Oct. 29, 1968 C. MacQUAID ETAL 3,407,518

SHOE WITH TOE AND INSTEP GUARD ASSEMBLY

Filed April 15, 1966

Fig. 1.

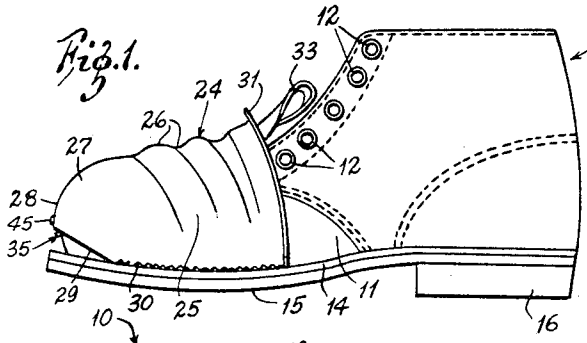


Fig. 2.

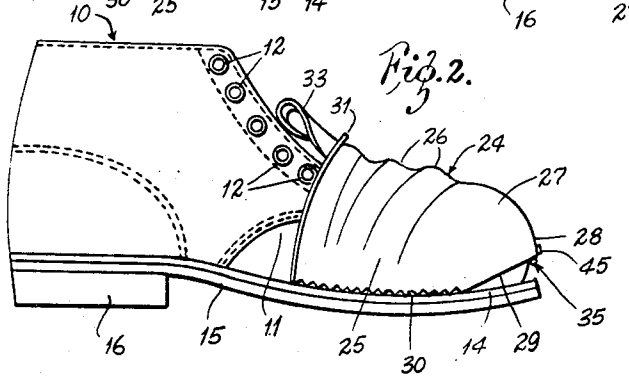


Fig. 3.

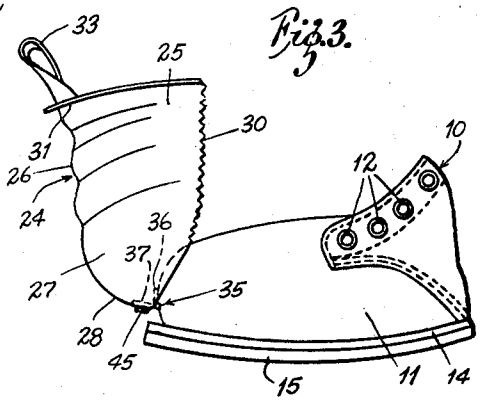


Fig. 4.

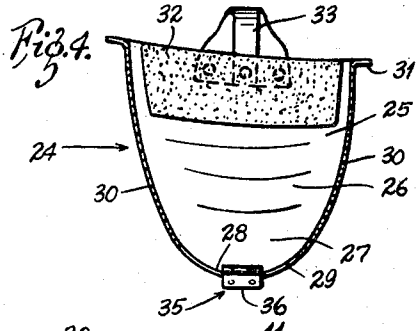


Fig. 5.

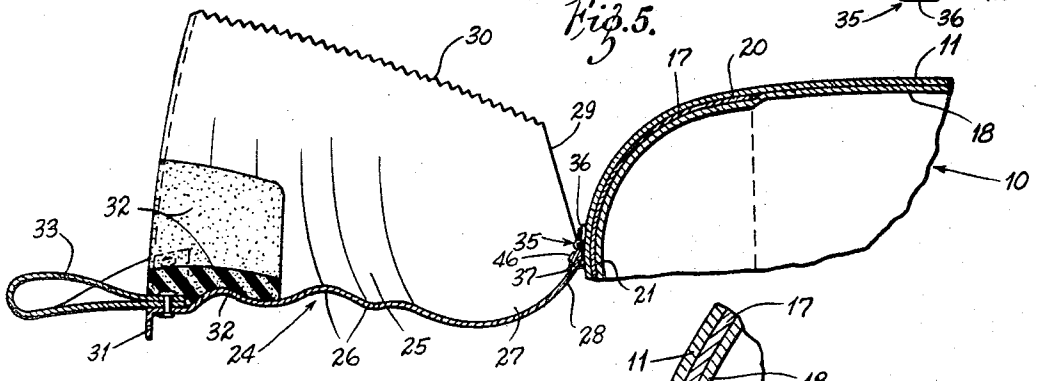


Fig. 6.

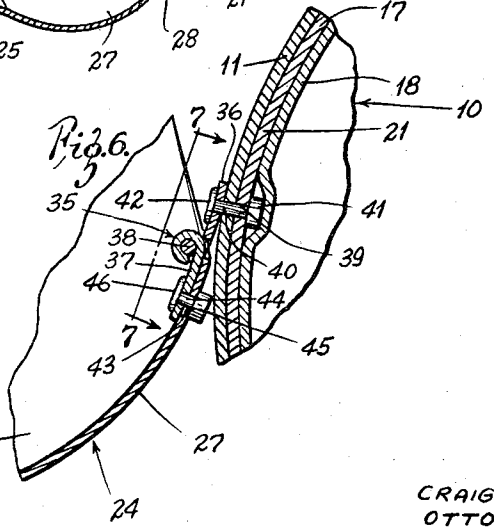
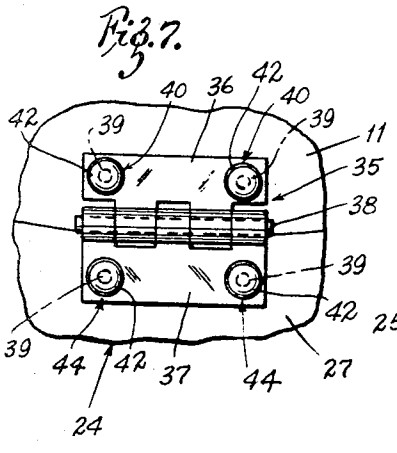


Fig. 7.



INVENTORS:
CRAIG MacQUAID,
OTTO A. ANDRE,
BY Kingsland, Rogers, Ezell, Eilers & Robbins
ATTORNEYS

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SHOE WITH TOE AND INSTEP GUARD ASSEMBLY

Craig MacQuaid and Otto A. Andre, St. Louis, Mo., assignors to Interco Incorporated, St. Louis, Mo., a corporation of Delaware

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ABSTRACT OF THE DISCLOSURE

A protective shoe construction having a rigid toe guard, with a rigid instep guard of compound curvature overlying both the instep portion and the toe portion of the shoe with toothed lower side edges for digging into the shoe welt, and having a front wall adjacent the front wall of the toe guard. A permanent, strong connection for the instep guard to the toe guard while accommodating movement of the instep guard when the shoe is worn.

An object of the invention is to provide a protective shoe with a toe guard and instep guard wherein the instep guard overlies both the instep and toe portions of the shoe with lateral sides resting on the welt of the shoe so that blows to the top of the instep guard are transmitted directly to the welt and through the sole of the shoe. Another object is to provide such a shoe wherein the lower side edges of the instep guard have teeth that dig into the welt to resist lateral spreading of the sides of the guard when a downward blow is applied to the top of the guard. The teeth also resist inward pinching when a side blow is applied to the guard.

Another object of the invention is to provide a shoe construction with a toe guard and an instep guard wherein the instep guard has a portion overlying the toe guard including the front thereof to block wires and other foreign matter from entering the space between the instep guard and the shoe, together with a strong, permanent attachment of the instep guard to the toe guard.

Another specific object is to provide a shoe with a rigid toe guard and a rigid instep guard with utilization of these rigid parts to hold rivet fasteners in joining the instep guard to the toe guard.

All the foregoing objects are accomplished by attaching the instep guard to the shoe by a hinge riveted to the front of the instep guard and to the front of the toe guard. Also, there are other objects of this invention which will be apparent.

In the drawing:

FIGURE 1 is a left side elevation view of a shoe made according to this invention;

FIGURE 2 is a right side elevation view of the shoe of FIGURE 1;

FIGURE 3 is a fragmentary left side elevation view of the shoe of FIGURE 1, but showing the instep guard pivoted away from the shoe;

FIGURE 4 is a bottom plan view of the instep guard removed from the shoe;

FIGURE 5 is an enlarged fragmentary view in medial section through the front portion of the shoe and through the instep guard;

FIGURE 6 is a further enlarged fragmentary view in section showing the hinge portion of FIGURE 5; and

FIGURE 7 is a fragmentary view of the hinge along the line 7—7 of FIGURE 6.

Referring to the drawing, this shoe **10** has an upper **11**, as is usual, with eyelets **12** in the vamp for shoestrings. There is a welt or midsole **14** and an outsole **15** with a heel **16**. A rigid steel toe guard **17** is positioned in the toe portion of the shoe with a liner **18** lining the inner surface of the upper **11** and toe guard **17**.

The toe guard **17** may be of any conventional form and shape and its manner of mounting in the shoe **10** may be conventional. Likewise, the arrangement of upper **11** and liner **18** is conventional. In this normal construction, it will be noted that the toe guard **17** has a top portion **20** and a front portion **21**, albeit the line dividing these two portions is not sharply defined.

The instep guard **24** comprises a steel shell **25** of concavo-convex shape to follow the contour of the instep portion of the shoe **10**, with transverse corrugations **26** to give added strength, and with a cup portion **27** extending to a front wall **28** overlying the front wall **21** of the toe guard **17**. The front wall **28** terminates at an edge **29** that is spaced above the sole **14** of the shoe but which leads to toothed lateral side edges **30** which rest on the welt or midsole **14**. These teeth **30** extend along the sides of the instep guard **24** to points forward of the back edge of the toe guard **17** and dig into the welt or midsole. There is an outwardly turned flange **31** at the back of the instep guard **24** with a cellular pad **32** and a leather loop **33** respectively glued and riveted to the shell **26**. The shoelaces (not shown) are passed through the loop **33** to position the guard **24** while permitting it to move as the shoe is worn.

The difficulty in a guard like the guard **24** has been to find a satisfactory way of attachment. Different kinds of screw attachments and the like have been used but the screws often work loose causing the guard to separate from the shoe. According to this invention, a hinge **35** is riveted to the instep guard **24** and to the toe guard **17**. The hinge **35** has the usual construction including plates **36** and **37** relatively pivotal on a pin **38**. Appropriate holes **39** are drilled through the front wall **21** of the toe guard, a plurality of rivets **40** extend through the hinge plate **36**, the upper **11**, and the holes **39** in the toe guard **17**. Each rivet **40** has a head **41** that bears against the inner wall of the steel toe guard and a head **42** that bears against the metal wall of the hinge plate **36**. The rivets are thus tightly and permanently held in place.

Likewise, holes **43** are drilled through the front wall of the instep guard **24**, and rivets **44** extend through these holes **43** and through the hinge plate **37**. A head **45** on each rivet **44** bears against the wall of the instep guard **24**, and a head **46** bears against the metal hinge plate **37** to hold the rivets **44** tightly in place.

The resulting assembly is permanent and strong. There are no screws to come loose. A strong metal instep guard with this attachment provides the maximum protection to the wearer, which will not come loose and which cannot be removed. Because of the shape of the guard, this protection extends over the entire forepart of the shoe, including the toe and instep, giving protection not only to the instep, but added protection to the toe. Also, since the toothed sides **30** rest on the welt or midsole **14**, the forces of blows are transferred directly to the sole rather than to the foot. The teeth **30** dig into the welt or midsole to lock the sides of the instep guard against spreading.

Various changes and modifications may be made within the purview of this invention as will be readily apparent to those skilled in the art. Such changes and modifications are within the scope and teaching of this invention as defined by the claims appended hereto.

What is claimed is:

1. A protective shoe combination comprising a shoe, a rigid toe guard in the toe of the shoe, a rigid instep guard for overlying the instep portion of the shoe, the instep guard having a corrugated portion overlying the top of the toe guard and the instep portion of the shoe and having a front wall overlying the front portion of the

toe guard, a hinge having two relatively pivoted plates, one plate being riveted to the front of the toe guard, the other plate being riveted to the front wall of the instep guard, an inner liner covering the heads of the rivets inside the shoe, the instep guard having lateral sides with toothed lower edges for biting into the welt or midsole of the shoe, means to releasibly connect the upper rearward end of the instep guard to the shoe, and a resilient pad on the under side of the instep guard for spacing the lower radii of the corrugations from the upper surface of the instep portion of the shoe.

2. The shoe combination of claim 1 wherein the toe guard and instep guar are of steel.

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PATRICK D. LAWSON, *Primary Examiner.*

ALFRED R. GUEST, *Assistant Examiner.*