United States Patent [19]

Groothaert

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[54] **BOOT WITH HEEL PROTECTION**

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[52] **U.S. Cl.** **36/4**, 36/7.3

[51] **Int. Cl.** **A43b 1/10**

[58] **Field of Search** ..... 36/2.5 Y, 4, 7.3

[56] **References Cited**

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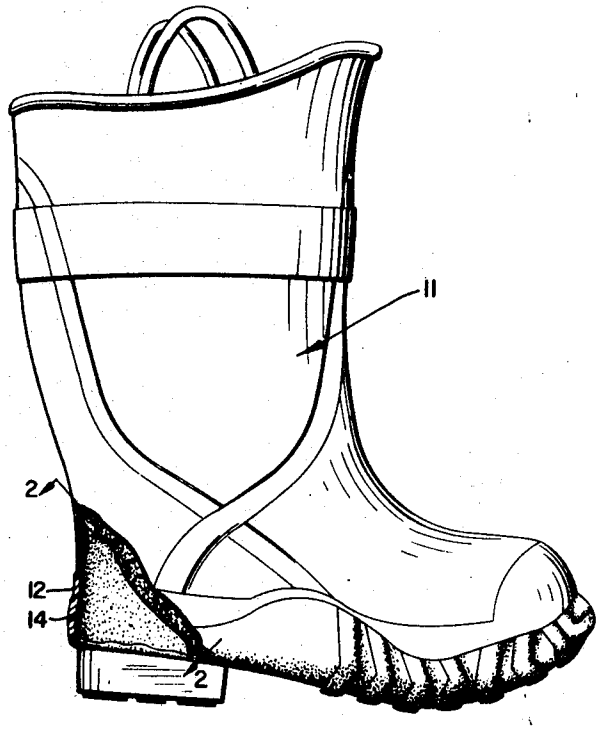
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[57] **ABSTRACT**

A rubber or like plastic boot having a felt lining is provided at the lower heel area with a permanently bonded wear element insert which is preferably nylon fabric having a rubber backing fused into the felt surface at the heel area.

3 Claims, 4 Drawing Figures



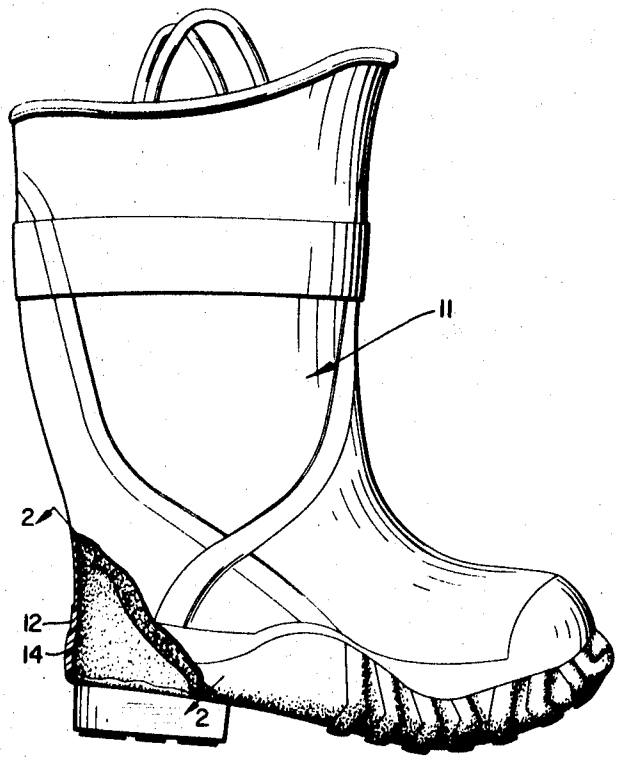


FIG. 1

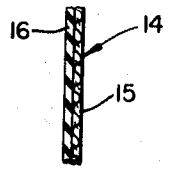


FIG. 3

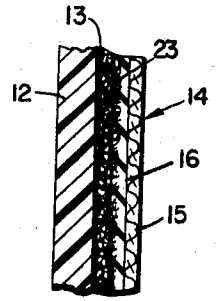


FIG. 4

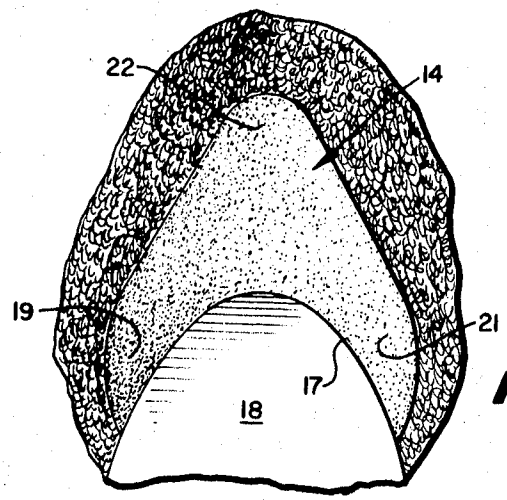


FIG. 2

BOOT WITH HEEL PROTECTION

This invention relates to rubber boots of the relatively heavy duty type which are normally lined with felt and particularly to such boots wherein a special wear element is inserted to protect the felt against wear in the back heel area.

Felt lined rubber boots are conventional. An example is the heavy duty rubber boot worn by firemen. Because these boots do not have a snug fit a major problem is that at the heel area up and down rubbing movement of the wearer's heel causes the felt at that region to be worn away. As the felt wears through to the rubber it rolls up and forms thickened and irregular local areas, and this soon causes discomfort and often blisters and like injury to the wearer. No suitable way is known to repair this defect and so, as a result of the worn felt at the heel area, otherwise perfectly good boots must be discarded.

Efforts have been proposed in solution of the problem. These include painting or stamping into the felt at the heel area a polyvinyl chloride material or a solution of nylon, but while there has been some improvement in reducing excessive wear the problem remains essentially unsolved. Some of these coating materials also present further problems in that they may become relatively stiff and thereby fail to retain the flexibility needed to conform the boot to a last during further processing.

The invention provides a special full surface bonded wear element as an insert at the heel area normally subject to rubbing, and this is the major object. Pursuant to this object the invention contemplates a nylon or equivalent synthetic plastic fabric insert bonded permanently as by a coating of rubber on the fabric surface that is fused to imbed with the fibrous felt surface at the heel area.

While heel inserts have been proposed for footwear, the major purpose has been for protection of the wearer's socks or stockings in contrast to the invention wherein protection of the boot interior against wear is the essential object.

BRIEF DESCRIPTION OF DRAWINGS

FIG. 1 is a side elevation partly broken away and in section to show the invention according to a preferred embodiment;

FIG. 2 is an enlarged view substantially on line 2—2 of FIG. 1 showing the wear element within the boot heel;

FIG. 3 is a fragmentary section showing the rubber coated wear element before assembly with the boot; and

FIG. 4 is a fragmentary section at the boot heel area with the wear element in place.

PREFERRED EMBODIMENTS

FIG. 1 illustrates a heavy duty boot 11 assembled from natural or synthetic rubber. The interior of boot 11 is lined with a permanently secured relatively soft lining of felt presenting a relatively fibrous surface at the interior of the boot. FIG. 4 shows at 12 the rubber wall of the boot and at 13 the attached felt liner. To this extent the boot is of known and conventional construction. The invention provides a wear element 14 that is full surface bonded to the felt on the inside rear heel area.

The wear element 14 consists of a suitably shaped flexible sheet of nylon or like smooth synthetic perspiration and water resistant non-absorbent fabric 15 that has one surface coated with a fusible rubber layer 16.

The preferred shape of wear element is indicated in FIGS. 1 and 2. The lower edge 17 of element 14 extends continuously around the sides and rear of the heel just above the inner sole 18. The element thus lines the felt area in this region, extending upwardly from the inner sole substantially equally at side portions 19 and 21 and enlarging to be somewhat higher at the center portion 22 which would contact the back of the wearer's heel.

Before the boot is assembled the leg lining section shown at 13 in FIG. 4 is placed fabric side up on a platen and the suitably shaped wear element 14 in FIG. 4 is placed on the heel area of the fabric lining.

Then heat and pressure are applied over the entire nylon surface area as by a suitable die thereby holding the wear element tightly in full surface contact with the felt. The applied heat is sufficient to soften the fusible rubber coating 16 contacting the relatively soft fibrous felt surface. As a result the softened rubber tends to imbed itself in the fibrous felt surface and the felt fibers also enter the softened rubber layer.

When the heated die is removed the softened rubber solidifies and the wear element now remains bonded onto the felt, the interlocked felt fibers and rubber providing a permanent intermediate bonding layer indicated at 23 in FIG. 4.

The fabric 15 is preferably nylon because of its smoothness and wear resistance. However, the term smooth non-absorbent synthetic fabric as used herein and in the claims is meant to include synthetic plastics fabrics of other compositions than nylon. Similarly while fusible rubber has been found to be quite suitable at 16, flexible thermoplastic and thermosetting materials may be used, and the term flexible heat softenable bonding material is used herein and in the claims to include these materials as well as rubber. The term felt as used herein and in the claims includes any equivalently functioning layer presenting a random fiber, woven or knitted fabric surface to be contacted by the rubber layer of the wear element. Finally while the invention is described as applied to rubber boots, it may be equally applied to boots of other plastic waterproof material such as the vinyl compounds used in slush molding.

While the parts are shown exaggeratedly in size in the drawings for purposes of illustration it will be understood that the die pressure and the bonding action will tend to press the wear element into the relatively soft felt so that there is insignificant projection of any of the wear element relative to the adjacent felt surface.

In the final boot assembly shown in FIG. 1 the insert flexes with the rubber of the boot wall when placed on a last or on the wearer's foot, and the flexible bond insures against separation of the insert during the life of the boot.

The invention may be embodied in other specific forms without departing from the spirit or essential characteristics thereof. The present embodiment is 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 Letters Patent is:

1. A boot of waterproof material having a felt lining presenting a relatively soft fibrous surface interiorly of the boot and a wear element permanently bonded to the felt at the lower heel area that is subject to rubbing contact with the wearer, said wear element comprising a smooth flexible non-absorbent synthetic plastics fabric coated on the side facing the felt with a flexible heat softenable bonding material layer that is fusibly incorporated with the felt surface at an intermediate layer that contains a mixture of said bonding material and the fibrous felt.

2. The boot defined in claim 1, wherein said wear element is a sheet of nylon fabric.

3. The boot defined in claim 2, wherein its bonding material is fusible rubber.

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