An upper reinforcing element adapted to equip a boot having a flexible or semi-rigid upper. The upper reinforcing element includes a support zone on which the tongue is supported, and in that it extends from the support zone down to the sole.
UPPER REINFORCING ELEMENT
CROSS-REFERENCE TO RELATED APPLICATIONS

0001 This application is based upon French Patent Application No. 00 14667, filed Nov. 9, 2000, the disclosure of which is hereby incorporated by reference thereto in its entirety, and the priority of which is hereby claimed under 35 U.S.C. § 119.

BACKGROUND OF THE INVENTION

0002 1. Field of the Invention

0003 The present invention relates to an upper reinforcing device adapted to equip a boot adapted in particular, but in a non-limiting fashion, to sporting activities. This upper reinforcing device can be used in particular for boots designed for snowboarding or in-line roller skating.

0004 2. Description of Background and Relevant Information

0005 In the prior art, there are pieces designed to make the connection between the boot tongue and the boot upper. The document FR 2 379 263 describes a tongue front end that forms a collar. This collar is attached in a groove made in the thickness of the upper itself in order to ensure a better stability of the tongue. However, the document relates to a ski boot having a rigid shell. Therefore, the present collar is not used to distribute the pressures exerted by the tongue on the upper since the boot upper is adequately rigid.

0006 There are also boots, having a flexible or semi-rigid upper provided with a flexible tongue, which are adapted especially to snowboarding. For this type of activity, one seeks to limit or control the angles of the forward bending of the ankle. One solution consists of adding a rigid or semi-rigid tongue. With this type of tongue, a substantial bending of the leg generates a pressure on the top portion of the tongue, which balances itself by taking support on the top of the upper. Thus, the tongue exerts a substantially vertical pressure on the upper, in the area of the toes. As the upper is flexible or semi-rigid, the upper deforms and tends to crush the toes against the sole.

SUMMARY OF THE INVENTION

0007 One of the objects of the present invention is to propose an element, or device, for reinforcing an upper, which makes it possible to incorporate into the boot having a flexible or semi-rigid upper, a tongue that controls and/or limits bending while ensuring comfort for the user’s foot.

0008 Another object of the present invention is to propose an upper reinforcing device and to stiffen the upper as locally as possible so as to preserve the advantages of the flexible or semi-rigid upper, in particular with respect to the sensations, i.e., sensory perceptions during the use of the boot.

0009 To achieve these objects, the reinforcing element, which includes a support zone on which the tongue is supported, extends from the support zone up to the sole. In addition, the reinforcing element, which is positioned in the front portion of the boot, includes two arms that are positioned laterally, on both sides of the foot, substantially between the metatarsophalangeal joint and the toes.

0010 In a first embodiment, the reinforcing element is positioned within the boot upper.

0011 In a second embodiment, the reinforcing element is positioned outside the boot upper.

BRIEF DESCRIPTION OF DRAWINGS

0012 The invention will be better understood, and other advantages thereof will become apparent from the description that follows, with reference to the annexed drawings. The description illustrates, by way of non-limiting examples, certain preferred embodiments.

0013 FIG. 1 schematically shows a perspective front view of a snowboard boot equipped with the upper reinforcing element according to the first embodiment.

0014 FIG. 2 schematically shows a perspective side view of an inner liner equipped with the upper reinforcing element for an upper according to an alternative of the first embodiment.

0015 FIG. 3 schematically shows a perspective side view of a snowboard boot equipped with the upper reinforcing element according to the second embodiment.

0016 FIG. 3r schematically shows a detail of the boot illustrated in FIG. 3, at the junction between the upper reinforcing element and the tongue.

DETAILED DESCRIPTION OF THE INVENTION

0017 In FIG. 1, the boot CH includes an upper O, shown broken away in the front portion of the boot CH so as to show the upper reinforcing device or element 1 that is positioned beneath the upper O. The upper O, which is flexible or semi-rigid, overlays a sole 99 and includes a tongue 2 arranged substantially on the top of the foot. The tongue 2 is rigid or semi-rigid in order to provide either a bending control, or a bending limitation toward the front of the boot. Such a tongue is particularly adapted for snowboarding, especially for jump landings, in order to limit sprains or fractures of the ankle joint.

0018 In FIGS. 1 and 3, the tongue 2 has two elements, a stiffener 102 that contributes to the rigidity of the tongue and a flexible envelope 12 that contributes to enveloping the foot, and possibly ensuring a sealing function. The stiffener 102 is preferably made of a thermoplastic material, whereas the envelope 12 is preferably made of leather or fabric. The stiffener 102 includes a top portion 101 adapted to be indirectly in contact with the user’s lower leg, as well as a lower portion 100 adapted to come into contact with the top of the foot.

0019 In the preferred embodiment shown in FIG. 1, the stiffener 102 is held in place on the tongue 2, in the area of the lower portion 100, by an abutting contact 400 obtained by the upper O, on the one hand and, in the area of the top portion 102, by a contact on an elastic element 53, on the other hand. In addition, the stiffener 102 is positioned beneath the tightening system 200 of the boot CH, which maintains it flat against the envelope 12. The elastic element 53, due to its compressibility, makes it possible to compensate for the length differential between the stiffener 102 and the tongue 2. Indeed, a length differential occurs between the stiffener 102 and the tongue 2 during bending. Moreover, the
stiffener 102 is guided laterally, in the area of its top portion 101, by a guide 51 that is positioned on the tongue 2 and which maintains the stiffener 102 inserted between the tongue 2 and the guide 51.

[0020] To limit the effect of toe compression by the tongue 2, the boot CH includes an upper reinforcing element 1 positioned in the front portion of the boot CH. This upper reinforcing element 1 is positioned within the upper O, and in support against the inner surface Ob of the upper O. The upper reinforcing element 1 especially serves to maintain, from within, the shape of the front portion of the upper O. The reinforcing element 1 can advantageously be fixed on the inner surface Ob of the upper O by seams or stitchings 304, or by adhesive. Similarly, the reinforcing element 1 is advantageously fixed to the upper O and to the sole 99, at the base of the arms 4 and 5, in particular by adhesive.

[0021] The reinforcing element 1 includes, on the top, a support zone 3 on which the tongue 2 is supported. Moreover, the reinforcing element extends from the support zone 3, which is arranged substantially on the top of the foot, down to the sole 99. This arrangement makes it possible to transmit to the sole 99 the compression forces exerted by the tongue 2 on the reinforcing element 1, and this by limiting the effects of excess pressure on the toes.

[0022] In the preferred embodiment described in FIG. 1, the reinforcing element 1 includes two arms 4 and 5 positioned laterally on both sides of the foot. The two arms 4 and 5 are preferably arranged in the area of the metatarsophalangeal joint. The arms 4 and 5 can extend from the metatarsophalangeal joint toward the toes. The two arms 4 and 5 transversely form an arch which transfers, toward the sole 99, the vertical pressures exerted by the front portion 100 of the stiffener 102 on the support zone 3. The reinforcing element 1 advantageously includes a recess 6 positioned in the area of the toes. This recess 6 makes it possible in particular to avoid placing the reinforcing element 1 in contact against the ends of the toes, in particular when the foot tends to slide forward in the boot.

[0023] This specific geometry of the reinforcing element 1, with the two arms 4 and 5 and the recess 6, makes it possible to limit the surface of the reinforcement 1 to a maximum, and thus to preserve the advantages of a flexible upper.

[0024] Indeed, for snowboarding, the boots having a flexible upper are appreciated for the sensations which they provide, especially in the area of the contact of the foot and lower leg on the binding that fixes the boot to the snowboard.

[0025] In the preferred embodiment described in FIG. 1, the stiffener 102 of the tongue 2 is not fixed to the reinforcing element 1, but is just maintained in contact with the reinforcing element 1, through the upper O, by means of the tightening means 200 which, in this case, are laces. Thus, the user can voluntarily interchange the stiffener 102 to modify the behavior of the tongue 2 while preserving the benefit of foot comfort obtained by the reinforcing element 1. If desired, the tongue 2 can be made in a single piece, i.e., unitarily, from an adequate material having a certain rigidity.

[0026] In the embodiment of FIG. 2, the boot is not shown, but it is equipped with a liner CH that is positioned within the boot. The upper reinforcement 1 is positioned between the boot upper and the liner CH. In this constructive alternative, the upper reinforcement 1 is detachable with respect to the boot and liner.

[0027] The tongue of the boot, not shown, is stiffened by the stiffener 102 that is inserted between the tongue of the boot and the tongue 2 of the liner CH. In addition, the stiffener 102 is fixed to the upper reinforcing element 1. Indeed, the upper reinforcing element 1 includes, in the area of the support zone 3, fixing elements 7 such as rivets 7, which makes it possible to fix the stiffener 102 on the upper reinforcing element 1. The fixing elements 7 cooperate with the lower portion 100 of the stiffener 102.

[0028] The stiffener 102 can be constructed so as to be integral or unitary with the reinforcing element 1, or connecting means other than rivets 7 can be provided.

[0029] The upper reinforcing element 1 can advantageously include a bottom 156 that connects the base of the arms 4 and 5, and which is adapted to remain inserted between the liner CH and the boot sole. The bottom 156 also serves to stiffen the structure of the reinforcing element 1 so as to better transmit the forces from the support surface down to the boot sole. The bottom 156 also serves to facilitate the positioning of the reinforcing element-stiffener assembly around the liner CH. The upper reinforcing element 1 can be fixed to the liner CH by appropriate means such as an adhesive. Similarly, the stiffener 102 can be fixed on the tongue 2 of the liner CH, in particular according to the constructional arrangements related to the fixing of the stiffener 102 on the tongue 2 of the boot CH, as described in FIG. 1.

[0030] As in the previous embodiment, the reinforcement-stiffener assembly can be interchangeable for modifying the behavior of the tongue 2 as a function of the desired sporting activity.

[0031] FIG. 3 shows a boot CH adapted to snowboarding, where the reinforcing element 1 is fixed on the outer surface Oa of the upper O of the boot CH.

[0032] The reinforcing element 1, which is fixed substantially in the area of the metatarsophalangeal joint of the foot, cooperates with the stiffener 102. This stiffener 102 also cooperates with the envelope 12 arranged on the front of the tibial zone by defining a tongue 2.

[0033] In the preferred embodiment shown, this last cooperation is fixable, but detachably obtained, in a non-limiting fashion, by a protuberance 300 positioned fixably on the envelope 12, which is connected to the boot CH, and a recess 301 positioned in the top portion 101 of the stiffener 102, so as to enable the stiffener 102 to be affixed to the envelope 12. Moreover, the protuberance 300 can advantageously include a closure system complementary of the recess 301.

[0034] To allow a relative bending freedom of the tongue 2, the stiffener 102 cooperates with the upper reinforcement element 1 so as to leave a possibility to slide in the longitudinal direction of the footwear CH. To achieve this result, the upper reinforcement 1 includes, in the area of the support zone 3, a guiding device 10 that is capable of cooperating with the tongue 2, and more specifically the lower portion 100 of the stiffener 102 so as to obtain a displacement of the tongue 2 with respect to the reinforcing element 1.

[0035] In this embodiment, the upper reinforcing element 1 is assembled on the outer surface of the upper O by appropriate means such as seams or stitching 303 arranged preferably on the periphery of the reinforcing element 1.

[0036] This last fixing method can be replaced or completed by a mounting, which can be obtained by adhesive, whereby the base of the two arms 4 and 5 is inserted between the upper O and the sole 99.
FIG. 3a shows a detail of FIG. 3, in the area of the guiding device 10 that ensures the connection between the upper reinforcement 1 and the stiffener 102 which is an integral part of the tongue.

The stiffener 102 includes at least one exorecence 305a that slides in the guiding device 10. The guiding device 10 has at least two lateral portions 308 arranged substantially in the longitudinal direction X of the footwear, and at least one upper wall 307 substantially parallel to the support zone 3 of the reinforcing element. This arrangement makes it possible to laterally guide the stiffener 102 so that it remains in the longitudinal axis X, and to vertically maintain the stiffener 102 in contact with the reinforcing element 1 between the support zone 3 and the upper wall 307.

The guiding device 10 therefore enables a displacement D of the tongue 2 with respect to the reinforcing element 1.

In the preferred embodiment shown, the stiffener includes two projections 305a and 305b that are complementary of the guiding device 10. Moreover, an elastic return 11 is advantageously positioned between the projections 305a and 305b in order to control the sliding D. Indeed, the elastic return 11 is compressed between the stiffener 102 and the guiding device 10 during the sliding D generated by the bending of the boot CH.

The elastic return 11 as well as the elastic element 53 can be made of elastic or viscoelastic material for dampening vibrations.

The present invention also encompasses a sports boot equipped with the reinforcing element 1 and is not limited to the particular embodiments described hereinabove, which are provided for guidance only, but it encompasses all similar or equivalent embodiments.

Further, the present invention is not limited to the embodiments described but applies to any type of boot for which similar or equivalent problems must be resolved. In particular, it can apply to boots such as telemark ski boots, short skis boots, etc.

What is claimed is:

1. An upper reinforcing element adapted to equip a boot, the boot having a sole and an upper, said upper being flexible or semi-rigid, and said upper overlaying said sole, said boot further having a tongue, said tongue being rigid or semi-rigid, said upper reinforcing element comprising:
   a support zone to support said tongue, and said reinforcing element having a size and shape to extend from said support zone down to the sole.
   2. An upper reinforcing element according to claim 1, comprising a predetermined size and shape to be positioned in a front portion of the boot.
   3. An upper reinforcing element according to claim 1, further comprising two arms adapted to be positioned laterally on opposite sides of a foot, substantially in an area of a metatarsophalangeal joint of a wearer.
   4. An upper reinforcing element according to claim 1, further comprising a recess positioned substantially in an area of toes of a wearer.
   5. An upper reinforcing element according to claim 1, wherein said support zone includes a fixing device for fixing said tongue on the reinforcing element.
   6. An upper reinforcing element according to claim 1, wherein said support zone comprises a guiding device capable of cooperating with said tongue for enabling a displacement of said tongue with respect to the reinforcing element.
   7. An upper reinforcing element according to claim 6, wherein said guiding device comprises an elastic return for controlling sliding.
   8. An upper reinforcing element according to claim 1, wherein the reinforcing element is positioned within said upper in support against an inner surface of said upper.
   9. An upper reinforcing element according to claim 1, wherein the reinforcing element is detachable with respect to the boot.
   10. An upper reinforcing element according to claim 1, wherein the reinforcing element is fixed on the outer surface of the upper.
   11. A sports boot comprising:
      a sole;
      an upper, said upper being flexible or semi-rigid, and said upper overlaying said sole;
      a tongue, said tongue being rigid or semi-rigid;
      an upper reinforcing element comprising a support zone, said tongue being supported by said upper reinforcing element on said support zone, said upper reinforcing element extending from said support zone down to said sole.
   12. A sports boot according to claim 11, wherein said upper reinforcing element is positioned in a front portion of the boot.
   13. A sports boot according to claim 11, wherein said upper reinforcing element further comprises two arms positioned laterally on opposite sides of the upper, substantially in an area of a metatarsophalangeal joint of a wearer.
   14. A sports boot according to claim 11, wherein said upper reinforcing element further comprises a recess positioned substantially in an area of toes of a wearer.
   15. A sports boot according to claim 11, wherein said support zone of said upper reinforcing element includes a fixing device for fixing said tongue onto said reinforcing element.
   16. A sports boot according to claim 11, wherein said guiding device comprises a guiding device capable of cooperating with said tongue for enabling a displacement of said tongue with respect to said upper reinforcing element.
   17. A sports boot according to claim 16, wherein said guiding device comprises an elastic return for controlling sliding.
   18. A sports boot according to claim 11, wherein said reinforcing element is positioned within said upper in support against an inner surface of said upper.
   19. A sports boot according to claim 11, wherein said reinforcing element is detachable with respect to the boot.
   20. A sports boot according to claim 11, wherein said reinforcing element is fixed on an outer surface of said upper.