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(54) CRAMPONS PROVIDED WITH SPIKES

MIT SPIKES AUSGESTATTETE KLETTEREISEN

CRAMPONS DOTÉS DE CLOUS

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Description

CROSS-REFERENCE TO RELATED APPLICATION

[0001] This application claims the benefit of U.S. Application Serial Number 62/380,359 filed August 26, 2016.

FIELD OF THE INVENTION

[0002] The present invention relates to crampons for preventing mountain-climbing boots from being slipped on a snowy road or icy road when climbing a mountain in the winter season, and more particularly, to chain-type crampons having an elastic band and chains mounted on the band which are provided with a plurality of spikes and link rings, so that a brake power on a snowy road or icy road is increased and snows are not adhered to the crampons. The present invention also relates to spike members in crampons adapted to be mounted to a boot.

[0003] A crampon of this kind is disclosed in US 7 428 788 B2. Similar solutions and spike members are known from KR 2015 0079204 A and from KR 2008 0000693 U.

BACKGROUND OF THE RELATED ART

[0004] In general, since temperatures are low, and snows and ices pile up on the ground, in the winter season, snowy roads or icy roads are formed on mountain passes. Climbers are frequently slipped on the snowy road or icy road through carelessness or beyond human control, when climbing a mountain, so that climbers are bruised or are seriously wounded, such as a fracture.

[0005] In order to prevent the emergency situations, most of the mountain-climbing boots are put on crampons. The climbers carry the crampons at ordinary times, and put the crampons on the boots in an area with snowy roads or icy roads, thereby keeping a body in safe and thus preventing the slip.

[0006] The existing crampons are generally put below a bottom surface of the boots to prevent the slip on the snowy roads or icy roads in the winter season. The crampons includes a body and a binding band, in which the body is downwardly bent to form about 4 to 6 spike edges at the bottom surface thereof, and the binding band is coupled to the body to tightly bind the body against the outsole of the boots, when the climber puts the crampons on the boots.

[0007] In order to shorten a time required to put the crampons on the boots or remove the crampons from the boots, the binding band of the crampons is provided with a fastening member having a hook and a coupling ring. For example, crampons capable of shortening the time required to put on the crampons is disclosed in Korean Utility Model Registration No. 20-0252026 entitled "Crampons", which is assigned to the same applicant.

[0008] According to the crampons disclosed in the publication, an elastic band is bound around the upper portion of an outsole of mountain-climbing boots, and chains are coupled to the band as an anti-skid member. The chains are coupled to each other to partially cover the bottom surface of the boots, thereby preventing the slip of the boots due to the friction between the crampons and the snowy road or icy road.

[0009] When the climber puts the crampons on the boots, a front heel portion is firstly inserted in the widened elastic band, and the band is pulled to enable it to cover the upper portion of the outsole corresponding to a rear heel. The crampons are tightly attached to the boots due to the elastic force of the band, and the chains are disposed below the bottom surface of the boots.

[0010] The existing crampons have a discomfort drawback in that the snows are adhered to the chains when temperatures are low. Specifically, snows adhered between the chains are gradually getting bigger. Further, in case the chains disposed at the rear heel portion of the boots are applied with strong frictional force when climbing a steep slope, the band tightly covering the front heel portion of the boots is stretched, so that the wearing state of the band is deteriorated.

[0011] Also, in addition to the drawback that the snows are adhered between the chains to make the behavior discomfort, the brake power on the snowy road or icy road is remarkably decreased.

[0012] Above mentioned US 7 428 788 B2, also to the same inventor as herein, relates to a crampon having chains and spikes, but does not disclose spikes forward of the front spikes.

SUMMARY OF THE INVENTION

[0013] Accordingly, the present invention is directed to crampons for mountain-climbing boots that substantially obviates one or more problems due to limitations and disadvantages of the related art.

[0014] An object of the present invention is to provide chain-type crampons having an elastic band and chains mounted on the band which are provided with a plurality of spikes and link rings, so that a brake power on a snowy road or icy road is increased and snows are not adhered to the crampons.

[0015] The solution of this object is defined in the patent claims.

[0016] The prefrontal or advanced spike(s) can increase the stability of the boot and wearer's foot, not being pushed behind up to the end of spikes when used for going on steep slopes.

[0017] It is to be understood that both the foregoing general description and the following detailed description of the present invention are exemplary and explanatory and are intended to provide further explanation of the invention as claimed.

BRIEF DESCRIPTION OF THE DRAWINGS

[0018] The accompanying drawings, which are includ-

ed to provide a further understanding of the invention and are incorporated in and constitute a part of this application, illustrate embodiment(s) of the invention and together with the description serve to explain the principle of the invention. In the drawings:

FIG. 1 is a perspective view of a first embodiment of the invention;
FIG. 2A is a perspective view of the prefrontal or advanced front spike portion of the first embodiment;
FIG. 2B is a perspective view of a spike piece of the prefrontal or advanced front spike portion of the first embodiment;
FIGs. 2C and 2D are perspective views of spike pieces of the prefrontal or advanced front spike portion of the first embodiment;
FIG. 3 is a plan view of the first embodiment;
FIG. 3A is a plan view of the front portion of the first embodiment;
FIG. 4 is a plan view of a second embodiment of the invention with a variant restraining member different from that of the first embodiment;
FIG. 4A is a plan view of the front portion of the second embodiment;
FIG. 5 is plan view of a third embodiment of the invention with another variant restraining member different from that of the first and second embodiments;
FIG. 5A is plan view of the front portion of the third embodiment;
FIG. 6 is a perspective view of an embodiment, not according to the invention; and
FIG. 7 is plan view of a further embodiment, not according to the invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0019] A preferred embodiment according to the present invention will now be explained with reference to the accompanying drawings (except figures 6 and 7 which disclose embodiments not part of the present invention).

[0020] The chain-type crampons installed with spikes according to a first embodiment of the present invention (see FIGs. 1, 2A, 2B, 2C, 2D, 3 and 3A), in which an elastic band 10 is bound around an outsole of mountain-climbing boots 1, and chains 20 are coupled to the band 10 as an anti-skid member, are defined by claim 1 and include among other features: at least one prefrontal or advanced spike 15 (shown are three), a front spike 30, a center spike 50, and a rear spike 60, respectively, disposed at a prefrontal or advanced front portion, a front portion, a center portion, and a rear portion of a bottom surface of the boots 1, engaged to the chain 20 and coupling rings 21, 23, 24, and 25, and formed with a plurality of spike edges 33, 53, and 63; lateral spikes 40 disposed forward between the front spike 30 and the center spike 50 and engaged to the chain 20 and the coupling ring 22; link rings 70 and 80 each engaged to the front spike 30, the lateral spikes 40, and the center spikes 50; and a restraining member 13 coupled to the top of the advanced spikes 15 tightly attached to a front heel of the boots 1, as shown in FIG. 1.

[0021] The elastic band 10 made of rubber or synthetic material is adapted to cover the upper portion of the outsole of the boots 1, and bosses 11 protrudes from an outer edge of the band 10 at a desired interval so that fixing rings 12 are mounted to the bosses 11. The chains 20 and the coupling rings 21, 22, 23, and 24 are coupled to a plurality of fixing rings 12 spaced apart from each other at a given interval.

[0022] The coupling rings 21, 23, and 24 are coupled to the front, center, and rear spikes 30, 50, and 60 each integrally formed with bent spike edges 33, 53, and 63. The front, center, and rear spikes 30, 50, and 60 are disposed at the front, center, and rear portions on the bottom surface of the boots 1. The lateral spikes 40 are disposed at both sides between the front spike 30 and the center spike 50, and are coupled by the chain 20 and the coupling ring 22.

[0023] The advanced spikes 15, front spike 30, the center spike 50, and the rear spike 60, which are disposed at the front, center, and rear portions of the bottom surface of the boots 1, respectively, are formed with fastening holes 31 and 32; 51 and 52; 61 and 62 at both lateral ends and a center portion thereof. Also, the front spike 30, the center spike 50, and the rear spike 60 are bent at the side thereof to integrally form the spike edges 33, 53, and 63.

[0024] The lateral spikes 40 disposed at both front sides on the inner bottom surface of the boots 1 are formed with fastening holes 41 and 42 at both lateral ends and center portion, and are bent toward the bottom surface to form the spike edge 43.

[0025] The front spike 30, the center spike 50, and the rear spike 60, which are disposed at the front, center, and rear portions of the bottom surface of the boots 1, respectively, are coupled to a plurality of link rings 70 configured to freely pivot. The rear spike 60 is coupled to the center spike 50, the link chain 80, and the chain, with it being mounted to the chain 20 and the coupling ring 24.

[0026] The link ring 70 positioned at the front portion of the bottom surface of the boots 1 is bent to be pivotally inserted into is bent to be pivotally inserted into the fastening holes 32, 42, and 52 of the front spike 30, the center spike 50, and the rear spike 60. The front spike 30 and the lateral spikes 40 are coupled to the chain 20 and the band 10 via the fastening holes 31 and 41 formed at center portion and the coupling rings 21 and 22.

[0027] The rear spike 60 is disposed at the rear portion of the inner bottom surface of the boots 1, and is coupled to the center spike 50 by connecting the fastening hole 51 of the center spike 50 disposed at the center portion with the fastening hole 61 positioned at the center portion by use of the link ring 80, the chain 20, and the coupling

ring 25, with the fastening hole 62 formed at both sides of the elastic ban 10 being mounted with the chain 20 and the link ring 80.

[0028] The chain-type crampons provided with spikes according to the first embodiment of the present invention includes the front spike 30, the lateral spikes 40, the center spike 50, and the rear spike 60, which are disposed at the front, both sides, center, and rear portions on the inner bottom surface of the boots 1 and have spike edges 33, 43, 53, and 63, respectively, thereby increasing a brake power on a snowy road or icy road.

[0029] With the chain-type crampons provided with spikes according to the first embodiment of the present invention, in order to prevent the band 10 tightly attached to the boots 1 from being stretched when the front spike 30, the lateral spikes 40, the center spike 50, and the rear spike 60 are applied with strong frictional force in climbing a steep slope, both chains 20 tightly attached to the front heel of the boots 1 are provided with the restraining member 13, so that the restraining bar 13 is restrained by the front heel portion of the boots 1 to prevent the stretching of the band 10. In this embodiment, the restraining member 13 is in the form of three links, 13A, 13B, and 13C.

[0030] Consequently, the first embodiment of the present invention includes the prefrontal or advanced spikes 15, front spikes 30, the lateral spikes 40, the center spike 50, and the rear spike 60, respectively, disposed to the prefrontal or advanced front, front, both sides, center, and rear portions on the inner bottom surface of the boots 1 which comes in contact with the snowy road or icy road, to increase the brake power and thus prevent the slip effectively. Also, the front spike 30, the lateral spikes 40, the center spike 50, and the rear spike 60 are coupled to the link rings 70 and 80 configured to be freely pivoted, thereby solving the existing problem in that the snow is adhered to the boots.

[0031] Specifically, the advanced spike 15, front spike 30, the lateral spikes 40, the center spike 50, and the rear spike 60, respectively, disposed to the advanced front, front, both sides, center, and rear portions on the inner bottom surface of the boots 1 are coupled to each other by use of the link rings 70 and 80 made of an iron wire to solve the problem in that the snow is adhered to the boots, breaking from the chain structure of the existing crampons.

[0032] According to the present invention, the advanced spike 15, front spike 30, the lateral spikes 40, the center spike 50, and the rear spike 60, respectively, having a plurality of spike edges 33, 43, 53, and 63, are provided to the existing crampons, thereby effectively preventing the slip of the boots 1 on the snowy road or icy road.

[0033] The restraining member 13 keeps the fixing rings 12 tightly attached to the front heel of the boots 1. Hence, in case the front spike 30, the lateral spikes 40, the center spike 50, and the rear spike 60 are applied with the strong frictional force in climbing a steep slope, the restraining member 13 is caught by the front heel portion of the boots 1, thereby preventing the band 10 from being stretched and thus maintaining the normal wearing state.

[0034] With the above description, the chain-type crampons of the first embodiment of the present invention having the elastic band and the chains mounted on the band are provided with a plurality of spikes and link rings, so that the brake power on the snowy road or icy road is increased, and the snow is not adhered to the crampons. In particular, the restraining member is installed to the front portion of the boots, thereby increasing the binding force of the crampons.

[0035] According to the present invention and as shown in FIGs. 2A and 2B three advanced spikes 15 are provided on each of the front right and front left of the boot. Each advanced spike 15 is in the shape of an L, with a hole 15A in one leg of the L and a spike tip 15B, and an inner connecting member 15C in the other leg of the L identified by a cut-out portion 15E and gap 15F. The three spikes are connected serially together by inserting the tip 15 of one inner connecting member 15C into the hole 15A of another advanced spike and then bending the inner connecting member 15C at its base to close the gap, thereby preventing the advanced spikes from separating.

[0036] FIGs. 4 and 4A show a second embodiment similar to the first embodiment, except that restraining member 13 is in the form of three bars 13D, 13E, and 13F which are pinned to each other at their respective ends, permitting relative hinged movement about pin axes 13G and 13H.

[0037] FIGs. 5 and 5A show a third embodiment of the invention similar to the first and second embodiments, except that the restraining member 13 is in the form of a single link.

[0038] FIG. 6 shows an embodiment not part of the present invention, similar to the first embodiment of FIGs. 1, 2A, 2B, 2C, 2D, 3 and 3A, with the same restraining member 13, except that this embodiment does not have advanced spikes 15 at the front of the boat 1. FIG. 7 shows an embodiment not part of the present invention, similar to the embodiment of FIGs. 5 and 5A, except that the advanced spikes 15 are in the form of a single plate instead of three connecting links of FIGs. 2C and 2D.

Claims

1. Chain-type crampons provided with spikes, in which an elastic band (10) is adapted to be bound around an outsole of mountain-climbing boots, and chains (20) are coupled to the band (10) as an anti-skid member, the crampons comprising:

   a front spike (30) having a plurality of first spike edges (33), the front spike (30) adapted to be positioned at a front portion of a bottom surface

of the boot when the elastic band (10) is bound around the outsole of the boot,
a center spike (50) having a plurality of second spike edges (53), the center spike (50) being coupled to the elastic band (10) via a first chain (20), the center spike (50) adapted to be positioned at a center portion of the bottom surface of the boot when the elastic band (10) is bound around the outsole of the boot, and
a rear spike (60) having a plurality of third spike edges (63), the rear spike (60) being coupled to the elastic band (10) via a second chain (20), the rear spike (60) adapted to be positioned at a rear portion of the bottom surface of the boot when the elastic band (10) is bound around the outsole of the boot,
lateral spikes (40) disposed forward between the front spike (30) and the center spike (50), wherein the front spike (30), center spike (50), rear spike (60) and lateral spikes (40) are each operatively engaged to the respective chain (20) via coupling rings (21, 22, 23, 24), link rings (70, 80) each engaged to the front spike (30), the lateral spikes (40), and the center spikes (50),
wherein first and second front chains (20) are arranged, and wherein a restraining member (13) is operatively coupled to the first and second front chains, the restraining member adapted to be engaged with a front of the boot when the elastic band (10) is bound around the outsole of the boot, **characterized in that**
each of the first and second front chains
comprising a plurality of advanced front spikes (15) connected together in a series, provided on each of the front right and front left of the boot, forward of the front spike (30),
each advanced front spike (15) having an L-shape comprising a first leg and a second leg,
wherein the first leg comprises a first surface associated with a first plane, and a hole (15A) in the first surface;
the second leg comprises a second surface associated with a second plane perpendicular to the first plane, a spike tip (15B) and an inner connecting member (15C) defined by a cut-out portion (15E) and a gap (15F);
the first surface and the second surface intersect to form a corner;
the gap (15F) is defined in the first surface of the first leg, in the second surface of the second leg, and in the corner, the gap (15F) defining a projecting element (15G), the projecting element (15G) having a first portion in the first leg, a second portion in the second leg, and a bend in the corner, the gap (15F) being present on two sides of the first portion of the projecting element (15G) in the first leg and on three sides of the second portion of the projecting element (15G) in the second leg;
the gap (15F) is adapted to receive an adjacent first leg of an adjacent advanced front spike (15); and
the projecting element (15G) is adapted to connect to an adjacent hole (15A) of the adjacent first leg of the adjacent advanced front spike (15).

2. The chain-type crampons according to claim 1, **characterized in that** the advanced front spike (15), front spike (30), the center spike (50), and the rear spike (60), respectively, are formed with fastening holes at both lateral ends and a center portion thereof, and the front spike (30), the center spike (50), and the rear spike (60) are bent at the side thereof to integrally form the respective spike edges.

3. The chain-type crampons according to claim 1, **characterized in that** the restraining member (13) is in the form of at least two links.

4. The chain-type crampons according to claim 1, **characterized in that** the restraining member (13) is in the form of three bars.

5. The chain-type crampons according to claim 4, **characterized in that** the three bars are pinned to each other at their respective ends to permit relative hinged movement.

6. The chain-type crampons according to claim 1, **characterized in that** the restraining member (13) is in the form of a single link.

7. The chain-type crampons according to claim 1, **characterized in that** the band (10) is formed with fixing portions of a circular ring shape for coupling the chains.

8. The chain-type crampons according to claim 7, wherein the chains have a fixing ring (12).

9. A spike member (15) in crampons adapted to be mounted to a boot, the spike member (15) comprising an L-shape having a first leg and a second leg, wherein:

the first leg comprises a first surface associated with a first plane, and a hole (15A) in the first surface;
the second leg comprises a second surface associated with a second plane perpendicular to the first plane, a spike tip (15B) and a gap (15F);
the first surface and the second surface intersect to form a corner;
the gap (15F) is defined in the first surface of the first leg, in the second surface of the second

leg, and in the corner, **characterized in that**, the second leg comprises an inner connecting member (15C) defined by a cut-out portion (15E) and the gap (15F), the gap (15F) defining a projecting element (15G), the projecting element (15G) having a first portion in the first leg, a second portion in the second leg, and a bend in the corner, the projecting element (15G) projecting from a center of the gap such that the gap is present on two sides of the first portion of the projecting element (15G) in the first leg and on three sides of the second portion of the projecting element (15G) in the second leg;
the projecting element (15G) is adapted to connect to an adjacent hole (15A) of an adjacent first leg of an adjacent advanced spike member (15) by inserting the projecting element (15G) into the adjacent hole (15A) of the adjacent first leg of the adjacent advanced spike member (15).

Patentansprüche

1. Mit Spikes versehene Steigeisen des Kettentyps, bei denen ein elastisches Band (10) dazu geeignet ist, um eine Außensohle von Bergsteigerstiefeln gebunden zu werden, wobei Ketten (20) mit dem Band (10) als ein Anti-Rutsch-Element gekoppelt sind, wobei die Steigeisen umfassen:

einen vorderen Spike (30) mit einer Vielzahl von ersten Spikekanten (33), wobei der vordere Spike (30) geeignet ist, an einem vorderen Abschnitt einer Bodenfläche des Stiefels positioniert zu werden, wenn das elastische Band (10) um die Außensohle des Stiefels gebunden ist,
einen zentralen Spike (50) mit einer Vielzahl von zweiten Spikekanten (53), wobei der zentrale Spike (50) mit dem elastischen Band (10) über eine erste Kette (20) gekoppelt ist, wobei der zentrale Spike (50) angepasst ist, um an einem mittleren Abschnitt der unteren Oberfläche des Stiefels positioniert zu werden, wenn das elastische Band (10) um die Außensohle des Stiefels gebunden ist, und
einen hinteren Spike (60) mit einer Vielzahl von dritten Spikekanten (63), wobei der hintere Spike (60) mit dem elastischen Band (10) über eine zweite Kette (20) gekoppelt ist, wobei der hintere Spike (60) dazu geeignet ist, an einem hinteren Abschnitt der Bodenfläche des Stiefels positioniert zu werden, wenn das elastische Band (10) um die Außensohle des Stiefels gebunden ist,
seitliche Spikes (40), die vorne zwischen dem vorderen Spike (30) und dem zentralen Spike (50) angeordnet sind, wobei der vordere Spike (30), der zentrale Spike (50), der hintere Spike (60) und die seitlichen Spikes (40) jeweils über Kupplungsringe (21, 22, 23, 24) mit der jeweiligen Kette (20) operativ in Eingriff sind,
Verbindungsringe (70, 80), die jeweils mit dem vorderen Spike (30), den seitlichen Spikes (40) und dem zentralen Spike (50) in Eingriff stehen, wobei erste und zweite vordere Ketten (20) angeordnet sind und wobei ein Rückhalteelement (13) operativ mit den ersten und zweiten vorderen Ketten gekoppelt ist, wobei das Rückhalteelement ausgebildet ist, um mit einer Vorderseite des Stiefels in Eingriff zu kommen, wenn das elastische Band (10) um die Außensohle des Stiefels gebunden ist,
dadurch gekennzeichnet,
dass jede der ersten und zweiten vorderen Ketten eine Vielzahl von vorgeschobenen vorderen Spikes (15) umfasst, die in einer Reihe miteinander verbunden sind, die jeweils an der vorderen rechten und vorderen linken Seite des Stiefels vor dem vorderen Spike (30) vorgesehen sind, wobei jeder vorgeschobene vordere Spike (15) eine L-Form aufweist, die einen ersten Schenkel und einen zweiten Schenkel umfasst, wobei der erste Schenkel eine erste Oberfläche, die mit einer ersten Ebene verbunden ist, und eine Öffnung (15A) in der ersten Oberfläche umfasst;
wobei der zweite Schenkel eine zweite Oberfläche, die einer zweiten Ebene senkrecht zu der ersten Ebene zugeordnet ist, eine Spikespitze (15B) und ein inneres Verbindungselement (15C) umfasst, das durch einen Ausschnitt (15E) und einen Spalt (15F) definiert ist;
wobei sich die erste Fläche und die zweite Fläche schneiden, um eine Ecke zu bilden;
wobei der Spalt (15F) in der ersten Oberfläche des ersten Schenkels, in der zweiten Oberfläche des zweiten Schenkels und in der Ecke definiert ist, wobei der Spalt (15F) ein vorstehendes Element (15G) definiert, wobei das vorstehende Element (15G) einen ersten Abschnitt in dem ersten Schenkel, einen zweiten Abschnitt in dem zweiten Schenkel und eine Biegung in der Ecke aufweist, wobei der Spalt (15F) an zwei Seiten des ersten Abschnitts des vorstehenden Elements (15G) in dem ersten Schenkel und an drei Seiten des zweiten Abschnitts des vorstehenden Elements (15G) in dem zweiten Schenkel vorhanden ist;
wobei der Spalt (15F) ausgebildet ist, um einen benachbarten ersten Schenkel eines benachbarten vorgeschobenen vorderen Spikes (15) aufzunehmen; und
wobei das vorstehende Element (15G) ausgebildet ist, um sich mit einer benachbarten Öffnung (15A) des benachbarten ersten Schenkels

des benachbarten vorgeschobenen vorderen Spikes (15) zu verbinden.

2. Steigeisen des Kettentyps nach Anspruch 1, **dadurch gekennzeichnet, dass** der vorgeschobene vordere Spike (15), der vordere Spike (30), der zentrale Spike (50) und der hintere Spike (60) jeweils mit Befestigungsöffnungen an beiden seitlichen Enden und einem mittleren Abschnitt davon ausgebildet sind, und der vordere Spike (30), der zentrale Spike (50) und der hintere Spike (60) an der Seite gebogen sind, um die jeweiligen Spikekanten einstückig zu bilden.

3. Steigeisen des Kettentyps nach Anspruch 1, **dadurch gekennzeichnet, dass** das Rückhalteelement (13) in Form von mindestens zwei Gliedern ausgebildet ist.

4. Steigeisen des Kettentyps nach Anspruch 1, **dadurch gekennzeichnet, dass** das Rückhalteelement (13) in Form von drei Stäben ausgebildet ist.

5. Steigeisen des Kettentyps nach Anspruch 4, **dadurch gekennzeichnet, dass** die drei Stäbe an ihren jeweiligen Enden miteinander verbunden sind, um eine relative Gelenkbewegung zu ermöglichen.

6. Steigeisen des Kettentyps nach Anspruch 1, **dadurch gekennzeichnet, dass** das Rückhalteelement (13) als Einzelglied ausgebildet ist.

7. Steigeisen des Kettentyps nach Anspruch 1, **dadurch gekennzeichnet, dass** das Band (10) mit kreisringförmigen Befestigungsabschnitten zur Kopplung der Ketten ausgebildet ist.

8. Steigeisen des Kettentyps nach Anspruch 7, wobei die Ketten einen Befestigungsring (12) aufweisen.

9. Spikeelement (15) eines Steigeisens, das zur Befestigung an einem Stiefel ausgebildet ist, wobei das Spikeelement (15) eine L-Form mit einem ersten Schenkel und einem zweiten Schenkel aufweist, wobei:

der erste Schenkel eine erste Oberfläche, die einer ersten Ebene zugeordnet ist, und eine Öffnung (15A) in der ersten Oberfläche aufweist;
der zweite Schenkel eine zweite Oberfläche, die einer zweiten Ebene zugeordnet ist, die senkrecht zu der ersten Ebene verläuft, eine Spikespitze (15B) und einen Spalt (15F) umfasst;
sich die erste Fläche und die zweite Fläche schneiden, um eine Ecke zu bilden;
der Spalt (15F) in der ersten Fläche des ersten Schenkels, in der zweiten Fläche des zweiten Schenkels und in der Ecke definiert ist,

dadurch gekennzeichnet, dass
der zweite Schenkel ein inneres Verbindungselement (15C) umfasst, das durch einen ausgeschnittenen Abschnitt (15E) und einen Spalt (15F) definiert ist, wobei der Spalt (15F) ein vorstehendes Element (15G) definiert, wobei das vorstehende Element (15G) einen ersten Abschnitt in dem ersten Schenkel, einen zweiten Abschnitt in dem zweiten Schenkel und eine Biegung in der Ecke aufweist, wobei das vorstehende Element (15G) von einer Mitte des Spalts derart vorsteht, dass der Spalt auf zwei Seiten des ersten Abschnitts des vorstehenden Elements (15G) in dem ersten Schenkel und auf drei Seiten des zweiten Abschnitts des vorstehenden Elements (15G) in dem zweiten Schenkel vorhanden ist;
wobei das vorstehende Element (15G) ausgebildet ist, um mit einer benachbarten Öffnung (15A) eines benachbarten ersten Schenkels eines benachbarten vorstehenden Spikeelements (15) durch Einsetzen des vorstehenden Elements (15G) in die benachbarte Öffnung (15A) des benachbarten ersten Schenkels des benachbarten vorstehenden Spikeelements (15) verbunden zu werden.

Revendications

1. Crampons à chaînes munis de pointes, dans lesquels une bande élastique (10) est prévue pour être attachée autour d'une semelle d'usure de chaussures d'alpinisme, et des chaînes (20) sont couplées à la bande (10) en tant qu'organe antidérapant, les crampons comportant :

une pointe avant (30) dotée d'une pluralité de premières arêtes (33) de pointe, la pointe avant (30) étant prévue pour être positionnée dans une partie avant d'une surface inférieure de la chaussure lorsque la bande élastique (10) est attachée autour de la semelle d'usure de la chaussure,
une pointe centrale (50) dotée d'une pluralité de deuxièmes arêtes (53) de pointe, la pointe centrale (50) étant couplée à la bande élastique (10) par l'intermédiaire d'une première chaîne (20), la pointe centrale (50) étant prévue pour être positionnée dans une partie centrale de la surface inférieure de la chaussure lorsque la bande élastique (10) est attachée autour de la semelle d'usure de la chaussure, et
une pointe arrière (60) dotée d'une pluralité de troisièmes arêtes (63) de pointe, la pointe arrière (60) étant couplée à la bande élastique (10) par l'intermédiaire d'une deuxième chaîne (20), la pointe arrière (60) étant prévue pour être posi-

tionnée dans une partie arrière de la surface inférieure de la chaussure lorsque la bande élastique (10) est attachée autour de la semelle d'usure de la chaussure,
des pointes latérales (40) disposées à l'avant entre la pointe avant (30) et la pointe centrale (50), la pointe avant (30), la pointe centrale (50), la pointe arrière (60) et les pointes latérales (40) étant chacune en interaction fonctionnelle avec la chaîne (20) respective par l'intermédiaire d'anneaux (21, 22, 23, 24) de couplage,
des anneaux (70, 80) de liaison dont chacun interagit avec la pointe avant (30), les pointes latérales (40), et la pointe centrale (50), des première et deuxième chaînes avant (20) étant mises en place, et un organe (13) de retenue étant couplé fonctionnellement aux première et deuxième chaînes avant, l'organe de retenue étant prévu pour interagir avec un avant de la chaussure lorsque la bande élastique (10) est attachée autour de la semelle d'usure de la chaussure, **caractérisés en ce que**
chacune des première et deuxième chaînes avant comporte une pluralité de pointes avant avancées (15) reliées ensemble en une série, placées à chaque emplacement parmi l'avant droit et l'avant gauche de la chaussure, en avant de la pointe avant (30), chaque pointe avant avancée (15) présentant une forme en L comportant une première branche et une deuxième branche,
la première branche comportant une première surface associée à un premier plan, et un trou (15A) dans la première surface ;
la deuxième branche comportant une deuxième surface associée à un deuxième plan perpendiculaire au premier plan, un bout (15B) de pointe et un organe intérieur (15C) de liaison défini par une partie (15E) de découpe et un vide (15F) ;
la première surface et la deuxième surface se croisant pour former un coin ;
le vide (15F) étant défini dans la première surface de la première branche, dans la deuxième surface de la deuxième branche, et dans le coin, le vide (15F) définissant un élément saillant (15G), l'élément saillant (15G) comprenant une première partie dans la première branche, une deuxième partie dans la deuxième branche, et un coude dans le coin, le vide (15F) étant présent sur deux côtés de la première partie de l'élément saillant (15G) dans la première branche et sur trois côtés de la deuxième partie de l'élément saillant (15G) dans la deuxième branche ;
le vide (15F) étant prévu pour recevoir une première branche adjacente d'une pointe avant avancée (15) adjacente ; et
l'élément saillant (15G) étant prévu pour se lier à un trou (15A) adjacent de la première branche adjacente de la pointe avant avancée (15) adjacente.

2. Crampons à chaînes selon la revendication 1, **caractérisés en ce que** la pointe avant avancée (15), la pointe avant (30), la pointe centrale (50), et la pointe arrière (60), respectivement, sont formées avec des trous de fixation aux deux extrémités latérales et dans une partie centrale de celles-ci, et **en ce que** la pointe avant (30), la pointe centrale (50), et la pointe arrière (60) sont coudées sur leur côté pour former de façon intégrée les arêtes de pointes respectives.

3. Crampons à chaînes selon la revendication 1, **caractérisés en ce que** l'organe (13) de retenue se présente sous la forme d'au moins deux maillons.

4. Crampons à chaînes selon la revendication 1, **caractérisés en ce que** l'organe (13) de retenue se présente sous la forme de trois barres.

5. Crampons à chaînes selon la revendication 4, **caractérisés en ce que** les trois barres sont goupillées les unes aux autres à leurs extrémités respectives pour permettre un mouvement relatif articulé.

6. Crampons à chaînes selon la revendication 1, **caractérisés en ce que** l'organe (13) de retenue se présente sous la forme d'un seul maillon.

7. Crampons à chaînes selon la revendication 1, **caractérisés en ce que** la bande (10) est formée avec des parties de fixation de la forme d'un anneau circulaire servant à coupler les chaînes.

8. Crampons à chaînes selon la revendication 7, les chaînes comprenant un anneau (12) de fixation.

9. Organe (15) de pointe dans des crampons prévu pour être montés sur une chaussure, l'organe (15) de pointe comportant une forme en L dotée d'une première branche et d'une deuxième branche :

la première branche comportant une première surface associée à un premier plan, et un trou (15A) dans la première surface ;
la deuxième branche comportant une deuxième surface associée à un deuxième plan perpendiculaire au premier plan, un bout (15B) de pointe et un vide (15F) ;
la première surface et la deuxième surface se croisant pour former un coin ;
le vide (15F) étant défini dans la première surface de la première branche, dans la deuxième surface de la deuxième branche, et dans le coin, **caractérisés en ce que**
la deuxième branche comporte un organe intérieur (15C) de liaison défini par une partie (15E)

de découpe et le vide (15F), le vide (15F) définissant un élément saillant (15G), l'élément saillant (15G) comprenant une première partie dans la première branche, une deuxième partie dans la deuxième branche, et un coude dans le coin, l'élément saillant (15G) dépassant d'un centre du vide de telle façon que le vide soit présent sur deux côtés de la première partie de l'élément saillant (15G) dans la première branche et sur trois côtés de la deuxième partie de l'élément saillant (15G) dans la deuxième branche ;
l'élément saillant (15G) étant prévu pour se lier à un trou (15A) adjacent d'une première branche adjacente d'un organe (15) adjacent de pointe avancée en insérant l'élément saillant (15G) dans le trou (15A) adjacent de la première branche adjacente de l'organe (15) adjacent de pointe avancée.

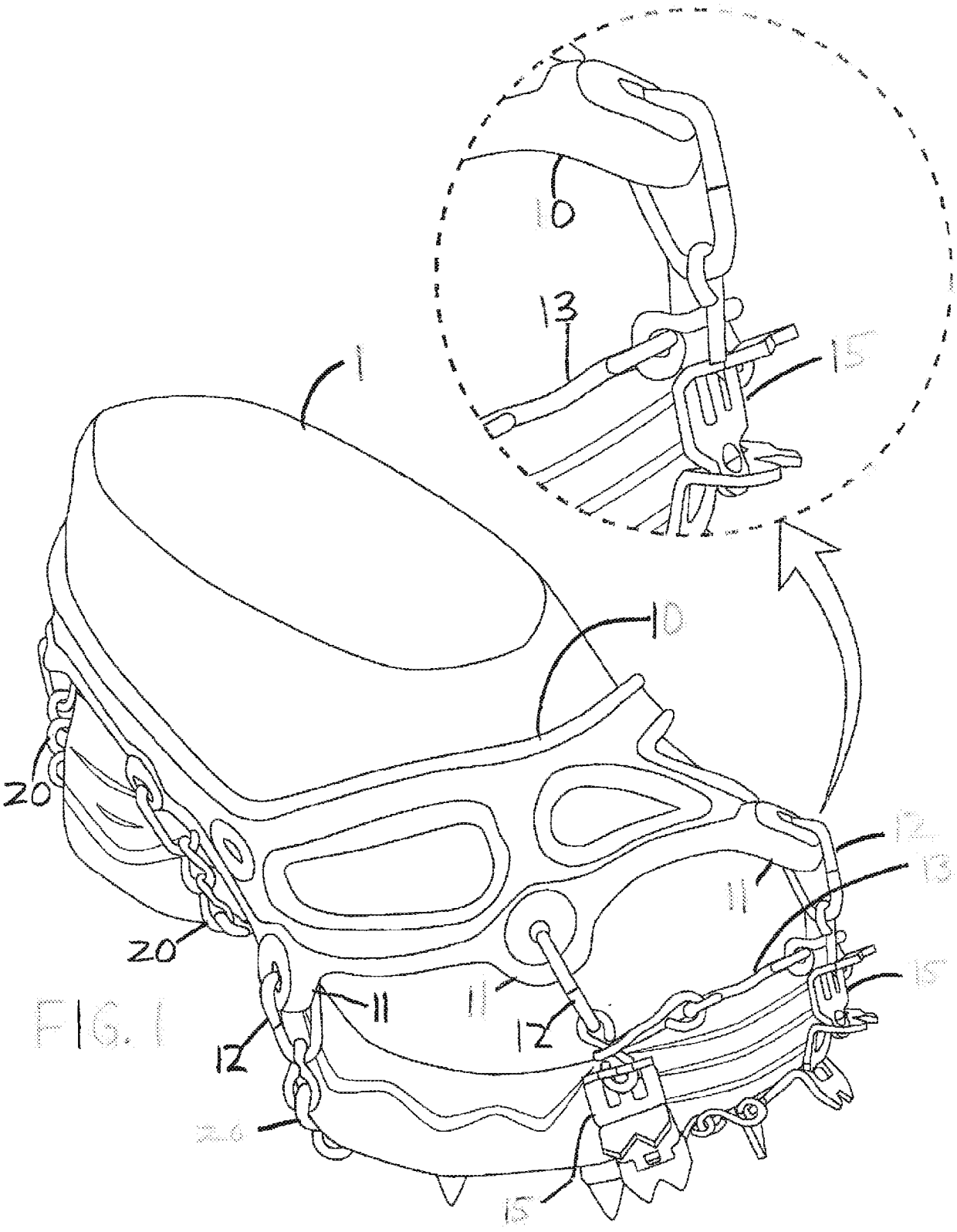

FIG. 1

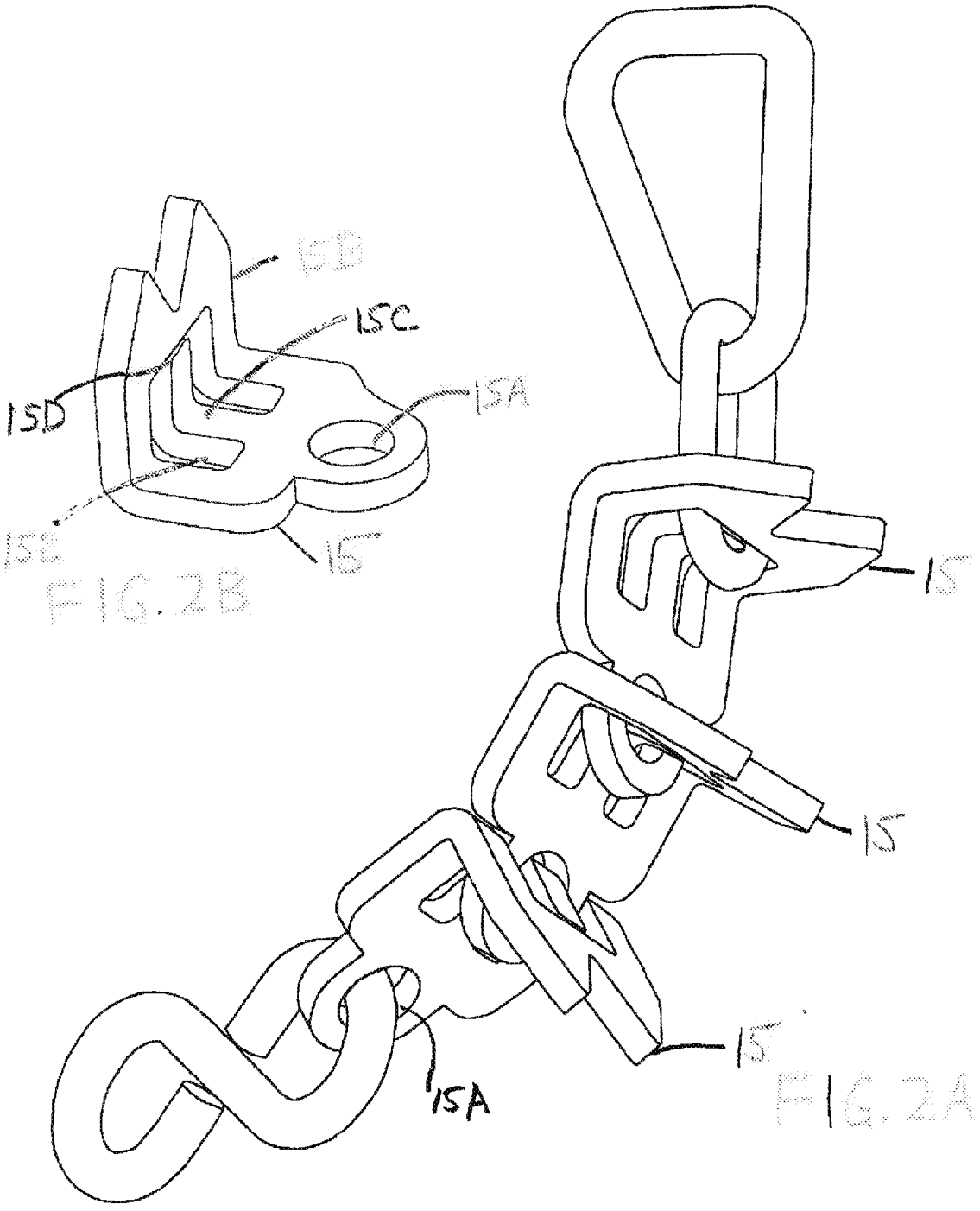

FIG.2B

FIG.2A

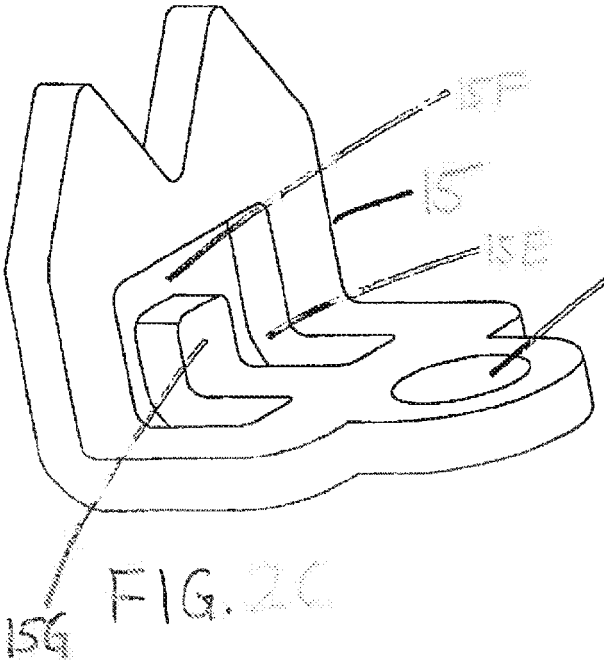

FIG. 2C

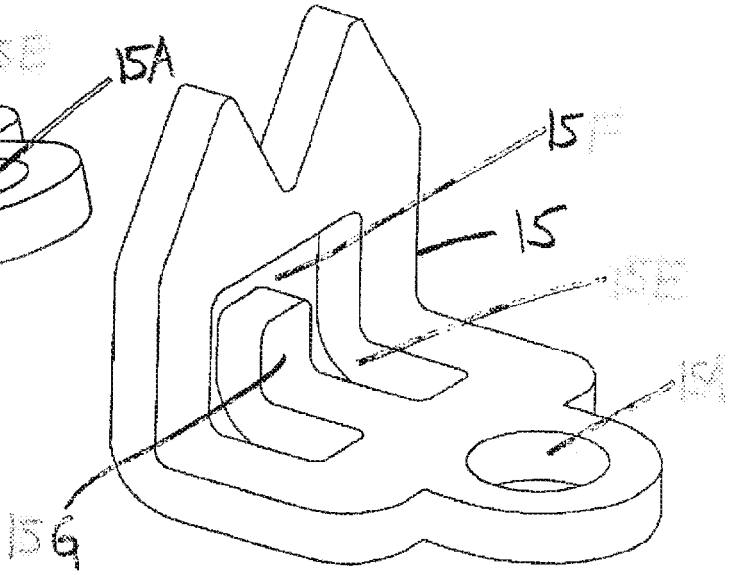

FIG. 2D

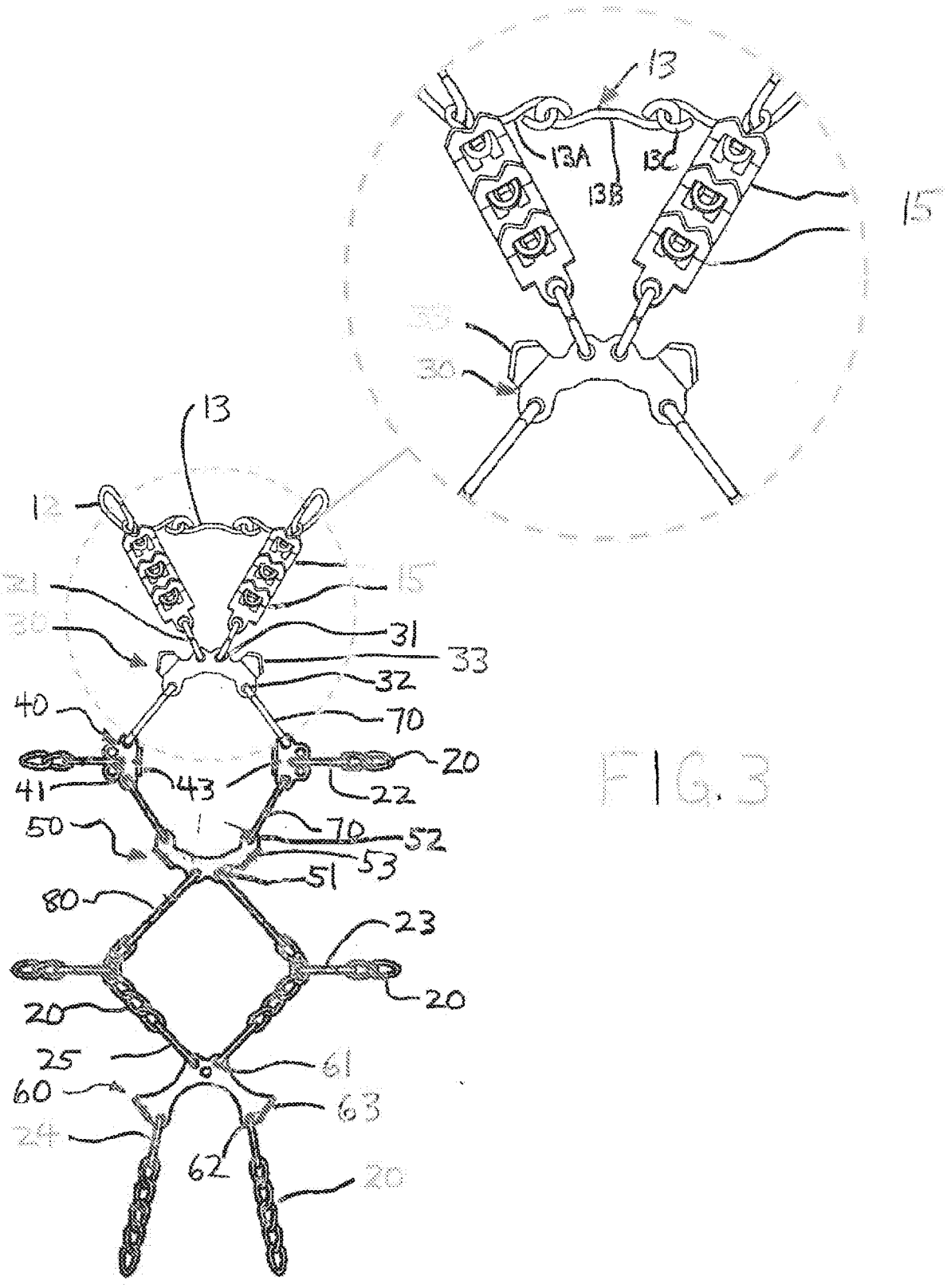
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FIG. 3

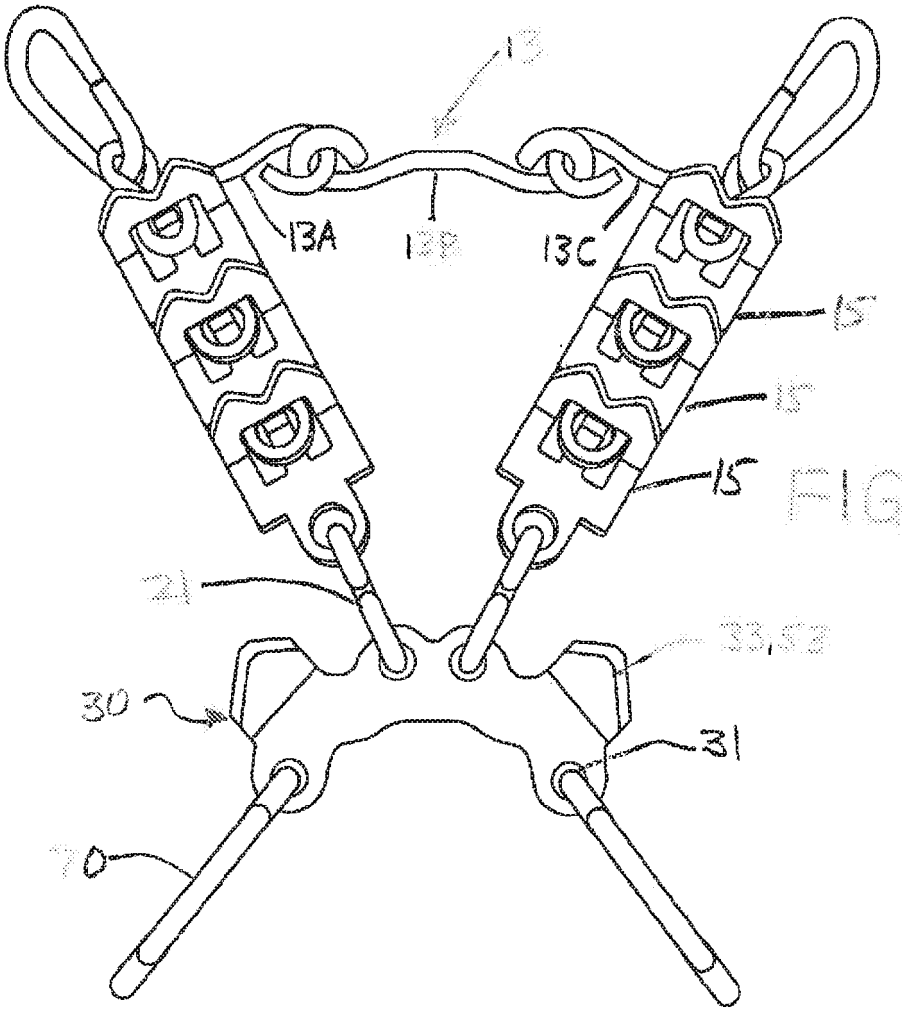

FIG. 3

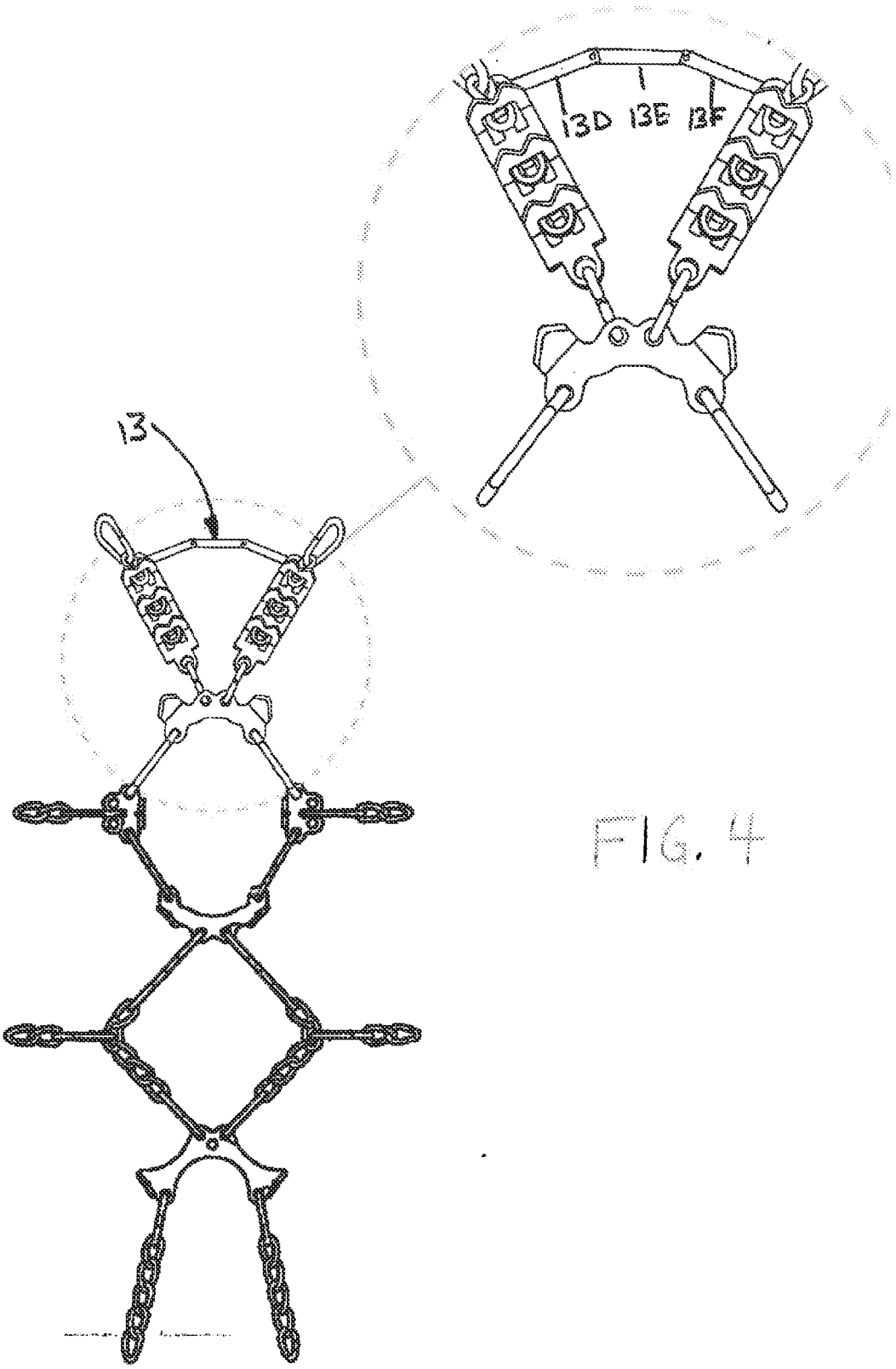

FIG. 4

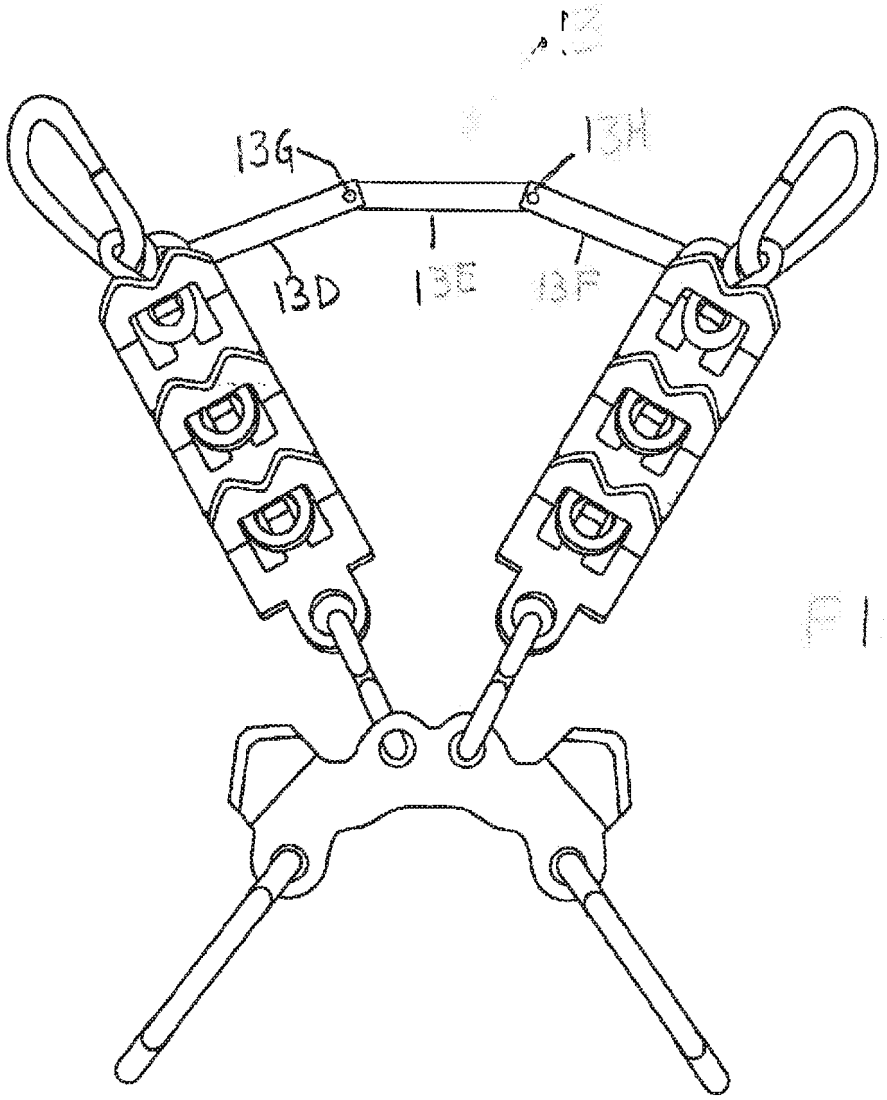

FIG. 4

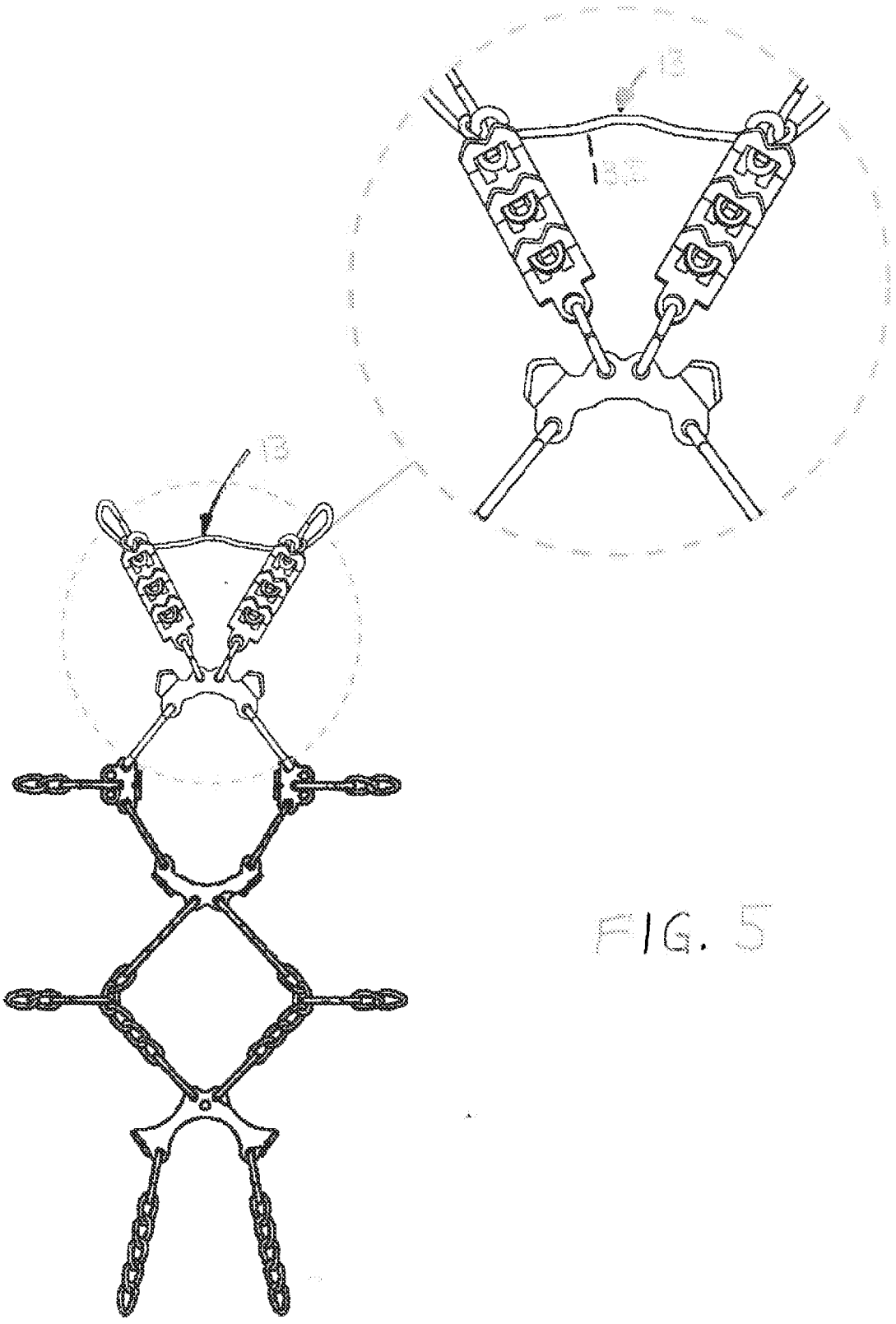

FIG. 5

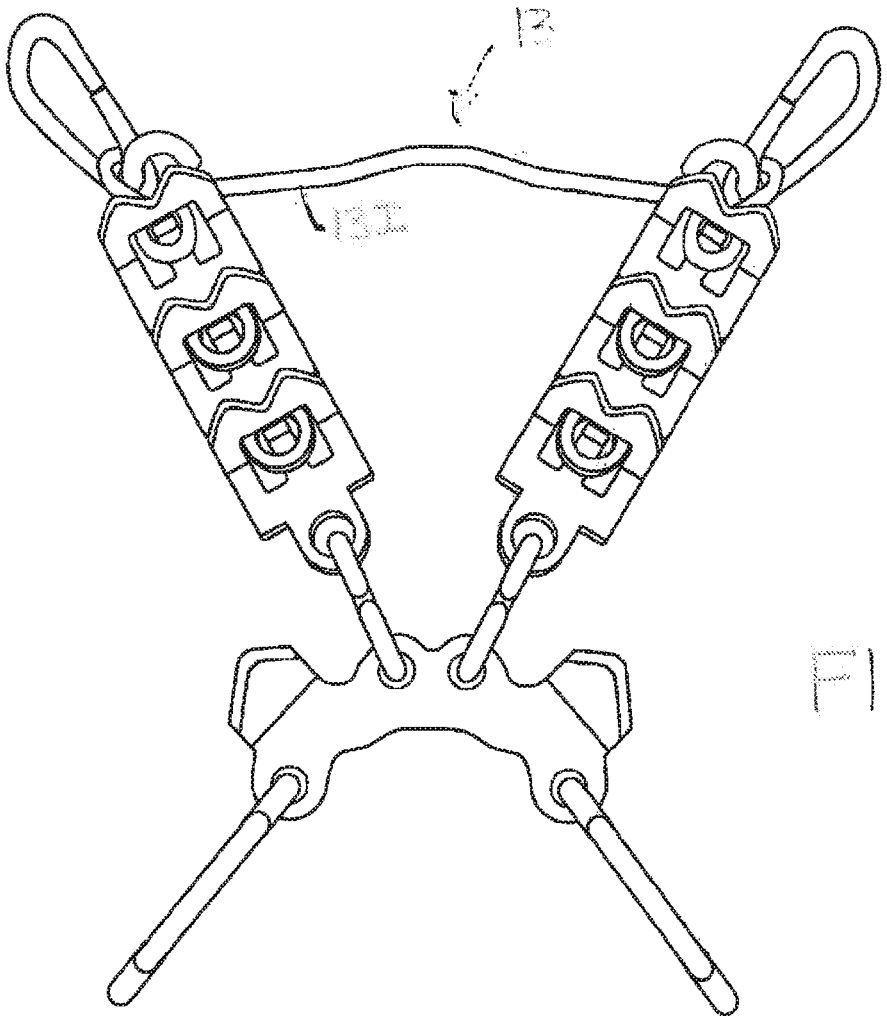

FIG. 5A

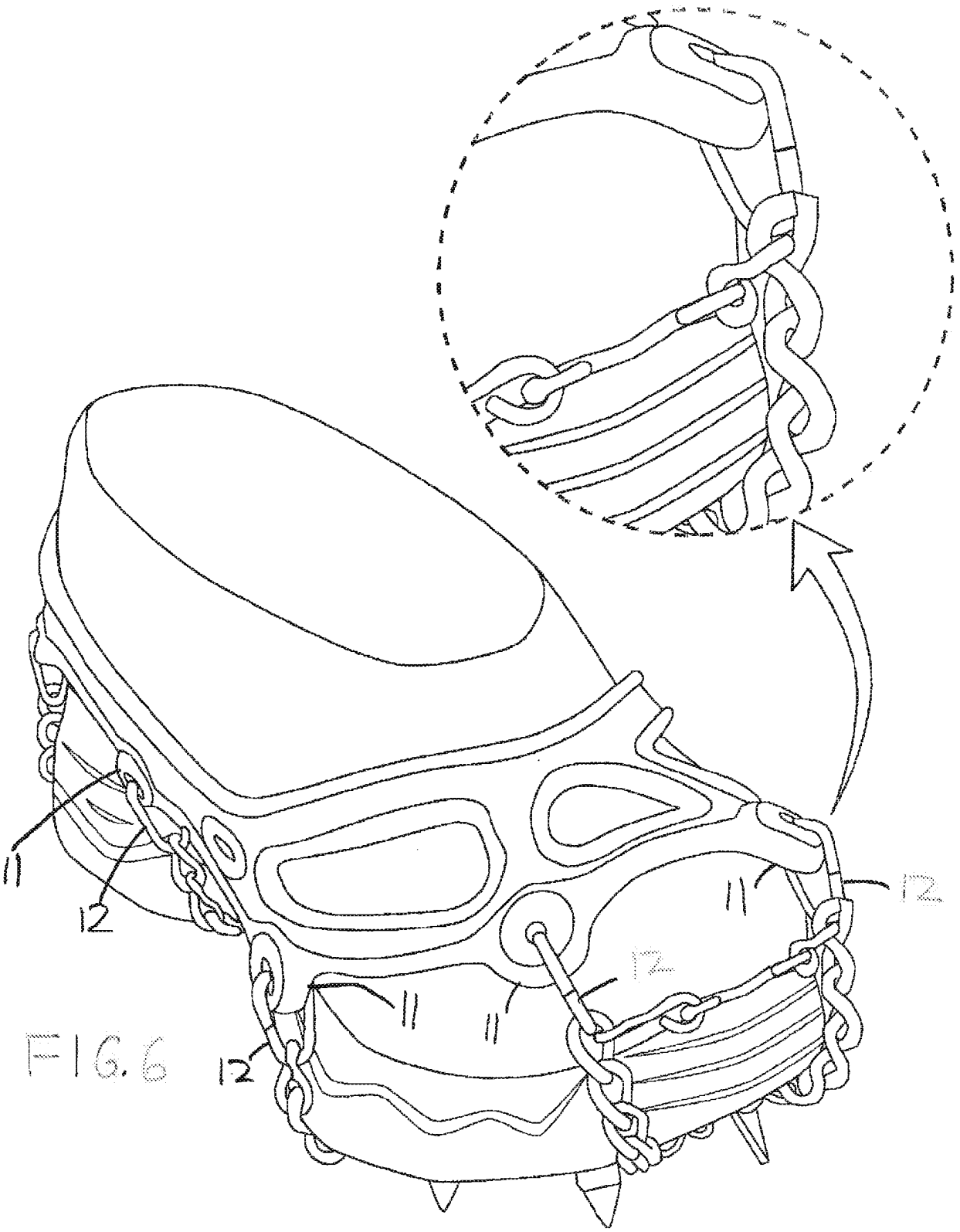

FIG. 6

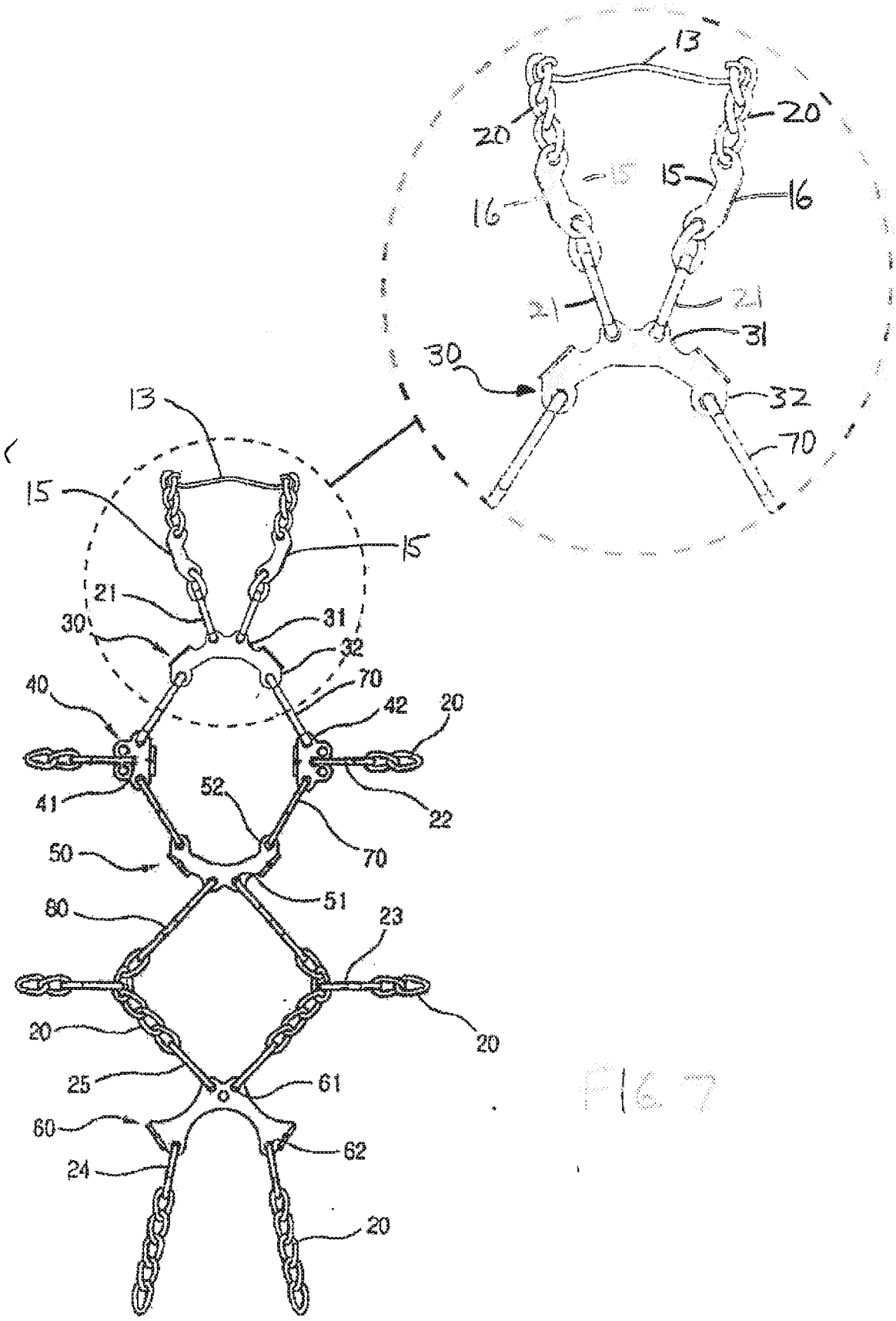
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FIG 7

REFERENCES CITED IN THE DESCRIPTION

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