United States Patent

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[72] Inventor **Martin J. Mitchell**
Pittsburgh, Pa.

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[73] Assignee **Bata Shoe Company, Inc.**
Belcamp, Md.

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[54] **SPREAD-RESISTANT METAL TOE FOR SAFETY SHOES**
1 Claim, 5 Drawing Figs.

[52] U.S. Cl. 36/77
[51] Int. Cl. A43c 13/14
[50] Field of Search 36/77, 72

[56] **References Cited**

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Primary Examiner—Alfred R. Guest
Attorneys—Arthur L. Morsell, Jr. and Curtis B. Morsell, Jr.

ABSTRACT: The lower edge at each side of the rear of the metal toe piece of a safety shoe is formed with several sawteeth which are positioned to bite into the welt of the shoe in response to a blow on the toe piece of a type which might otherwise result in lateral spreading of the sides of the toe piece.

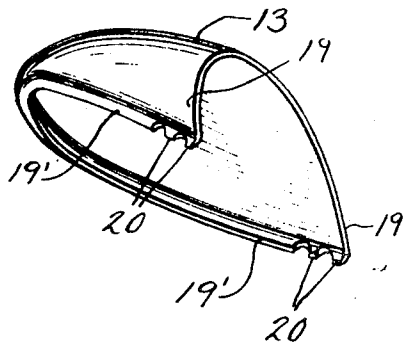


Fig. 1

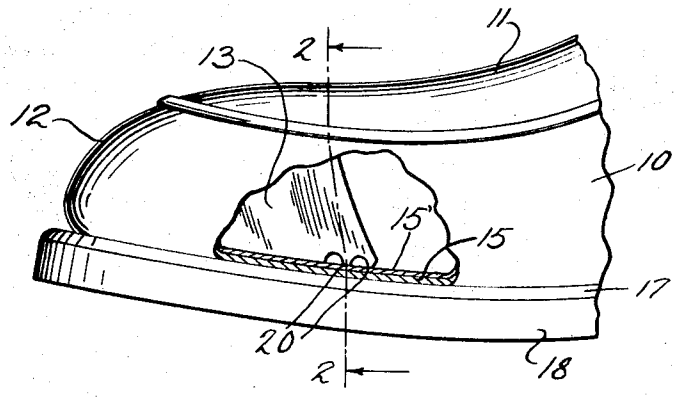


Fig. 2

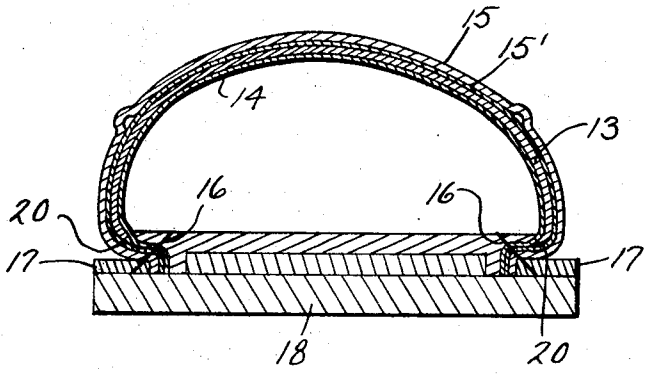


Fig. 3

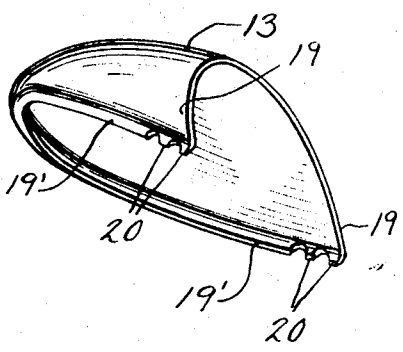


Fig. 5

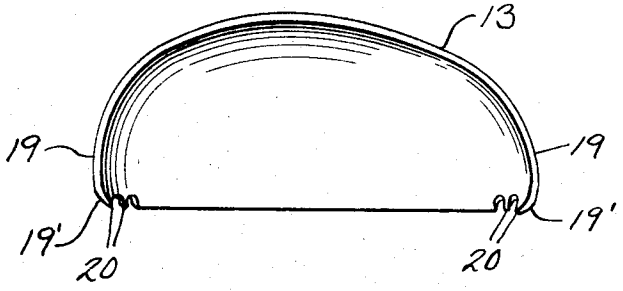
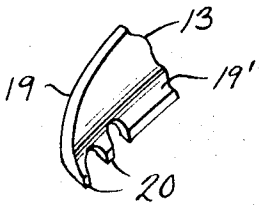


Fig. 4



INVENTOR
Martin J. Mitchell
BY
Morsell & Morsell
ATTORNEYS

SPREAD-RESISTANT METAL TOE FOR SAFETY SHOES

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to safety shoes of the type worn by workmen in foundries, factories, steel mills, and the like, to reduce the possibility of injury to their toes from falling objects, molten metal, or the like.

2. Description of the Prior Art

Safety shoes with metal toe pieces embodied in the box toe are common in the art. With the conventional metal toe piece, when a heavy object falls on the toe of the wearer there is a spreading tendency which causes the downwardly extending portions of the rear of the metal toe piece to spread apart and slide off of the welt of the shoe, thus losing effectiveness in preventing injury to the toes of the wearer. At the present time the government has standards for safety shoes which require a predetermined minimum compression rating for metal toe pieces.

Summary of the Invention

With the present invention the lower edge at each side of the rear portion of the metal toe piece in a safety shoe is formed with several sawteeth. These are directed toward the welt of the shoe in a position to dig into the welt in response to pressure on the top of the toe.

A general object of the present invention is to provide, in a safety shoe of the type having a metal toe, novel means for raising the effective compression rating of the metal toe piece.

A further object of the invention is to provide, in a safety shoe as above described, means on the metal toe piece for coaction with the welt of the shoe to prevent the lower portions of the toe piece from spreading apart and sliding sidewise off of the welt when an object is dropped on the toe of the wearer.

A more specific object is to provide a metal toe piece for a safety shoe in which the rear portion of the lower edge of the toe piece is formed on both sides with several sawteeth which are positioned to bite into the welt, in response to pressure from above, to thereby prevent the lower portions of the toe piece from spreading apart and sliding sidewise off of the welt.

A further object of the invention is to provide, in a safety shoe of the class described, a novel means for raising the effective compression rating of the metal toe piece without otherwise changing the construction of the shoe or adding to the expense thereof.

With the above and other objects in view, the invention consists of the improved spread-resistant metal toe for safety shoes, and all of its parts and combinations, as set forth in the claims, and all equivalents thereof.

BRIEF DESCRIPTION OF THE DRAWINGS

In the accompanying drawings, in which the same reference numerals designate the same or similar parts in all of the views:

FIG. 1 is a fragmentary side elevational view of the fore portion of a shoe embodying the invention, part of the upper being broken away and shown in section;

FIG. 2 is a sectional view taken approximately on the line 2–2 of FIG. 1;

FIG. 3 is a perspective view of the metal toe piece alone;

FIG. 4 is a fragmentary perspective view showing the toothed portion of one of the sides of the metal toe piece; and

FIG. 5 is a rear elevational view of the metal toe piece alone.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring more particularly to the drawing, the numeral **10** designates a workman's shoe having an upper **11** with a box toe portion **12**. Within the box toe portion of the shoe is a rigid toe piece **13** preferably formed of steel, the toe piece being covered on its underside by the usual lining layer **14** and being covered on top by the leather toe covering **15** and lining layer **15'** of the shoe upper.

The lower edges of the upper layers **15** and **15'** and lining **14** are secured by the usual welt stitching **16** to the welt **17** of the shoe and there is the usual outsole **18**. It will be noted that the lower edges of the metal toe piece are located between the lining **14** and leather upper **15–15'** and directly over the welt, as is conventional.

Referring now to the metal toe piece **13**, it has downwardly extending side portions **19**, the extreme lower edges of which are angled inwardly as at **19'** throughout the length thereof. At the rear portion of the metal toe piece **13**, and on both sides thereof, the angled portion **19'** is formed with a plurality of sawteeth **20**, as shown particularly in FIG. **4**. These sawteeth may be cut or otherwise formed. The points of the sawteeth are normally inactive.

In use of the conventional safety shoe, when a heavy object would fall upon the top of the toe of the shoe there was a tendency for the rear downwardly extending portions of the metal toe piece (see **19** of FIG. **5**) to spread apart under the force of the blow. The forward portion of the toe piece, being closed, had little tendency to spread. When such spreading occurred under the force of a heavy blow, the inwardly flanged portions **19'** had a tendency to slide sidewise off of the welt. As a result, the protection for the toe of the wearer was seriously impaired. With the present invention, when such blow occurs, the sawteeth tend to dig through the upper leather layers **15** and **15'** into the welt to prevent such spreading tendency. Tests have shown that the present invention increases the compression rating of a metal toe piece by about 500 pounds.

It is to be understood that I do not desire to be limited to the exact details of construction shown and described, for obvious modifications will occur to a person skilled in the art.

I claim:

1. In a safety shoe having a welt and having a toe portion with a strong rigid metal toe piece therein and having upper material covering said metal toe piece, with the lower edge of said covering material secured to the welt near the inner margin thereof, said metal toe piece being shaped to cover the toes of the user and having downwardly extending, spaced-apart side portions, the lower edge of both side portions being generally downwardly directed and positioned over the welt and being normally separated from the welt by the thickness of the upper covering material of the shoe, said lower edges of the metal toe piece near the rear ends thereof having teeth cut therein and directed in the same direction as said lower edges of the metal toe piece, said teeth at their lower pointed ends being substantially the same plane as the remainder of the lower edges of said toe piece so as to be normally separated from the welt by the upper covering material of the shoe so as to be normally inactive, said teeth being of such length and so positioned and directed as to dig through the upper covering material of the shoe and into the welt only when the metal toe piece is subjected to a spreading force from a blow, and having sufficient length to dig into the welt and prevent spreading tendency of the metal toe piece when such blow of sufficient force occurs.