The ski grip band (11) is attached to the ski (1). The grip part (17) and the glide part (15) are self carrying.

**Abstract:**
Ski grip band (H) for use under a ski (I), comprising a grip part (17) adapted for providing grip against a snow base and a glide part (15) adapted to glide on a snow base. At press against the snow base the transition between the grip part (17) and the glide part (15) will be substantially without press step, as the grip part (17) and the glide part (15) in this transition is substantially flush and parallel with the underside of the ski (1). The rear end of the ski grip band (11) is adapted to be positioned in such way that the end has the entire or a part of a rear glide zone (5) of the ski (1) behind it when the ski grip band (11) is attached to the ski (1). The grip part (17) and the glide part (15) are self carrying.
SKI GRIP BAND

The present invention relates to an arrangement for providing grip against the snow base when skiing, particularly with cross country / touring skis. In particular the invention relates to a ski grip band which is releasably mountable to a ski.

The ski grip band is arranged to give a good grip against the snow base, but is still suited for use on the ski in normal cross country skiing on a flat terrain or downhill.

Background

There are known various types of devices for providing better grip on the snow when using cross country skis or touring skis. For instance there are known so-called skins which are attached under the ski. These can comprise mohair which at contact with the snow gives a good grip. It is common to attach such skins under the skis when one is to go uphill for a long time, and then taking them off again when skiing downhill. There also exist such skins which are more adapted to a flat terrain or even downhill.

German utility model DE 9304437 shows a skin which is arranged in one or more gliding areas with low friction when in contact with a snow base, and a skin layer with high friction. This skin has a carrier layer of a woven fabric (Gewebe). On the carrier layer is attached a skin layer, while in the gliding area there is either no additional part or it is applied a gliding layer of plastic. Furthermore, the skin extends along the entire length (L) of the ski. In two shown embodiments there are arranged grip areas along the entire length of the ski, on each side of a corresponding longitudinal gliding area. In another embodiment the grip area is arranged approximately in the middle, under the ski, between a front and rear gliding area (Fig. 6).

Swiss patent publication CH 637839 shows a similar skin with a front and rear gliding layer arranged on each side of an intermediate grip layer. The layers are attached to a carrier layer which extends along the entire skin.

Norwegian patent publication NO 318691 shows another type of arrangement for grip on the snow base. This arrangement has a band or a strip which can be
releasably attached in a pocket under the ski. The attachment to squeezing the strip between the ski and a clamping plate. In the attached position the clamping plate will extend a bit down from the downwardly facing face of the ski. If the ski glides along the snow base the clamping plate will thus make a braking effect. This effect is mended in an alternative embodiment (see Fig. 10). However, here the strip itself will extend down and form a protrusion which will function as a brake against the snow base.

It is an object of the present invention to provide an arrangement for grip against the snow base, which is well suited for use uphill as well as with flat terrain and downhill. Furthermore it is desirable that the arrangement to a smallest possible degree reduces the characteristics of a ski of the cross country type with a span and wax area (in Norwegian: spenn og smøreomme).

The invention

According to the invention there is provided a ski grip band for use under a ski, in particular a cross country ski and/or a touring ski. The ski grip band comprises a grip part adapted for providing grip against a snow base and a glide part adapted to glide on a snow base. The glide part is adapted to extend backwards along the underside of the ski, from the front upwardly bent end of the ski. The grip part is adapted to extend backwards from the glide part, mainly in the area of the grip zone (wax area) of a ski. The ski grip band is characterized in that with pressure against the snow base, the transition between the grip part and the glide part be mainly without press step, as the grip part and the glide part in this transition is substantially flush with each other and parallel with the underside of the ski.

Furthermore, the back end of the ski grip band is adapted to be positioned in such way that the end has the entire or a part of a rear glide zone of a ski behind it, when it is attached to the ski. Furthermore, the grip part and the glide part are self carrying. With this term is meant that they are not attached to a carrying layer.

That a press against the snow base is mainly without press step means that the forces or the pressure between the ski and the snow base along the longitudinal direction of the ski either is continuous or changes without abrupt changes.
The grip zone of a ski is normally the area adapted to be waxed with a gripping wax or other grip-enhancing material. The grip zone can also be characterized by the design of the ski sole. Such skis can be so-called "wax-free" skis.

The ski grip band can also be adapted in such way that its back end is arranged under the back gliding zone of the ski. However, the back end is preferably arranged under the grip zone (or wax area) of the ski.

The ski grip band is preferably arranged in such way that when it is mounted to a cross country ski with span/curvature and wax area or grip zone, its back end is arranged in said wax area or grip zone in such a way that at distributed gliding load onto the ski from the skier, the said back end will not be forced against the snow base. The precise placement of the back end of the ski grip band then depends on the weight of the skier, the curvature/bend of the ski, and the thickness of the ski grip band (at least the thickness at said back end).

With the term gliding load is meant a load onto the ski from the skier which is not sufficiently large to force the gripping part of the ski grip band down against the snow base. This is for instance the case when the skier distributes his body weight evenly onto his two skis. At a backwards kick, i.e. the rearwards and downwardly applied force from the skier against the snow base, the skier will, on the other hand, force the gripping part of the ski grip band down against the snow base.

Moreover, the back end of the ski grip band is preferably adapted to be arranged at a rear area of the grip zone or wax area of a ski, whereby the said back end will be forced down against or into the snow base during a kick. The back end will then provide grip against the snow base. The back end of the ski grip band can thus be designed as a pronounced or defined edge which extends into the snow base at a kick.

The grip part and the glide part can be attached adjacent to each other by means of a splice that has an extension in the longitudinal direction which is less than
1/3 or the entire length of the ski grip band, wherein the splice part
arranged on that side of the ski grip band which is adapted to face the ski.
Preferably the extension of the splice is less than 1/5 of the length of the ski grip band, and more preferably less than 1/9 of the length.

Cross country skis are provided with some curvature. This results in that when a skier stands on both skis with the weight equally divided onto the skis, an area along the ski, under the skier, will not be in contact with the snow base. The span or curvature results in that the weight of the skier is not sufficient to force this part of the ski down to the snow base. This area under the cross country ski is known as the wax area or grip zone of the ski. In this area it is known to apply grip enhancing wax which provides grip against the snow base. When the skier transmits much of or his entire body weight to one ski, and preferably performs a kick, the wax area of the ski will be forced down against the snow base, so that the skier can perform his kick without the ski gliding on the snow base.

For optimal performance of this function, the skiers choose ski pairs which are adapted to their weight, strength and technique. A large, heavy and strong skier will thus choose a ski pair onto which a large force must be applied in order to press the wax area down to the snow base. A light and weak skier should, on the contrary, have skis which are more easily pressed or bent down.

The ski grip band according to the invention exhibits advantages when used on cross country skis or tour skis with span or curvature. Since the ski grip band does not have any carrier layer onto which the gliding part or the grip part is attached to, the ski grip band can be thin. The ski grip band will then not lift the front part of the ski unnecessary much up from the snow base. Unnecessary elevation of the front portion of the ski will deteriorate the characteristics of a ski pair which otherwise may be perfectly adapted to a certain skier. The low elevation of the ski will also cause that the function of the sharp longitudinal edges of the ski will be better maintained. Furthermore, a thin ski grip band will weigh less than a thicker band, so that the total weight of the ski with the band applied, remains as low as possible. This is particularly important for skiers desiring to run fast.
By using a foil in the gliding part of the ski grip band, one avoids for instance a weave or textile which takes in water and thus becomes heavy. If the grip part takes in water, this will not result in much weight since this part, in relation to the entire ski grip band, is relatively short.

Moreover, a plane transition from the gliding part to the grip part of the ski grip band will result in that the transition is not acting as a brake against the snow base, if it comes into contact with the snow base during gliding of the ski. For example, when running downhill a skier may vary the press against the skis in order to maintain balance and to steer. This will from time to time result in that he forces the ski so hard down against the snow that also the grip part may come into contact with the snow. This can also happen if the snow base is not plane, for instance when gliding over a small bump in the terrain.

By terminating the ski grip band in such a position that the rear gliding zone of the ski comes into contact with the snow base, one achieves several advantages. Firstly, the ski grip band will be short and thus require less material. This makes it cheaper to manufacture and it requires less space. A thin ski grip band according to the invention can preferably be accommodated in a pocket of a jacket.

Secondly, the skier will maintain the advantageous function of the groove under the ski. This will give him better control of the ski. The skier will also enjoy the sharp longitudinal edges of the ski in this area. For some skis such edges are made in steel. Thirdly, the rear edge of the ski grip band will function as a gripping edge giving large friction when the skier forces the ski down against the snow base. The rear end of the ski grip band is preferably arranged in such way that it is not in contact with the snow base when the skier has distributed his weight equally on both skis, such as when running downhill. The rear end or edge of the ski grip band will thus not result in friction in such a situation.

When used for a skiing trip in normal terrain, including downhill and uphill, the ski grip band according to the invention is thus suited for remaining on the skis during the entire trip. This is in contrast to many known skins which are attached under the skis only for uphill running and removed at the top of the hill. Since the
ski grip band reduces the inherent features of the skis to such an extent that it can be used as a replacement for ski wax, in particular in difficult waxing conditions. This is particularly advantageous in waxing conditions which requires a soft wax which is known to make annoying stains on everything it contacts, such as clothing and transport equipment. In contrast to ski wax the ski grip band also has an advantage in that it does not have to be replaced according to conditions and is not worn down during use.

The ski grip band according to the invention is preferably attached to the ski sole by means of an adhesive, in addition to the attachment at the front part of the ski (at the upwardly bent front). With a ski grip band according to prior art, which extends along the entire length of the ski, such an attachment method will result in problems due to the bending of the ski during use. Such bending will result in a change of distance along the ski sole against which the ski grip band is attached. With a ski grip band that is terminated in or at the grip zone (wax zone) of the ski, this change of distance will not cause problems. With a ski grip band that runs along the entire length of the ski, the change of distance will however result in that the band also must be attached to the rear end of the ski, by means of a strap or other mechanical attachment device. For such bands it may be insufficient with adhesive.

Moreover, ski grip bands which are mechanically attached both in the front and rear end of the ski must be precisely adapted to the length of the ski. A ski grip band according to the invention will on the contrary function satisfactory within a larger domain of ski lengths. In this way a ski grip band according to the invention which fits to one ski length will also fit to ski lengths which are a bit shorter or longer. The ski grip band can even be adapted by cutting of the rear end and still be used with good functionality.

**Example**

Several of the compulsory and optional technical features of the present invention have been described above. In the following, a non-limiting example of embodiment which illustrates the invention in further detail will be given. The example is described with reference to the drawings, in which
Fig. 1 is a perspective view showing the underside of a ski with a ski grip band according to the invention; Fig. 2 is a section view of the front portion of the ski grip band, with a fastening bow; Fig. 3 is a section view of a cross country ski with the ski grip band attached to the front end of the ski; Fig. 4 shows the ski grip band of Fig. 1, without the ski; and Fig. 5 is a section view of a connection in the ski grip band.

Fig. 1 shows the underside of a cross country ski 1 with a ski grip band 11 according to the invention attached. The ski grip band 11 is attached to the front, upwardly bent end 3 of the ski 1, in such a way that also the ski grip band 11 is bent upward to some extent. Fig. 2 shows the front end of the ski grip band 11, where a bow 13 is arranged, adapted to be treaded over the front end 3 of the ski 1. Fig. 3 shows the bow 13 being treaded over the front end 3 of the ski 1.

Fig. 1 further shows how the ski grip band 11 comprises a glide part 15 and a grip part 17. The glide part 15 is arranged along a front glide zone of the ski 1 and is adapted to exhibit minimal friction against a snow base. The grip part 17 is arranged along a grip part or a wax area of the ski 1, and is adapted to provide grip or friction against a snow base. The grip part 17 can preferably comprise mohair.

The ski 1 also has a rear glide zone 5. The rear end of the ski grip band 11 is arranged in such way that the rear glide zone 5 of the ski 1 will be in contact with the snow base when using the ski 1. In this way the skier will have use of the longitudinal groove 7 of the ski. Manoeuvring and steering will thus be easier for the skier than if also the groove 7, or the rear glide zone 5 of the ski, also was covered with a ski grip band, in particular when running downhill.

The rear end of the ski grip band 11 will also function as an edge or a step which will be pressed down into the snow and provide a good grip for a kick, as explained above.
Fig. 4 shows the ski grip band 11 in an extended position, not mounted to a ski.

Fig. 5 shows an enlarged section of the ski grip band 11, in the connection between the glide part 15 and the grip part 17. This figure shows an advantageous way for connecting the two parts 15, 17. Here, one end of the glide part 15 abuts the facing end of the grip part 17, and a splice 19 is glued onto the parts. The splice 19 only extends a small distance over each part 15, 17, sufficient to provide a secure connection between them. The splice 19 is preferably arranged on the side of the ski grip band 11 which faces the underside (sole) of the ski 1, so that it does not extend against the snow base during use of the ski grip band 11. The splice 19 is preferably made of a thin and strong material, so that it does not result in a substantial increase of the thickness of the ski grip band 11. Depending on the chosen material, one can also imagine other ways of connecting the splice 19 to the glide part 15 and the grip part 17, for instance by welding or sewing. This connection provides a plane transition between the glide part 15 and the grip part 17.

The glide part 15 and the grip part 17 can also be connected in other ways. For instance, a short portion of the glide part 15 can overlap a portion of the grip part 17, wherein they can be fixed together by means of a glue, welding or sewing, e.g. (not shown). With such a connection the overlapping part of the grip part 17 is preferably between the ski sole and the overlapping part of the glide part 15, when the ski grip band 11 is in use.

The glide part can preferably comprise a polyethylene foil. This is a cheap and durable material which will result in good gliding properties on various types of snow bases, and is substantially of the same type of material as the ski sole. Other possibilities include polyolefine and thermoplastic foils.

The ski grip band 11 according to the invention can for instance be 1 mm thick, but also thinner or thicker. Preferably the thickness is approximately 0.5 mm or thinner. The ski grip band 11 must tolerate mechanical load and wearing. It is,
however, an advantage if it is thin, amongst other things in order
characteristics of the skis which preferably are adapted to the skier.
Claims

1. Ski grip band (11) for use under a ski (1), comprising a grip part (17) adapted for providing grip against a snow base and a glide part (15) adapted to glide on a snow base, wherein the glide part (15) is adapted to extend backwards along the underside of the ski (1) from the front upwardly bent end of the ski (1), and the grip part (17) is adapted to extend backwards from the glide part (15), in the area of the grip zone of the ski, characterized in that
   - at press against the snow base the transition between the grip part (17) and the glide part (15) will be substantially without press step, as the grip part (17) and the glide part (15) in this transition is substantially flush and parallel with the underside of the ski (1);
   - the rear end of the ski grip band (11) is adapted to be positioned in such way that the end has the entire or a part of a rear glide zone (5) of the ski (1) behind it when the ski grip band (11) is attached to the ski (1); and that
   - the grip part (17) and the glide part (15) are self carrying.

2. Ski grip band according to claim 1, characterized in that the grip part (17) and the glide part (15) are connected adjacent to each other by means of a splice which has a longitudinal extension of less than 1/3 of the entire length of the ski grip band.

3. Ski grip band according to claim 1, characterized in that the grip part (17) and the glide part (15) are connected adjacent to each other by means of an overlap between the two parts, said overlap being fixed together.