

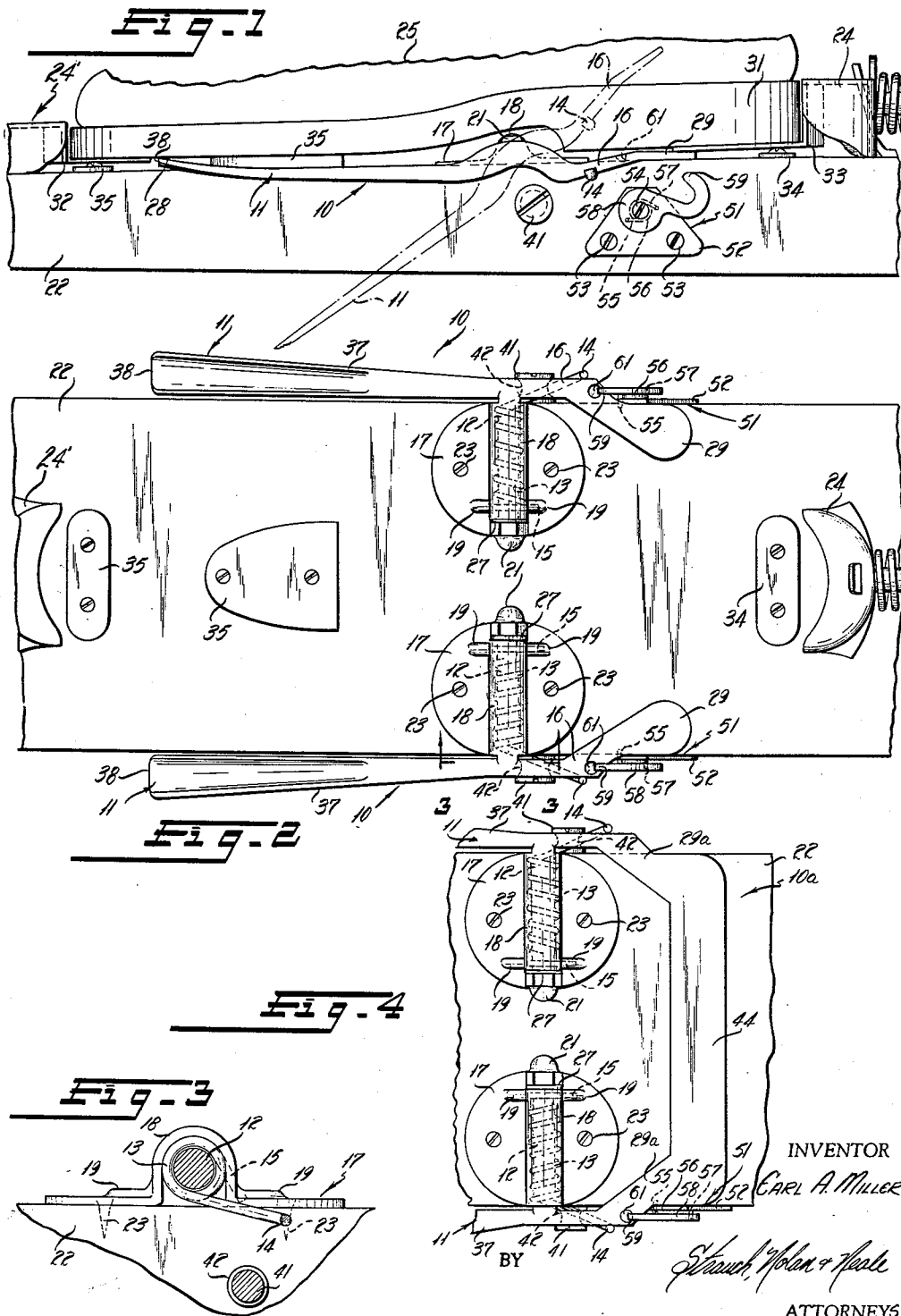
March 26, 1963

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3,083,028

SKI STOP

Filed Jan. 15, 1958



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3,083,028

SKI STOP

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Filed Jan. 15, 1958, Ser. No. 709,102

12 Claims. (Cl. 280—11.13)

The present invention relates to an attachment for skis and more particularly to an emergency stop attachment adapted to automatically arrest movement of a loose ski and prevent the damage, personal injury and retrieving time loss that an accidentally lost ski often causes.

In view of the widely increasing interest in skiing in recent years and the consequent increase in skiing novices and ski festivals, exhibitions and carnivals attended by ever increasing numbers of participants and spectators, the property damage and personal injuries resulting from loose and lost skis has become a problem of considerable importance. While stop attachments of various forms have been provided to aid ski enthusiasts in scaling the ski slopes and even braking the speed during a ski run, see United States Letters Patent 2,208,214 to H. G. Fortune dated July 16, 1940, no stop designed to effectively brake and stop the rapidly moving projectile-like flight of a lost ski and at the same time offer a minimum resistance to normal use of skis has been developed to applicant's knowledge.

It, accordingly, is the primary object of this invention to provide a stop for skis adapted to occupy a non-operating position so long as the skis are attached to a skier's boots and which will automatically move to an operative braking position when a ski becomes detached from the boot.

A further important object of the present invention resides in providing a stop of the character called for in the preceding object which will occupy an inoperative position so long as the skis are attached to the skier's boots and provide a minimum of interference with normal skiing activities.

Another object of the present invention resides in the provision of a ski stop attachment assembly made up of a minimum of rugged elements adapted for attachment to any conventional ski by the user with a minimum of effort and skill.

Still another object of the present invention resides in the provision of a ski stop in the form of a narrow pivotally supported blade designed to lie in juxtaposition to a side edge of a ski adjacent the boot engaged face having an angularly related arm designed to normally overlie the boot engaged face of the ski in position to be clamped between the boot and ski to maintain the braking portion of the blade in inoperative parallelism to the ski edge and boot engaged face during normal skiing activity.

A further object of the present invention resides in providing the ski stop of the preceding object with a biasing spring arranged to propel the blade to an operative position at right angles to the plane of the boot engaged face of the ski when the ski becomes detached from the boot.

Still another object of the present invention resides in providing the ski stop of the preceding object with an abutment screw shaped to cooperate with the blade in its operative position to limit the biasing action of the spring and support the blade against sidewise deflection under influence of the stresses developed as the blade digs into the snow to brake and stop the gliding movement of a free ski.

A further object of the present invention resides in providing the ski stop of any of the preceding objects with a catch member adapted to lock the stop in its inoperative position in parallelism to the ski edge and boot engaged face whereby ready stacking of the skis is made possible

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to assure convenient storage and ready portage and transportation of the stop equipped skis.

Still other objects will appear from the following description and appended claims when read in conjunction with the appended claims wherein:

FIGURE 1 is a side elevational view of the intermediate boot engaged fragment of a ski fitted with a single stop of the present invention illustrated in conjunction with one of the many forms of conventional automatically releasable boot securing mechanisms in wide use today;

FIGURE 2 is a fragmental top elevational view of the intermediate boot engaged fragment of a ski fitted with a pair of the stops of the present invention in accord with another manner of using the stops of the present invention;

FIGURE 3 is a fragmental sectional view taken substantially on line 3—3 of FIGURE 2 to illustrate the manner of securing the main elements of the ski stop of this invention to the ski; and

FIGURE 4 is a fragmental top plan view of a modified dual blade stop made in accord with the present invention and intended for use in place of the pair of independent stops illustrated in FIGURE 2.

With continued reference to the drawings wherein like reference numerals are used throughout the several views to indicate the same parts, the ski stop of the present invention is indicated generally by numeral 10. The stop proper is composed of an elongated blade 11 of suitable form and shape having a cylindrical mounting stem 12; a biasing spring 13 illustrated as a coil spring surrounding stem 12 with its opposite ends 14 and 15 respectively underlying the rearwardly projecting blade portion 16 and overlying the stem 12; a clamp or attachment plate 17 having a laterally extending, upwardly arched portion 18 adapted to freely but closely cooperate with the coils of spring 13 and a pair of aligned but shallow, upwardly arched portions 19 extending at right angles to and located at opposite sides of arched portion 18 to alternately receive end 15 of its associated spring 13; and a journal nut 21, preferably a standard dome shaped cap nut, operable together with the coil spring 13 to form a journal for mounting stem 12. In attaching the stop 10 of this invention to a ski 22, the stem 12 is preferably located at a point on the upper ski face between the boot toe and heel clamps 24' and 24, which may take any suitable form, normally bridged by the instep of the boot 25 as illustrated in FIGURE 1. With stem 12 so located at right angles to the longitudinal axis of the ski and a flat side of nut 21 in surface engagement with the upper surface of the ski, clamp plate 17 is secured in place with its upwardly arched portions 18 and 19 respectively receiving the coils of spring 13 and end 15. Suitable securing screws 23 threaded directly into the ski body are preferably employed to secure clamp plate 17 in place. As screws 23 are turned home to draw plate 17 into surface contact with the upper ski surface, end 15 of the spring normally lying in a plane parallel to the upper ski surface and tangent to the uppermost point of cylindrical stem 12 is drawn down to tension spring 13. If extreme care is used in constructing spring 13, that is in locating the relative angles of the ends 14 and 15, the operating position of stop blade 11 can be determined sufficiently by coincidence with the relative positions of spring ends 14 and 15 in the relaxed condition of the spring. Also the outward movement of stem 12 and its blade 11 will be prevented by the securement of spring ends 14 and 15 respectively to blade 11 and clamp plate 12. However, to further assure against such outward disassembling movement of stem 12 and its blade 11, clamp plate 17 acting through spring end 15 bearing on stem 12 will clampingly engage nut 21 against the upper ski face with its apertured end sufficiently close to the inner end of arched portion 18

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of plate 17 to abuttingly contact the inner end of the arched portion or a washer 27 interposed between said end and nut 21. Therefore, further assurance against lateral disassociation of the blade from clamp plate 47 is assured as an incident function of nut 21.

As clearly appears from FIGURE 1, the forward portion of blade 11 slopes upwardly at a slight angle from stem 12 to a feather edge 28 located adjacent but rearwardly of toe clamp 24' while rear end 16 inclines upwardly at a somewhat steeper angle and its free end then flattens out into a laterally offset arm 29. Arm 29 is offset laterally in opposite directions, depending upon whether the stop is intended for application to a right or left ski, so as to overlie the upper ski surface in the region of the boot heel 31. As a consequence, arm 29 will be engaged between boot heel 31 and the upper surface of ski 22 so long as the toe and heel clamps 24' and 24 effectively engage the boot toe and heel plates 32 and 33 provided in the illustrated type of ski boot clamps to retain stop 10 in its normal inoperative position at the upper side edge of the ski. In other types of boot attachments, the arm 29 will be similarly located to retain stop 10 in its inoperative position as illustrated. As most forms of boot attachments used today employ some form of heel and toe plates 34 and 35 for firmly engaging the boot heel and toe and assuring a transversely level relationship of the ski and boot, the arm 29 normally does not impart any canting of the ski with respect to the boot that might be objectionable to the wearer.

To assure an adequate braking area, the forward end of blade 11 diverges outwardly along its outer edge 37 as will most clearly appear from an inspection of FIGURE 2 to provide a relatively wide laterally concave tip 38. In the inoperative position of stop 10, tip 38 preferably engages the sole of boot 25 and, due to the presentation of a laterally concave, forwardly and upwardly inclined leading portion, little, if any, resistance to normal skiing speed is offered by the present ski stop even if the stop should contact the surface of the snow in normal skiing activity.

Since it is difficult in quantity production practice to accurately relate the two spring ends 14 and 15 and still secure sufficient spring tension to propel the blade 11 forcefully to an upright position, the present invention contemplates that the spring ends be disposed to define between them a greater included angle than actually required so as to assure an excessive spring tension upon assembly of the stop attachment with the ski as heretofore described. In order to predetermine an effective braking position with such an overstressed spring and at the same time relieve stem 12 from bending forces imposed by the rearward and side thrusts imposed during braking of the ski, the present invention provides a combined abutment and operating position limit screw 41 adapted to be threaded into the ski edge juxtaposed to blade 11. As most clearly seen in FIGURES 2 and 3, screw 41 includes an enlarged head providing an annular groove 42 into which the convex under face of the leading blade portion is forced by the spring action upon release of blade 11. Since the side walls of groove 42 fit upwardly around the laterally convex face of blade 11, lateral forces acting on blade 10 during its braking operation will be effectively resisted at the same time that screw 41 positively backs up blade 11 to relieve stem 12 and plate 17 of the rearwardly acting braking reaction forces.

It will be apparent from the preceding description that the present invention provides a rugged, long life brake attachment of extremely simple yet highly effective construction that may be readily attached to the skis by users with no tools other than a conventional screw driver. It, furthermore, will be apparent that the stop 10 of this invention, though preferably employing an abutment and limiting screw 41, may by proper construction of spring 12 provide an efficient stop.

In event it is desired to employ two stops on each ski as illustrated in FIGURE 2, this may be accomplished by

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use of two pair of left and right side ski stops. Normally, however, a single pair of stops will be found sufficient with the left ski stop mounted as shown in FIGURE 1 and the right ski stop mounted on the other ski along the outside edge.

In the modification shown in FIGURE 4, a dual blade ski stop 10a is illustrated. For the most part ski stop 10a consists of a duplication of the two stops of FIGURE 2. The only real difference is that the oppositely offset arms 29a are integrally connected by a laterally extending cross arm 44. While such a fixed length cross arm 44 can be made of predetermined length to assure a dual blade ski stop 10a for conventional width skis, it will be readily appreciated that an adjustable width dual blade ski stop could be readily provided by extending offset arms 29 inwardly to dispose their inner ends in overlapping relation and oppositely slotting the inner ends to receive a clamp screw and nut assembly constructed in a manner that will be clear to those skilled in the art.

To expedite stacking and portage of skis embodying any of the several embodiments of this invention, a catch assembly 51 adapted for screwed attachment to the ski side edge may be provided. Such a catch assembly preferably comprises a generally triangular mounting plate 52 apertured adjacent its three corners to receive attachment screws 53 and 54. Plate 52 adjacent the aperture for screw 54 is preferably provided with a through opening of small diameter (not shown) disposed to receive the right angular bent end 55 of a single coil biasing spring 56 surrounding the shank of screw 54. The opposite end 57 of spring 5 is right angularly bent to enter into a suitable through aperture in the hub 58 of a hook-shaped catch element journaled on the shank of securing screw 54. To this end, the shank of screw 54 may be provided adjacent its head with an enlarged shank portion of predetermined length the inner end of which abuts the face of plate 52 and the periphery of which mounts spring 56 and journals the hub 58 of the catch element. The hook-shaped end 59 of the catch element is dimensioned to swing upwardly in a counterclockwise direction as viewed in FIGURE 1 to a position overlying the rearwardly extending portion 16 of blade 11 with its hook tip engaged in aperture 61 as shown in FIGURES 2 and 3. Spring 56 being biased to urge catch element end 59 clockwise and spring 12 being biased to urge rear end 16 of blade 11 counterclockwise, hook end 59 will be firmly engaged in aperture 61 to hold blade 11 in its inoperative position until manually released by the user.

It, accordingly, will be appreciated that catch assembly 51 provides a simple yet highly efficient safety catch to maintain stop attachment 10 or 10a in inoperative position so the pair of skis can be readily disposed in bottom contacting position for storage in a confined space and carried by the user with the same facility that skis without the stop may be carried.

The invention may be embodied in other specific forms without departing from the spirit or essential characteristics thereof. The present embodiments are therefore to be considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by the appended claims rather than by the foregoing description, and all changes which come within the meaning and range of equivalency of the claims are therefore intended to be embraced therein.

What is claimed and desired to be secured by United States Letters Patent is:

1. A ski stop comprising a blade member of longitudinally elongated formation having a laterally offset portion at one end; shaft means extending away from said member in the same lateral direction as said offset portion and disposed forwardly of said offset portion; resilient means connected to said member at a preselected point between said offset portion and said shaft means and arranged to bias said member in a predetermined direction; a mounting plate formed to receive said shaft means and clamp-

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ingly engage a portion of said resilient means remote from the connection thereof to said blade member; and securing means for removably securing said mounting plate and said shaft means to the upper face of a ski in pre-selected position between the conventional boot toe and heel attachment members with said offset portion overlying said ski face and said longitudinally elongated member lying outwardly of and adjacent an edge of said ski whereby, upon engagement of said offset portion of said blade member between a user's boot and said ski face, said resilient means will be tensioned and conditioned for urging said member from an inoperative position paralleling said ski face to an operative position substantially at right angles to said ski face upon disengagement of said ski from said boot.

2. The ski stop of claim 1 wherein said shaft means comprises an integral part of said longitudinally elongated member, said resilient means comprises a coil spring having its body portion surrounding said shaft means and angularly offset ends one of which is suitably bent to receive a portion of said longitudinally elongated member and said clamp plate comprises a generally planar body portion having a transversely directed upwardly arched portion dimensioned to closely surround said body portion of said coil spring and a longitudinally directed downwardly facing groove to receive the other angularly offset spring end and move said spring end toward said upper ski face to tension said spring by a winding action as said movement of said other spring end is effected by drawing said plate downwardly against said ski face.

3. The ski stop of claim 1 together with a catch assembly comprising a mounting plate adapted to be attached to said ski edge adjacent said boot heel attachment member and a hook-shaped catch pivotally mounted on said mounting plate and disposed to cooperatively engage said offset portion of said blade member and retain the blade member in its inoperative position paralleling said ski face to assure convenient stacking of a pair of stop equipped skis for transportation and storage.

4. The ski stop of claim 1 wherein the end of said shaft means remote from said blade member is provided with abutment means arranged to engage said mounting plate and prevent axial disassociation of said shaft means and blade member from said ski and cooperating mounting plate.

5. The ski stop of claim 1 wherein said blade member at the point of connection with said shaft means is arched upwardly to dispose said shaft means and said offset portion at a higher level than the major length of said blade member whereby said shaft means and said offset portion will respectively overlie said upper ski face in the area thereof normally disposed beneath the instep and heel of a user's boot retained between the conventional boot toe and heel attachment members.

6. The ski stop of claim 5 wherein the major length of said blade member is defined along one side by an edge paralleling the adjacent ski edge and an opposite side diverging in a direction forwardly of said shaft means and is of shallow U-shaped configuration in cross section with its upper edges lying in a common plane generally coinciding with the plane of the sole of the user's boot.

7. The ski stop of claim 5 wherein the under face of the major length of said blade member in a direction forwardly of the cross shaft slopes upwardly toward said common plane in a forward direction to impart a progressively flattening U-shaped cross sectional configuration throughout its length to present a substantial feather edge at its forward end disposed to bear against the sole of the user's boot and present a minimum drag so long as the ski remains attached to the user's boot.

8. A ski stop adapted to automatically move from a normal inoperative position alongside one edge of a ski paralleling the boot surface of said ski to a right angularly related operative position with respect to said boot surface of said ski comprising an elongated blade member

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having a normally forwardly directed braking portion adapted to extend alongside said one edge of said ski and a laterally offset rearwardly directed boot heel engaging portion adapted to overlie the boot surface of said ski in the region of said surface normally covered by the skier's boot heel; a laterally directed mounting shaft connected to said blade member adjacent the juncture of said blade member with said boot heel engaging portion, said mounting shaft being disposed to overlie the boot surface of said ski in the region of said surface normally underlying the instep of the skier's boot and having its free end threaded; a coil spring having its body portion surrounding said mounting shaft and its opposite ends angularly offset with one end extended into abutting engagement with the under surface of said blade member rearwardly of said mounting shaft and the other end overlying and inclined upwardly away from said mounting shaft; a flat sided nut threaded on said free shaft end; a mounting plate having a generally centered, laterally extending, upwardly arched recess adapted to snugly receive the body portion of said coil spring, a shallow, right angularly related, upwardly arched recess for receiving said other spring end and screw holes disposed on opposite sides of said generally centered recess; securing screws adapted to be inserted through said screw holes and threaded into the body of said ski to draw said mounting plate downwardly to its final home position against said boot surface of said ski normally underlying the instep of the skier's boot and to draw said other spring end downwardly to tension said spring, said mounting plate in its home position being disposed to lie between said blade member and the opposed end face of said nut to journal said blade member in said spring body and nut with its shaft free for limited relative rotation with respect to said coil spring body and said nut.

9. The ski stop of claim 8 together with a catch assembly adapted to be secured to said one edge of said ski and comprising a pivoted hook adapted to be moved to and from a position engaging a portion of the rear end of said blade member to lock said blade member in inoperative position during transportation and storage of a ski equipped with said ski stop.

10. The ski stop of claim 8 together with a limit screw disposed in said one edge of said ski adjacent said mounting shaft to predetermine the operative position of said bladed member.

11. The ski stop of claim 10 wherein said limit screw is provided with an enlarged head having an annular groove in its periphery to matingly receive a portion of said blade member and absorb lateral stresses imparted to said blade member during braking operating thereby relieving the mounting shaft and said mounting plate of the strain imposed by said lateral stresses.

12. In combination with a ski having conventional side edges and a conventional upper boot support face; a normally inoperative ski stop adapted upon disassociation of a ski from a skier's boot to be projected into an operative stop position to arrest the free movement of a lost ski comprising an elongated blade member having one end formed to provide a laterally and vertically offset heel engageable portion; shaft means extending laterally away from said blade member in the direction of said laterally offset heel engaged portion and terminating in a threaded end; means for journalingly supporting said shaft means between its ends on a ski with said blade member lying beyond one edge of said ski and said heel engaged portion of said blade member overlying the upper boot support face of said ski in the region normally covered by the skier's boot heel, whereby said blade member, upon contact of said heel engageable portion by the skier's boot heel will assume a normal inoperative position alongside said one edge of said ski; coil spring means having a body portion surrounding said shaft means and engagement end portions respectively engaged between said means for journaling said shaft means and said boot

support face and engaging said blade member operatively to forcefully project said blade member to an operative braking position at a downward angle to the upper boot support face of said ski upon release of said heel portion when the ski becomes disassociated from the skier's boot; and a flat sided nut threaded onto said threaded end of said shaft into end abutting engagement with a portion of said means for journallingly supporting said shaft means and a flat side contacting the upper boot support face of said ski to retain said shaft means against axial disassociating movement with said ski while permitting limited in and out threaded movement of said shaft means with respect to said nut during movement of said

blade member between its normally inoperative position and its operative braking position.

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