United States Patent [19]

Imagawa

[11] **3,873,111**

[45] **Mar. 25, 1975**

[54] **CONNECTION FOR SKI-BINDING**

[75] Inventor: **Katsuhiko Imagawa**, Shizuoka, Japan

[73] Assignee: **Nippon Gakki Seizo Kabushiki Kaisha**, Hamamatsu, Japan

[22] Filed: **Dec. 6, 1973**

[21] Appl. No.: **422,198**

[30] **Foreign Application Priority Data**

Jan. 31, 1973 Japan 48-12591

[52] **U.S. Cl.** ..... **280/11.35 R**

[51] **Int. Cl.** **A63c 9/00**

[58] **Field of Search** ... 280/11.35 R, 11.35 T, 11.37 E, 280/11.37 R, 11.35 C, 11.13 W, 11.13 R, 11.35 H; 24/208 R, 211 R; 403/306, 263, 361, 378

[56] **References Cited**

UNITED STATES PATENTS

3,153,543	10/1964	Magyar	280/11.35 T X
3,219,359	11/1965	Schneider	280/11.35 R
3,314,687	4/1967	Tiesler	280/11.35 C
3,463,523	8/1969	Vasas	403/263 X
3,797,838	3/1974	Shurgot	280/11.35 R

Primary Examiner—Robert R. Song
Assistant Examiner—David M. Mitchell
Attorney, Agent, or Firm—Wenderoth, Lind & Ponack

[57] **ABSTRACT**

An improved connection for a ski-binding clamp with respect to a ski board, wherein a fitting member provided at the bottom of the body of the ski-binding clamp is inserted into a hollow cavity formed in the ski board and having a corresponding shape to that of the fitting member, after which a stopper pin is inserted laterally through a hole formed at the lateral side of the ski board and a hole diametrically formed in the fitting member so as to secure the ski-binding clamp to the ski board.

4 Claims, 4 Drawing Figures

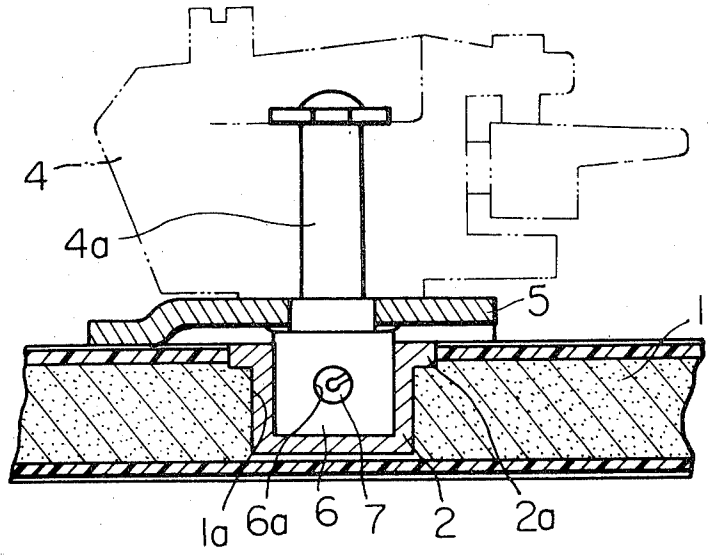


Fig. 1

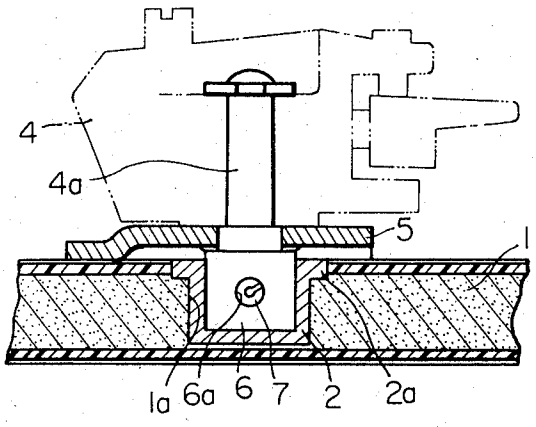


Fig. 2

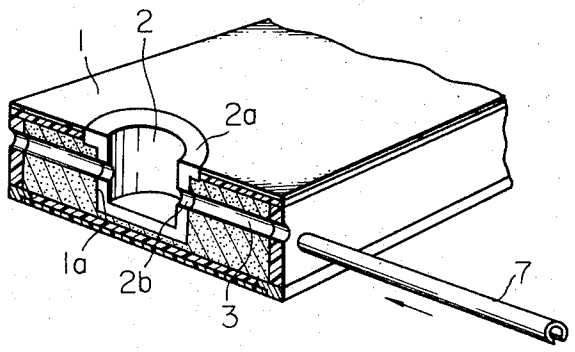


Fig. 3

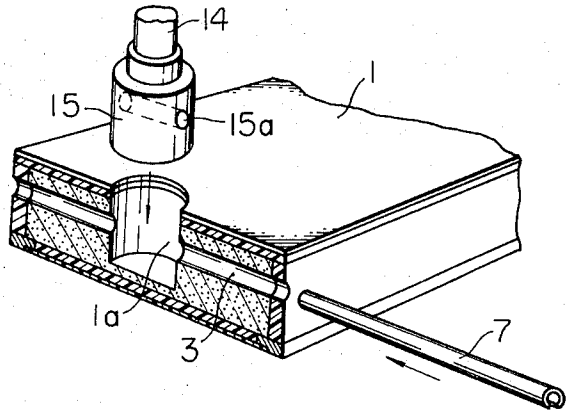
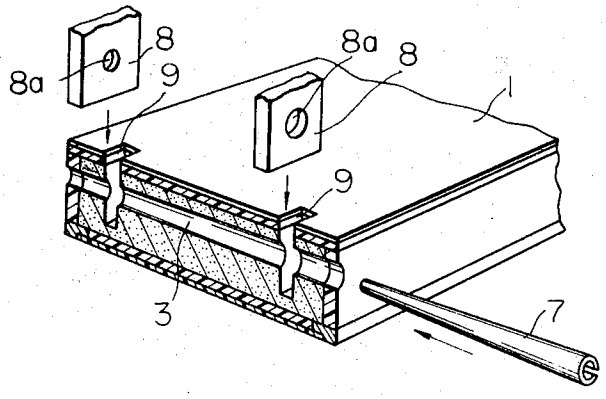


Fig. 4



CONNECTION FOR SKI-BINDING

This invention relates to improvements in ski structures and more particularly, it is concerned with an improved connection for ski-bindings, in which the binding clamp is freely and readily attachable to or detachable from the ski board even by common skiers themselves depending on necessity.

Those who have ever experienced skiing must have felt, each time they carried the ski board on their shoulder without putting the same on their feet, that care should be taken to balance the pair of long ski boards so that they did not become loosened, separated from each other, and came off the shoulder. However, even if the ski boards are well-balanced on the shoulder, the portion of the ski boards which rests on the nape of the neck is provided with protruding ski-binding clamps which encroach upon the nape to make it more and more difficult and troublesome to carry the ski boards on the shoulder, which has been one of the reasons for fatigue or exhaustion when climbing up a skiing slope with the ski boards on the shoulder.

It has therefore been felt by those who always suffer from this kind of inconvenience that, if the ski-binding clamps were freely attachable to and detachable from the ski boards, there would be a great convenience and advantage in carrying the ski boards on their shoulders. Reality, however, is quite opposite in that the ski-binding clamps fixed on the ski boards on sale in the market are so tightly fastened thereon that their removal should usually be performed only by an expert in handling ski equipment. This is the very reason that has hindered easiness in carrying the ski boards on the shoulder.

On the other hand, in view of the function of the threaded bolt, assembling and disassembling of the ski-binding clamps with respect to the ski boards can be accomplished without any accompanying difficulty. This is, in fact, true on the part of both users and dealers. That is, the retailers who are situated at the terminal of the merchandise circulation, are required to render, on behalf of their customers, additional services in fastening the ski-binding clamps on the ski boards they sell, for the purpose of which there is required additional manpower to get the job done. This brings about serious problem with the retailers under the habitual shortage of labor forces. If, therefore, such additional work can be dispensed with, the surplus labor force may be appropriated to the sales activity which is their proper function.

In order, therefore, to meet such demand from both users and dealers, the present invention has made it possible to assemble and disassemble the ski-binding clamps on and from the ski boards in a very simple operation, thereby enabling the ski-binding clamps to be readily fitted onto the ski boards on the spot at the skiing slope as well as enabling them to be detached from the ski boards for carrying on the shoulder. In other words, the ski-binding clamps separated from the ski boards are put in a sack, and the bare ski boards are carried on the shoulder, whereby the assembling and disassembling works at the retailers is no longer necessary.

It is therefore the primary object of the present invention to provide an improved connection for the ski-binding, wherein the ski-binding clamps are assembled on and dismantled from the ski boards in a very simple and easy operation.

It is another object of the present invention to provide an improved connection for ski binding, wherein one or more fitting members provided at the bottom part of the ski-binding clamps are inserted into a hollow cavity formed in the ski board, and secured to the ski board by means of a stopper pin piercing through the ski board and the fitting member in parallel with and along the horizontal plane of the ski boards.

The foregoing objects and detailed construction of the present invention will become more apparent from the following description when read in conjunction with the accompanying drawing.

In the drawing:

FIG. 1 is a longitudinal cross-section showing one embodiment of the structure for fitting the ski-binding clamps onto the ski board according to the present invention;

FIG. 2 is a perspective view, partly in cross-section, showing the connecting structure in FIG. 1 above;

FIG. 3 is a perspective view, partly in cross-section, showing another embodiment of the structure for fitting the ski-binding clamps onto the ski board according to the present invention; and

FIG. 4 is a perspective view, partly in cross-section, showing still another embodiment of the structure for fitting the ski-binding clamps onto the ski board according to the present invention.

The improved connecting structure for assembling and disassembling the ski-binding clamps on and from the ski board according to the present invention, in its first embodiment, is as shown in FIGS. 1 and 2, wherein a cylindrical cavity 1*a* is formed in the center part of the ski board 1, into which a cylindrical bracket 2 with its upper end being open is buried and secured. This bracket 2 is provided with a flange 2*a* on the circumference of the upper edge thereof. The top surface of this flange 2*a* is flush with the top surface of the ski board. In the cylindrical wall of this bracket 2, a through-hole 2*b* is diametrically formed for allowing a pin 7 to pass therethrough, extending in a direction orthogonal to the lengthwise direction of the ski board 1. There is further perforated in the ski board 1 a straight through-hole 3 which extends transversely from one lateral side of the ski board to the other lateral side thereof, passing through the cylindrical cavity 1*a*, and which registers with the through-hole 2*b*. Thus, the pin 7 is insertable from one of the lateral sides of the ski board into an alignment of holes 3 and 2*b* and cavity 1*a*.

The ski-binding clamp 4, or, a toe piece in this embodiment, is in such a construction that the body of the ski-binding clamp is rotatable on the axis of a pin 4*a* provided therein in a plane perpendicular to the top surface of the ski board 1. The pin 4a pierces through the base plate 5 fixed at the bottom of the ski-binding clamp 4, and the bottom of this vertically extending pin 4a is fixedly connected to a cylindrical block 6 which is adapted to be inserted into the hollow cylindrical bracket 2. It is desirable that this inserting block 6 be formed integrally with the pin 4*a*, and be insertable into the hollow cylindrical bracket with the minimal clearance between the walls.

The inserting block 6 is also provided with a through-hole 6*a* at a position in alignment with the through-hole 2*b* in the bracket 2 and the through-hole 3 in the ski board 1 so that the binding metal may be fixedly se-

cured on the ski board by way of a spring pin 7 which passes through the holes 3, 2*b*, and 6*a*.

The afore-described construction of the toe piece and the manner of mounting the same on the ski board 1 is also applicable to the heel piece, in which case the inserting block 6 may be provided at the bottom surface of the base plate 5 for insertion into the bracket 2 and for fastening the entire ski-binding onto the ski boards by way of the through-holes formed in the ski board, the hollow cylindrical bracket and the inserting block all being in mutual alignment.

In assembling the binding clamp 4 with the ski board 1 according to this embodiment of the present invention, the inserting block 6 integrally connected with the pin 4*a* of the ski-binding metal 4 is first inserted into the hollow cylindrical bracket 2 installed in the cavity 1a formed in the ski board 1, followed by alignment of the through-hole 2*b* of the bracket 2 and the through-hole 6*a* of the inserting block 6, and then a spring pin 7 is intromitted into the aligned holes through the hole 3 formed in the ski board. For sufficient intromission, the end of the spring pin may be lightly hit by a hammer.

Since the ski-binding clamp 4 can be rotated on the axis of the pin 4*a*, it is only necessary that the base plate 5 be correctly mounted on the ski board as required, for the direction, etc. of the rotatable ski-binding clamp per se may be adjusted later on.

The hollow cylindrical bracket 2 may be dispensed with when the ski board 1 is made of a material of sufficiently high mechanical strength, for example, if the ski board 1 comprises a metal layer. In this case, the inserting block 6 can be directly inserted into the cylindrical cavity 1a in the ski board and secured thereto by the spring pin 7 piercing the through-holes 3 and 6*a* arranged in mutual alignment as shown in FIG. 3. The spring pin 7 may be replaced with a straight pin as indicated.

In still another embodiment of the present invention shown in FIG. 4 which indicates a manner of fixing a heel piece of the ski-binding onto the ski board 1, a pair of downwardly projecting planar pieces 8 of the heel clamp of the ski-binding are inserted into a corresponding pair of cavities 9 formed in the ski board 1.

As in the previous embodiment, there is formed a through-hole 3 within the ski board in parallel with the horizontal plane of the ski board 1. Also, each of the abovementioned downwardly projecting planar pieces 8 is provided with a hole 8*a* at a position corresponding to the through-hole 3 in the ski board 1. Through these holes 3 and 8*a*, a stopper pin 7 is inserted to secure the ski-binding onto the ski board 1. The pin to be inserted into the through-hole may be of any kind such as spring pin, tapered pin, straight pin, etc.

As will now be apparent from the foregoing explanations, the present invention has made it easier to attach and detach the ski-binding clamps to and from the ski board in such a manner that an inserting block provided on the ski-binding is inserted into or withdrawn from a hollow cavity corresponding to the inserting block in shape and formed in the ski board. Since the inserting block is secured in this receiving cavity by means of a single stopper pin passing through the common through-hole formed in each of them, and is releasable by drawing the pin out of the through-holes, the carrying of the ski board on the shoulder becomes easier, reducing suffering, pain and annoyance at the nape by a very simple dismantling operation of the ski-binding clamp, and the burden of additional work on the part of the dealers can be remarkably reduced.

What is claimed is:

1. An improved connection means for ski-binding, comprising:
   - a ski board having a hollow cavity in one portion at a top surface thereof, and a hole formed therein and opening at a lateral side of said ski board, the axis of said hole passing through said hollow cavity;
   - a ski-binding clamp for a ski boot, comprised of a main body, and at least one fitting member extending downwardly from said main body and also having a through-hole formed therein at a position corresponding to said through-hole in said ski board, said fitting member being inserted into said hollow cavity for assembling the ski-binding on said ski board; and
   - a stopper pin for insertion through said holes in said ski board and said fitting member, all being in mutual alignment so as to secure the ski-binding clamp to said ski board.

2. The connection means for ski-binding according to claim 1, wherein a reinforcing bracket for receiving and accommodating therein said fitting member is provided in said hollow cavity.

3. The connection means for the ski-binding according to claim 1, wherein said fitting member is in a cylindrical form.

4. The connection means for the ski-binding according to claim 1, wherein said hole formed in said ski board is a through-hole which transversely extends from one lateral side to the opposite side thereof.

* * * * *