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(54) **Removable walking attachment for footwear**

(57) An overshoe traction device includes a flexible strap for attaching to a shoe, and front and rear cleat members attached to the strap. The rear cleat member includes a metallic rear plate. The front cleat member includes metallic fore and aft plates, and an elastically flexible material molded to, and interconnecting, the fore and aft plates. The fore and aft plates are spaced from one another to form a gap therebetween. Cleats extend downwardly from the rear plate and each of the fore and aft plates. The cleats of the fore and aft plates extend in a pattern around a central region of the front cleat member. The elastically flexible material forms a topside of the front cleat member, and a central region of the underside of the front cleat member and defines a horizontal pivot zone between the fore and aft plates, enabling the fore and aft plates to pivot up and down relative to one another.

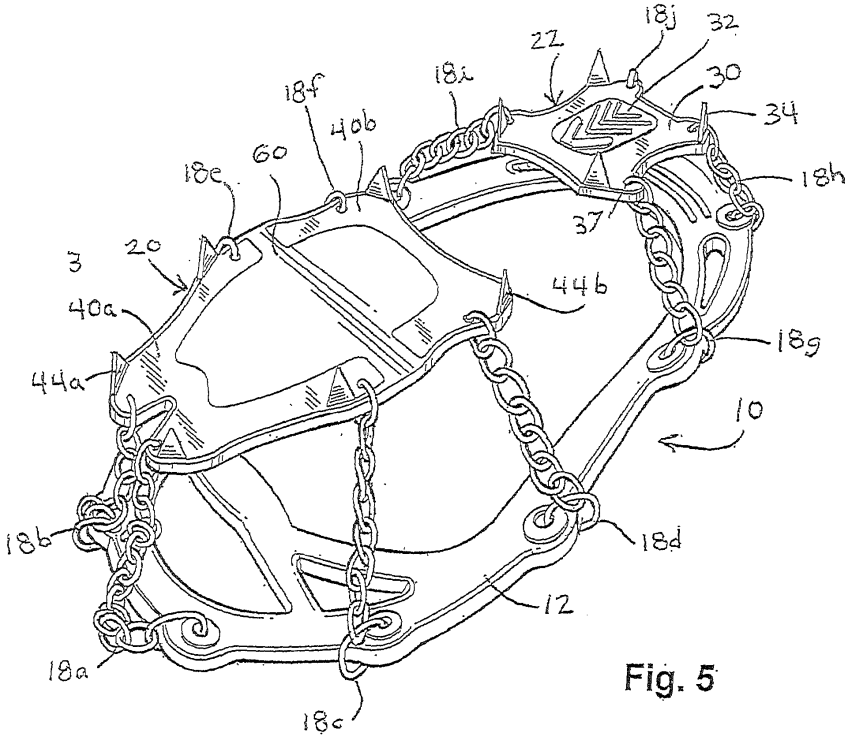

Fig. 5

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Description

BACKGROUND

[0001] This disclosure relates to an overshoe traction device, or crampon, which can be attached to walking shoes to aid in walking on slippery surfaces such as ice and snow.

[0002] Overshoe traction devices have been proposed which facilitate walking on ice and snow. Such devices may include metal cleats attached to one or more straps formed of an elastically flexible material, like rubber, that fit over a shoe, such that the cleats are held in a downwardly facing state beneath the shoe.

[0003] In some cases, the cleats are formed integrally with metal plates, and the plates may be bonded to an elastically flexible material. Among the issues facing such devices is a tendency for snow or ice to become packed along the undersides of the plates, especially near the front of the foot, which diminishes the traction provided by the device.

[0004] It would be desirable to provide an improved overshoe traction device which provides traction when walking in ice and snow.

[0005] It would also be desirable to provide an improved overshoe traction device which resists the packing of snow and ice on the underside thereof.

SUMMARY

[0006] An overshoe traction device comprises an elastically flexible strap configured to be attached over a shoe; and a front cleat member and a rear cleat member attached to the strap and adapted to be disposed beneath a shoe when the strap is attached thereto. The front cleat member is disposed ahead of the rear cleat member and spaced therefrom. The rear cleat member includes at least one rear plate formed of a rigid material, with rear cleat elements extending downwardly from an underside of the rear plate The front cleat member includes a fore plate, an aft plate, and an elastically flexible material molded to, and interconnecting, the fore and aft plates. The fore and aft plates are formed of a rigid material. The aft plate includes a front edge spaced rearwardly from a rear edge of the fore plate to form a gap between the fore and aft plates. Fore and aft cleat elements extend downwardly from the underside of each of the fore and aft plates. The front edge of the aft plate includes an aft opening extending to the gap, and the rear edge of the fore plate includes a fore opening extending to the gap and facing the aft opening. The fore and aft cleat elements extend around the fore and aft openings. The elastically flexible material extends: (a) through the gap between the fore and aft plates, (b) across respective upper sides of the fore and aft plates, and (c) through the fore and aft openings. Thus, the elastically flexible material of the front cleat member forms a topside and a central region of the underside of the front cleat member and defines a horizontal pivot zone along the gap for enabling the fore and aft plates to pivot up and down relative to one another.

BRIEF DESCRIPTION OF THE DRAWINGS

[0007] Fig. 1 is a side elevational view of an overshoe traction device attached to a shoe.

[0008] Fig. 2 is a bottom perspective view of cleat plates which will become embedded in elastomeric material to form traction parts of the device.

[0009] Fig. 3 is a bottom perspective view of the cleat plates after being embedded in elastomeric material.

[0010] Fig. 4 is a view similar to Fig. 1, showing the device in use.

[0011] Fig. 5 is a bottom perspective view of the device removed from a shoe.

[0012] Fig. 6 is a top plan view of the device removed from a shoe.

[0013] Fig. 7 is a bottom plan view of the device attached to a shoe.

[0014] Fig. 8 is a bottom plan view of an alternate embodiment of the device, attached to a shoe.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

[0015] Depicted in Figs. 1-7 is a first embodiment of an overshoe traction device 10 which can be attached to walking shoes to aid in walking on ice and snow.

[0016] The device 10 includes an elastically flexible strap 12 of a generally oval shape (see Fig. 6) and adapted to fit around a user's shoe S. The strap is formed of an elastically flexible material, such as rubber, in order to be capable of being stretched over the shoe and held in place by the elastic restoring force of the material. A plurality of holes 14 is formed around the strap which contain metal grommets 16. Attached to respective grommets are elongated flexible connectors, such as metal chains 18a-j (see Fig. 7). Six of the chains 18a-f are attached within a front half of the strap, and the remaining four chains 18g-j are attached within a rear half of the strap.

[0017] The front chains 18a-f are connected to a front cleat member 20, and the rear chains 18g-j are connected to a rear cleat member 22 which is spaced rearwardly from the front cleat member. The chains 18a and 18b extend from a front side of the strap; the chains 18i and 18h extend from a rear side of the strap; the remaining chains extend from either of two sides of the strap. The front and rear cleat members 20, 22 are not directly connected to one another, but rather are indirectly interconnected through the strap 12. Thus, the front and rear cleat members are freely movable relative to the strap and to one another in a horizontal plane when being worn. When the device is worn, the cleat members are arranged to be disposed beneath the user's shoe S.

[0018] The rear cleat member 22 includes a rear plate

30 and an elastically flexible material 32 attached thereto. The rear plate 30 can be formed of a relatively stiff material, such as aluminum or hardened steel, for example, and portions of the outer edge of the plate are bent downwardly and sharpened to form pointed rear cleats 34. The rear plate 30 is shown as being of generally rectangular shape, and the cleats 34 are formed at each of respective four corners of the plate. The plate could be of other suitable shapes, and any number of cleats could be provided. The rear plate forms a generally centrally disposed rear opening 36 extending therethrough, and the rear cleats 34 extend in a pattern around that rear opening. The cleats need not be disposed at the outer edge of the rear plate, but rather cleats 34' could be disposed slightly inwardly therefrom (shown in Fig. 8), as long as they extend around the rear opening 36.

[0019] The elastically flexible material 32, such as thermoplastic rubber (TPR), for example, is preferably directly molded to the rear plate 30 so that a portion 32a thereof forms a layer overlying extending across an upper surface of the rear plate (see Fig. 6). Another portion 32b covers a side edge 41 of the plate (see Fig. 3). Still another portion 32c extends through the rear opening 36, and slightly downwardly therebeyond, to form an underside of the rear cleat member which could be smooth or formed with a ridge pattern, as shown. Through-holes 37 extend through the rear plate and the elastically flexible material 32 for connection with respective chains 18g-j.

[0020] The front cleat member 20 includes a pair of front plates, i.e., a fore plate 40a and an aft plate 40b, and an elastically flexible material 42 attached to both of the front plates 40a, 40b. The plates 40a, 40b can be formed of any suitable rigid material, such as aluminum for example, and portions of the outer edge of the fore plate are bent downwardly and sharpened to form pointed front cleats 44a. Each of the fore and aft plates 40a, 40b is shown as being of generally U-shaped shape (see Fig. 7).

[0021] Portions of the outer edge of the aft plate are bent downwardly and sharpened to form pointed rear cleats 44b.

[0022] The cleats 44a are formed at each of respective four corners of the fore plate 40a, and the cleats 44b are formed at each of two rear corners of the aft plate 40b. The fore and aft front plates 40a, 40b could be of other suitable shapes, and any number of cleats could be provided. The cleats need not be at the outer edges of the fore and aft plates; instead, cleats 44a' and 44b' could be located slightly inwardly of those edges, as shown in Fig. 8. It will be appreciated, however, that in either embodiment, the cleats extend in a pattern around central areas of the fore and aft plates.

[0023] The aft plate 40b includes a U-shaped front edge 50 spaced rearwardly from a U-shaped rear edge 52 of the fore plate to form a gap 54 between the fore and aft plates (Fig. 2). The front edge 50 of the aft plate includes an aft opening or recess 56 extending therethrough which opens at the gap 54. The rear edge 52 of the fore plate includes a fore opening or recess 58 extending therethrough which opens at the gap and faces the aft opening 56.

[0024] The elastically flexible material 42, such as thermoplastic rubber (TPR), is molded to , and interconnects, the fore and aft plates. That material 42 includes a portion 60 which extends through the gap 54 (see Fig. 7), a portion 62 which overlies the upper sides of both of the fore and aft plates (Fig. 6), another portion 63 which covers outer edges of the fore and aft plates (see Fig. 3), and still another portion 64 which extends through, and slightly downwardly beyond, the fore and aft openings 56, 58 (see Fig. 3). Thus, the portion 62 of the material 42 forms a topside of each of the fore and aft cleat members; the portion 64 forms a generally central region of the underside of the front cleat member; and the portion 60 defines a horizontal pivot zone along the gap 54, enabling the foe and aft plates to pivot up and down relative to one another (see Fig. 4). The underside portion 64 could be smooth as shown in Fig. 5, or formed with a ridge pattern P as shown in Fig. 8.

[0025] Through-holes 70, 72 extend through respective plates 40a, 40b, and through the portions 60, 62 and 64 of the material 42, for connection with respective chains 18a-f. Those through-holes extend in a pattern around the central region of the fore and aft plates.

[0026] As a user wearing the devices walks on ice or snow, the accumulation of ice or snow in the central region of the undersides of the front and rear cleat members 20, 22 (i.e., the region around which the cleats and the holes extend), will be resisted by the presence of the portions 32c and 64 of the materials 32 and 42, respectively, to which ice/snow does not readily adhere. Furthermore, any ice/snow which manages to accumulate in the central region of the underside of the front cleat member 20 will tend to be expelled therefrom as the fore and aft plate members 40a, 40b pivot relative to one another about the pivot axis defined by the portion 60 of the material 42 (see Fig. 4), which material will protrude even farther downwardly beyond the openings 56, 58 as the fore and aft plate members pivot relative to one another, to physically push away any adhered snow off the underside of the front cleat member 20.

[0027] The portions 62 and 32a of the elastically flexible material 42 which form the topsides of the fore and aft cleat members, respectively, frictionally engage the bottom of the wearer's shoe to resist relative sliding movement therebetween as the user walks.

[0028] Although the present invention has been described in connection with preferred embodiments thereof, it will be appreciated by those skilled in the art that additions, deletions, modifications, and substitutions not specifically described may be made without departing from the spirit and scope of the invention as defined in the appended claims.

Claims

1. An overshoe traction device comprising:

an elastically flexible strap configured to be attached over a shoe; and
a front cleat member and a rear cleat member attached to the strap and adapted to be disposed beneath a shoe when the strap is attached thereto, the front cleat member disposed ahead of the rear cleat member and spaced therefrom;
wherein the rear cleat member includes at least one stiff rear plate, with rear cleat elements extending downwardly from the rear plate;

wherein the front cleat member includes:

a stiff fore plate and a stiff aft plate, the aft plate including a front edge spaced rearwardly from a rear edge of the fore plate to form a gap between the fore and aft plates, fore and aft cleat elements extending downwardly from the fore and aft plates, respectively, the fore and aft cleat elements extending in a pattern around a central region of the front cleat member, and
an elastically flexible material molded to, and interconnecting, the fore and aft plates, which elastically flexible material extends:

across respective upper sides of the fore and aft plates to form a topside of the front cleat member, and
through the gap between the fore and aft plates to define a horizontal pivot zone along the gap for enabling the fore and aft plates to pivot up and down relative to one another as the user walks.

2. The overshoe traction device according to claim 1, wherein at least one of the fore and aft plates includes an opening disposed in said central region and extending to said gap, said elastically flexible material extending through said opening.

3. The overshoe traction device according to claim 1, wherein the front edge of the aft plate includes an aft opening disposed in said central region and extending to the gap, the rear edge of the fore plate including a fore opening disposed in said central region and extending to said gap and facing the aft opening, said elastically flexible material extending through the fore and aft openings.

4. The overshoe traction device according to claim 3, wherein the elastically flexible material extends downwardly beyond the fore and aft openings.

5. The overshoe traction device according to claim 1, wherein the rear plate includes a rear opening extending through a central region of the rear plate, and an elastically flexible material molded to the rear plate and extending across an upper surface thereof and through the rear opening, wherein such elastically flexible material forms a topside of the rear cleat member and a central region of an underside of the rear cleat member, the cleats of the rear cleat member extending around in a pattern around the rear opening.

6. The overshoe traction device according to claim 5, including elongated flexible elements attaching the front and rear cleat members to the strap, some of the flexible elements attached to through-holes formed in the rear plate which extend around the rear opening, others of the flexible elements attached to through-holes formed in the fore and aft plates and extending around the central region of the front cleat member.

7. The overshoe traction device according to claim 6, wherein the elongated flexible elements comprise metal chains.

8. The overshoe traction device according to claim 6, wherein the front and rear cleat members are attached to one another only indirectly through the strap, wherein the front and rear cleat members are relatively movable relative to the strap and to each other in a horizontal plane.

9. The overshoe traction device according to claim 1, wherein the rear cleats are formed at an outer edge of the rear plate, the fore cleats are formed at an outer edge of the fore plate, and the aft cleats are formed at an outer edge of the aft plate.

10. The overshoe traction device according to claim 1, wherein the cleats of the fore plate, the aft plate, and the rear plate are spaced inwardly from respective outer edges thereof.

11. The overshoe traction device according to claim 1, wherein the elastically flexible material comprises thermoplastic rubber.

12. The overshoe traction device according to claim 1, wherein the rear plate, the aft plate and the fore plate comprise metal.

13. The overshoe traction device according to claim 1, wherein the rear cleats comprise downwardly bent and sharpened portions of the rear plate; the fore cleats comprise downwardly bent and sharpened portions of the fore plate, and the aft cleats comprise downwardly bent and sharpened portions of the aft plate.

14. An overshoe traction device comprising:

an elastically flexible strap configured to be attached over a shoe; and

a front cleat member and a rear cleat member attached to the strap by elongated flexible elements and adapted to be disposed beneath a shoe when the strap is attached thereto, the front cleat member disposed ahead of the rear cleat member and spaced therefrom;

wherein the rear cleat member includes at least one metallic rear plate, with portions thereof being bent and sharpened to form pointed rear cleat elements extending downwardly from the rear plate, wherein the rear plate includes a rear opening extending through a central region of the rear plate, and an elastically flexible material molded to the rear plate and extending across an upper surface thereof and through the rear opening,

wherein such elastically flexible material forms a topside of the rear cleat member and a central region of an underside of the rear cleat member, the cleats of the rear cleat member extending around the rear opening.

wherein the front cleat member includes:

a metallic fore plate and a metallic aft plate, the aft plate including a front edge spaced rearwardly from a rear edge of the fore plate to form a gap between the fore and aft plates, portions of the fore and aft plates being bent and sharpened to form fore and aft pointed cleat elements extending downwardly from the fore and aft plates, the front edge of the aft plate including an aft opening extending to the gap, and the rear edge of the fore plate including a fore opening extending to the gap and facing the aft opening, the fore and aft cleat elements extending around the fore and aft openings, and

an elastically flexible material molded to, and interconnecting, the fore and aft plates, which elastically flexible material extends:

across respective upper sides of the fore and aft plates to form a topside of the front cleat member,

through the fore and aft openings to form a central region of the underside of the front cleat member, and

through the gap between the fore and aft plates to define a horizontal pivot zone along the gap for enabling the fore and aft plates to pivot up and down relative to one another as the user walks.

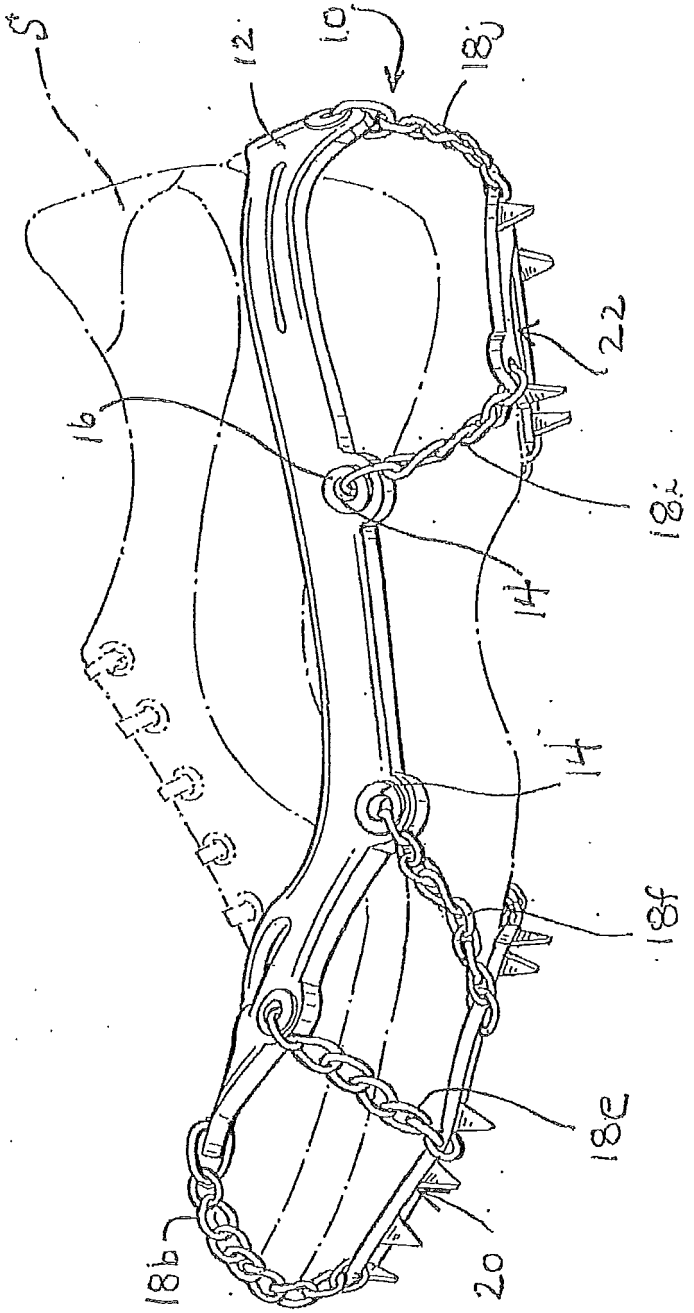

Fig. 1

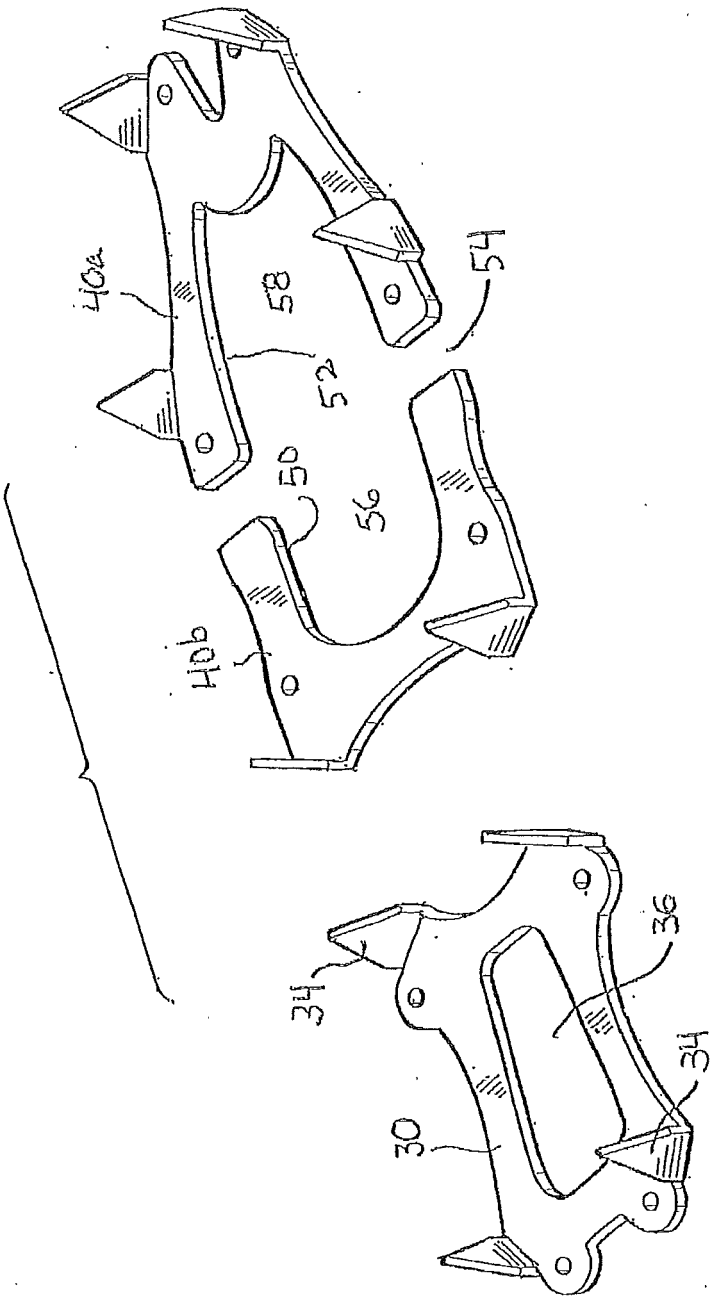

Fig. 2

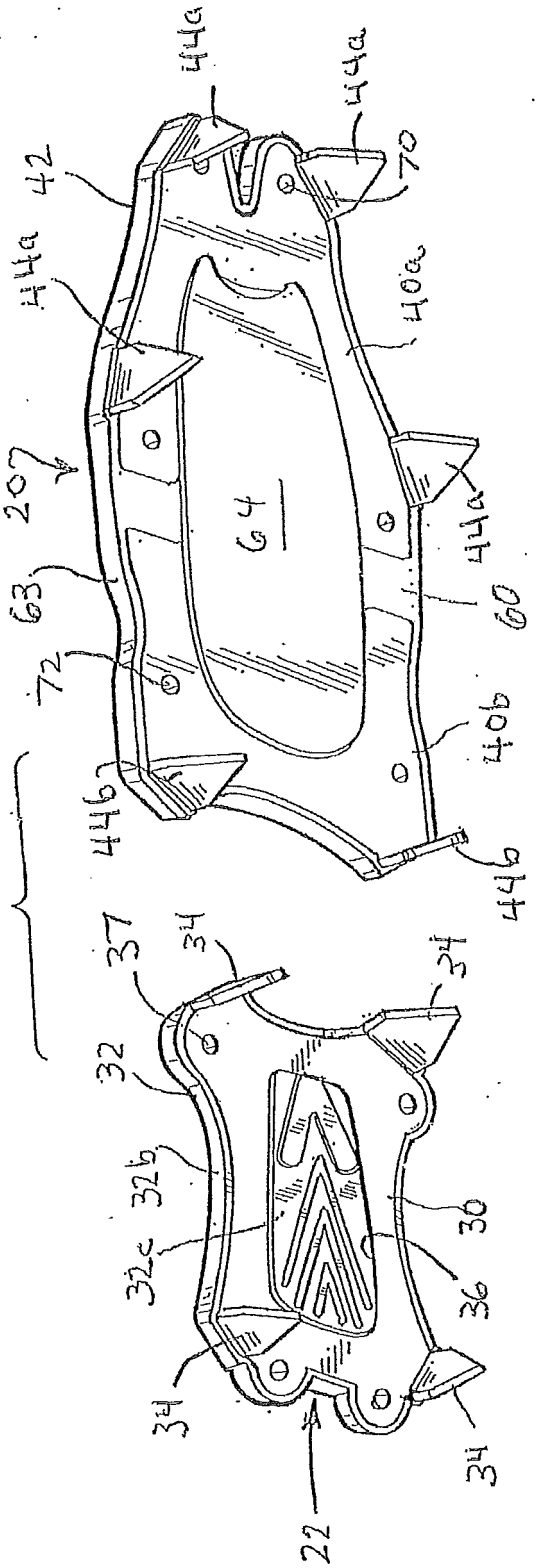
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Fig. 3

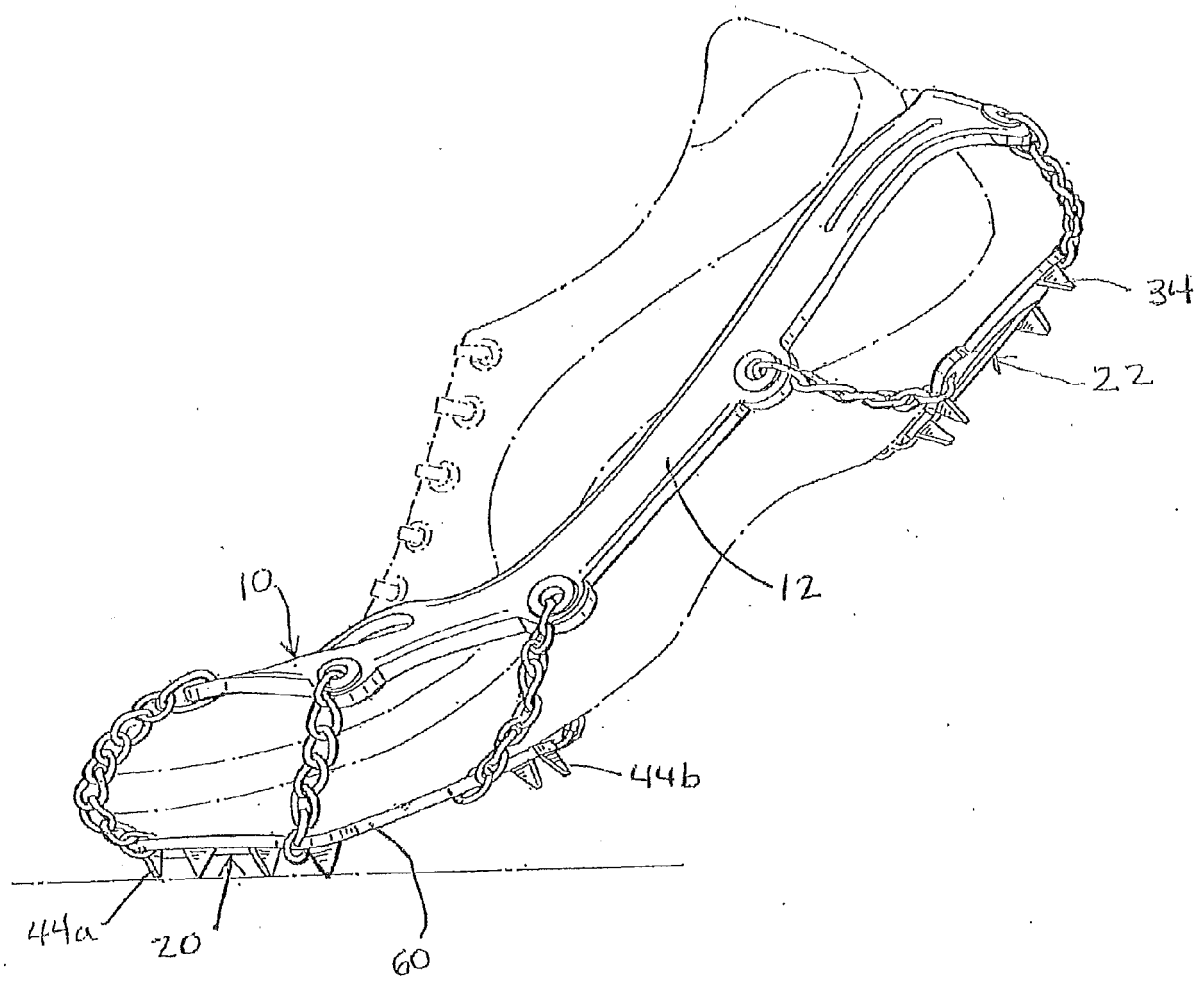

Fig. 4

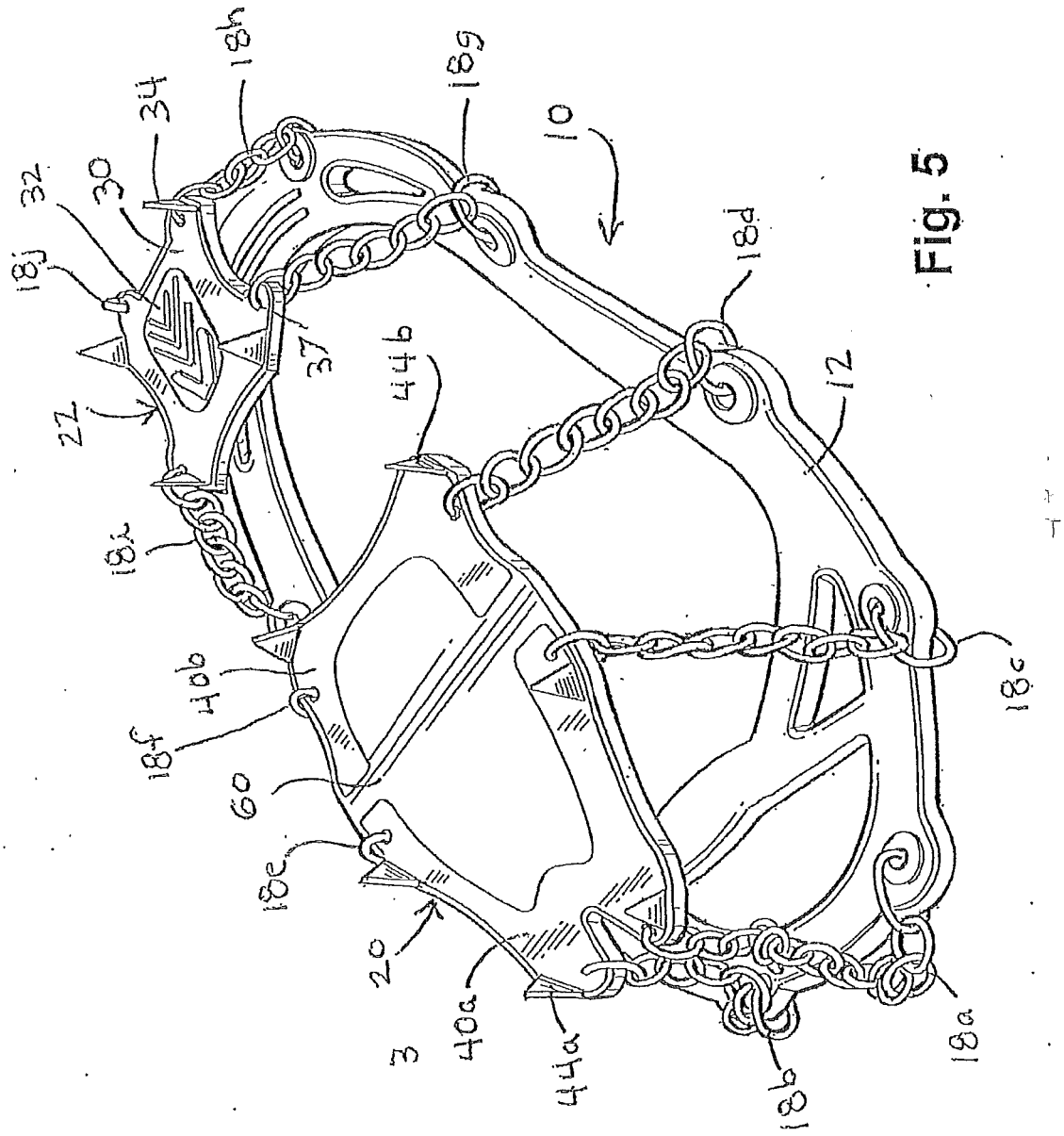
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Fig. 5

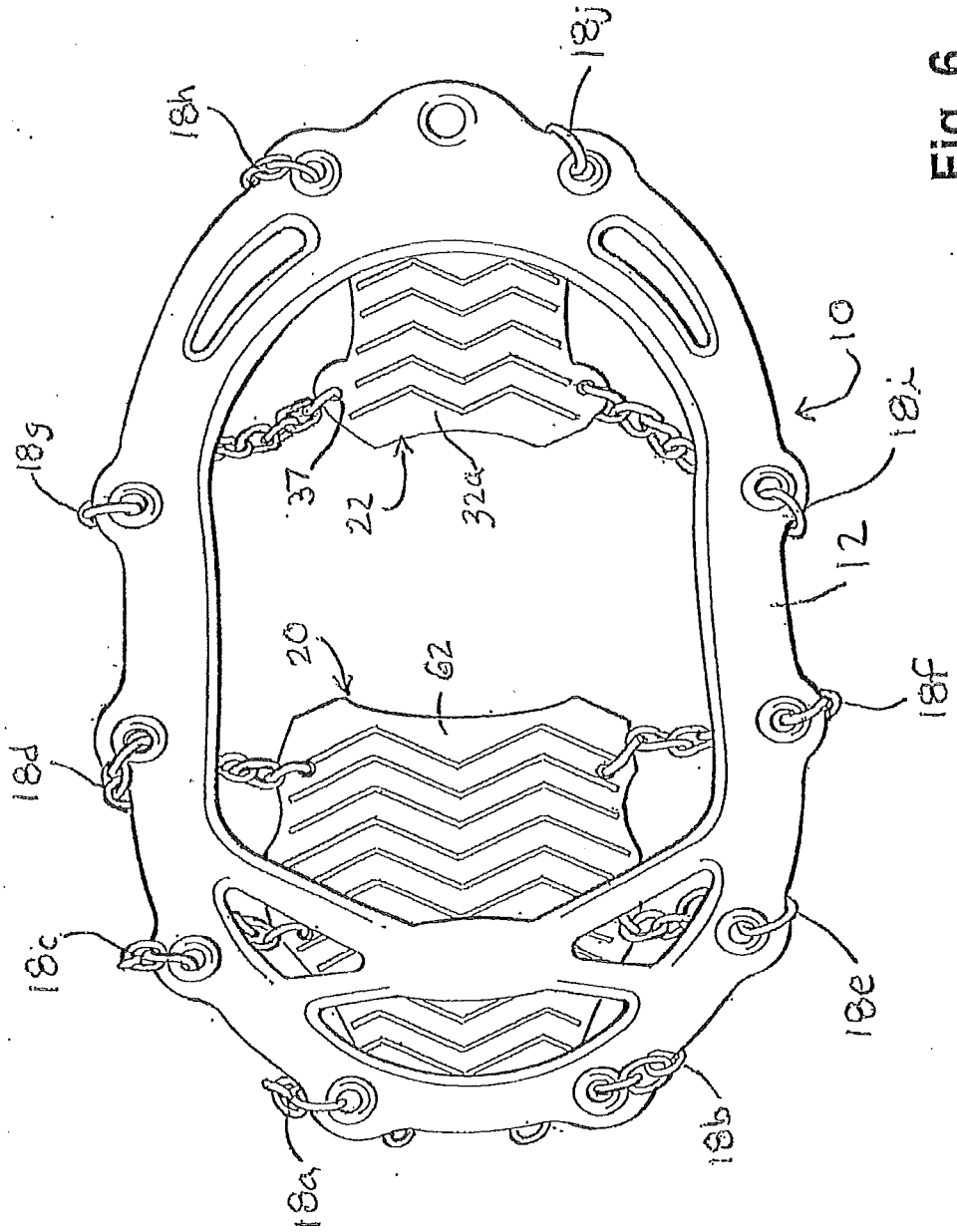

Fig. 6

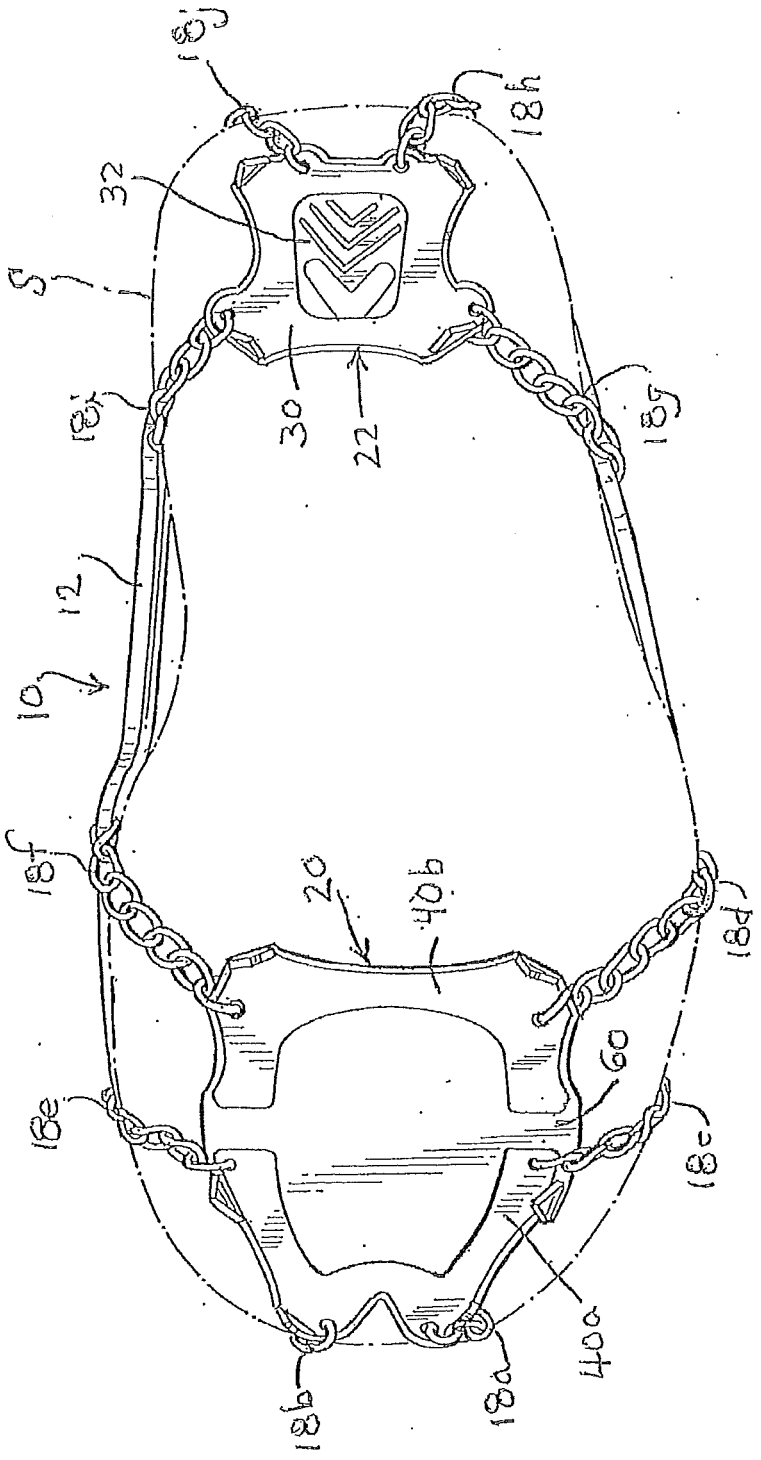
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Fig. 7

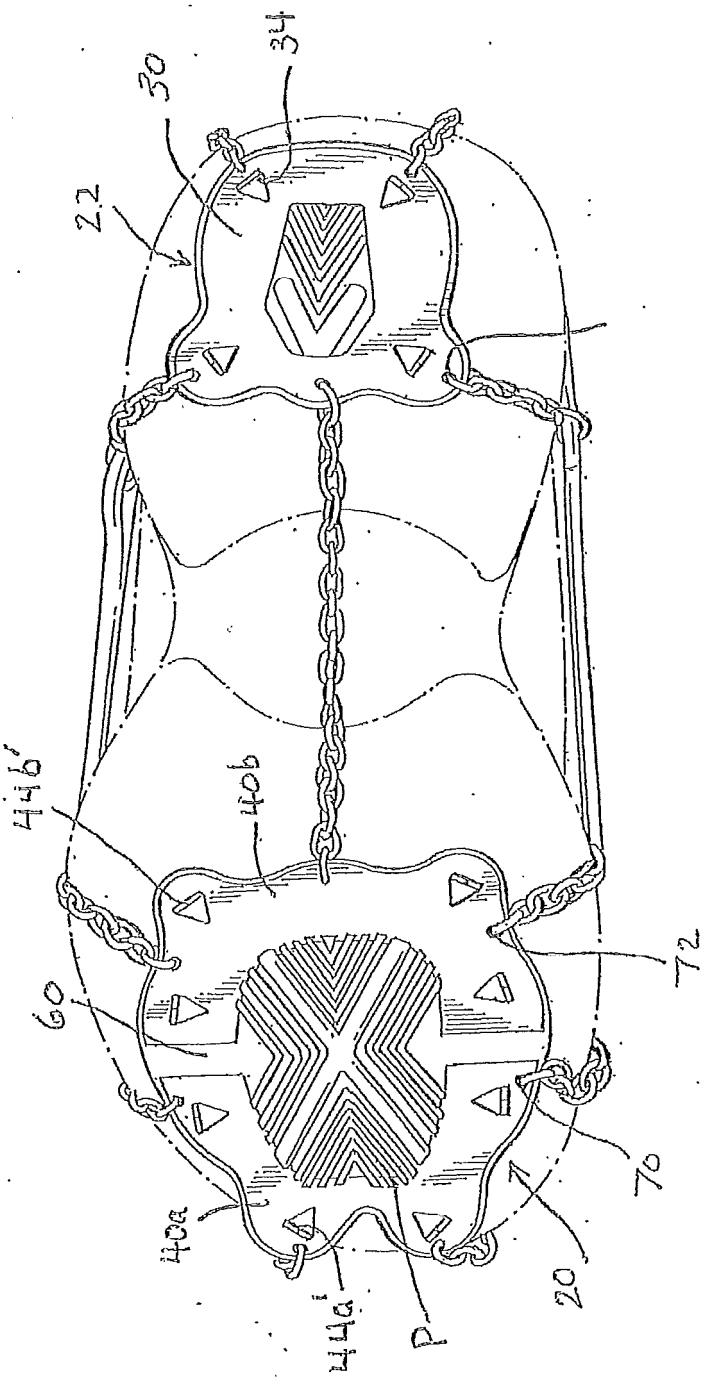

Fig. 8