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2,601,162

SAFETY SHOE

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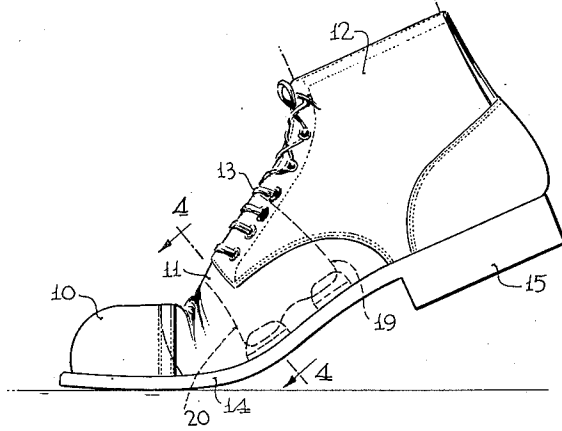


FIG. 1

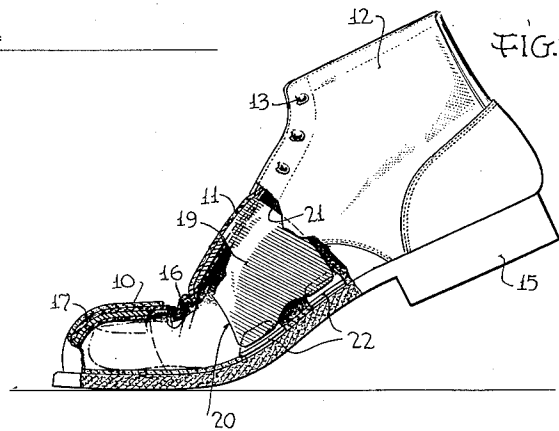


FIG. 2

FIG. 3

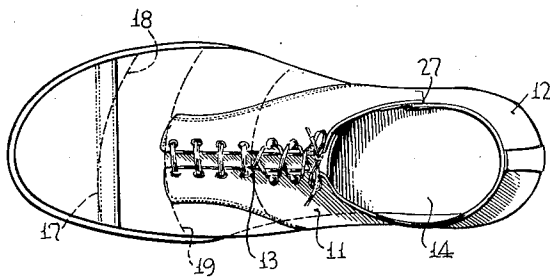
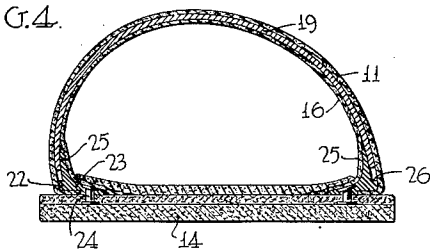


FIG. 4



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SAFETY SHOE

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1 Claim. (Cl. 36—77)

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The invention relates to a safety shoe, that is, a shoe provided with reinforcements, mostly of sheet steel or other metal, for protecting at least parts of the feet of the wearer against injury by objects hitting the shoe.

The most widely used safety shoes have merely a built-in dome-like metal toe cap, often called: box toe, which is a concealed, inclusive part of the shoe upper and is formed to the desired toe shape. The protection afforded by such cap extends to about the base of the great toe and to parts of the second and third toes.

The objects of the invention are achieved in part by a second reinforcement, guard or protector built into the shoe, extending over the instep region and being spaced from the cap so as to leave the break-line free of reinforcements and permit proper flexing. The break line may also be called the flexing zone and generally coincides with the transverse curved line defined by the metatarso-phalangeal joints of a normal foot within the shoe. The instep guard forms the subject matter of the inventor's copending application "Instep Guard for Safety Shoes," Serial No. 245,818, filed September 10, 1951, as a division of the present application.

The main feature of the present application resides in a rearward extension of the toe cap at the outer side of the shoe, that is, on the side of the small toe, so as to give further protection to the third, fourth and fifth toes which, by the customary shoe caps are only partly protected or not at all. This means that the corner portion of the box toe wall, which is located at the outside of the shoe, extends rearwardly of the toe end of the shoe farther than the corner portion located at the inside of the shoe.

The shoe with the new cap and instep guard protects the foot of the wearer nearly perfectly. The small gap left for the flexion between the toe cap and the protector over the instep will be vulnerable only if a pointed object happens to strike in just this gap. However, most foot injuries are caused by heavy, blunt objects and said space would be of no consequence in such accidents.

In other words: the toe cap or box toe is entirely disposed in advance of the lateral flexing zone of the upper and the break line of the sole and has a transversely arched rear edge continuously and asymmetrically curved toward the toe end of the shoe, whereby this rear edge overlies the toes of a normal foot within the shoe and is generally parallel to but in advance of the transverse curved line defined by the metatarso-

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phalangeal joints of such foot. In this manner, the new metal box toe has maximum dimension without limiting the comfortable flexing of the shoe in wear.

5 The invention, its objects, advantages and special details thereof will be more fully and easily understood from the several embodiments illustrated in the attached drawing and described hereinafter.

10 In the drawing:

Figure 1 is a side elevation of a shoe partly flexed, indicating in dotted lines the arrangement of the new toe cap and instep protector;

15 Figure 2 is an elevation corresponding to Figure 1 yet with certain parts shown in section or broken away so as to illustrate the essential features of the construction;

Figure 3 is a plan view of the shoe shown in Figures 1 and 2; and

20 Figure 4 is a section along line 4—4 of Figure 1.

The invention is illustrated for a shoe having a leather cap 10, a vamp portion 11, an ankle portion 12 with lacings 13 of the blucher type, a sole 14 and a heel 15. Inserted between the leather cap 10 and the inner lining 16 is a metal toe cap 17. The rear margin of this cap extends on the outside rearwardly at 18 as shown by the dotted line in Figure 3 so as to give more complete protection to the toes, especially to the outer toes.

30 Held between the upper 11 and the inner lining 16 is a second reinforcing metal band 19 which extends over the foot in the instep region. The front margin 20 of this band 19 is spaced from the rear margin of the metal cap 17 and is also rearwardly spaced from the so-called "break-line," that is, the line where the shoe flexes. The rear margin 21 of the instep reinforcement, guard or protector 19 extends approximately across the top of the arch of the foot. In cross sections in planes transversely to the length of the foot, the protector 19 is arched so as to correspond approximately to the form of the top of the foot in this region.

45 The lining 16 is preferably of a relatively heavy and soft material so as to form a cushion between foot and protector, or additional cushioning material may be provided.

The protector 19 does not constitute a rigid closed-figure structure with the sole 14. In the illustrated embodiments, one or both ends of the protector 19 are not rigidly secured to the sole as is the case with the toe cap but they movably engage brackets 22 which in their turn are secured to the sole. These brackets are preferably

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of a hard material, e. g. metal, and are firmly held in place. In the embodiment illustrated in Figure 4, these brackets 22 each have a horizontal arm 23 overlying and secured by rivets 24, to the sole, an upstanding arm 25 extending between the lower part of the protector 19 and the inner lining and a shoulder 26 extending outwardly from the lower part of the arm 25.

Ordinarily, the protector 19 may move up and down relative to the brackets 22 with the movements of the foot. If the shoe should be hit by a heavy object in the region of the protector 19, the protector will be pushed down and the lower margin of the protector will engage the shoulders 26, whereupon the protector will act in the same manner as the toe cap and will prevent injury to the foot.

The invention is not restricted to the illustrated embodiments but is subject to modifications, and protection is sought for the invention as expressed by the spirit and the language of the attached claim.

What is claimed is:

In a safety shoe, as a concealed inclusive part of its upper, a rigid, dome-like, metal box toe formed to the desired toe shape, such box toe being entirely disposed in advance of the lateral flexing zone of the upper and the break line of the sole and having a transversely arched rear edge continuously and asymmetrically curving toward the toe end of the shoe, the corner portion of the box toe wall located at the outside of the shoe extending rearwardly of the toe end of the shoe farther than the corner portion located at

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the inside of the shoe, and the curved rear edge of the box toe overlying the toes of a normal foot within the shoe and being generally parallel to but in advance of the transverse curved line defined by the metatarso-phalangeal joints of said foot, thus providing for maximum dimension of the metal box toe itself without limiting comfortable flexing of the shoe in wear.

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