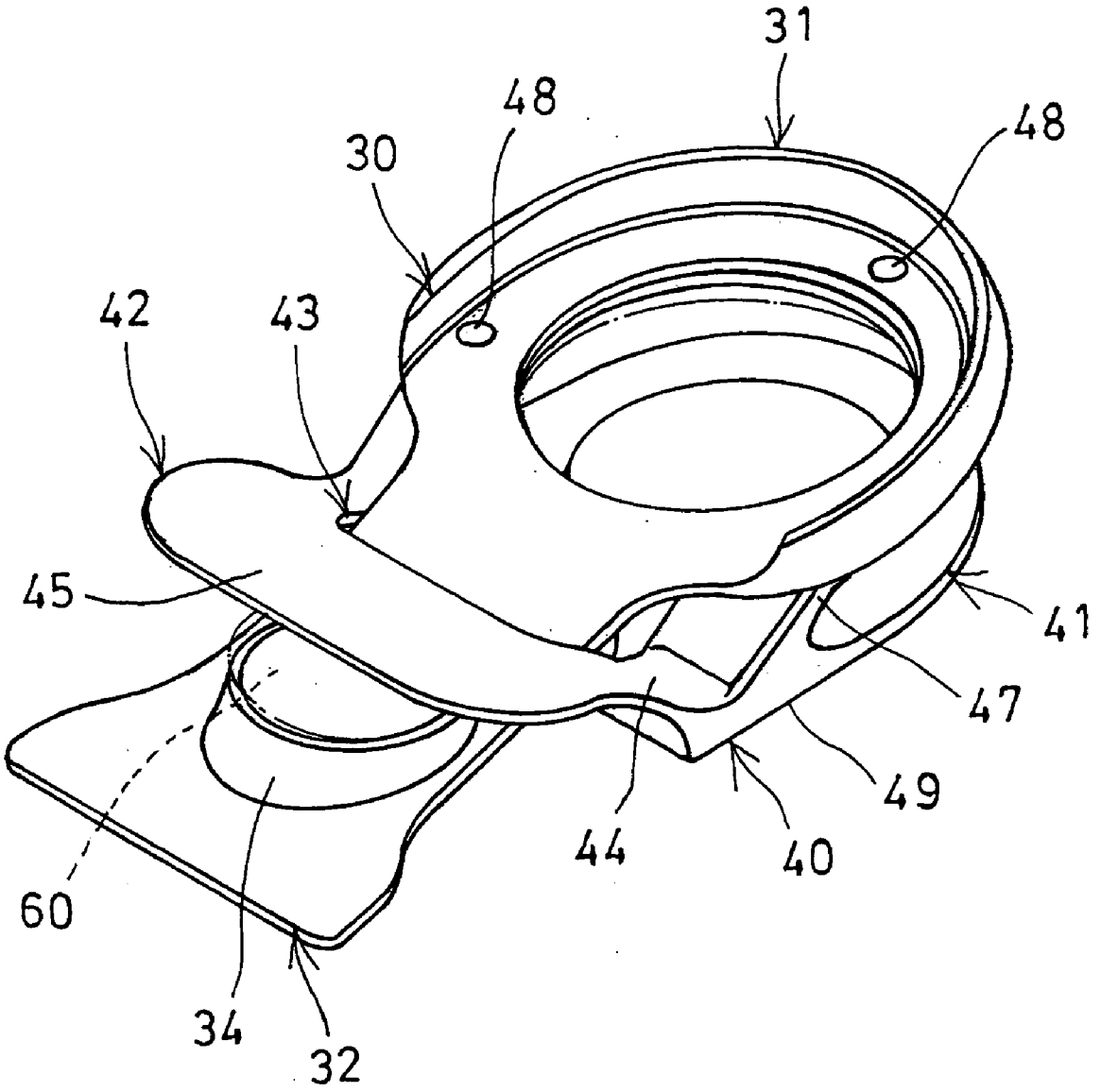

FIG. 4

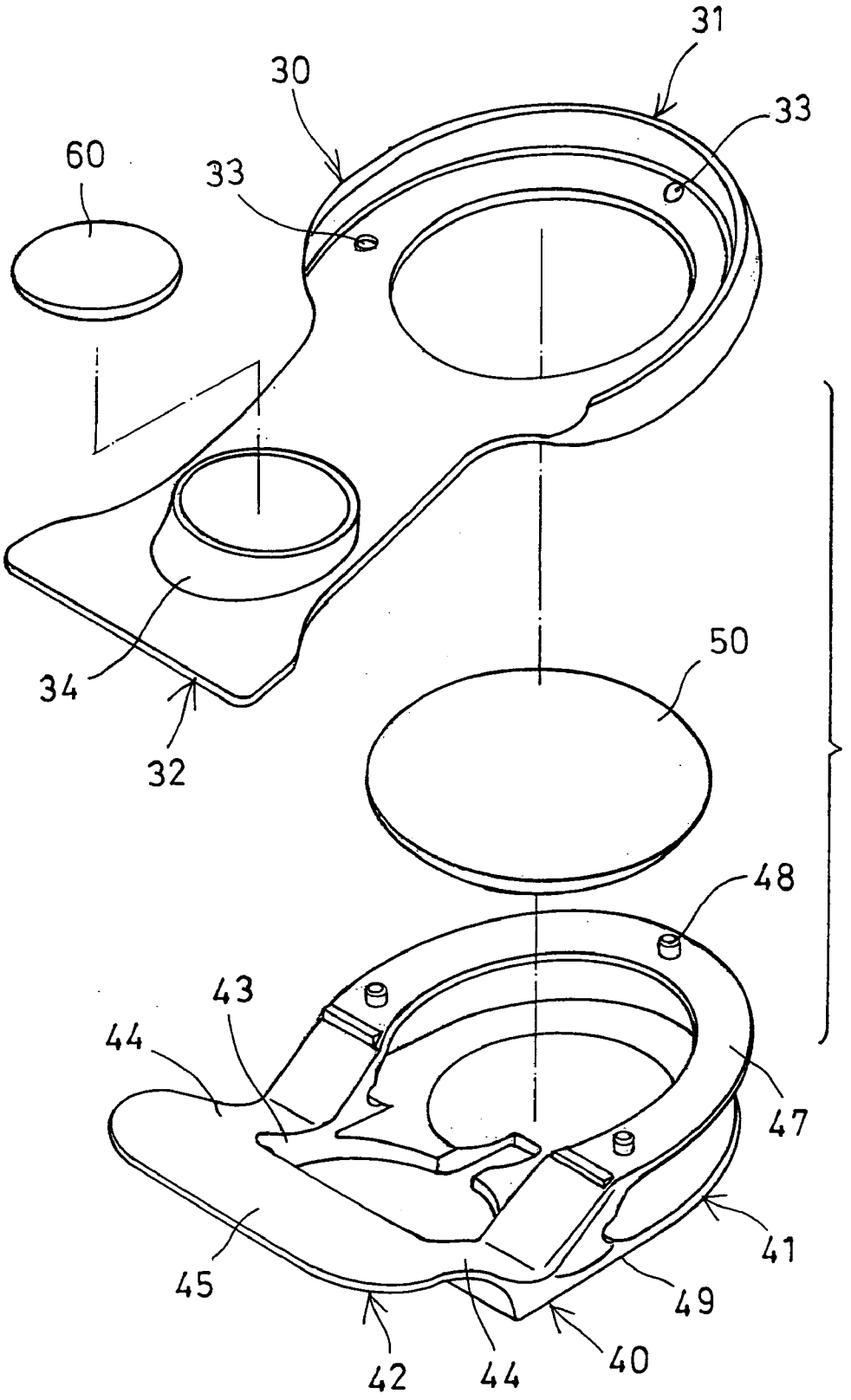

FIG. 5

SHOE SOLE HAVING HEEL CUSHIONING DEVICE

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] The present invention relates to a shoe sole, and more particularly to a shoe sole having a resilient cushioning device for the heel portion thereof.

[0003] 2. Description of the Prior Art

[0004] Typical shoe soles may comprise one or more bladders or air chambers formed in the shoe soles, to increase the resilience of the shoe soles, and to resiliently support the heel portions of the users.

[0005] However, the bladders or the air chambers formed in the shoe soles may not be used to effectively cushion the heel portions of the users.

[0006] The present invention has arisen to mitigate and/or obviate the afore-described disadvantages of the conventional shoe soles.

SUMMARY OF THE INVENTION

[0007] The primary objective of the present invention is to provide a shoe sole including a resilient cushioning device for attaching to the heel portion thereof to effectively cushion the heel portions of the users, and thus to comfortably support the heel portions of the users.

[0008] In accordance with one aspect of the invention, there is provided a shoe sole comprising a heel portion and a front portion, and a resilient cushioning device engaged in the heel portion of the shoe sole for cushioning heel portions of users, the resilient cushioning device including a first and a second frame members cross to each other to form an X-shape structure as seen from side portion of the resilient cushioning device, the first frame member and the second frame member each including an inclined structure having a front portion and a rear portion, the rear portion of the first frame member being located above the rear portion of the second frame member, and the front portion of the first frame member being located below the front portion of the second frame member, and the rear portion of the first frame member and the front portion of the second frame member being suspended in the shoe sole, and including a resilience to cushion and support the heel portions of the users.

[0009] The front portion of the second frame member includes an opening formed therein, the front portion of the first frame member is extended through the opening of the second frame member. For example, the front portion of the second frame member includes two legs and a bar to form and define the opening thereof.

[0010] The second frame member includes at least one arm extended therefrom and engaged with the rear portion of the first frame member, to support the rear portion of the first frame member. The arm of the second frame member includes at least one projection extended therefrom, the rear portion of the first frame member includes at least one cavity formed therein to receive the projection of the arm of the second frame member.

[0011] A resilient member may further be provided and engaged between the rear portions of the first frame member and the second frame member, to cushion the rear portion of the first frame member.

[0012] Another resilient member may further be provided and engaged between the front portions of the first frame member and the second frame member, to cushion the front portion of the second frame member. The front portion of the first frame member includes a seat provided thereon to receive and support the resilient member.

[0013] Further objectives and advantages of the present invention will become apparent from a careful reading of the detailed description provided hereinbelow, with appropriate reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0014] **FIG. 1** is a side schematic view of a shoe sole in accordance with the present invention;

[0015] **FIG. 2** is a partial side schematic view of the shoe sole;

[0016] **FIG. 3** is a top plan view of a resilient cushioning device for the shoe sole;

[0017] **FIG. 4** is a perspective view of the resilient cushioning device for the shoe sole; and

[0018] **FIG. 5** is an exploded view of the resilient cushioning device for the shoe sole.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0019] Referring to the drawings, and initially to **FIG. 1**, a shoe sole **10** in accordance with the present invention comprises a rear or heel portion **11** for supporting heel portions of users, a front portion **12** for supporting front foot portions of the users, and a resilient cushioning device **20** attached or engaged in the heel portion **11** of the shoe sole **10** to effectively cushion the heel portions of the users.

[0020] The resilient cushioning device **20** may be engaged into the heel portion **11** of the shoe sole **10** while molding the shoe sole **10**, and includes two frame members **30**, **40** arranged cross to each other, in order to form a substantially X-shape structure (**FIGS. 1-2**) as seen from the side portion of the resilient cushioning device **20**. The frame members **30**, **40** may be engaged into the heel portion **11** of the shoe sole **10** while molding the shoe sole **10**.

[0021] One of the frame members **40** includes an inclined structure having a rear portion **41** located below a rear portion **31** of the other frame member **30**, and a front portion **42** located above a front portion **32** of the other frame member **30**. The other frame member **30** also includes an inclined structure having the rear portion **31** located above the rear portion **41** of the frame member **40**, and the front portion **32** located below the front portion **42** of the frame member **40**.

[0022] The rear portion **41** of the frame member **40** includes a flat bottom surface **49** for being stably retained or molded in the heel portion **11** of the shoe sole **10**. The front portion **42** of the frame member **40** is preferably slightly shorter than the front portion **32** of the frame member **30**, and includes an opening **43** formed therein, and defined between two legs **44** and a bar **45**.

[0023] The front portion **32** of the frame member **30** is extended forwardly and downwardly through the opening **43** of the frame member **40**. In addition, the frame member **40** includes one or more arms or a peripheral arm **47** extended therefrom and engaged below the rear portion **31** of the frame member **30**, to further support the rear portion **31** of the frame member **30**.

[0024] The arm **47** of the frame member **40** includes one or more projections **48** extended therefrom, for engaging into one or more corresponding cavities **33** (**FIG. 5**) formed in the rear portion **31** of the frame member **30**, in order to anchor or secure the rear portion **31** of the frame member **30** to the arm **47** of the frame member **40**.

[0025] In operation, as shown in **FIGS. 1 and 2**, due to the engagement or the molding of the frame members **30**, **40** within the heel portion **11** of the shoe sole **10**, and due to the inclined structure of the frame members **30**, **40**, the rear portion **31** of the frame member **30** and the front portion **42** of the frame member **40** are suspended in the shoe sole **10** and may thus include a suspending structure, and may thus include a suitable resilience to cushion and to comfortably support the heel portions of the users.

[0026] The rear portion **31** of the frame member **30** includes an O-shaped structure, as seen from the upper portion thereof (**FIGS. 3-5**). The frame member **30** includes a socket or a seat **34** formed or provided on the front portion **32** thereof.

[0027] The resilient cushioning device **20** may further include a bladder or a resilient member **50** engaged between the rear portions **31**, **41** of the two frame members **30**, **40** (FIGS. **1-5**); and/or another bladder or a resilient member **60** engaged between the front portions **32**, **42** of the two frame members **30**, **40** (**FIGS. 1, 5**), and/or seated on the seat **34** of the frame member **30**, to further provide a cushioning force between the two frame members **30**, **40**, and thus to further cushion and comfortably support the heel portions of the users.

[0028] Accordingly, the shoe sole in accordance with the present invention includes a resilient cushioning device for attaching to the heel portion thereof to effectively cushion the heel portions of the users, and thus to comfortably support the heel portions of the users.

[0029] Although this invention has been described with a certain degree of particularity, it is to be understood that the present disclosure has been made by way of example only and that numerous changes in the detailed construction and the combination and arrangement of parts may be resorted to without departing from the spirit and scope of the invention as hereinafter claimed.

I claim:

1. A shoe sole comprising:

a heel portion and a front portion, and

a resilient cushioning device engaged in said heel portion of said shoe sole for cushioning heel portions of users,

said resilient cushioning device including a first and a second frame members cross to each other to form an X-shape structure as seen from side portion of said resilient cushioning device, said first frame member and said second frame member each including an inclined structure having a front portion and a rear portion, said rear portion of said first frame member being located above said rear portion of said second frame member, and said front portion of said first frame member being located below said front portion of said second frame member, and

said rear portion of said first frame member and said front portion of said second frame member being suspended in said shoe sole, and including a resilience to cushion and support the heel portions of the users.

2. The shoe sole as claimed in claim 1, wherein said front portion of said second frame member includes an opening formed therein, said front portion of said first frame member is extended through said opening of said second frame member.

3. The shoe sole as claimed in claim 2, wherein said front portion of said second frame member includes two legs and a bar to form and define said opening thereof.

4. The shoe sole as claimed in claim 1, wherein said second frame member includes at least one arm extended therefrom and engaged with said rear portion of said first frame member, to support said rear portion of said first frame member.

5. The shoe sole as claimed in claim 1, wherein said at least one arm of said second frame member includes at least one projection extended therefrom, said rear portion of said first frame member includes at least one cavity formed therein to receive said at least one projection of said at least one arm of said second frame member.

6. The shoe sole as claimed in claim 1 further comprising a resilient member engaged between said rear portions of said first frame member and said second frame member, to cushion said rear portion of said first frame member.

7. The shoe sole as claimed in claim 1 further comprising a resilient member engaged between said front portions of said first frame member and said second frame member, to cushion said front portion of said second frame member.

8. The shoe sole as claimed in claim 7, wherein said front portion of said first frame member includes a seat provided thereon to receive and support said resilient member.

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