Nov. 19, 1929. L. D. GIBSON 1,735,922

TOE CLIP FOR SKI BINDING

Filed July 9, 1928

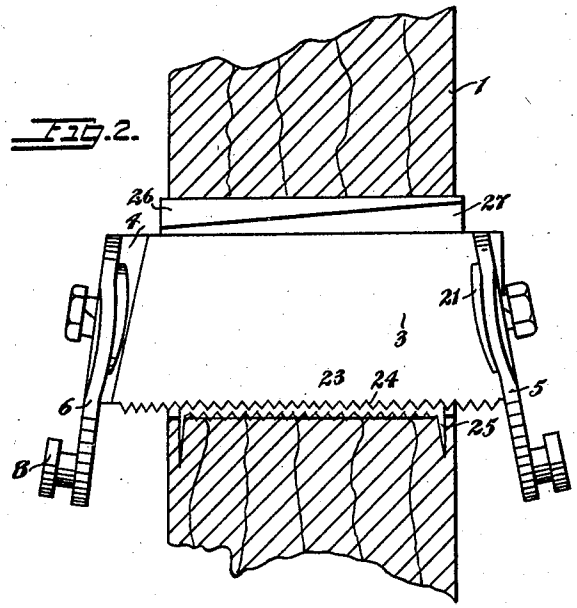


Fig. 2.

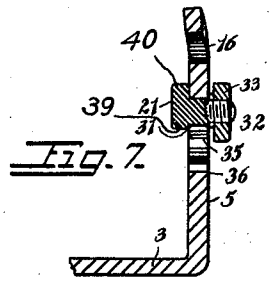


Fig. 7.

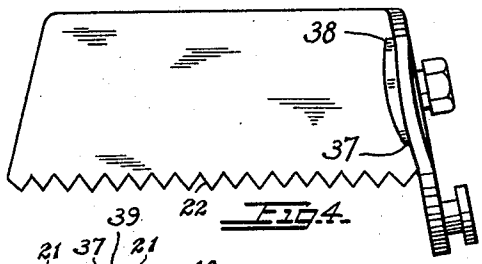


Fig. 4.

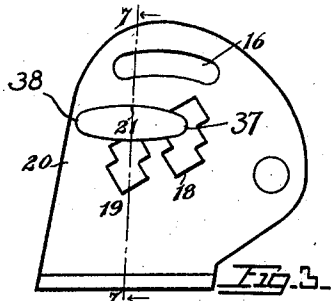


Fig. 3.

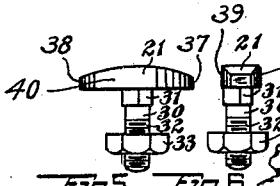


Fig. 5.

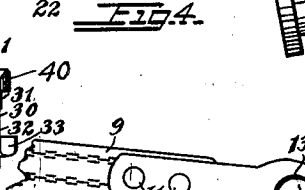


Fig. 6.

Fig. 1.

Inventor

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By Frank M. Slough

His Attorney

Patented Nov. 19, 1929 1,735,922

UNITED STATES PATENT OFFICE

LOUIS D. GIBSON, OF NORWAY, MAINE, ASSIGNOR TO THE W. F. TUBBS COMPANY, OF NORWAY, MAINE, A CORPORATION OF MAINE

TOE CLIP FOR SKI BINDING

Application filed July 9, 1928. Serial No. 291,467.

My invention relates to toe clips for ski binding, and relates particularly to toe clips of the type supported by the laterally disposed portions of ski toe irons adapted for the purpose of engaging the boot sole of the user of the ski.

In securing the boot of the user of a ski to the ski, many and various expedients have been resorted to, such as the use of straps alone, or straps in combination with toe iron side plates, which in turn are often provided with toe clips supported thereby, which project inwardly from the upstanding toe iron side plates and have a portion adapted for engagement with the upper surface of the boot sole, to maintain the boot sole in close fitting engagement with the upper surface of the ski, said sole being interposed between the toe clips and such upper surface.

An object of my invention, therefore, is to provide an improved toe clip for ski bindings.

Another object of my invention is to provide an improved toe clip for ski bindings applicable to the side plates of toe irons therefor.

Another object of my invention is to provide toe clips of the above character which are readily removable and replaceable by other toe clips of the same or similar kind and of the same or differing size, whereby variations in thicknesses of boot soles may be accommodated, at the same time securing a close-fitting engagement with the upper surface of the boot sole.

Another object of my invention is to provide an improved ski binding comprising toe iron side plates adapted to receive toe clips and to hold the received toe clips rigidly in any one of a number of different positions on the side plate.

Another object of my invention is to provide an improved ski binding comprising toe irons with side plates employng toe clips adapted to be variously positioned on the side plates to provide for boot toe soles of different widths.

Another object of my invention is to provide an improved ski binding comprising toe irons with side plates employing the clips adapted to be variously positioned on the side plates to provide for boot toe soles of different widths and thicknesses.

Another object of my invention is to provide an improved ski binding comprising toe irons with side plates employing toe clips adapted to be variously positioned on the side plates to provide for boot toe soles of different thicknesses.

Another object of my invention is to provide a ski binding comprising toe iron side plates and toe clips supported thereby adapted to be rotated to adjust the clip for different thicknesses of boot soles.

Other objects of my invention and the invention itself will be apparent by reference to the accompanying description of an embodiment of my invention, susceptible of variation in form, and which, in a preferred form, is illustrated in the accompanying drawings, in which:

Fig. 1 illustrates in side elevation, a fragment of a ski comprising toe irons having side plates, and fragments of a ski harness shown as attached thereto, together with a side elevational view of a toe clip secured in a given adjusted position in one of the side plates.

Fig. 2 is a plan view of the apparatus of Fig. 1, except that a showing of the harness is omitted.

Fig. 3 is a side elevational view of a side plate with a toe clip supported thereby, viewed from the opposite or inner side of the side plate from that viewable in Fig. 1.

Fig. 4 is a plan view of a single toe iron, a pair of complementary ones of which are employed with each ski, as illustrated in Fig. 2.

Figs. 5 and 6 are views taken from posi-

tions each relatively at right angles one to the other, of a toe clip element including means for the clip.

Fig. 7 is a section taken on the line 7—7 of Fig. 4, of one of the side plates with toe clip attached.

Referring now to the different figures of drawing in all of which like parts are designated by like reference characters, the ski is shown at 1 and is provided with a slot 2 extending through the ski from side to side generally but mid-way between its upper and lower surface.

At 3 and 4 are shown a pair of complementary toe irons having superposed base portions projected into the slot 2 from opposite sides and wedged tightly in position within the slot by the oppositely driven wedges 26 and 27 and prevented from movement from a given adjusted position within the slot, by the interengagement of the serrations 22 along an edge 24 of each toe iron base, making engagement with complementary serrations of a plate 25 rigidly secured by prongs into the wood of the ski 1 at a rear end wall of the slot 2.

Each of the toe irons 3 and 4 terminate exteriorly of the slot 2 in upturned flanges of said irons 5 and 6 respectively these being provided with toe strap receiving slots 16 in their head portions 15, and with buttons 7 and 8 respectively for a pair of harness straps such as 9, terminating in eyelet hooks 10 secured to the ends of the straps by rivets 11. The eyelet hooks are provided with an elongated formed perforation 12 having a circular enlarged portion 13 and an inner slot portion 14, the buttons 7 and 8, as the case may be, adapted to enter the enlarged portion and the heads of the buttons being projected entirely through the eyelet hook perforation. The hook is retracted to effect a movement of the hook longitudinally to draw the neck portion of the button into the slot.

The foregoing are parts of an improved ski binding forming the subject matter of a separate companion application filed by me, Serial No. 294,796, filed July 23, 1928, and is, therefore not specifically claimed herein.

The side irons 5 and 6 are also perforated at 18 and 19 there being preferably two of such perforations for each side plate although one, several, or more might be advantageously provided. The perforations 18 and 19 may be variously formed but I preferably form them generally as illustrated so as to provide one or more positions within the slots wherein key portions 31 of a toe clip such as 21 may be non-rotatably secured.

The toe clip embodying my invention as illustrated in Figs. 5 and 6, is in the form of a headed screw having a toe clip portion 21 forming the head of the screw, and a stem 30 threaded at 32 to receive a securing nut 33, there being also a key portion 31 intermediate the stem and to clip head portion.

The stem 30 is preferably of generally circular cross-sectional form, whereas the key portion is preferably non-circular and preferably polygonal, being illustrated as quadrilateral and more specifically square in transverse section.

Each of the slots 18 and 19 are preferably formed to provide a plurality of interconnected key supporting apertures, several being shown in the embodiment illustrated, at 34, 35, and 36, each of which are of square formation, except for the interconnecting portions, and adapted to receive the key portion 31 of the clip element, in snug fitting relation so that relative rotation of the head-clip 21 is effectually prevented by the non-circular form of the engaging surface of the key portion 31 of the clip element and of the square aperture, such as 34,

The key and aperture walls are preferably so formed as to permit the clip element to be held in keyed position therein in either of two oppositely disposed rotative positions so as to position the surface 40 of the clip 21 downward toward the ski 1 to contact with the upper surface of the boot sole interposed therebetween or if desired, to position the surface 39 lowermost, for the same purpose, but in order to accommodate a thicker boot sole.

In any case, the clip element is positioned with the key portion projected through the selected non-circular aperture of either of the slots 18 or 19, one clip for each side plate complementarily disposed therein, as illustrated in Fig. 2 at 21, and 41, respectively. The side plates are capable of adjusting inwardly or outwardly by placing the side plates in the desired lateral positions and then driving the wedges into place.

The user then may insert the sole of his boot between the side plates, which incidentally are preferably inclined to the longitudinal axis of the ski, converging forwardly, and the boot is pressed forward to its limiting position as determined by the convergence of the side plates. The upper surface of the sole is tightly pressed against the lower surface, such as 39 of the clip 21, and the harness comprising the straps 17 and 9 may then be tightened about the upper portion of the boot toe and rear portion of the boot, respectively.

The strap 9 tends to press the boot forward. The converging side plates prevent forward movement of the forward part of the boot sole toe portion, and the lowermost surface 39 or 40, as the case may be, of the top clip prevents upward movement of the sole so that the sole is wedgingly secured to the ski by its forward portion. By providing a plurality of slots 18 and 19, one forwardly of the other, and the most forward one preferably lowermost relative to its proximity to the surface

of the ski 1, a very nice graduated adjustment of toe clip to boot sole of any ordinary dimensions may be effected.

The head 21 may be variously formed, but to carry out certain objects of my invention, I preferably provide it with lateral surfaces varying in distance from the axis of the axially aligned stem and key portions. Thus in Figs. 5 and 6, the head clip portion comprises a pair of end surfaces 37 and 38 and intermediate surfaces 39 and 40, the sides 39 and 40 being adapted to be positioned to either of two alternate positions depending upon the rotative position of the key 31 in any one of the squared portions of either of the slots 18 or 19.

Having thus described my invention in a specific embodiment, I am aware that numerous and extensive departures may be made from the embodiment herein illustrated and described but without departing from the spirit of my invention.

I claim:

1. In a ski binding, in combination with the ski, of a pair of complementary toe irons therefor adapted to be secured thereto, each of said toe irons comprising lateral boot toe confining side plate portions, a pair of toe clip elements adapted to be rigidly secured to said side plate portions, one to each, each toe clip comprising a stem and head supported thereby, said head providing a boot toe sole cap, said stem adapted for insertion through an aperture in its associated side plate, means to secure the clip element to the plate in either of two alternate rotative positions relative thereto, said clip comprising a pair of lateral surface portions varying in distance radially from the stem axis, each surface interchangeably adapted for positioning relatively nearest the ski.

2. In a ski binding, in combination with the ski, of a pair of complementary toe irons therefor adapted to be secured thereto, each of said toe irons comprising lateral boot toe confining side plate portions, a pair of toe clip elements adapted to be rigidly secured to said side plate portions, one to each, each toe clip comprising a stem and head supported thereby, said head providing a boot toe sole cap, said stem adapted for insertion through an aperture in its associated side plate, means to secure the clip element to the plate in either of two alternate rotative positions relative thereto, said clip comprising a pair of lateral surface portions varying in distance radially from the stem axis, each surface interchangeably adapted for positioning relatively nearest the ski, and key means adapted to interchangeably lock the clip to either of the two said alternate rotative positions.

3. In a ski binding, in combination with the ski, of a pair of complementary toe irons therefor adapted to be secured thereto, each of said toe irons comprising lateral boot toe confining side plate portions, a pair of toe clip elements adapted to be rigidly secured to said side plate portions, one to each, each toe clip comprising a stem and head supported thereby, said head providing a boot toe sole cap, said stem adapted for insertion through an aperture in its associated side plate, means to secure the clip element to the plate in either of two alternate rotative positions relative thereto, said clip comprising a pair of lateral surface portions varying in distance radially from the stem axis, each surface interchangeably adapted for positioning relatively nearest the ski, and key means adapted to interchangeably lock the clip to either of the two said alternate rotative positions, said key means comprising cooperative clip element and side plate surfaces non-circular in form, disposed in engagement to prevent relative rotation of the clip element to the side plate.

4. In a ski binding, in combination with the ski, of a pair of complementary toe irons therefor adapted to be secured thereto, each of said toe irons comprising lateral boot toe confining side plate portions, a pair of toe clip elements adapted to be rigidly secured to said side plate portions, one to each, each toe clip comprising a stem and head supported thereby, said head providing a boot toe sole cap, said stem adapted for insertion through an aperture in its associated side plate, means to secure the clip element to the plate in either of two alternate rotative positions relative thereto, said means comprising a portion of a stem of non-circular form in transverse section, and portions of the side plate at the aperture engageable with the non-circular portion of the stem, said clip comprising a pair of lateral surface portions varying in distance radially from the stem axis, each surface interchangeably adapted for positioning relatively nearest the ski.

5. In a ski binding, in combination with the ski, of a pair of complementary toe irons therefor adapted to be secured thereto, each of said toe irons comprising lateral boot toe confining side plate portions, a pair of toe clip elements adapted to be rigidly secured to said side plate portions, one to each, each toe clip comprising a stem and head supported thereby, said head providing a boot toe sole cap, each of said plates having non-circular apertures therethrough, said stem adapted for insertion through the aperture in its associated side plate, and comprising a portion engageable with the non-circular edge of the side plate aperture to prevent relative rotation of the stem in the aperture.

6. In a ski binding, in combination with the ski, of a pair of complementary toe irons therefor adapted to be secured thereto, each of said toe irons comprising lateral boot toe confining side plate portions, a pair of toe clip elements adapted to be rigidly secured

to said side plate portions, one to each, each toe clip comprising a stem and head supported thereby, said head providing a boot toe sole cap, each said side plate comprising a plurality of apertures disposed at different levels relative to the surface of the ski, said stem adapted for interchangeable insertion through either of said apertures.

7. In a ski binding, in combination with the ski, of a pair of complementary toe irons therefor adapted to be secured thereto, each of said toe irons comprising lateral boot toe confining side plate portions, a pair of toe clip elements adapted to the rigidly secured to said side plate portions, one to each, each toe clip comprising a stem and head supported thereby, said head providing a boot toe sole cap, each said side plate comprising a plurality of apertures disposed at different levels relative to the surface of the ski, said stem adapted for interchangeable insertion through either of said apertures, means to secure the clip element to the plate with its stem through either of said apertures in either of two alternate relative positions, said clip comprising a pair of lateral surface portions varying in distance radially from the stem axis, each surface interchangeably adapted for positioning relatively nearest the ski by positioning it in either of the two alternate rotative positions in the chosen aperture.

8. A toe clip for ski binding toe irons, comprising a stem adapted for insertion through an aperture of one of the side plates of the irons, a head integrally secured thereto, said stem being threaded on its end remote from the head, and a nut for application to the threaded portion of the stem to tightly secure the head to the side plate at the inner surface thereof, so as to engage, by its lowermost surface, the boot sole of a boot secured to the ski.

9. In a ski binding, in combination with the ski, of a pair of complementary toe irons therefor adapted to be secured thereto, each of said toe irons comprising lateral boot toe confining side plate portions, a pair of toe clip elements adapted to be rigidly secured to said side plate portions, one to each, each toe clip including a stem, said stem supporting at its inner end, a boot toe sole cap, each said side plate comprising a plurality of apertures disposed at different levels relative to the surface of the ski, said stem adapted for interchangeagle insertion through either of said apertures.

10. In a ski binding, in combination with the ski, of a pair of complementary toe irons therefor adapted to be secured thereto, each of said toe irons comprising lateral boot toe confining side plate portions, a pair of toe clip elements adapted to be rigidly secured to said side plate portions, one to each, each toe clip including a stem, said stem supporting at its inner end, a boot toe sole cap, each said side plate being pressed to form an elongated aperture extending upwardly relative to the surface of the ski, said elongated aperture being bordered by longitudinally spaced pairs of inwardly extending projections to divide the aperture into connected widened aperture portions, said stem adapted for interchangeable insertion through any of said aperture portions.

In testimony whereof I hereunto affix my signature this 8th day of June, 1928.

LOUIS D. GIBSON. [L. S.]