

[54] **SAFETY HANDLE FOR A SKI POLE AND SAFETY KNOB FOR SUCH HANDLE**

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[57] **ABSTRACT**

The present invention relates to a safety handle for a ski pole and a safety knob for such handle, wherein said knob has a buffer body of elastic material, said body having at least one substantially elliptical cross-sectional area extending perpendicularly to the longitudinal axis of the ski pole. The safety knob is provided with means for attachment to the upper end of a conventional ski pole handle or the knob and the handle are constructed as an integral unit. In the latter instance the safety knob portion of the handle also comprises means for attaching the integral unit to the top of the ski pole.

1 Claim, 7 Drawing Figures

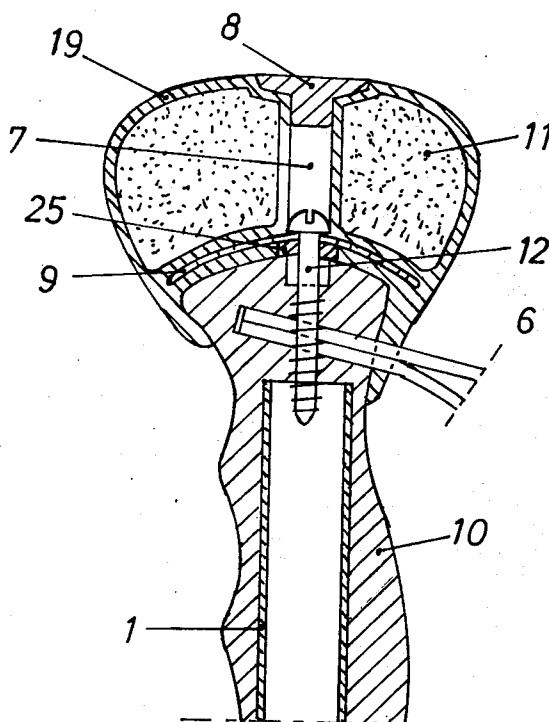


Fig. 1a

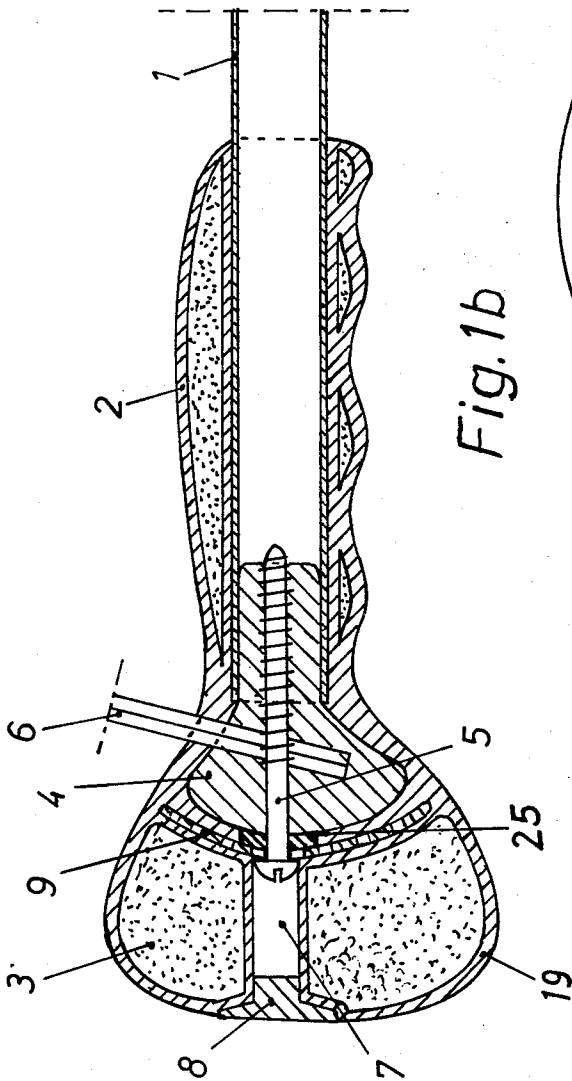
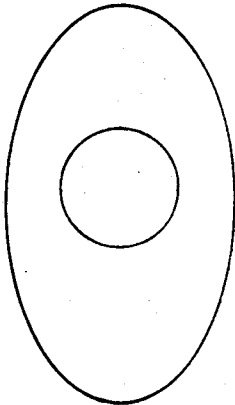


Fig. 1b



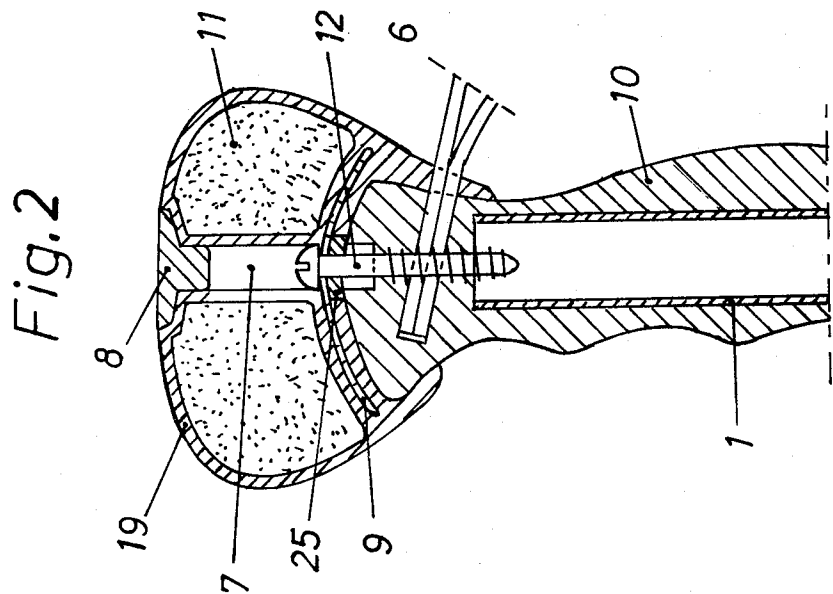


Fig. 3b

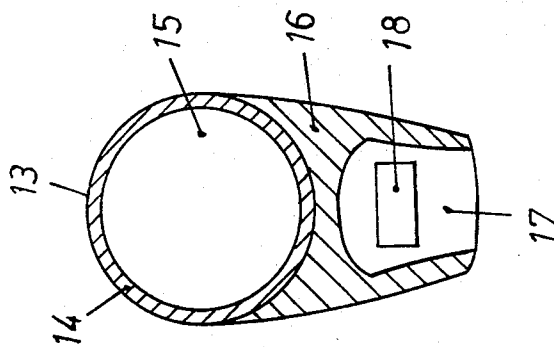


Fig. 3a

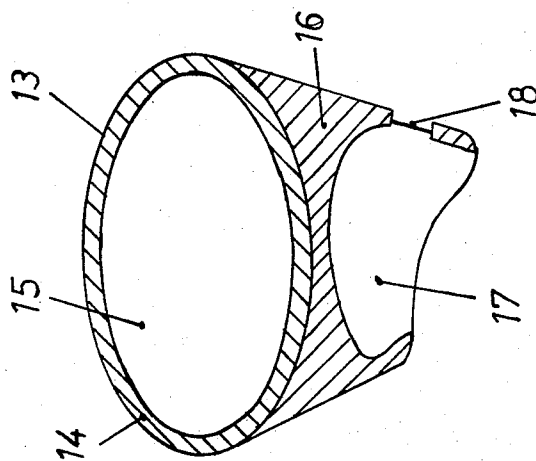


Fig. 4b

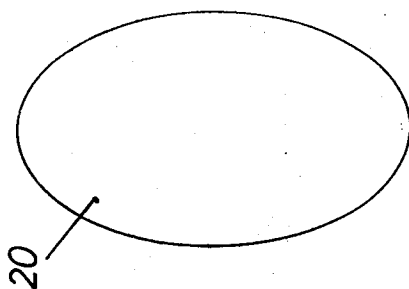
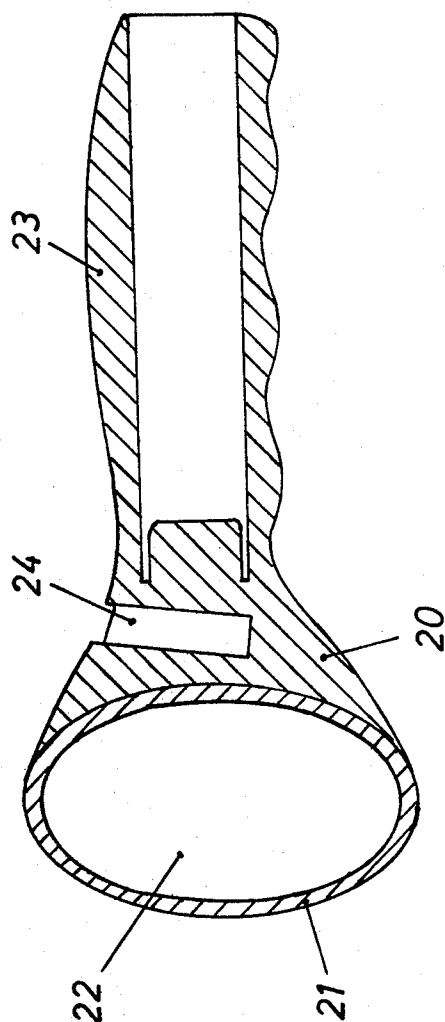


Fig. 4a



SAFETY HANDLE FOR A SKI POLE AND SAFETY KNOB FOR SUCH HANDLE

BACKGROUND OF THE INVENTION

The present invention relates to a safety handle for a ski pole and to safety knob for such handle. Ski pole handles have so far been made of solid material, for example plastic material, leather or the like. While these handles are shaped so as to properly fit into the hand of the skier; however, prior art handle offer but little protection to the human body when the skier falls, specially at higher speeds and happens to hit on the relatively small, hard surface at the upper end of the handle. Severe, even fatal injuries have resulted due to the penetrating effect of the ski pole when the body falls on the end of a ski pole.

The penetrating effect was occasionally so large that the ski pole entered the skier's body and even complete penetrations have been observed. Thus, the need for an improvement and larger safety has been pressing ever since skier's have used poles. However, so far this problem has not been solved as evidenced by the repeatedly occurring accidents occasioned by ski poles.

It has been attempted in the prior art to attach the handle to a ski pole under the bias of a spring. However, this feature not only causes an unsafe feeling when ascending, it also does not eliminate the just-mentioned dangers because when falling the handle is pressed onto the pole until it reaches its end position whereby the full hardness of the ski pole becomes effective on the body of the falling skier.

It has also been suggested to form the upper ends of the usually hard ski pole handles with a bulge in order to provide a larger contact surface when the skier falls. However, this construction has apparently not been successful as a safety handle which is presumably due to the fact that a simple bulge is not handy and that the bulge alone does not substantially reduce the hardness of the force contacting the skier's body.

OBJECT OF THE INVENTION

In view of the above it is the main object of the invention to provide a safety knob for a ski pole handle which will provide a cushion or buffer between the top of the ski pole and the body of the skier.

It is another object of the invention to overcome the above outlined drawbacks.

Yet another object of the invention is seen in that the present safety knob may form an integral unit with a ski pole handle.

A still further object of the invention is to construct the safety knob in such a manner that it will tightly fit on top of prior art ski pole handles.

Yet another object of the invention is to attach the safety knob in such a manner to the handle that in case of an accident in which the skier does not fall on top of the ski pole, but in which the pole is stuck while the skier keeps falling, that the knob, along with the strap may be pulled off the handle or pole with with strap around the skier's wrist without injury to the joints of the skier.

SUMMARY OF THE INVENTION

The above objects have been achieved according to the invention by a safety knob or handle top which is

made of elastic material to form a buffer having elliptical or oval cross-section in a plane extending perpendicularly to the longitudinal axis of the ski pole and having a length corresponding substantially to the width of a hand, said knob having a bulging top and a tapering portion which attaches to the handle proper.

The safety knob or handle, according to the invention, is capable to distribute the pressure of the impact between the ski pole and the body onto a rather large surface and thereby softly cushion such impact without impairing the ease of handling of the ski pole and without increasing the slight weight of the pole. In addition, the present safety knob or buffer reduces the danger of injury in that it is capable to elastically yield in response to a sudden high pressure impact when the body of the skier falls onto the top of the handle of his poles. Such elastic yielding facilitates the lateral displacement of the pole out of the path of the falling body.

The buffer or safety knob may be made of elastic, springy material and it may also be constructed as a gas filled hollow body. In yet another embodiment of the invention the buffer and handle may be constructed as a unit made of foam rubber. The streamlined shape of the buffer, the top view of which is elliptical, follows harmoniously out of the shape of the handle and gives the buffer an elegant appearance. Another advantage of the present buffer is seen in that it facilitates the ascending on skis, whereby the skier tends to support himself by pressing down on the top of the ski pole handle. Thus, in this instance the small top surface of the conventional ski pole handle no longer presses itself painfully into the palm of the hand. To the contrary, the hand now rests on a larger, softer surface of the buffer. The shape of the buffer thus takes into consideration the anatomic requirements of the hand which rests upon the handle.

By making the surface of the buffer rough the grip traction is increased. For a comfortable ascending, the solidity of the buffer is also important. Therefore, the solidity of the buffer is selected so that it will be sufficiently soft and elastic in response to a sudden impact while simultaneously offering a satisfactory support to the skier's hand which will not unduly yield to the steady pressure by the hand.

Still another advantage of the invention resides in that the ski pole, due to the presence of the buffer or knob, may not suddenly slip out of the hand when it is leisurely held during a relatively slow descent. This feature is rather desirable because it avoids having the skier trying to regain control of his ski pole which heretofore would be pulled along by the strap around the skier's wrist.

In accordance with the invention it is also intended to construct the buffer or safety knob as an integral part of the handle proper. On the other hand, the handle and the buffer may be constructed as two separate parts and the buffer is so arranged as to fit onto conventional ski pole handles. Another advantage is seen in that the structure of the present knob or buffer assures a low heat conductivity which makes the present handle rather warm to the hand.

By means of the present safety handle it is possible to remove another source of danger which in the past resided in that if the ski pole tangled with an obstacle

and thus was held back the skier kept going with the strap of the ski pole still around his wrist. It has been observed in the past that the strap will not usually skip over the wrist, but rather will remain attached thereto even in those instances where the ski pole bends in the direction of motion of the skier due to the pulling forces resulting from such tangling. In these instances it has frequently happened that the pulling forces caused a dislocation of the wrist and/or shoulder joints.

The invention avoids the above danger in that the present safety buffer is attached to the ski pole with such a defined force that the buffer, along with the strap, is pulled off the ski pole with a force which is not dangerous to the human body.

In order that the invention may be clearly understood it will now be described by way of example with reference to the accompanying drawings, wherein:

FIG. 1a illustrates a sectional view of a safety handle according to the invention in which the handle proper and a foam rubber buffer are shaped as an integral unit;

FIG. 1b illustrates a top view of FIG. 1a;

FIG. 2 illustrates a sectional view of a safety knob or buffer adapted to be attached to a conventional ski pole handle;

FIGS. 3a and 3b illustrate sectional views of another embodiment of a safety knob or buffer also adapted to be attached to a ski pole handle and comprising a hollow body;

FIG. 4a illustrates a sectional view of a hollow buffer forming an integral unit with the handle proper; and

FIG. 4b is a top view of FIG. 4a.

Referring to FIG. 1a there is shown a section through an embodiment of a safety handle attached to a ski pole 1. The handle 2 proper and the buffer 3 form an integral unit. The crown or head 4 of the handle is made of a suitably solid plastic material which nevertheless is elastic or resilient to a certain extent. For example, such material may be polyethylene and the crown 4 must fulfill simultaneously several purposes. One purpose is to connect the entire safety handle to the upper end of the tubular ski pole 1 by means of the screw 5. Another purpose is to simultaneously secure within the crown the strap loop 6 so as to attach it to the safety grip. Further, the crown 4 must prevent the tearing of the buffer 3 off the handle 2 along the lower portion of the buffer which surrounds the crown 4 and along which portion the cross section of the material is not strengthened by the pole 1. This must be assured where extreme mechanical forces are applied and the invention accomplishes this by giving the crown the shape shown.

In order to insert the screw 5 and to make it easily accessible the buffer 3 is provided with a channel 7 which may be closed at its upper end by a closure member 8.

In the present embodiment the safety handle comprising the handle 2 proper and the buffer 3 is made of a foam material, for example of polyurathane type. The foam material has along its entire surface a tight closed outer skin.

The crown 4 has a lower portion which extends into the top of the tubular ski pole 1. Such lower portion is slotted to a length to which it extends into the ski pole. Such slotting corresponds to the slots in a dowel and the lower portion of the crown 4 thus acts as a dowel when the screw 5 presses against the inner surface of

the ski pole 1. This feature provides the possibility of selecting the strength of connection of the safety handle and the ski pole in order to pull the safety handle off the ski pole when the pole itself is restrained from further advance and the strap 6 keeps being attached to the skier's wrist.

In order to provide a proper anchoring of the handle on the ski pole against lateral pressures a plate 9 of hard material, for instance hard aluminum, is embedded in the foam material. The close contact between the plate 9 and the foam material may even be improved by providing the plate 9 with a plurality of apertures into which the foam rubber grips. The plate 9 has a central aperture through which the screw 5 extends. In order to provide a proper spacing between the crown 4 and the plate 9 a washer 25 is inserted underneath the plate 9 to surround the screw 5. The washer may be formed as an integral protrusion of the crown 4, if desired.

The plate 9 may have a shape substantially conforming to the top surface of the crown 4. On the other hand, the plate 9 may be straight and due to its being embedded in the foam material an even better anchoring of the buffer 3 on the crown 4 will be accomplished.

In the embodiment of FIG. 1a the removal or loosening of the safety handle from the ski pole is assured because the handle 2 proper is pulled over the top end of the ski pole 1 with but a slight biasing tension. In addition, a wedging action is accomplished by the slotted lower portion of the crown 4 acting in the manner of a dowel. The sum of the holding forces or predetermined maximum is so selected that the wedging action may be overcome by a critical tensional force occurring in the longitudinal direction of the ski pole. Thereby, if an accident occurs the danger of overstressing the arms and joints of the skier is instantly removed.

Contrary to the above, prior art handles made of plastic material could be mounted on a ski pole only with the aid of larger biasing forces. Thus, such mounting could usually be done only in a sport shop or at the place of manufacture. However, according to the invention it is easy to remount the handle on top of the ski pole after it has been pulled off, for example, due to the ski pole being restrained by an obstacle, because the remounting may be accomplished by loosening the screw 5, whereby the slotted lower portion of the crown 4 may be inserted into the tubular ski pole 1 thereupon the ski pole is tightened and the safety handle is mounted again.

The necessary maximum value of the forces affecting the wedging action of the dowel type crown portion 4 is determined by the size of the screw 5, as well as by the selection of the shape, dimension and elasticity of the crown 4. In the embodiment, according to FIG. 1, one example has been disclosed; however, this embodiment is not intended to limit the invention as other embodiments are possible. The shown embodiment is merely representative. For example, it is possible to select the material of the crown 4 and, especially of its lower portion extending into the pole 1, to have such an elasticity that its insertion will provide the necessary wedging action without a screw.

FIG. 1b shows a top view of FIG. 1a; however, it will be appreciated that a sectional view through the buffer 3 perpendicularly to the longitudinal axis of the pole 1 will also substantially show the elliptical shape.

FIG. 2 illustrates a longitudinal sectional view through a safety handle of conventional construction with a safety buffer or knob attached thereto. The safety buffer 11 also has a tight closed outer surface 19. However, the lower end of the buffer 11 tapers into a collar providing a cavity into which the top of the handle 10 tightly fits. The handle 10 is secured to the pole 1 and the collar may be pulled over the top end of the handle since the buffer is made of a suitable foam material. A screw 12 secures the buffer 11 to the top of the handle 10 and simultaneously secures the ends of the strap loop 6 inside the safety handle. Thus, the attachment of the plug-on-buffer 11 to the handle 10 can be usually accomplished by means of the screw which is present anyway for the securing of the strap loop 6.

The solid plate 9 which is embedded in the foam material and which is made from, for example, hard aluminum or a washer of a size corresponding to that of the plate 9, assures a fast hold of the buffer 11 on the handle 10. This effective connection between the buffer 11 and the handle 10 are important because in FIG. 2, contrary to the embodiment of FIG. 1, the buffer and handle do not initially form an integral unit as in FIG. 1, rather such unit must be accomplished by the solid and permanent connection of the plug-on-buffer to the handle in order to meet all contingencies in practical use. The channel 7 and the closure member 8 correspond to the same elements shown in FIG. 1a.

The plug-on-buffer 11 may be made of materials such as used in connection with FIG. 1, for example, an elastic foam material which has respective strength and especially pressure resistance and which also has a substantially tight closed outer skin or surface.

FIG. 3a and 3b illustrate a plug-on-buffer 13 formed as a hollow body. FIG. 3 illustrates a sectional view taken through the longitudinal axis of the buffer and extending through the longitudinal axis of the ski pole, not shown. Whereas FIG. 3b illustrates a sectional view through a plane rotated by 90° relative to the view of FIG. 3a, but also extending through the longitudinal axis of the pole. The buffer 13 comprises a balloon skin 14, which contains a hollow space 15 which may be filled by a gas under pressure. The balloon skin 15, made of material having the required strength is attached to a base member 16 which provides a downwardly extending collar surrounding a cavity 17 into which fits the upper portion of a ski pole handle. In the wall of the collar surrounding the cavity 17 there is provided an aperture 18 which serves for inserting the hand strap loop. The illustrated plug-on-buffer 13 may,

for example, be glued to the top portion of the handle.

The hollow space 15 which if desired may be filled with gas, as mentioned, enables the buffer 13 to elastically yield when it impacts upon a skier's body. This embodiment has the further advantage that upon impact the top surface of the buffer 13 is increased whereby the pressure on the skier's body is reduced.

FIG. 4 illustrates a safety handle in which the buffer and the handle 23 form an integral unit. The buffer 20 forms a functional extension of the grip and contains a hollow space 22 surrounded by a balloon skin 21. The base portion of the buffer 20 is provided with a blind hole 24 for attachment of the strap loop not shown. The base portion of the buffer 20 is provided with an extension which fits into the upper end of the tubular ski pole. Here again the press fit between the ski pole and the safety handle may be selected in such a manner that the handle will be pulled off the ski pole before any joint dislocations occur.

FIG. 4b illustrates the oval shape of the buffer in a top view. It will be appreciated that a sectional view, perpendicular to the longitudinal axis of the pole corresponds to the sectional view shown in FIG. 4a due to the egg-shape of buffer 20.

What is claimed is:

1. In a safety knob for the handle of a ski pole having a longitudinal ski pole axis which lies in a plane of symmetry for said knob, wherein a buffer body made of elastic material forms said knob, the improvement comprising an upwardly bulging first portion forming an ellipsoid having a minor axis and a major axis, said major axis extending in said plane of symmetry and perpendicularly to said ski pole axis, said major axis having a length corresponding substantially to the breadth of a human hand, a downwardly extending second portion facing toward said handle, said second portion merging into said first portion along the periphery of a first plane section defined by said minor and major axes, said second portion having a shape so that any one of a number of further plane sections extending in parallel to said first plane section is substantially an ellipse, said second portion tapering downwardly towards the ski pole in such a manner that said further plane sections diminish in area from said first plane section toward said ski pole, whereby said first and second portions together are shaped to provide in combination an elastical yielding of the knob in the direction of said ski pole axis and a large surface area on top of said first portion.

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