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Famolare, Jr.

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[54] **CROSS-COUNTRY SKI BOOT**

[75] Inventor: **Joseph P. Famolare, Jr.**, Florence, Italy

[73] Assignee: **Famolare, Inc.**, New York, N.Y.

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[52] **U.S. Cl.** ..... **36/2.5 AL**

[51] **Int. Cl.** **A43b 00/00**

[58] **Field of Search** ..... 36/2.5 R, 2.5 A, 16, 45, 36/17 R, 17 A, 17 W

[56] **References Cited**

UNITED STATES PATENTS

2,273,541	2/1942	Summerhayes	36/2.5 AL
3,597,862	8/1971	Wogel	36/2.5 AL
3,727,329	4/1973	Peterson	36/2.5 AL

FOREIGN PATENTS OR APPLICATIONS

1,006,261	4/1952	France	36/2.5 AL
1,083,787	1/1955	France	36/2.5 AL

Primary Examiner—Patrick D. Lawson

Attorney, Agent, or Firm—Mandeville and Schweitzer

[57] **ABSTRACT**

A waterproof cross-country ski boot is provided with a soft, comfortable low-sided upper and a relatively solid nonflexible sole. The sole is configured to conform with the ski bindings and provide the required rigidity in the heel area while simultaneously allowing sufficient flexibility so that the boot may be worn as conventional sportswear. Moreover, provision is made for sufficient warmth in the boot upper, and the general interface between the boot upper and the sole is so configured to be watertight.

6 Claims, 3 Drawing Figures

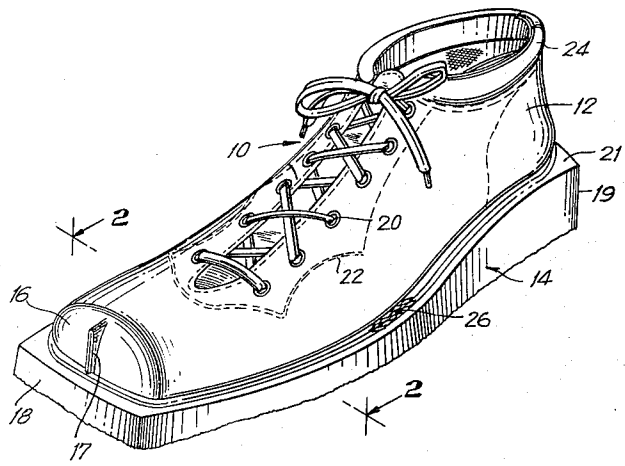
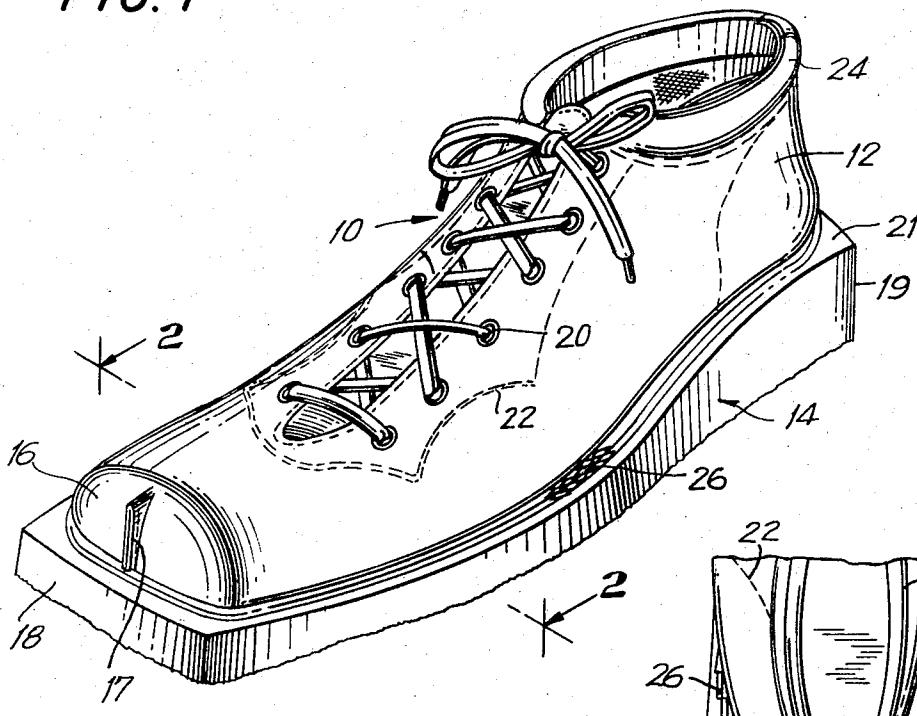


FIG. 1



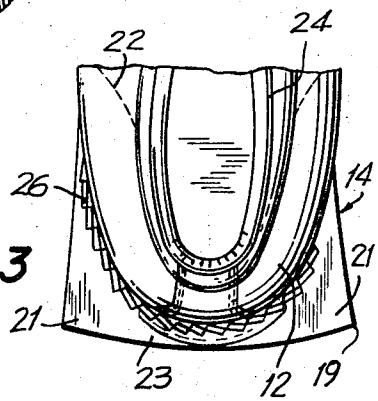
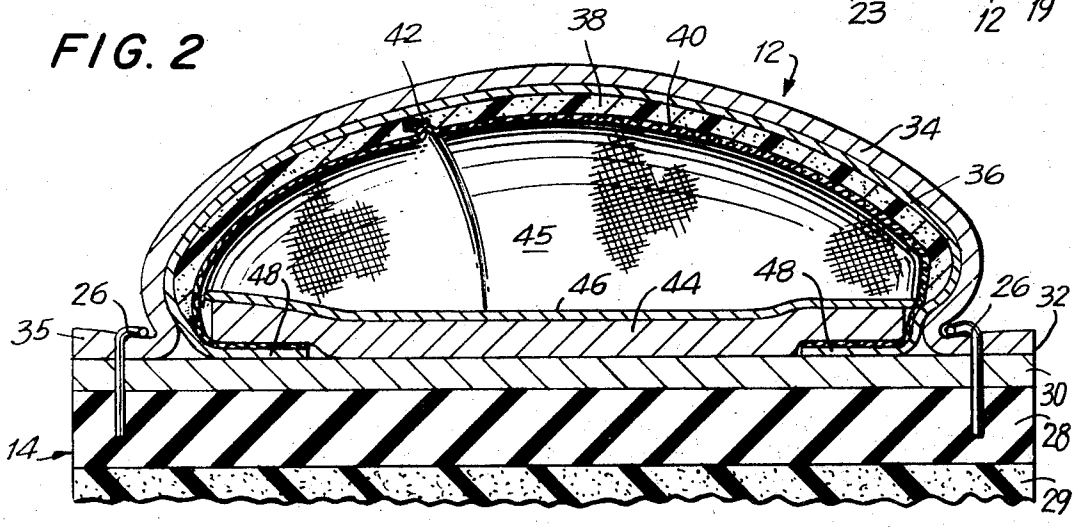


FIG. 3

FIG. 2



CROSS-COUNTRY SKI BOOT

STATEMENT OF THE INVENTION

In its most general form, this invention relates to a cross-country ski boot. More particularly, this invention relates to such a cross-country ski boot which is so configured and so designed that it may be readily utilized with the usual and conventional bindings for cross-country skis. All the necessary requirements are incorporated for such ski boots, while simultaneously being so constructed and designed that it may be used as conventional sportswear.

Cross-country ski boots require, for example, a relatively rigid sole, so configured that it will conform to the bindings and locking arrangements on cross-country skis. Moreover, the boots must be warm enough to sustain the wearer in a relatively cold, moist environment. The upper portion of the ski boot must be flexible enough for conventional walking action which takes place in cross-country skiing, and the boot must be usable without skis during those periods of rest and relaxation during treks which may take several days.

The ski boot, in accordance herewith, incorporates a solid sole structure with the required rigidity in the heel area and a squared heel and toe for accommodating the bindings of cross-country skis. Combined with this sole is a relatively soft, flexible upper, which incorporates the warmth requirements involved, and provides sufficient comfort for continuous walking action during a cross-country trek. Moreover, the multi-layered construction of the ski boot, in accordance herewith, is so configured to have the joints maintain a watertight connection between the solid sole and the flexible upper of the ski boot.

BACKGROUND OF THE INVENTION

As will be understood, the requirements of cross-country ski boots differ substantially from ski boots for conventional downhill skiing. That is, the latter require relatively rigid uppers which are built higher around the ankle so that the user may use the strength of his ankles to guide the skis at high speeds during downhill skiing. That is, the racer or downhill skier must tilt his boots from the ankle in order to control the direction of the skis for rapid changes in direction and so forth during downhill skiing.

By contrast, cross-country skiing is more in the form of a touring across country over snow covered areas with movement being more in the form of a walking or skating action during forward motion of the cross-country skis. In this connection, it will be understood further, that cross-country skis are configured differently from conventional downhill skis. That is, they are substantially smaller and shorter and serve more as "snowshoes" for carrying a person across snow covered areas. Because of this, cross-country ski boots do not require the rigidity that conventional ski boots require. In fact, they require just the opposite for the uppers in the sense that they should provide flexible comfort during this cross-country trekking. Nevertheless, the cross-country ski boots must have sufficient rigidity for connection with the cross-country ski bindings and locking arrangements, so that the ski boots are held appropriately on the cross-country skis.

However, since cross-country skiing is a relatively new recreational activity in the sense that large numbers of people have not, heretofore, participated in this sport, few boots have been developed which are particularly appropriate for this kind of activity. Generally, in the past when conventional ski boots have been used, their required rigidity for downhill skiing has not proved appropriate for cross-country trekking.

SUMMARY OF THE INVENTION

With this invention, by contrast, all of the special requirements for cross-country skiing have been met by structure in a cross-country ski boot. For example, the ski boot upper is comprised of an outer layer of a soft, waterproofed material, such as leather, in combination with a foam layer for further softness and warmth together with a soft fabric-like lining adjacent the foot. Utilized with this upper is a solid "wedge" type sole with a relatively thick substantially rigid heel area for connection to the bindings on the cross-country ski. The toe area of the sole is substantially more flexible than the heel area to provide for the walking action necessary for cross-country skiing. Moreover, the sole is squared at both the toe and heel, again to conform to the locking and binding connections with the cross-country ski. Also, the squared heel area of the sole at the rear corners of the ski boot have extensions or "wing-like" appendages which extend both laterally and rearwardly beyond the rear of the upper to enhance rigidity and to conform more precisely to the ski bindings.

Both the upper and the sole portion of the cross-country ski boot, in accordance herewith, are comprised of a plurality of layers or laminations which are so configured to provide a water-tight connection between the upper and the sole, so that any water leakage at the general connection between the sole and the upper is readily accommodated and prevented from entering the shoe interior. It will be noted from the drawings herein that the cross-country ski boots, in accordance herewith, are so designed to be appropriate for conventional sportswear from an appearance standpoint, as well as a utilitarian standpoint.

Before describing this invention further, it should be noted that various portions of the cross-country ski boot, in accordance herewith, may be manufactured from natural or synthetic leathers, natural or synthetic rubbers, various resins including thermoplastics and a variety of foamed resin materials. Moreover, unless otherwise noted, the various layers of the shoe parts described below may be joined together by a variety of different procedures, including fusion at elevated temperatures, chemical cross-linking, as well as the utilization of conventional adhesives, all in well known manner.

With the foregoing and additional objects in view, this invention will now be described in more detail, and other objects and advantages hereof will be apparent from the following description, the accompanying drawings, and the appended claims.

As purely illustrative of an arrangement of cross-country ski boot which may be used for carrying out this invention, the attached drawings illustrate a cross-country ski boot with the combination of a rigid "wedge" type sole and a relatively low slung, soft, flexible upper, with such ski boot being appropriate for use in cross-country skiing.

IN THE DRAWINGS:

FIG. 1 is a perspective view of a cross-country ski boot embodying aspects for practicing this invention;

FIG. 2 is an elevated sectional view of the ski boot of FIG. 1 along lines 2—2; and

FIG. 3 is a top plan view of the heel area of the cross-country ski boot of FIG. 1.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to the drawings, in which like reference characters refer to like parts throughout the several views thereof, a cross-country ski boot is designated generally at **10** in FIG. 1 with an upper **12** joined to a sole **14** by double stitching **26.** Upper **12** may have all of the conventional elements of a shoe upper including the vamp, toe, side quarter, etc., as well as conventional eyelets and lacing **20,** and stitching **22.** As will be apparent from FIG. **1,** the shoe "upper" has a relatively low slung ankle portion and may have incorporated therearound, a padded welt **24** for providing additional comfort adjacent the ankle. As can be seen further, in FIG. **1,** the sole is wedge-shaped and solid with a squared toe **18** and heel **19.** Although it is not required, the upper may have a squared-off toe portion **16** with a stylized stitching **17** to conform in style with squared-off toe portion **18** of sole **14.** Moreover, the toe may have a built-up, relatively rigid insert, as desired, in order to protect the toes of the wearer in the environment of use.

Referring now to FIG. **2,** it will be seen that solid sole **14** may be comprised of a variety of layers to form a solid laminate, including wear sole **29** which, preferably, will be comprised of a relatively flexible crepe rubber to provide enhanced gripping action to the wear sole. Adhered to the wear sole is layer **28** of a relatively hard rubber to provide the required rigidity for sole **14.** Finally, adhered to hard rubber layer **28** is an additional layer for completing the sole **14.** This additional layer may be, for example, reconstituted leather.

Forming the upper **12** of the ski boot, in accordance herewith, is an outer relatively soft, flexible leather layer **34,** which is waterproofed in order to protect the wearer from the moist environment in which the cross-country ski boot will be used. Immediately below leather layer **34** is an additional thinner layer of leather **36** of a relatively harder or less flexible nature which serves to provide body for the upper, particularly in the toe area of the ski boot. Immediately below this layer **36** is a foam layer **38,** which may be of any well-known foam material such as, for example, flexible polyurethane foam. Forming the lining for the internal cavity **45** of the ski boot is a fabric material **40** which may be, for example, nylon tricot, with the toe portion thereof being sewn at **42** to close or join the material together at the end of the toe.

Forming the bottom of the internal portion or cavity **45** of boot **10** is a soft sock liner **46,** which may be comprised of soft leather for the comfort of the wearer, which is, in turn, adhered to insole **44,** which may be made of reconstituted leather. As can be seen further in FIG. **2,** the upper outer layer **34** has an extension or flange portion **35,** which is positioned to form an interface **32** with upper layer **30** of sole **14.** Flange **35** is joined to the sole by stitching **26,** which, preferably, is double stitching. The double stitching **26,** as will be seen in FIG. **2,** extends well into hard rubber portion **28** of sole **14.**

As can be seen further in FIG. **2,** foam portion **38** of upper **12** extends downwardly only to the sides of the shoe upper, while internal leather layer **36** and lining **40** extend downwardly and under insole **44** at interface **32.** With such an arrangement, if moisture should enter interstices formed around the stitching **26** or at the interface **32** between the joined upper and sole, the moisture will only proceed as far as the areas adjacent interface **32** below insole **44.** It will be prevented from entering internal area **45** by the insertion of the layers **36** and **40** inwardly under insole **44,** as shown at **48** in FIG. **2.**

Referring now to FIG. **3,** it will be seen that sole **14** extends at the rear of the cross-country ski boot beyond the rear of upper **12** both laterally and to the rear. That is, "wing-like" extensions **21** are formed integral with sole **14** to give sole **14** the appropriate conformity to conventional ski bindings. Moreover, sole **14** extends to the rear of upper **12** at **23.** This not only provides the conformity noted above, but also the rigidity necessary to keep the foot from twisting away from the ski after breaking in, which is a defect with prior art constructions.

Thus, with the arrangement herein, the wearer of ski boot **10** is protected from moisture through the combination of the waterproofed outer layer **34,** as well as the configuration of the joints between the various layers interconnecting the boot upper with the sole. Moreover, the appropriate softness and flexibility for the upper **12** is provided with foam layer **38** and the soft, flexible nature of the tricot lining **40** and leather layer **34.** Nevertheless, substantial rigidity is incorporated into boot **10** through the use of solid wedge-shaped sole **14,** which in turn, incorporates a wear sole with appropriate frictional gripping action, as well as a solid, hard, relatively inflexible portion comprised of reconstituted leather and hard rubber. The squared configuration of the heel and toe of sole **14** is appropriate for use with conventional cross-country ski bindings and locks. Moreover, because of the relative flexibility of the upper and a degree of flexibility in the toe portion of the sole, the cross-country ski boot, in accordance herewith, may be utilized as conventional sportswear. The rugged sole combined with the double stitching, joining the upper to the sole, with that stitching extending into the hard rubber portion of the sole, provides, moveover, the appropriate protection for the type of environment in which the ski boots will be used.

While the particular arrangements of cross-country ski boot herein disclosed form a preferred embodiment of this invention, this invention is not limited to that particular arrangement, and changes can be made therein without departing from the scope of the invention, which is defined in the appended claims.

I claim:

1. In combination a cross-country ski boot having a soft, flexible, low slung upper and a substantially inflexible sole joined by stitching; which comprises

a. said sole being a solid wedge-shaped laminate with a squared-off heel and toe comprised of a crepe wear sole adhered to a hard rubber internal layer;

b. a top layer of reconstituted leather adhered to said hard rubber layer on the side opposite said crepe wear sole;

c. said upper being a laminate with the outer layer thereof having an outwardly extending flange forming an interface with said top layer of said sole around the entire peripheral extent of said ski boot, said flange being joined to said sole by said stitching;

d. an insole disposed adjacent said interface; and

e. the entire periphery of at least one lamina of said upper being folded inwardly under said insole at said interface.

2. A cross-country ski boot as described in claim **1,** in which

a. said outer layer is waterproofed.

3. A cross-country ski boot as described in claim **1,** in which

a. said upper is comprised of said outer layer of soft, flexible leather;

b. a second layer of a thinner, less flexible leather;

c. a third layer of a flexible foam; and

d. a liner of fabric material.

4. A cross-country ski boot as described in claim **3,** in which

a. said second layer and said liner are folded inwardly under said insole.

5. A cross-country ski boot as described in claim **1,** in which

a. said squared-off heel of said sole extends rearwardly and laterally beyond the heel of said upper.

6. A cross-country ski boot having a soft, flexible, low slung upper fixed to a substantially rigid sole, in which

a. said sole is generally wedge-shaped in its longitudinal cross section and includes a substantially thickened heel portion;

b. said sole includes a generally squared-off toe portion; and

c. wing-like appendages integral with said thickened heel portion project both laterally and rearwardly beyond said upper to rigidify and to stabilize said sole.

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