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Wehr

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[54] **SAFETY HEAD FOR SKIS**

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[52] **U.S. Cl.** ..... **280/11.13 T**

[51] **Int. Cl.** **A63c 5/00**

[58] **Field of Search** .. 280/11.37 R, 11.37 E, 11.37 B, 280/11.37 H, 11.37 P, 11.17, 11.13 T, 11.13 R, 11.13 S, 11.13 A

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Assistant Examiner—Milton L. Smith

[57] **ABSTRACT**

A safety head adapted to be fastened to the front end of a ski to enclose the sharp ski tip. The safety head consists of a body of resiliently deformable synthetic rubber-like material and is provided with a convex front face covered with a smooth and even metal cap.

5 Claims, 8 Drawing Figures

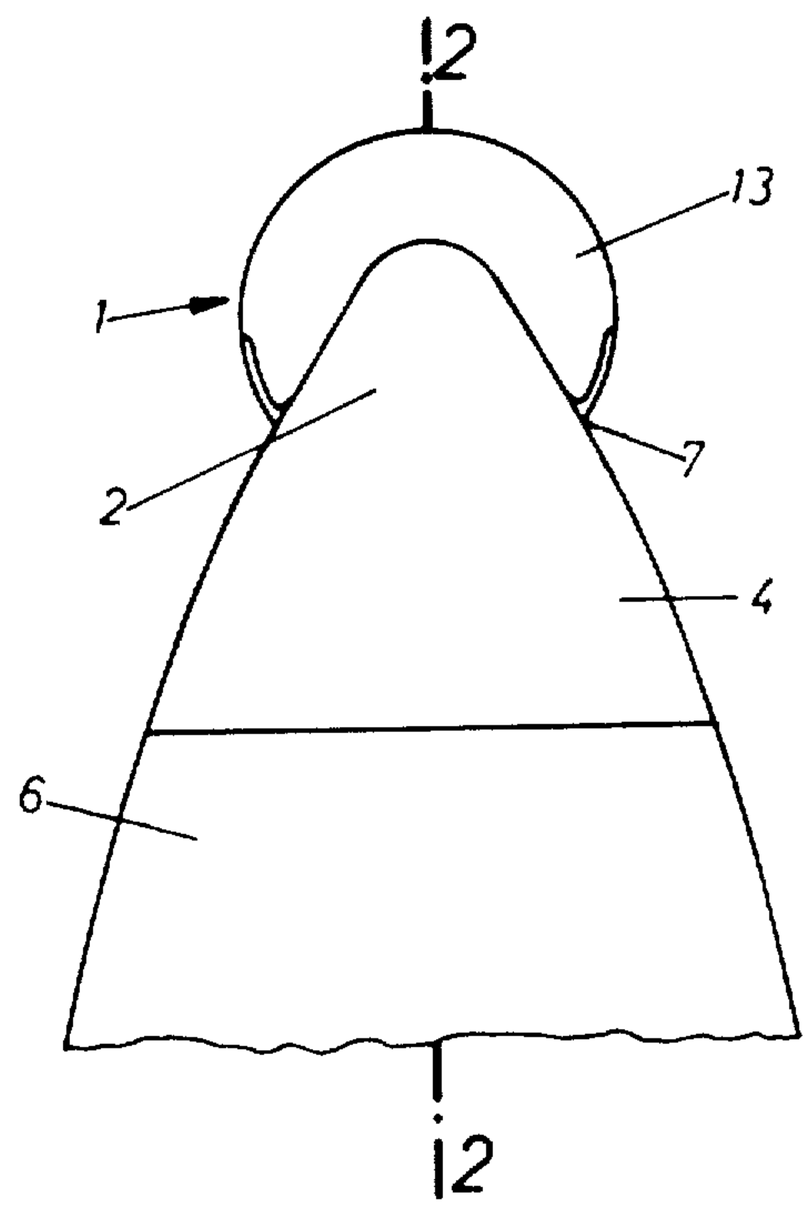


Fig. 1

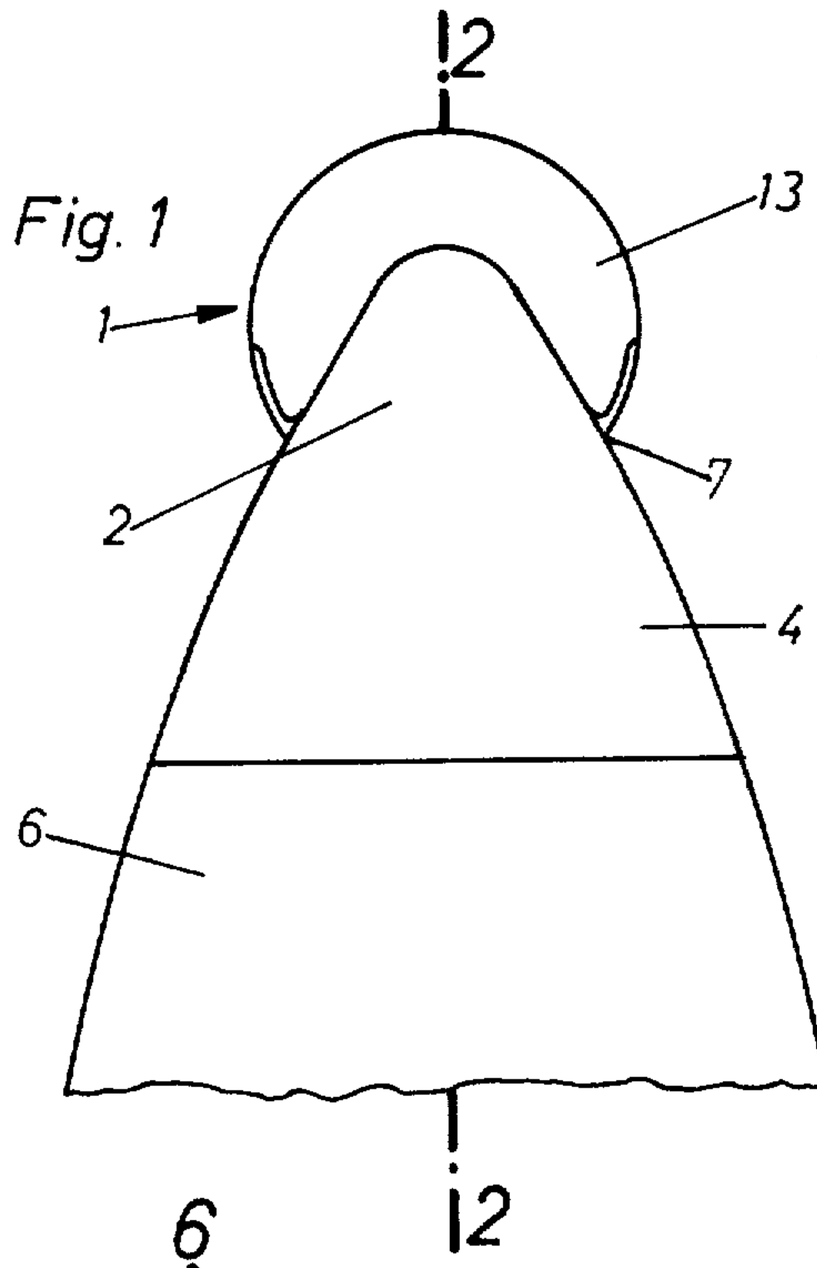


Fig. 2

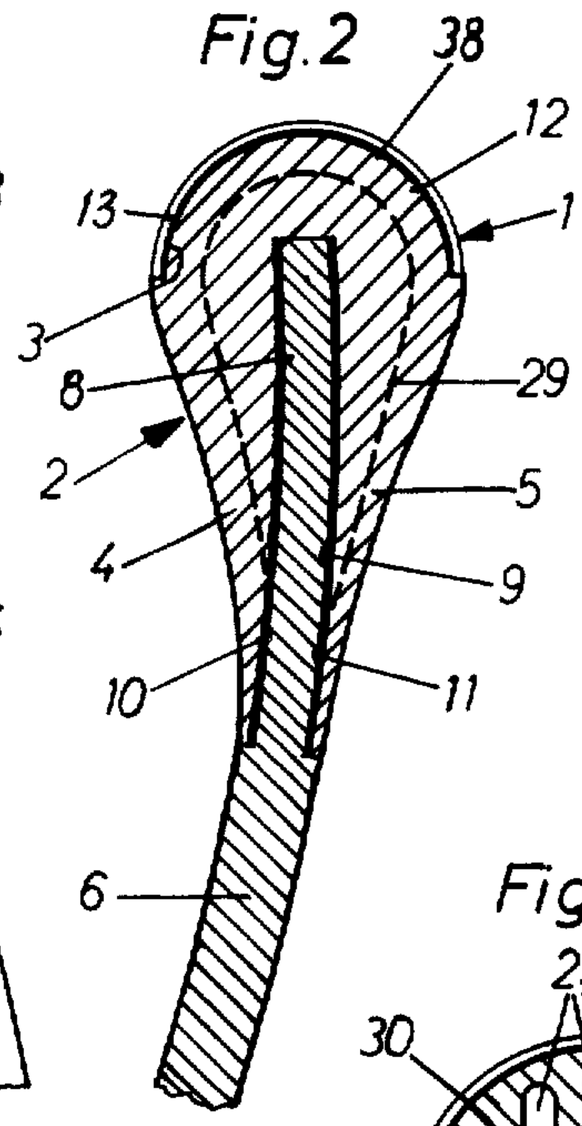


Fig. 3

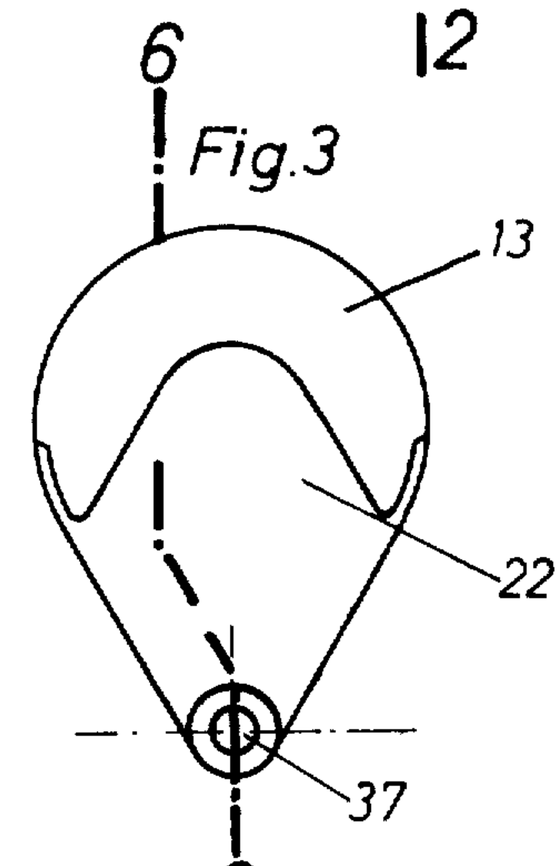


Fig. 4

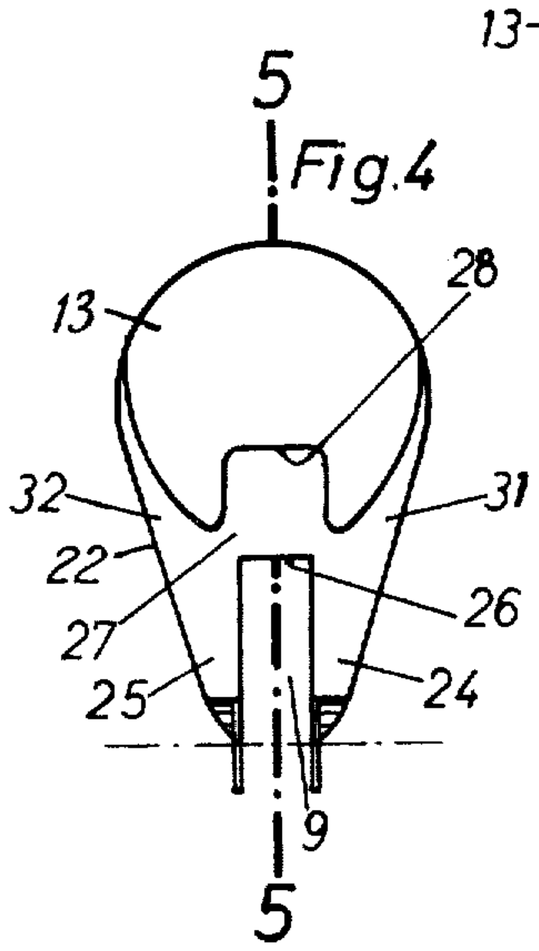


Fig. 5

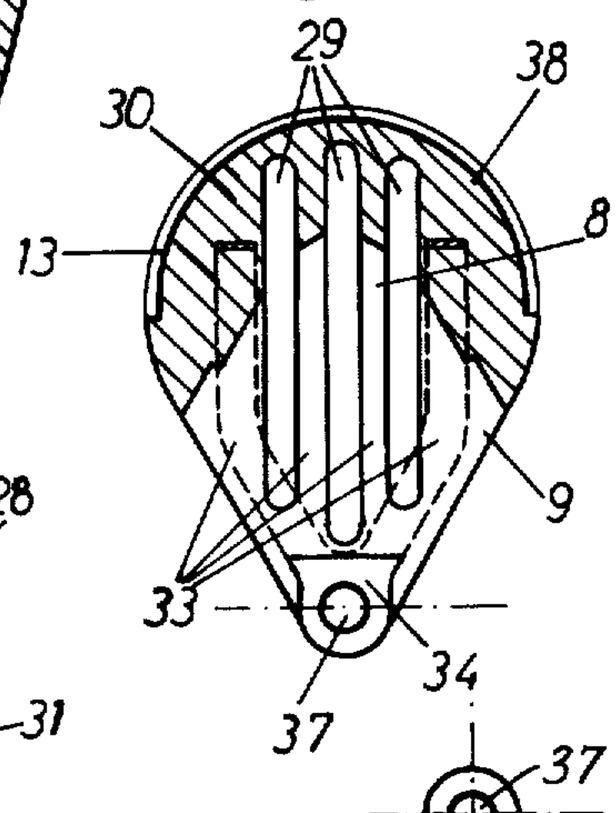


Fig. 6

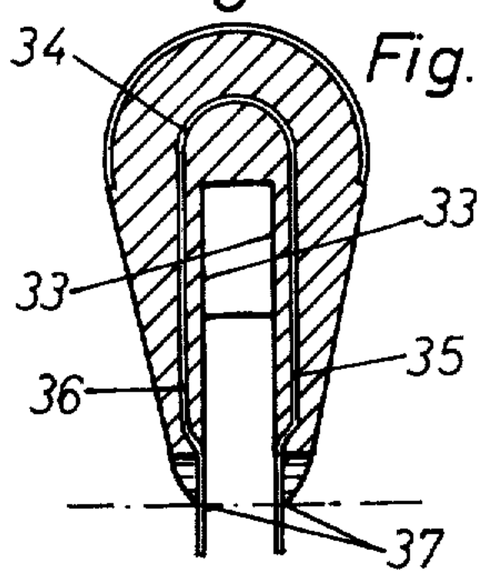


Fig. 8

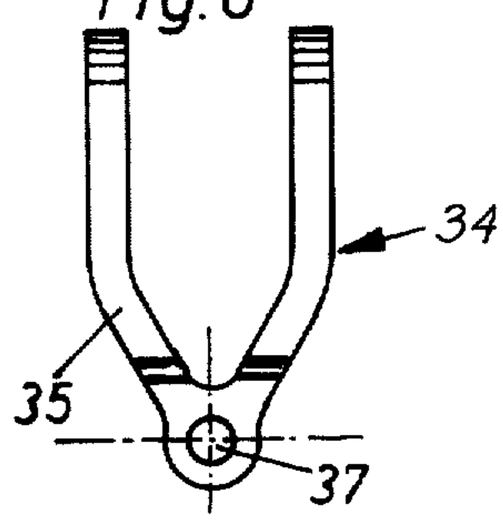
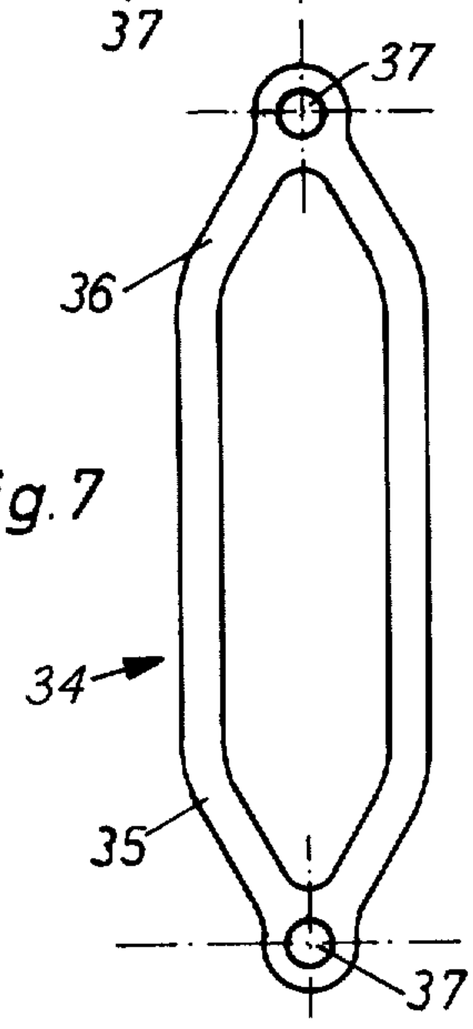


Fig. 7



SAFETY HEAD FOR SKIS

Modern skis have sharp tips at their front ends. Many injuries result from these sharp ski tips.

The main object of the invention consists in providing means for avoiding or at least reducing injuries resulting from a collision during down-hill movement.

According to the present invention a safety head for a ski tip is provided, comprising a body having a convex front face and a cavity which is open at the rear end of the body, at least the front face of the body being covered with a thinwalled outer cap made of a material having a higher specific gravity than that of the body.

Further objects, features and advantages of the invention result from the following description in connection with the drawing, which shows embodiments of the invention by way of example.

FIGS. **1** and **2** show a plan view and a longitudinal section respectively of one embodiment of a safety head fastened to a ski;

FIGS. **3** and **4** show a plan view and a side view of a second embodiment of a safety head;

FIGS. **5** and **6** show sectional views of the safety head taken along lines **5—5** and **6—6** of FIGS. **4** and **3** respectively; and

FIGS. **7** and **8** show views of a reinforcing insert used in the embodiment of FIGS. **3** to **6**, showing the insert in its original state and in its end state after bending into a U-shaped form.

A safety head **1** comprises a body **2** of synthetic material having a relatively low weight. The front portion **3** of the body **2** has the shape of a hemisphere. An upper rear flange **4** and a lower rear flange **5** are associated with the front portion **1**. The front portion **3** and the flanges **4, 5** form the integral body **2**. The outer surfaces of the flanges **4, 5** converge from the frontside to the backside, so that the height of the body is smallest at the rearward end.

The width of the flanges **4,5** increases in the rearward direction corresponding to the given shape of a ski front end or ski tip **6**. The body is closed at its sides rearwardly up to the point **7**, where the two flanges **4,5** are associated with the body. In the interior of the body a flat cavity **8** is formed which is open at the rear side. This cavity is connected with a lateral slot **9** defined between the two flanges **4,5**. The cavity and the slot are of the same height. Double sided adhesive strip portions **10** and **11** are fastened to the upper surfaces of the cavity **8** and the slot **9** and to the adjacent bottom surfaces of equal size respectively. The two adhesive surfaces of the strip portions **10, 11** facing one another are covered with release paper strips.

In order to fasten the safety head **1** to the ski tip **6**, first the release paper strips are removed, then the two flanges **4, 5** are bent away from one another and the safety head is pushed onto the ski tip, whereafter the two flanges **4,5** are pressed against the ski surfaces for a short period. Because the shape of the cavity is adapted to the shape of the ski tip, after this operation the safety head is secured to the ski.

The body **2** of the safety head **1** is made of a yieldable material so that in the case of a collision it can consume impact energy by deformation. If rubber-like material is used as the material for the body **2** two disadvantages would result because of the substantial friction at the surface of the body. If the body **2** strikes against the dressing of the body of a skier the deflection of the ski

will be too small. The ski in a sort of way is held tightly at the collision point because of the frictional effect of the rubber body. The danger of injuries will be increased thereby. The great friction at the surface of the body would further result in a sticking effect between one of the skis and the rubber body of the other ski during down-hill movement. The danger of falling down is increased thereby.

These two disadvantages are however avoided by fastening, at least at the convex front face **12** of the body **2**, a cap **13** made from a material having a higher specific gravity. This cap **13** preferably is made of metal having a smooth and even outer surface. As can be seen from the drawing, the body is relieved at its outer surface in the area where it is covered by the cap in order to form a recess into which the cap is inserted such that the outer surfaces of the cap and the adjacent portions of the body **2** are flush with one another. The cap **13** is provided with rearwardly extending side flanges which end near the point **7** (FIG. **1**) in order to avoid contact between the longitudinal ski edges and the rubber-like body.

If a ski provided with such a safety head impacts against the body of a skier because of the low-friction surface of the cap it is no longer stuck to the body of the skier but instantaneously will be deflected, thereby consuming only a small portion of the impact energy. A further advantage resides in that the safety head has a large thrust surface, whereby the impact force per area unit and therefore the danger of serious injuries are reduced. The hard and relatively inelastic cap **13** transfers the thrust pressure uniformly distributed onto the synthetic rubber-like body **2** whereby this body is uniformly deformed and a maximum of deformation energy is consumed.

According to an advantageous feature, the cap **13** is adhered to the front face of the body by a double-sided adhesive intermediate section **38**.

FIGS. **3–6** show a second embodiment of a safety head which is fastened to the ski tip by a rivet, bolt or other pinlike anchoring element. The synthetic body **22** provided with a metal cap **13** has an upper flange **24** and a lower flange **25**, which contrary to the flanges **4,5** converge backwardly not only in their height but in their width. The cap **13** also in this embodiment also has side flanges extending backwardly approximately to the rear edge **26** of the body side walls **27** but these side flanges are provided with a respective recess **28**. The recess **28** is situated in the area of the rear edge **26** of the body **22** and serves to facilitate the deformation of the synthetic body in this area, because the synthetic material can flow out from the uncovered area of the body side wall **27** through the gap between the cap **13** and the side edge of the ski (not shown).

In the region of the cavity **8** and the slot **9** a plurality of longitudinal grooves **29** are provided extending in the front wall **30**, upper wall **31** and bottom wall **32** of the body **22**. The longitudinal section shape of the groove is geometrically similar to the corresponding shape of the body **2** (see dotted lines in FIG. **2**). It is essential however that these grooves **29** starting from the cavity end at a distance from the outer surface of the body **22** and that ribs **33** are formed between each pair of grooves cooperating with the upper front and bottom surfaces of the ski tip (not shown). The grooves contact the ski surfaces and therefore the head is fixedly arranged at the ski. Owing to the grooves addi-

tional hollow spaces are provided facilitating the deformation of the body **22** with the result, that a still greater amount of deformation energy can be absorbed in the case of a collision. These grooves **29** further result in a weight reduction and allow a deformation of the ribs for adaption to extreme thick or thin skis.

If the safety head is to be fastened on finished skis, especially used skis, it is advantageous to use a separate anchoring element as a rivet, bolt or screw. This anchoring element could be inserted into aligned holes provided at the end of the body flanges **24, 25** and a corresponding hole in the ski. In this construction, however, the deformable material of the body **22** could be split off. In order to avoid this, a thin-walled reinforcing insert **34** bent into a U-shaped form is embedded into the body **22.** The two legs **35, 36** of the insert **34** are connected with and preferably embedded in the body flanges **24, 25** respectively. A hole **37,** or a pair of holes, is provided at the rear ends of the legs **35,36** respectively. The holes of one flange and the holes of the other flange are aligned with one another and an anchoring bolt is inserted into the aligned holes of the flanges and the enclosed ski tip. This bolt secures the reinforcing insert **34** to the ski which in turn secures the body to the ski owing to the embedding of the insert in the material of the body **22.** According to an alternative embodiment, the reinforcing insert is adhered or vulcanized to the body **22.**

In FIGS. **7** and **8** the reinforcing element **34** is respectively shown before bending into the U-shaped condition and after this bending operation. The reinforcing element **34** is provided with two narrow spaced bands. This construction helps not only to reduce weight as compared with a plate-shape reinforcing element, but facilitates the production of the body reinforced by the U-shaped element, because during molding of the body the narrow bands of the U-shaped element are held in fixed relation with respect to the molding tool by means of the projecting parts adapted to form the grooves **29** of the body.

I claim:

1. A safety head for a ski tip comprising a body having a convex front face and a cavity which is open at the rear end of the body, said body including an upper flange and a lower flange, the two flanges being spaced from one another by an amount substantially equal to the thickness of the ski, and a thin-walled reinforcing insert secured to said body, said insert having a U-shaped longitudinal cross-section with two rearwardly extending legs, each of which is connected to a respective one of said flanges, at least one hole being provided at the rear end of each leg such that at least two holes are aligned with one another and adapted to receive a connecting pin or bolt extending through the ski.

2. A safety head as claimed in claim **1,** wherein in said upper and lower flanges and in the front wall of the body a plurality of parallel longitudinally extending grooves are provided, said grooves being formed in the cavity with the bottom surfaces ending at a distance from the outer surface of the body, each two parallel grooves forming a rib between one another, all of the ribs cooperating with the upper surface, front surface and lower surface of the ski.

3. A safety head as claimed in claim **1,** comprising a thin-walled metal cap covering the front face of said body, said body consisting of a resiliently deformable material.

4. A safety head as claimed in claim **3,** wherein said cap is arranged in a recess provided at the front face of the body such that the cap surface and the adjacent body surface are flush with one another.

5. A safety head as claimed in claim **3,** wherein said cap includes said flanges extending rearwardly approximately to the rear end of side walls connecting the upper and bottom flanges of the body, said side flanges being provided with recesses in the region of the rear edges of the body side walls.

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