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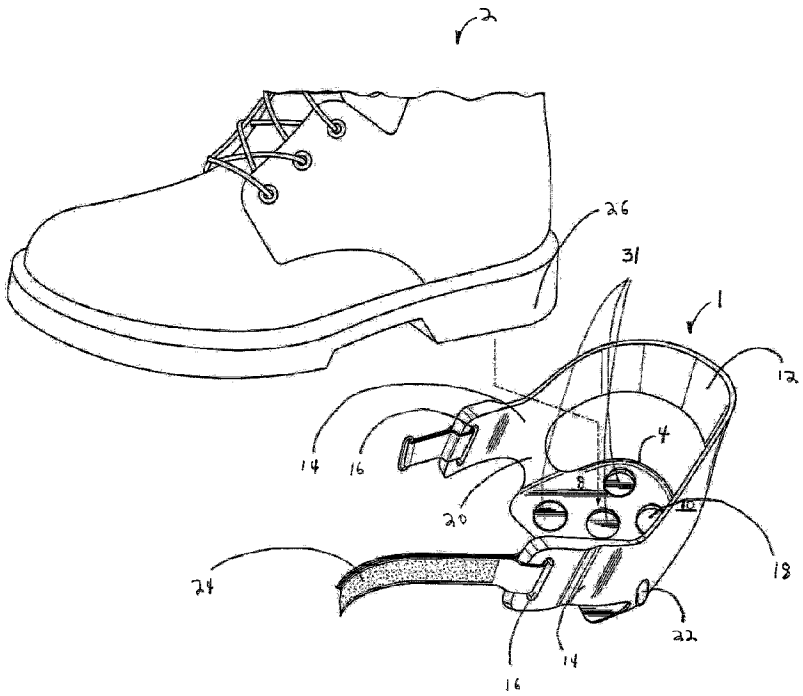
(54) Title: HEEL TRACTION DEVICE



(57) Abrégé/Abstract:
A heel traction device for attachment to a heel of a shoe or a boot comprises a traction platform formed of a flexible rubber material. The traction platform has a first face for contacting a ground surface and a second face for attachment to the heel of the shoe or boot. The traction platform defines a plurality of openings fomied therethrough for receiving a traction element in each of said openings. A support band is connected to the traction platfonn for securing the traction platfonn to the shoe or a boot. The support band has a rear portion for attachment to a rear portion of the shoe or the boot and two opposing side portions for attachment to side portions of the shoe or the boot. Each of the side portions define a slot formed therethrough for receiving a strap.

ABSTRACT

A heel traction device for attachment to a heel of a shoe or a boot comprises a traction platform formed of a flexible rubber material. The traction platform has a first face for contacting a ground surface and a second face for attachment to the heel of the shoe or boot. The traction platform defines a plurality of openings formed therethrough for receiving a traction element in each of said openings. A support band is connected to the traction platform for securing the traction platform to the shoe or a boot. The support band has a rear portion for attachment to a rear portion of the shoe or the boot and two opposing side portions for attachment to side portions of the shoe or the boot. Each of the side portions define a slot formed therethrough for receiving a strap.

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HEEL TRACTION DEVICE

Field of the Disclosure

The present disclosure is directed to a heel traction device that provides anti-slip protection to footwear such as shoes and boots.

Background and Summary of the Disclosure

Traction devices provide protection against slipping on surfaces having a low co-efficient of kinetic friction such as ice, snow and other wet surfaces. It is often dangerous walking, running and working in environments having snow and ice on the surface. Such activities can involve carrying heavy objects where one's vision is at least partially obscured.

Traction devices with spikes exist that attach to footwear. However, such existing traction devices are insufficiently flexible to allow the user to walk or run efficiently and comfortably. In addition, this lack of flexibility results in an inefficient contact of the traction spikes to the slippery surface thereby limiting the effectiveness of the traction device. There is therefore a need for a traction device that is flexible, and which permits efficient contact of the bottom surface of the traction device with the ground surface when coupled to a user's footwear.

The present disclosure is directed to a flexible heel traction device which is configured to attach to the heel of an item of footwear such as a shoe or boot. The heel traction device as attached to the heel of a shoe or boot has traction elements which are preferably spikes as part of a spike assembly that engage the ground to provide improved traction. The flexibility of the heel traction device and the inclusion of a separate Velcro strap that is received in slots formed in the heel traction device permits the traction elements to contact and grip the ground efficiently in harnessing the user's weight transfer.

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According to one aspect of the present disclosure, there is provided a heel traction device for attachment to a heel of a shoe or a boot comprising a traction platform formed of a flexible rubber material. The traction platform has a first face for contacting a ground surface and a second face for attachment to the heel of the shoe or boot. The traction platform defines a plurality of openings formed therethrough for receiving a traction element in each of said openings. The heel traction device also has a support band connected to the traction platform for securing the traction platform to the shoe or a boot. The support band has a rear portion for attachment to a rear portion of the shoe or the boot and two opposing side portions for attachment to side portions of the shoe or the boot. Each of said side portions defining a slot formed therethrough for receiving a strap. The strap that is received in the slots is separate from the support band and is preferably a Velcro strap.

Additional features and advantages of the present invention will become apparent to those skilled in the art upon consideration of the following detailed description of the illustrative embodiments exemplifying the best mode of carrying out the invention as presently perceived.

Brief Description of the Drawings

The detailed description of the drawings particularly refers to the accompanying figures in which:

FIG. 1 is a top perspective view of a heel traction device of the present disclosure;

FIG. 2 is a side view of the heel traction device of the present disclosure as attached to a boot;

FIG. 3 is a bottom perspective view the heel traction device of the present disclosure;

FIG. 4 is a bottom view the heel traction device of the present disclosure; and

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FIG. 5 is a top view of a second face of a traction platform of the heel traction device of the present disclosure.

Detailed Description

The embodiments of the invention described herein are not intended to be exhaustive or to limit the invention to precise forms disclosed. Rather, the embodiments elected for description have been chosen to enable one skilled in the art to practice the invention.

With reference initially to Figure 1, an illustrative heel traction device 1 is illustrated with reference to a boot 2 to which the heel traction device 1 is attached at a heel region 26 of the boot 2 as illustrated in Figure 2.

The heel traction device 1 comprises a traction platform 4 having a first face 6 for contacting a ground surface as shown in Figures 3 and 4, and a second face 8 which is attachable to a bottom surface of boot 2 at the heel region 26, as discussed in more detail below. As shown in figure 1, the traction platform 4 is preferably semi-circular in shape to match the contour of the heel of the boot. However, the traction platform 4 is not limited to any particular shape and may have other shapes having different numbers of sides including pentagonal, hexagonal or a square shape. The traction platform 4 may also have a rectangular or a triangular shape in other embodiments.

The heel traction device 1 also comprises a support band 10 connected to the traction platform 4 for securing the traction platform to the shoe or a boot. The support band 10 is connected to the traction platform 4 by two web members 20. The web members 20 each preferably have a support rib 22 at a central portion thereof. The web members 20 are located close to a front end 38 of the traction platform 4. Preferably, a center of each of the web members 20 is located about 2cm from the from the front end 38 of the traction platform 4 and about 4.7cm from a rear end 40 of the traction platform 4. By positioning the web members 20 closer to the front end 38 of the traction platform 4 than to a rear end 40 of the traction platform 4, better placement of the heel of a shoe or boot onto the

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traction platform 4 is accomplished. This helps the traction platform 4 to sit in a better position when attached to the shoe or boot to ensure more effective surface contact by the spikes 28. The support band 10 has a rear portion 12 for attachment to a rear portion of the shoe or boot and two opposing side portions 14 for attachment to side portions of the shoe or the boot. A slot 16 is formed in each of the side portions 14 for receiving a strap 24. The strap 24 is preferably a Velcro strap. The strap 24 is separate from the support band 10. As such, the heel traction device 1 may be sold without a strap for later attachment to a strap.

The traction platform 4 and preferably also the support band 10 is constructed of a flexible rubber material. Preferably, the rubber material has the following composition:

Description	Weight (per Kg)
NR	25
SBR Elastomer	5
SRF774 EPDM	16
Calcium Carbonate ($CACO_3$)	8
Stearic Acid	0.3
NO#10il	5
Special pack-1	1 pack
Special pack-2	1 pack

The thickness of the traction platform is preferably about 6.5 mm. The thickness of the support band is preferably about 2.45 mm.

As shown in Figure 1, openings 18 are formed in the second face 8 for receiving a traction element in the form of a spike assembly which includes a spike 28 for gripping a ground surface which may be slippery due to the presence of ice or any other slippery substance. The openings 18 extend through the first face 6 so that the spikes may contact the ground. The spike assemblies preferably further include two interconnected, flat and circular flanges. The spike assemblies are preferably replaceable in the openings 18. The two

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interconnected, flat and circular flanges include a larger flat top flange 31 located near a surface of the second face 8 and a smaller flat lower flange 30 located near the surface of the first face 6 for housing the spike 28. The top flange and the bottom flange are preferably spaced apart by a connecting member (not shown). The spikes 28 are preferably comprised of 15% by weight of cobalt, 75% by weight of tungsten and 10% by weight of carbon.

As shown in Figures 3 and 4, the first face 6 preferably has gripping elements 32 formed thereon to provide additional traction. The gripping elements can be arranged in various different patterns in alternate embodiments.

The heel traction device is constructed according to methods known in the art such as injection molding involving the injection of a hot polymeric material into a cold mold. Preferably, the heel traction device is constructed using compression molding machines. The raw material is weighed and cut to size to fit into the mold. The temperature is carefully monitored to be consistent with the cycle time required to flow the material to all portions of the mold. Once the cycle is complete, the operator uses compressed air to cleanly lift the molded part out of the tooling by hand.

Injection molding techniques that extrude material over an existing core plate in the mold to provide a unitary construction may also be employed.

In operation, the heel traction device 1 is attached to footwear such as a boot 2 at the heel 26 as shown in Figure 2 by securing the heel traction device 1 to the boot 2 by tightening the strap 24. The flexibility of the traction platform 4 in combination with a separate strap preferably made of Velcro provides sufficient flexibility such that that the the heel traction device 1 fits comfortably and securely to the heel of a shoe or boot. This ensures that first face 6 makes direct contact with a ground surface 25 at the most efficient contact angle for gripping the slippery surface. The spikes 28 engage the ground directly at a contact angle of 90 degrees to the surface thereby imparting an efficient contact force of the spikes

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to the ground upon application of the weight of the user in order to provide an effective grip to minimize the risk of the user slipping and falling.

Although the invention has been described in detail with reference to certain preferred embodiments, variations and modifications exist within the spirit and scope of the invention as described and defined in the following claims.

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CLAIMS:

1. A heel traction device for attachment to a heel of a shoe or a boot comprising:

a traction platform formed of a flexible rubber material, the traction platform having a first face for contacting a ground surface and a second face for attachment to the heel of the shoe or boot, the traction platform defining a plurality of openings formed therethrough for receiving a traction element in each of said openings;

a support band connected to the traction platform for securing the traction platform to the shoe or a boot, the support band having a rear portion for attachment to a rear portion of the shoe or the boot and two opposing side portions for attachment to side portions of the shoe or the boot, each of said side portions defining a slot formed therethrough for receiving a strap.

2. The heel traction device of claim 1 wherein the traction elements include spikes attached to a flange wherein a separate flange accommodating a spike is received in each of said openings.

3. The heel traction device of claim 1 wherein the traction platform defines five openings.

4. The heel traction device of claim 1 wherein the support band includes two opposing flexible web members connecting the support band to the traction platform.

5. The heel traction device of claim 1 further including a strap received in the slots formed in the support band.

6. The heel traction device of claim 5 wherein the strap is a Velcro strap.

7. The heel traction device of claim 2 wherein the spikes are comprised of 15% by weight of cobalt, 75% by weight of tungsten and 10% by weight of carbon.

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8. The heel traction device of claim 1 wherein the traction platform is comprised of 25% by weight of NR, 5% by weight of SBR elastomer, 16 % SRF774 EPDM, 0.3% by weight stearic acid and 10 % by weight NO#10il.

9. The heel traction device of claim 1 wherein the support band is formed of a flexible rubber material.

10. The heel traction device of claim 9 wherein the support band is comprised of 25% by weight of NR, 5% by weight of SBR elastomer, 16 % SRF774 EPDM, 0.3% by weight stearic acid and 10 % by weight NO#10il.

11. The heel traction device of claim 1 wherein the traction platform is semi-circular in shape.

12. The heel traction device of claim 1 wherein a thickness of the traction platform is about 6.5 mm.

13. The heel traction device of claim 1 wherein a thickness of the support band is about 2.45 mm.

14. The heel traction device of claim 1 wherein the first face includes a plurality of gripping elements.

15. The heel traction device of claim 1 wherein the flexible web members each include a support rib.

16. The heel traction device of claim 1 wherein the flexible web members are located close to a front end of the traction platform.

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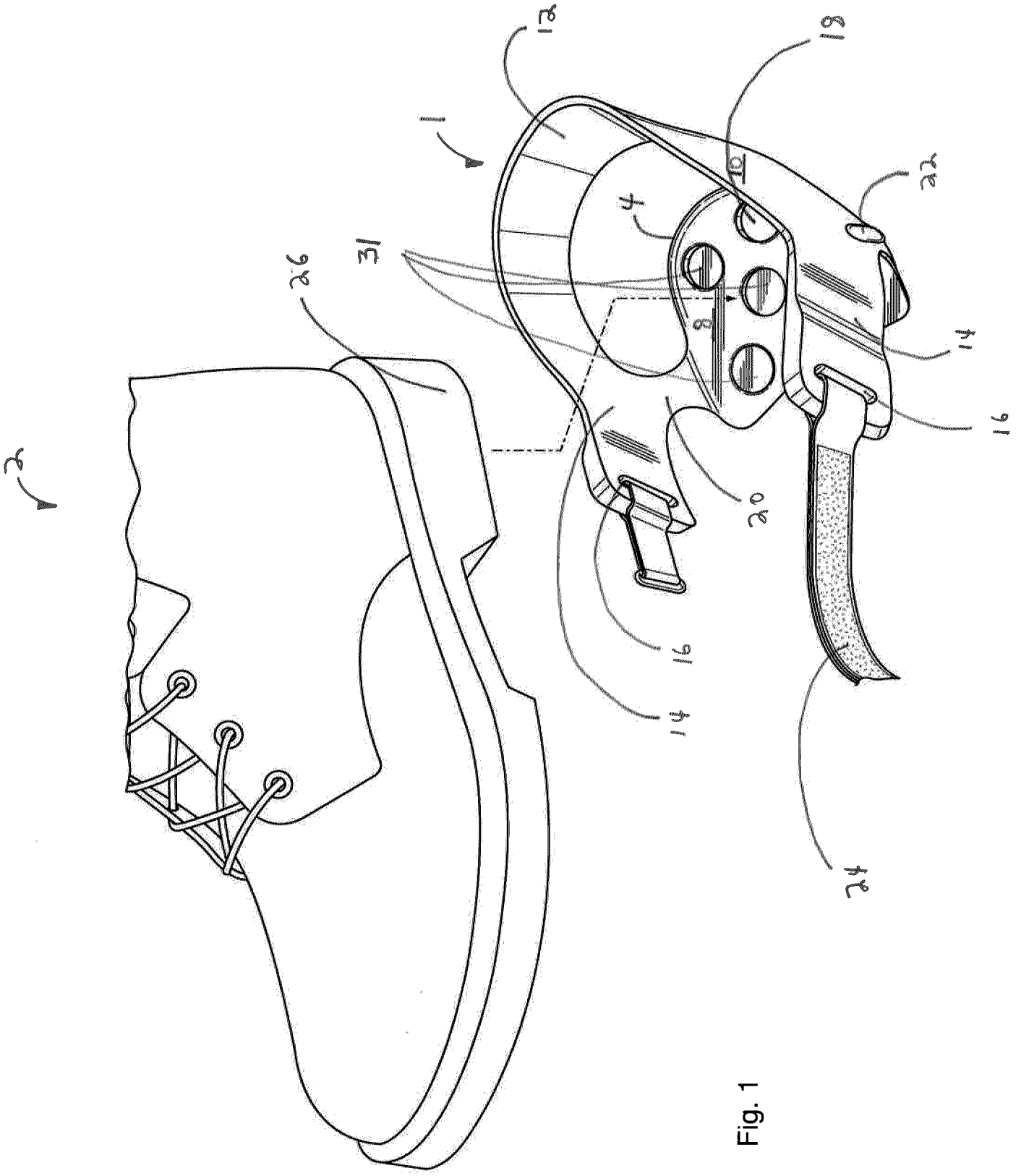

Fig. 1

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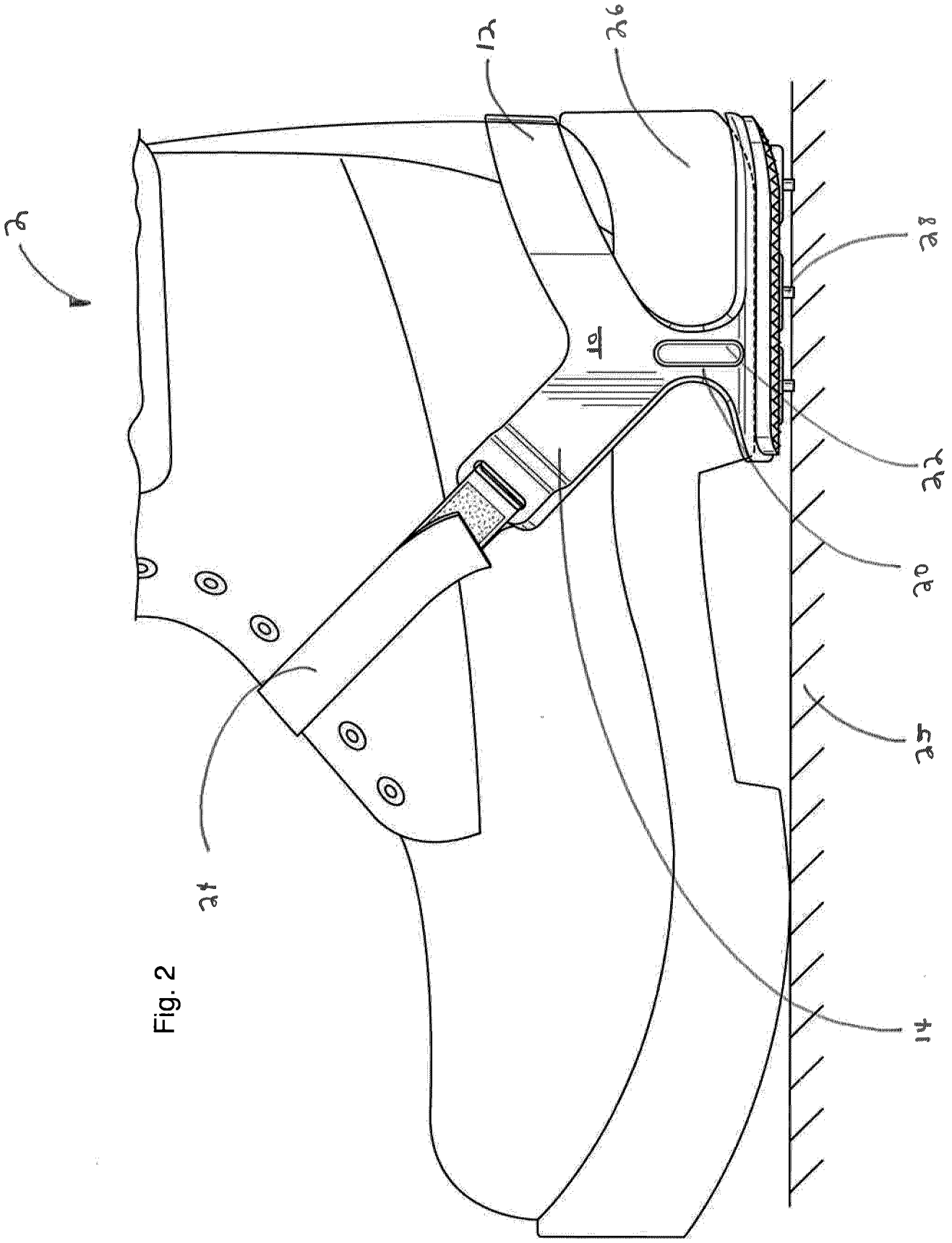

Fig. 2

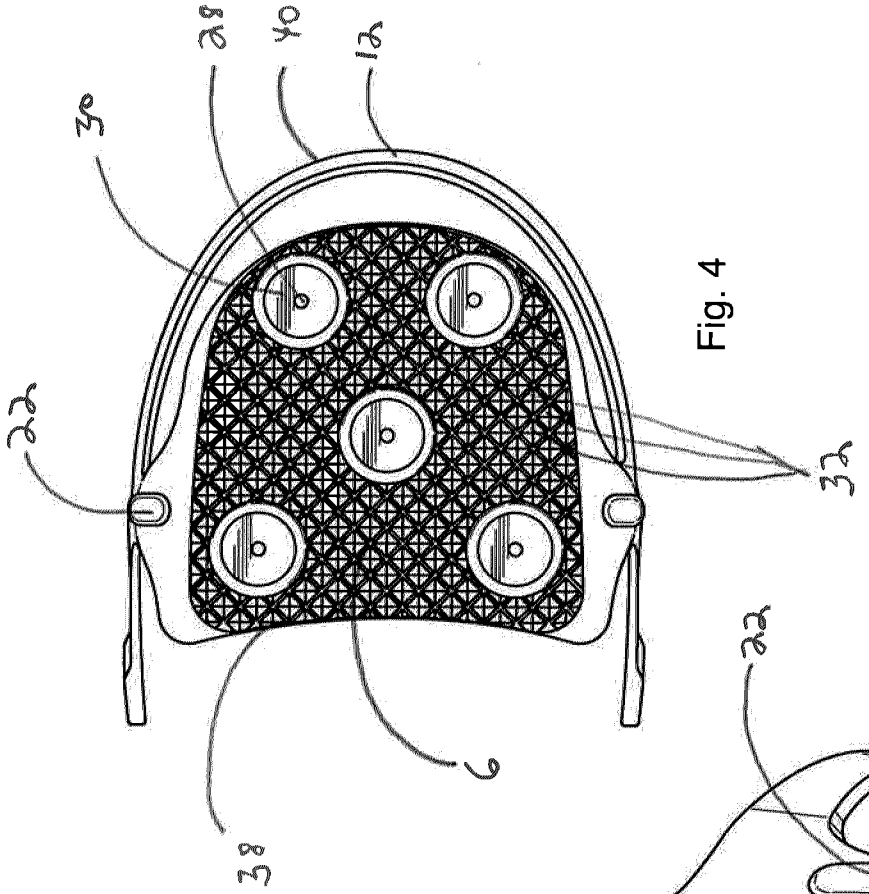

Fig. 4

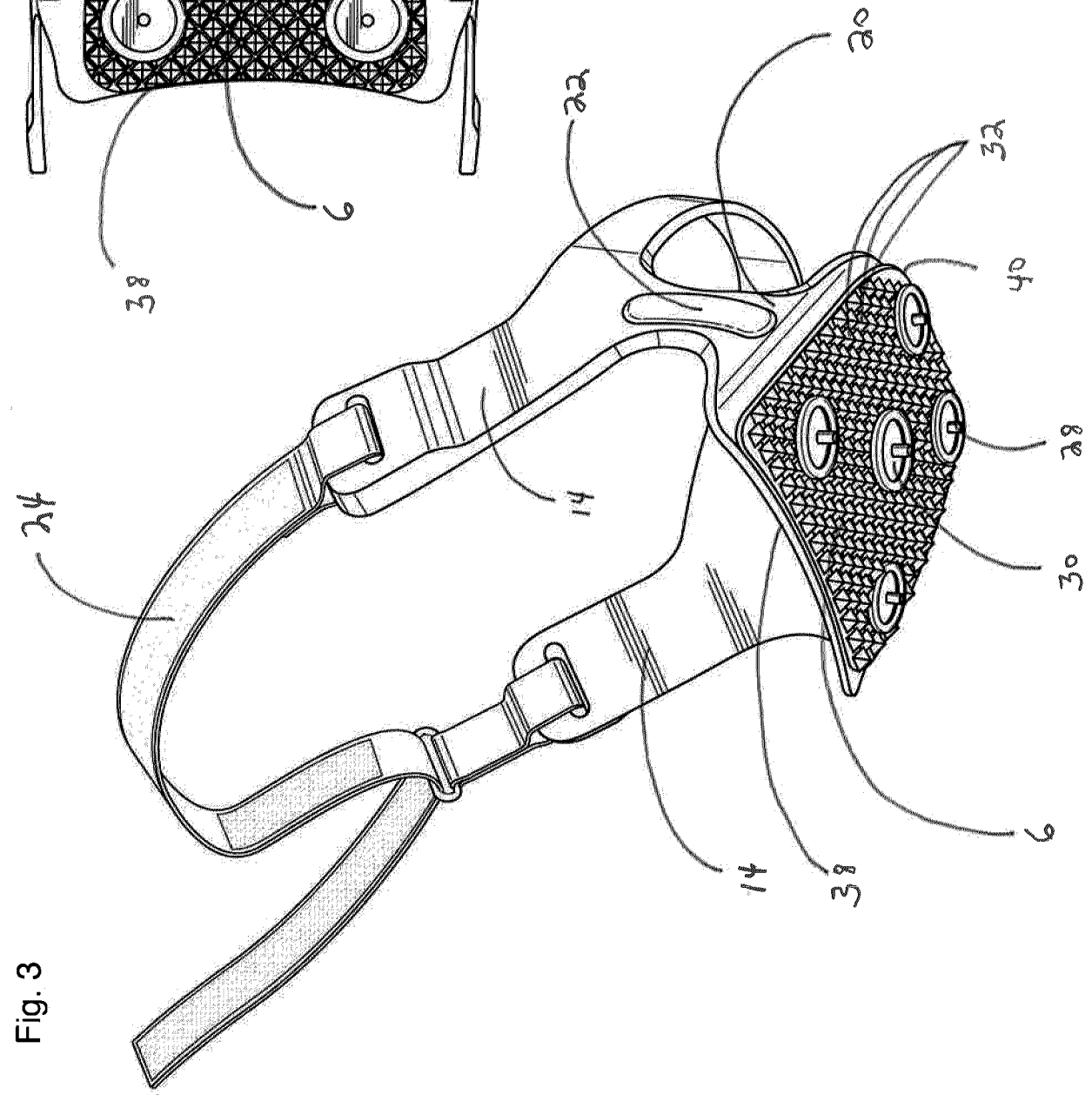

Fig. 3

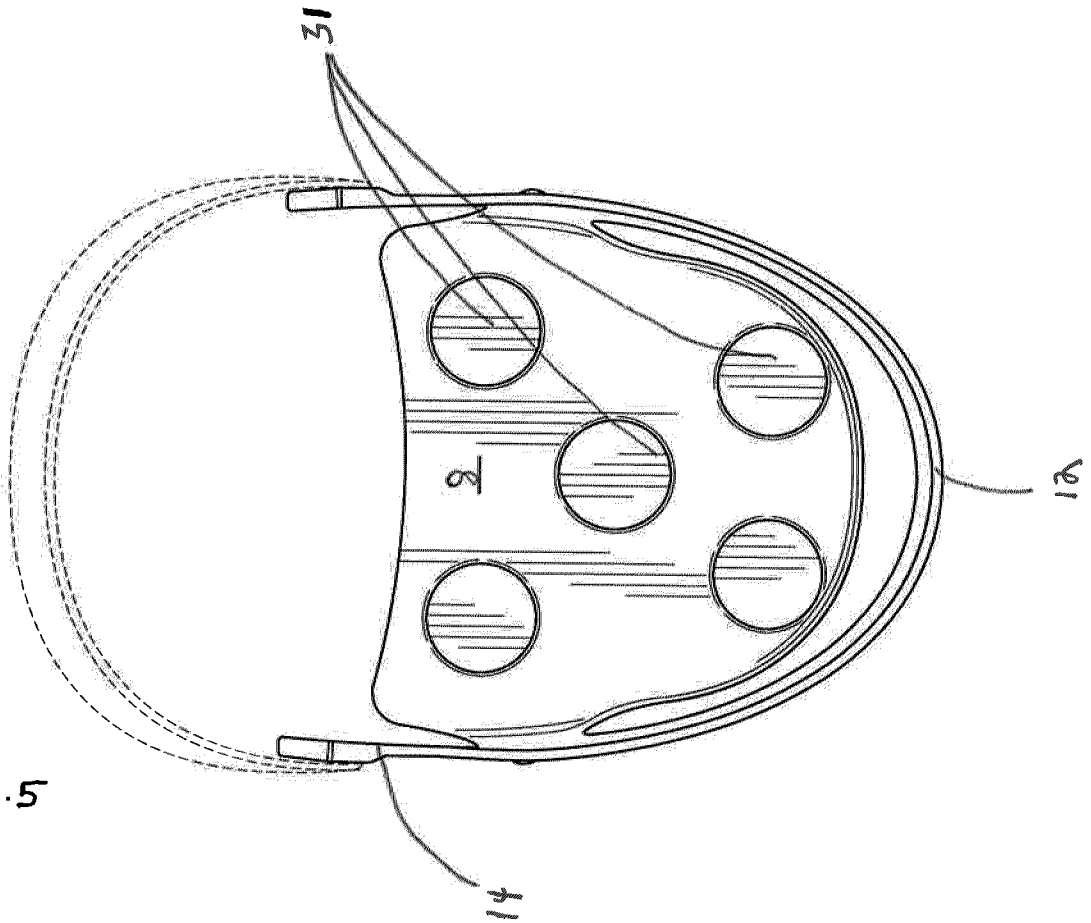

Fig. 5

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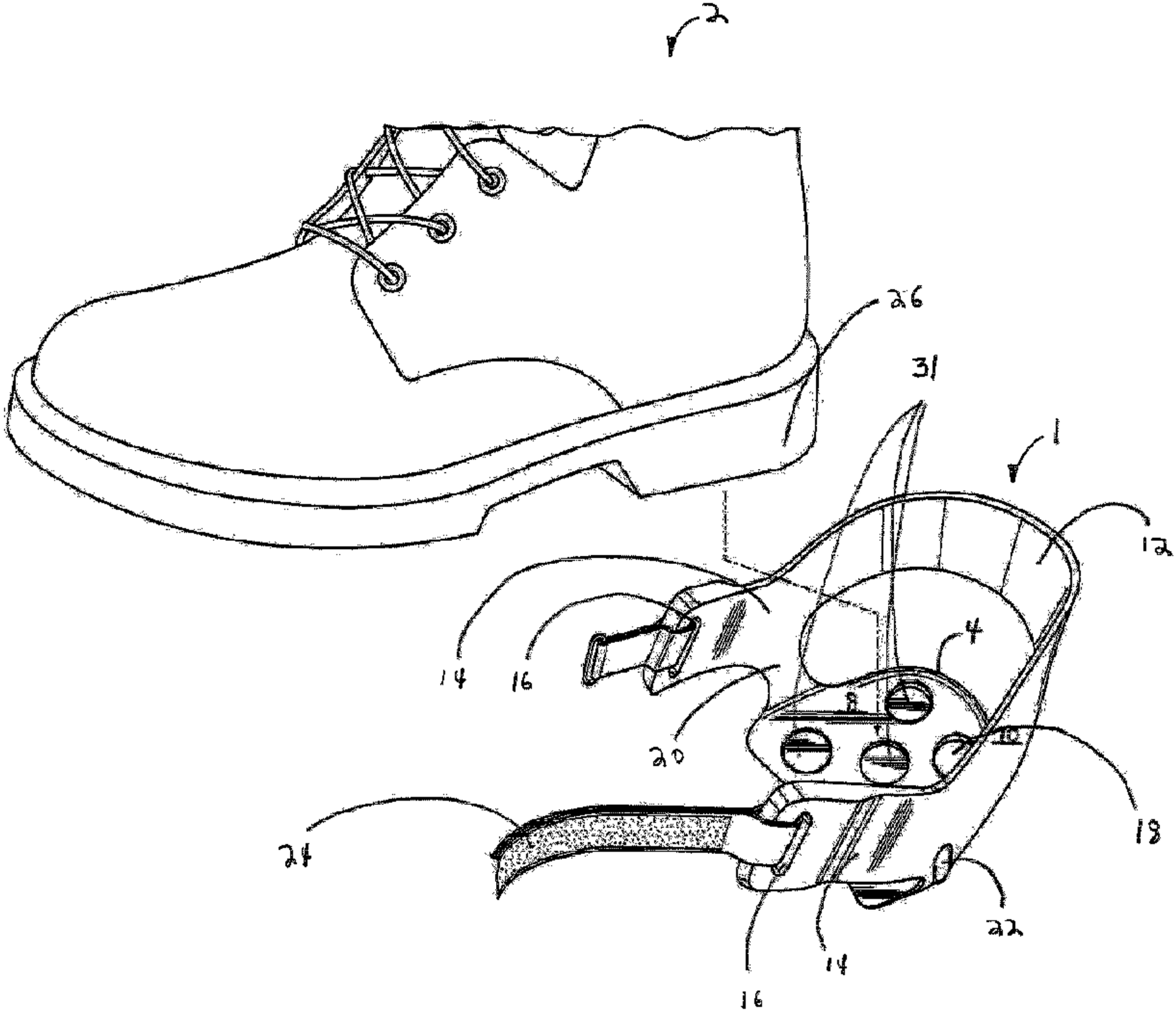
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