United States Patent [19]

Dysthe

[11] **3,874,684**

[45] **Apr. 1, 1975**

[54] **SKI TOE BINDING**

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[22] Filed: **Apr. 3, 1973**

[21] Appl. No.: **347,578**

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

[51] **Int. Cl.** **A63c 9/10**

[58] **Field of Search** ..... 280/11.35 B, 11.35 W

[56] **References Cited**

UNITED STATES PATENTS

2,450,514	10/1948	Humlegard	280/11.35 B

FOREIGN PATENTS OR APPLICATIONS

83,005	1/1954	Norway	280/11.35 B

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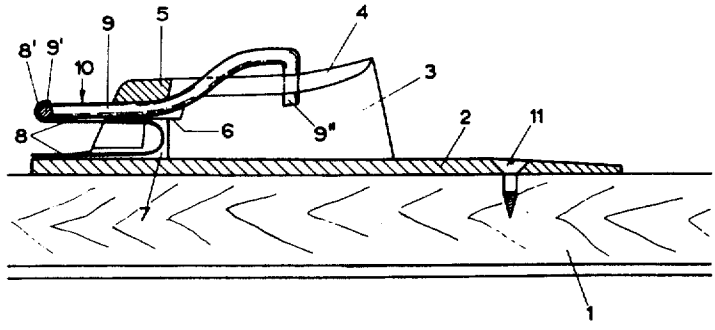
[57] **ABSTRACT**

A ski binding includes a base portion and a pair of side boot-engaging members extending upwardly from the base portion, each of the side members having a hole therein. A crossbridge member extends inwardly from the forward ends of the side members, and a pivot point is provided on the side members below the crossbridge. A flexible, generally U-shaped clamp member is inserted between the side members and is interposed between the crossbridge and the pivot point means with the front portion thereof located forwardly of the pivot point means, and the branches of the clamp member extending rearwardly of the pivot point means. The ends of the branches are bent downwardly toward the base portion and are adapted to be received in the respective holes of the side members. The front portion of the clamp is biased upwardly to force the downwardly bent clamp ends downwardly through the holes in the side member to engage the sole of a boot, thereby securing a boot in inserted position between the side members.

11 Claims, 3 Drawing Figures



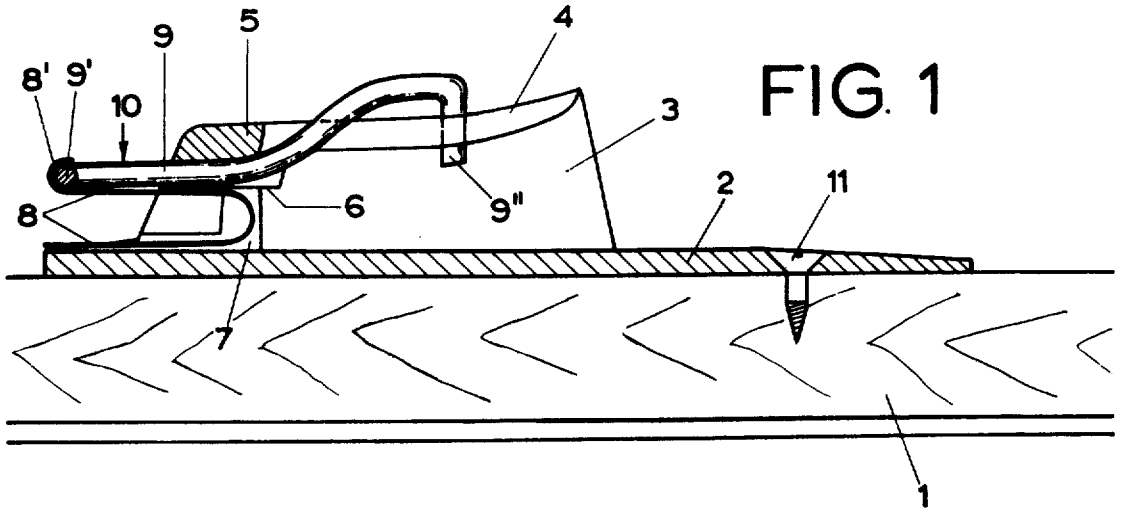


FIG. 1

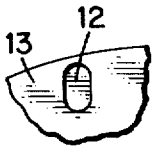
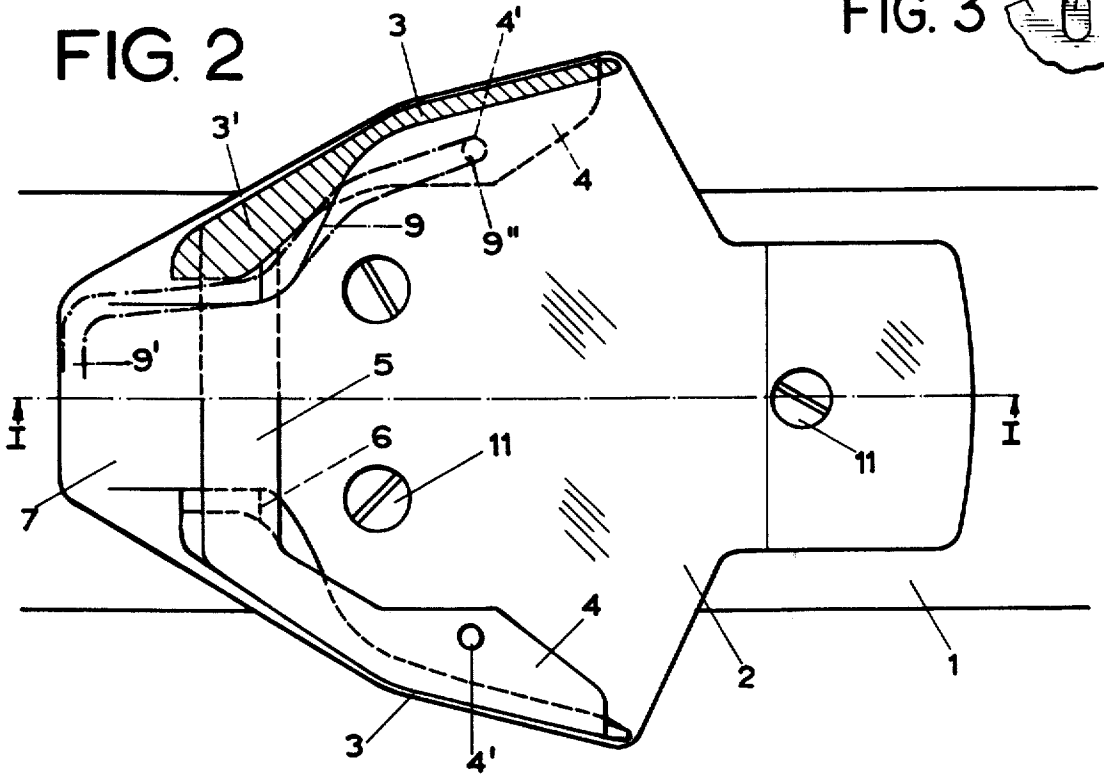


FIG. 3

FIG. 2



SKI TOE BINDING

The object of the present invention is to provide an improved ski binding.

The type of ski binding to which the present invention pertains, is a ski binding comprising a flat base or fastening plate to be fastened onto the top surface of the ski, the base portion providing a mounting for a flexible, generally U-shaped clamp whose middle part is fastened in front of the binding's side shoe-engaging plates or members. The ends of the backward-extending branches of the U-shaped clamp are bent down toward the ski and are inserted in holes in inward-bent parts on each of the side shoe-engaging members of the binding. The side shoe-engaging members engage the forward or toe-end of the ski-boot, so that the branch ends of the U-shaped clamp can flexibly grip a groove on either side of the boot's sole in order to secure the boot in its inserted position between the side shoe-engaging members and beneath the inward-bent parts.

In a known embodiment of this general type of binding, the U-shaped clamp is fastened to the ski in front of the side shoe-engaging members by means of a separate fastening. However, in conformity with present-day requirements, it is desirable that the binding should not only have the least possible number of different parts but that it may be completely assembled and ready for use when put on sale, so that the binding may be merely fastened to the ski by means of conventional screws which are inserted through correspondingly formed holes in the fastening plate which has the side shoe-engaging members upwardly extending therefrom.

The object of the present invention is to provide an improved ski binding which is simple in construction, uses relatively few parts, and which is completely assembled when sold to the consumer so that it may be merely fastened to the ski by means of conventional screws.

SUMMARY OF THE INVENTION

In accordance with the present invention, a ski binding comprises a base portion having a pair of side boot or shoe-engaging members which upwardly extend therefrom and which are adapted to engage the forward or toe-end of a ski boot. Each of the side members has a hole therein. A crossbridge extends between the forward ends of the side members, and a pivot or tilting point is provided on the forward portions of the side members spaced below the crossbridge. A flexible, generally U-shaped clamp member is mounted between the side members and is interposed between the crossbridge and the pivot point defining means with the middle portion thereof located in front of the pivot point defining means and the branches thereof extending rearwardly of the pivot point defining means. The ends of the rearwardly extending branches are bent down toward the base portion and are adapted to be received in respective holes of the side members. The front or middle portion of the clamp member is biassed in the upward direction against the retaining force of the crossbridge and thereby causes the downwardly bent clamp ends to be biassed downwardly toward the base portion and through the holes. The downwardly biassed clamp ends pass through the holes and are adapted to bear on the sole of a boot to secure the boot in the inserted position between the side members. In a preferred embodiment, the biassing means comprises a generally U-shaped plate spring and the pivot point defining means comprises respective shoulders on the side members. In accordance with another preferred feature, the base portion and the side members are integrally formed.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 illustrates a vertical side cross-sectional view of the binding of the present invention mounted on a ski;

FIG. 2 illustrates a top view of the binding of FIG. 1 with one of the side shoe-engaging members shown in cross-section; and

FIG. 3 illustrates a fragment of a boot sole having a groove therein for engagement with the binding of the present invention.

DETAILED DESCRIPTION OF THE DRAWINGS

Referring to FIG. 1, a ski 1 has a base or fastener plate 2 screwed firmly to its top surface by means of fastener screws 11, or the like. Side walls 3 project upwardly on either side from the base plate 2 and are preferably integral with the base plate 2. The side walls 3 form the binding's shoe or boot-engaging members, between which the boot and its sole are inserted in order to be secured to the ski. Securing of the boot sole is accomplished by means of a flexible, generally U-shaped clamp member 9, whose branches extend rearwardly and whose branch-ends 9'' are bent down toward the ski and are passed through holes 4' formed in an inwardly-extending upper part 4 of the shoe-engaging side members 3. The holes 4' are generally downwardly directed and have generally downwardly extending axes. The free ends 9'' of the branches of the clamp 9 project down against the underside of the inward-extending part 4, in order to be able to grip a groove 12 (FIG. 3) on either side of the boot sole 13 which is inserted into the binding.

The forward portion of the clamp 9 is inserted, together with its middle part 9', between the forward ends of shoe-engaging members 3 and is secured in place between a bridge 5, which spans across and connects shoe-engaging members 3, and shoulders 6. The shoulders 6 are respectively located on the inner side of each shoe-engaging side member 3 at a short distance beneath bridge 5. Shoulders 6 will thus form a tilt-axis or pivot point for the flexible wire-like clamp 9. The forward portion 9' of clamp 9 is biassed upwardly from beneath by means of a pressure spring 8. In the present example, spring 8 is in the form of a generally U-shaped plate spring whose lower branch or leg is inserted into a groove 7 which is formed between the forward portions of shoe-engaging members 3. The upper branch or leg of plate spring 8 has its remote end 8' bent up and back in order to enclose and securely engage the middle portion 9' of clamp 9. This maintains the clamp 9 and plate spring 8 in proper relative position.

An arrow 10 (FIG. 1) indicates in which direction clamp 9 should be actuated, counter to the action of spring 8, so that the rearwardly extending bent branches of the clamp 9 tilt or pivot around shoulders 6, and so that the boot can be freed from the binding and the boot sole can be disengaged from the downwardly extending branch ends 9'' of clamp 9. In accor-

dance with the present invention, said releasing action in the direction of arrow **10** can occur through pressure exerted for example by tapping with a ski pole.

It should be clear that various modifications and alterations can be made to the disclosed embodiment within the scope of the present invention as set forth in the claims. For example, the clamp member **9** may be made of a flexible, wire-like material and the exact shape thereof, while being generally U-shaped, may be varied. Also, the crossbridge **5** may be formed so as not to completely span the two side members **3** as illustrated. The particular design of the crossbridge **5** will depend upon the strength of the materials chosen in a particular embodiment. Also, the shape and style of the spring **8** may be varied as desired. Various other modifications, within the scope of the present invention, will be apparent to those ordinarily skilled in the art.

I claim:

1. A ski binding comprising:

a base portion (**2**) having a pair of side boot-engaging members (**3**) upwardly extending therefrom and being adapted to engage the forward or toe-end of a ski boot, said side boot-engaging members (e) each having portions which inwardly extend toward the boot, said inwardly extending portions having a generally downwardly extending hole (**4'**) with a generally downwardly extending axis formed therein;

a crossbridge (**5**) extending inwardly from the forward ends of said side boot-engaging members (**3**);

means (**6**) on the forward portions of said side boot-engaging members (**3**) and spaced below said crossbridge (**5**) for defining a pivot or tilting point;

a flexible, generally U-shaped clamp member (**9**) having a middle portion (**9'**) and rearwardly extending branches, said clamp member (**9**) being mounted between said side boot-engaging members (**3**) and being interposed between said crossbridge (**5**) and said pivot point defining means (**6**) with said middle portion (**9'**) located in front of said pivot point defining means (**6**) and the branches extending rearwardly of said pivot point defining means (**6**), the ends (**9''**) of said branches being bent down toward the base portion (**2**) and adapted to be received in respective downwardly extending holes (**4'**) of said side boot-engaging members (**3**); and

means for biassing said middle portion (**9'**) of said clamp member (**9**) in the upward direction, thereby biassing said clamp ends (**9''**) downwardly toward said base portion (**2**) and through said downwardly extending holes (**4'**), said downwardly biassed clamp ends (**9''**) being adapted to bear on the sole of a boot through said holes (**4'**) to secure a boot in inserted position between said side boot-engaging members (**3**).

2. The ski binding according to claim **1**, wherein said inwardly extending portions of said side boot-engaging members (**3**) extend substantially parallel to said base portion (**2**).

3. The ski binding according to claim **1**, wherein said base portion (**2**) and said upwardly extending side boot-engaging members (**3**) are integrally formed with each other.

4. The ski binding according to claim **1**, wherein said base portion (**2**), said upwardly extending side boot-engaging members (**3**) and said inwardly extending portions (**4**) are integrally formed with each other.

5. The ski binding according to claim **1**, wherein said biassing means is a generally U-shaped plate spring (**8**) having one end (**8'**) connected with said middle portion (**9'**) of said clamp member (**9**).

6. The ski binding according to claim **5**, wherein the other end portion of said plate spring (**8**) bears against said base portion (**2**), said plate spring (**8**) exerting upward pressure on said forward portion (**9'**) of said clamp member (**9**).

7. The ski binding according to claim **6**, wherein said base portion (**2**) has a groove therein for receiving said other end portion of said plate spring (**8**).

8. The ski binding according to claim **1**, wherein said pivot point defining means is a shoulder (**6**) formed on each of said side boot-engaging members (**3**) about which said clamp member (**9**) selectively pivots.

9. The ski binding according to claim **1**, wherein said clamp ends (**9''**) are adapted to engage a groove or recess (**12**) in an inserted boot.

10. The ski binding according to claim **1**, wherein said crossbridge (**5**) is connected between said side boot-engaging members (**3**).

11. The ski binding according to claim **1**, wherein said pivot point defining means (**6**) on said side boot-engaging members (**3**) define a pivot or tilt axis.

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