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2,718,403

FIG. 1

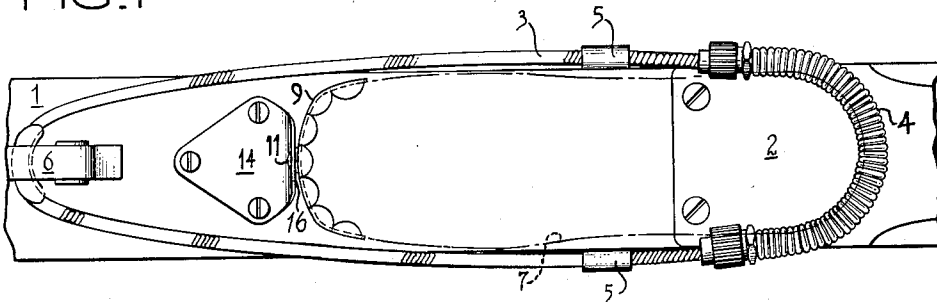


FIG. 2

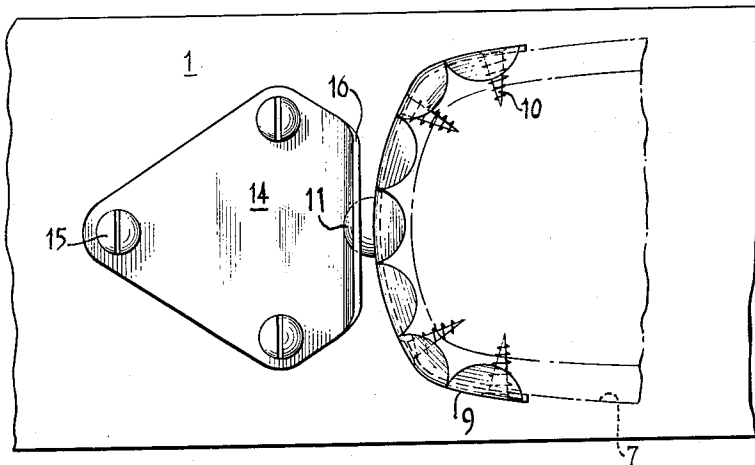
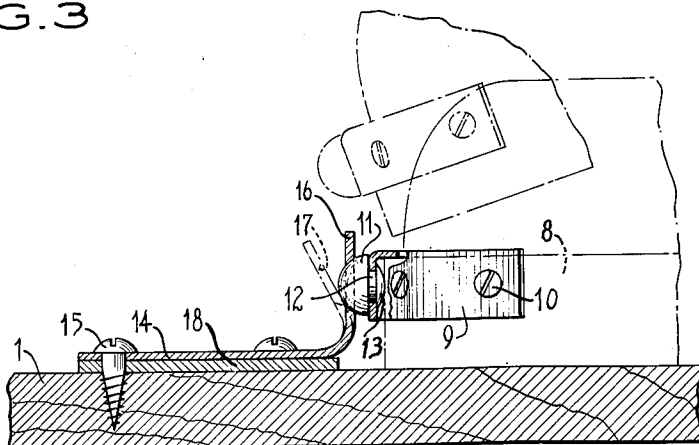


FIG.3



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SAFETY SKI BINDING

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4 Claims. (Cl. 280—11.35)

This invention relates to a safety ski binding of the quick release type and has for a principal object provision for holding a boot engaged on the ski for movement thereof in all normal skiing activity and for permitting the ready disengagement of the boot from the ski upon the application of an abnormal force exerted in the movement of the boot in any direction relative to the ski.

Another object of the invention is to provide a quick release binding of simplified form and at less expense than any prior binder now known to me.

A further object is to provide a toe engaging element in a binding assembly against which the skier will be unable to "lock" or seal the boot either intentionally or inadvertently.

A still further object is to provide a quick release binding automatically operable to effect disengagement of a skier's boot whenever an emergency condition arises which could cause physical injury.

These and other objects and advantages of the invention will be apparent from the following description of a preferred embodiment of the same as shown by the accompanying drawings in which

Fig. 1 is a top plan view of the binding assembly on a ski showing in outline the sole of a boot in position of operative engagement by the binding;

Fig. 2 is an enlarged plan view of the toe engaging members shown by Fig. 1; and

Fig. 3 is a vertical sectional view showing detail of the parts seen in Fig. 2.

The ski 1 is shown in Fig. 1 with a heel plate 2 and a conventional spring tensioned heel binding operatively mounted on the ski. The heel binding includes a looped cable 3 extending at each side of the ski with the ends thereof connected by a heel spring 4 adapted to embrace the boot heel rearwardly of the plate 2. The cable is held along each side of the ski by eared guides 5 and is looped at the front in a throw lever 6 for tightening the spring 4 against the heel. The outline of a boot sole is indicated at 7. The construction of this type of cable binding is well known and may be considered herein as illustrative of any conventional tensioning means adapted to yieldably press a ski boot forwardly into engagement against the toe stop assembly.

As best shown by Figs. 2 and 3 the toe engaging means for the boot, the sole of which is indicated at 8, comprises a toe plate member 9 adapted to be secured to the toe end of the sole as by screws 10. The toe plate is provided with a centrally disposed forwardly projecting button or domed member 11 which is suited for extension from the toe end of the sole at the approximate center of the ski width. The domed member 11 may be fastened on the plate 9 in the manner of a rivet with a shank at 12 passing through the plate and held therein by a headed inner end at 13. A toe stop plate 14 is secured to the ski 1 as by mounting screws 15 and formed with a vertically disposed flanged portion 16 bent upwardly at one end thereof with an opening 17 arranged to receive the dome 11 of the toe plate. For proper axial

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registration of the opening 17 with respect to the domed member a suitable spacer or shim plate as at 18 with mounting holes registering with the mounting holes of plate 14 may be inserted underneath plate 14. Thus the assembly may be suited to accommodate ski boots having various sole thicknesses.

The toe stop plate 14 is of tempered spring steel material to provide for the flexing thereof at the bend in the metal and may be made in two or three or more thicknesses. The thickest plate is designed for use by adults and the lightest construction for juvenile or child use, it being understood that a skier's weight and comparative skill will largely determine the relative yielding character desired in the vertically flanged retaining wall portion 16.

From the dot dash line position of the wall 16 of Fig. 3 it will be seen that forward pressure of predetermined intensity by movement of the boot relative to the ski will cause the wall to bend forwardly of the ski at an angle and permit the nose of the dome-like projection 11 to slide or snap out of engagement in the opening 17. It will also be noted that the dome is of spherical formation and preferably as a hemispherical button projects into engagement in the opening 17 at its forward portion only. The opening 17 is circular having countersunk or chamfered edges as indicated. Thus the dome forms a ball joint element permitting limited universal movement of the boot relative to the ski without disengaging the two members. In normal skiing activity the heel cable and spring 4 yieldably tension the dome into its socket opening for lateral or upward twisting movement of the skier's boot in order to guide the skis as desired. The tempered steel socketed wall 16 is of sufficient stiffness to resist all such normal pressures without flexing at the bend in the plate. However, on the application of an abnormal force such as might be caused by the front of the ski striking an obstruction or the skier falling and forcefully twisting the boot laterally on the ski the wall 16 will bend forwardly to release the ball-like dome and effect release of the boot from the ski. Thus any forces otherwise sufficient to cause a sprain or other injury to the skier were the boot to remain "locked" on the ski will be effective to release the boot.

It should also be noted that the yieldable spring plate cannot be inadvertently or intentionally locked with the dome. The strength of the spring plate to resist separation and to yield when forces of predetermined intensity are applied is built and designed into the part so that the skier cannot intentionally or inadvertently "lock" the ball joint as by excessively tightening the tensioning means engaging the heel of the boot.

The intensity of the forward force required to release the domed projection may be determined as mentioned above by providing a tempered steel plate of a desired thickness. It may be noted also that while as shown in the drawings the vertical wall 16 is substantially perpendicular to the horizontal plane of the ski, it may be initially bent at a slight angle rearwardly or forwardly of the ski in which case the force required to disengage the dome projecting from the boot toe will vary more or less in a plate of a given thickness. The predetermined forward force for releasing the engagement might, of course, be applied directly by movement of the boot, by the resultant of a lateral or upward force or combination thereof, by the increased force of the heel spring through lifting the heel with an abnormal force, or by a combination of any of these movements of the boot relative to the ski and plate wall 16.

What is claimed is:

1. In a safety binding for ski boots a toe piece adapted to be secured to the toe end of the sole of a boot and provided with a projection spherically formed for extending forwardly of said toe end at the approximate

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center of the toe width, a spring metal plate member mounted on the ski with a yieldable vertical wall portion bent upwardly therefrom and extending transversely of the ski centrally of the width thereof with an opening in said wall for engaging the sides of said projection under tension, said wall being yieldable forwardly of the ski upon application of a predetermined forward longitudinal pressure against the same, said opening holding said spherically formed projection lodged therein for limited universal movement of a ski boot and tensioning means for resiliently pressing said projection in said opening.

2. The structure of claim 1 in which said wall opening is circular and of a lesser diameter than the base of said spherical projection.

3. In a safety binding for ski boots a toe plate for attachment to the toe end of the sole of a ski boot and provided with a hemispherical dome for central extension forwardly in the plane of the boot sole, a spring metal plate fixed to the ski with a vertically disposed retaining wall bent upwardly therefrom and tensioning means for pressing a boot forwardly against said wall, said wall having a circular opening therein serving to receive said

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head and having countersunk edges for slidably embracing said dome for limited universal movement thereof in the opening, said plate wall being angularly yieldable forwardly of the ski to release said dome upon application of a predetermined forward force with relation to said ski.

4. The structure of claim 3 in which spacer means are provided under said spring plate to selectively adjust the vertical elevation of said opening with respect to said dome.

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