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BRAKE ATTACHMENT FOR SKI

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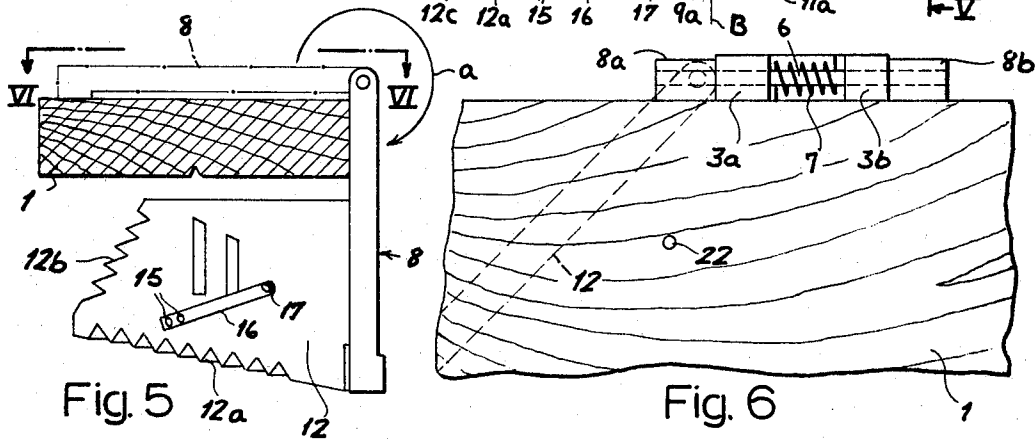
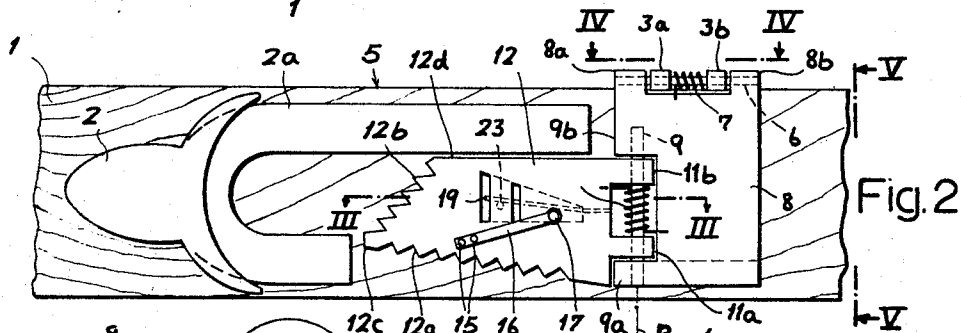
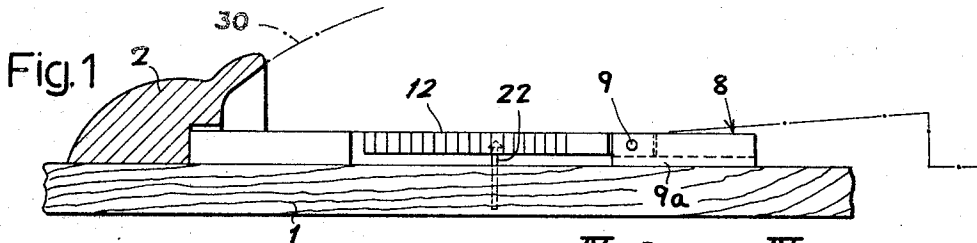


Fig. 6

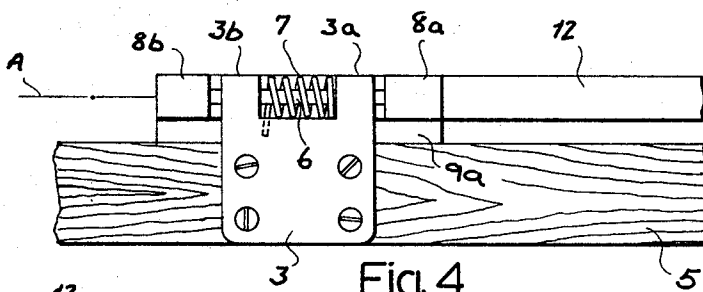


Fig. 4

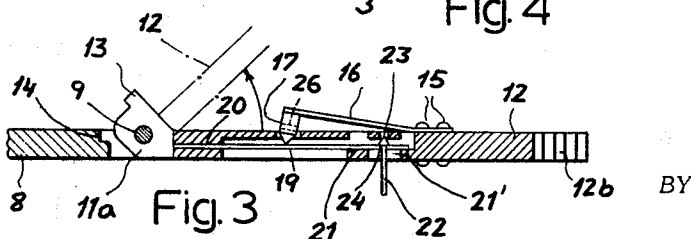


Fig. 3

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BRAKE ATTACHMENT FOR SKI

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10 Claims

ABSTRACT OF THE DISCLOSURE

Attachment for a ski which, upon removal of the skier's boot from the runner, flips sideways from a normal position on the upper surface of the runner into an off-normal position in which a preferably serrated tongue projects downwardly below the runner to dig into the underlying terrain and arrest a runaway ski.

My present invention relates to a brake attachment for a ski.

In order to minimize the risk of leg fractures during skiing, it has become the practice to provide skis with bindings which automatically release the skier's boot from the runner in the event of a fall. Although this expedient eliminates a grave danger, it creates the risk that a fallen skier may lose either or both runners as they continue unattended down a sloping snow or ice field. Apart from leaving the skier stranded, such a runaway ski may also imperil other persons in the vicinity.

It is, therefore, the general object of my invention to provide means associated with a ski binding for automatically arresting the runner whenever the skier's boot becomes detached therefrom, the arrangement being such as not to impair the mobility of the runner under normal skiing conditions.

A more specific object of my invention is to provide a braking attachment for the purpose described which, during periods of non-use, is maintained inoperative even in the absence of a boot yet which is automatically conditioned for possible operation as soon as the skier steps onto the runner.

In pursuance of the aforesaid object, a brake attachment according to my invention consists essentially of three basic parts, i.e. a support fixedly secured to the runner, preferably at an edge thereof, an intermediate member hinged to the support in the region of the boot, and a tongue hinged to the intermediate member, the latter member being spring-loaded to swing about a generally longitudinal axis with reference to the support whereas the tongue is spring-loaded to swing about a generally transverse axis with reference to the intermediate member. Normally, i.e. in the presence of a boot engaged by the binding, the intermediate member and the tongue are held down onto the upper surface of the runner; when the boot is removed, the intermediate member swings laterally outwardly and the tongue pivots relatively to the intermediate member into a braking position in which it projects downwardly beyond the underside of the runner to dig into the snow or ice of the underlying terrain.

Another feature of my invention resides in the provision of a detent mechanism designed to hold the tongue and its intermediate member onto the upper surface of the runner, e.g. during storage or transportation, until the user steps on the runner for the first time. The skier then depresses a camming element which, by disengaging two co-operating elements from each other, deactivates the detent so that a subsequent detachment of the boot from its binding will operate the brake attachment and arrest the runner.

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The invention will be described in greater detail with reference to the accompanying drawing in which:

FIG. 1 is a side-elevational view, partly in section, of a portion of a runner equipped with a brake attachment according to the invention;

FIG. 2 is a top plan view of the assembly shown in FIG. 1;

FIG. 3 is a fragmentary sectional view taken on the line III—III of FIG. 2;

FIG. 4 is a side-elevational view as seen from the line IV—IV of FIG. 2;

FIG. 5 is a sectional rear view through the runner taken on the line V—V of FIG. 2, showing the attachment in its off-normal position; and

FIG. 6 is a top plan view as seen from the line VI—VI of FIG. 5.

In FIGS. 1 and 2 I have shown a conventional ski runner 1 provided with the usual binding of which only a toe clamp 2 has been illustrated; the skier's boot has been indicated in dot-dash lines at 30 in FIG. 1. The associated heel clamp, not shown, is assumed to be so constructed as to release the boot 30 from the binding in the event of severe lateral stresses, occurring during a fall, as is well known per se.

A support plate 3, best seen in FIGS. 4 and 5, is fastened by means of screws 4 to a longitudinal edge 5 of the runner 1 and has a pair of eyes 3a, 3b traversed by a pintle 6 which also passes through eyes 8a, 8b of an anchor plate 8 normally lying flat against the upper surface of runner 1 as shown in FIGS. 1 and 2. Eyes 3a, 3b, and 8a, 8b constitute, together with pintle 6, a hinge by which the plate 8 can swing about a longitudinal axis A approximately in line with the edge 5.

A coil spring 7, wound about pintle 6, urges the plate 8 laterally outwardly as indicated by arrow a in FIG. 5. A second hinge comprises eyes 9a, 9b on plate 8 and eyes 11a, 11b on a flat tongue 12 as well as a pintle 9, this pintle being surrounded by a coil spring 10 which tends to swing the tongue 12 upwardly about a transverse axis B, FIG. 2, with reference to the intermediate member 8 as indicated by arrow b in FIG. 3. Eyes 11a, 11b are formed with spurs 13 which come to rest in recesses 14 of plate 8 to limit this relative swing to an acute angle of approximately 45°.

Tongues 12, which is partly framed by a J-shaped ridge 2a secured to runner 1, has two serrated edges 12a, 12b, meeting in a point 12c, and a smooth edge 12d perpendicular to its hinge axis B. When the boot rests on the assembly 8, 12, these elements are held down against the force of their biasing springs 7, 10 so that the attachment 3, 8, 12 remains inoperative.

If a fall dislodges the boot from the binding 2, tongue 12 swings upwardly (arrow b) with reference to plate 8 which in turn pivots laterally (arrow a) relatively to plate 3 through an angle of 270° to assume the position shown in full lines in FIG. 5. Under these conditions, tongue 12 comes to rest with its smooth edge 12b parallel and close to the underside of runner 1 and, as best seen in FIG. 6, extends forwardly from its hinge at an acute angle (here about 45°) to the longitudinal direction of the runner. Its serrated edges 12a, 12d dig into the terrain and arrest the runner even in a canted position thereof.

In accordance with another feature of my invention, I provide a detent mechanism adapted to hold the tongue 12 flat against the runner 1 when the brake attachment is to remain inoperative, as during transportation and storage. For this purpose I provide the tongue 12 with a resilient arm in the form of a leaf spring 16, attached to it by rivets 15. The free end of arm 16, opposite the rivets, carries a downwardly tapering head 17 aligned with a hole 25 in the body of the tongue. The opposite face of tongue 12 has an elongated recess 18 into which projects

a ledge 21 having an aperture 21'. A spring wire 19, anchored at 20 to the body of tongue 12, overlies the ledge 21 and, in the position of FIG. 3 in which the boot is assumed to be absent, engages a shoulder 24 formed by the head 23 of a pin 22 which rises from the runner 2 through aperture 21'. When the skier steps onto the runner 1, preparatorily to fastening the boot to the binding 2, the slightly inclined spring arm 16 is depressed by the boot 30 so that its head 17 enters the hole 25 and cams aside the spring wire 19 which is thus disengaged from the retaining element 22, 23 so that tongue 12 is free to swing upwardly when and if the boot is subsequently removed. Head 17 may have a lateral notch 26 to receive the wire 19 and be locked by it in position so as to prevent a re-engagement of co-operating detent elements 19 and 22, 23 after the boot has been lifted, yet before the springs 7, 10 have swung the plates 8, 12 away from the surface of runner 1.

If desired, runner 1 may be provided with a lateral recess along edge 5 to accommodate the plate 3 in a non-protruding position. It will be apparent, however, that this plate could also be mounted on the upper surface of the runner 1, in the region of the binding 2.

I claim:

1. In a ski having a runner provided with boot-engaging means, the combination therewith of a brake attachment for arresting said runner upon detachment thereof from a skier's boot, said attachment comprising a support fixed to said runner, an intermediate member hinged to said support adjacent said boot-engaging means and resting on an upper surface of the runner in a normal position of the attachment in which said member is overlain by the boot, said member being swingable relatively to said support about a first axis substantially parallel to the longitudinal direction of the runner, a tongue hinged to said member for swinging relatively thereto about a second axis substantially perpendicular to said first axis, said tongue being overlain by the boot in said normal position, first spring means anchored to said member and tending to swing same laterally outwardly about said first axis into an off-normal position, and second spring means anchored to said tongue for swinging same about said second axis into a braking position in which said tongue projects downwardly beyond the underside of the runner upon said member occupying said off-normal position thereof.

2. The combination defined in claim 1 wherein said first axis extends at a longitudinal edge of the runner, said member in said off-normal position bearing sideways upon said edge under the action of said first springs means.

3. The combination defined in claim 2 wherein said member has a portion extending downwardly beyond the underside of the runner in said off-normal position,

said tongue being so hinged to said portion as to lie entirely underneath the runner in said off-normal position.

4. The combination defined in claim 3 wherein said tongue and said member are provided with co-operating stop means for arresting said tongue, in the off-normal position of said member, in said braking position with said tongue extending forwardly from said second axis across the underside of the runner at an acute angle to said longitudinal direction.

5. The combination described in claim 4 wherein said tongue is provided with a smooth edge bearing upon the underside of the runner in said braking position, said tongue also having a serrated edge digging into the underlying terrain in said braking position.

6. The combination described in claim 2 wherein said support is secured laterally to the runner at said longitudinal edge.

7. The combination described in claim 1, further comprising detent means on said runner for temporarily deactivating said attachment by holding said member and said tongue against the upper surface of the runner, said detent means being releasable by the weight of the overlying boot.

8. The combination described in claim 7 wherein said detent means comprises a retaining element rising from the runner, a co-operating element on said tongue engageable with said retaining element, and camming means on said tongue actuable by the boot for disengaging said co-operating element from said retaining element.

9. The combination defined in claim 8 wherein said co-operating element is a spring wire and said camming means comprises a spring arm rising at a small angle from said tongue, said spring arm terminating in a downwardly tapering head engageable with said spring wire upon downward pressure on said spring arm.

10. The combination defined in claim 1 wherein said intermediate member and said tongue are plates lying flat against the upper surface of the runner in said normal position.

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