March 27, 1934. A. A. STRAUSS 1,952,294

FOOT GUARD

Filed Oct. 13, 1933

Fig. 1.

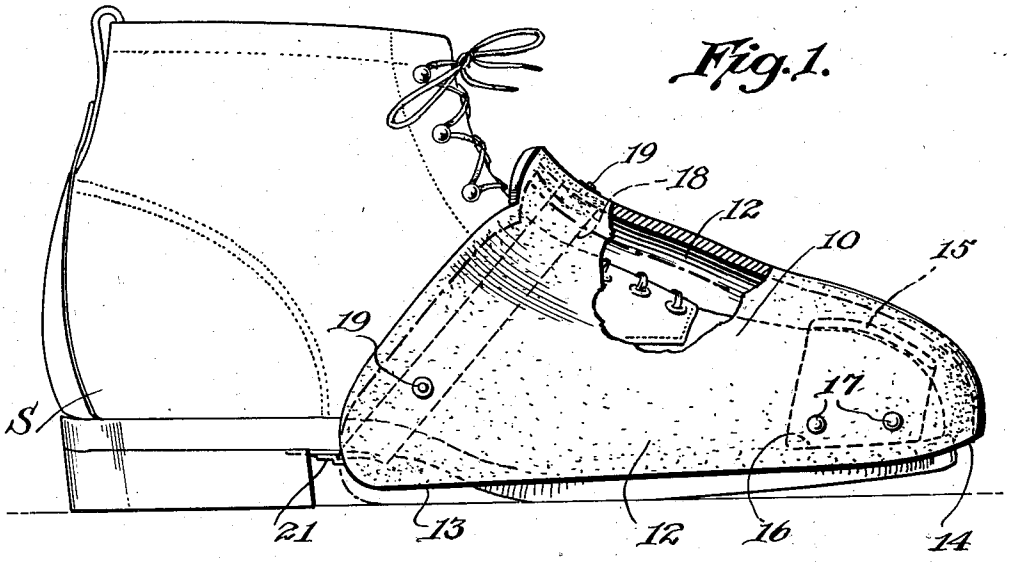


Fig. 2.

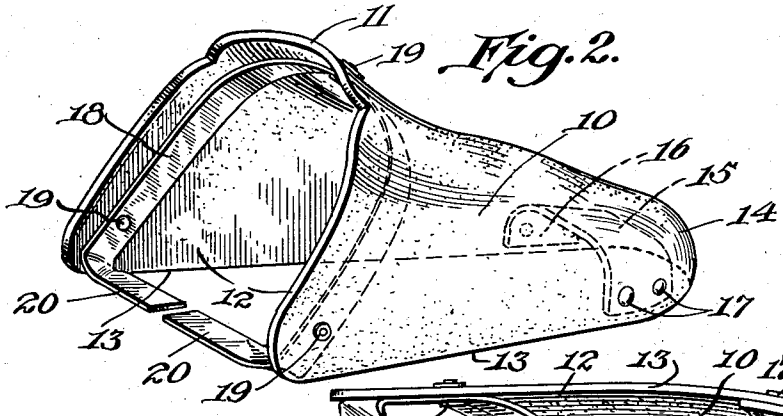
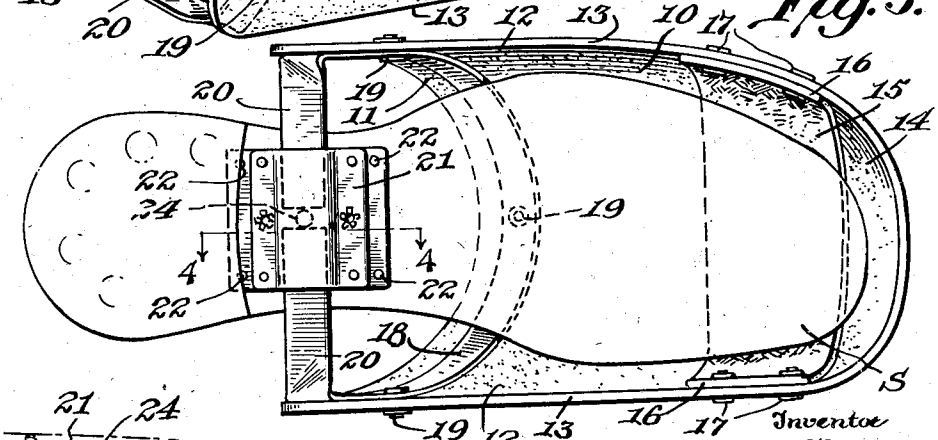


Fig. 3.



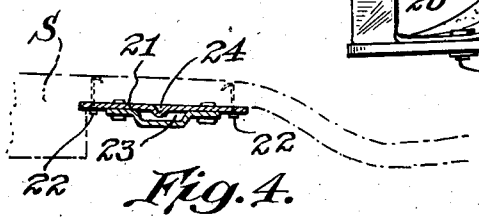


Fig. 4.

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FOOT GUARD

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9 Claims. (Cl. 36—72)

This invention relates to shoe guards of the type used to protect the feet from injury by heavy blows produced by falling articles and from the effects produced by the spilling of molten metal and other injurious substances from receptacles onto the feet.

Workmen in coal and other mines are constantly in danger of having their feet injured by the fall of heavy chunks of coal or other objects. Various manufacturing processes require the handling of heavy objects, ladles of molten metal and the like and, in the establishments wherein such processes are carried out there is great liability to foot injury produced by accidental dropping of weights, molten metal or other corrosive fluids. These injuries usually affect the instep and toe portion of the foot.

Among the objects of the present invention are to provide a novel and efficient shoe guard of rigid material adapted to be carried by a shoe in spaced relation to the top and sides of the instep and toe portions of a shoe; to so attach this guard to the shoe that it will normally be held with its side edges spaced above the floor or other surface on which the shoe rests; to arrange the attachment of the guard to the shoe in such manner that the guard may be depressed when struck by a weight so that it will rest on the ground or surface supporting the shoe; to so shape the guard that, when depressed, it will form an effective arch for supporting a superimposed weight without coming in contact with the shoe; and to provide attaching means for such a guard whereby, without the use of straps, buckles and the like, the guard may be readily attached to and detached from any shoe which it is desired to equip with the guard.

With the above and other objects in view, one embodiment of the invention will now be described in detail and specifically claimed, reference being had to the accompanying drawing, wherein:

Figure 1 is a side elevation of the guard partly in section and showing the same applied to a shoe with the guard in normal position in full lines and in weight supporting position in dotted lines.

Figure 2 is a perspective view of the guard removed from the shoe.

Figure 3 is a bottom plan view of the guard applied to a shoe.

Figure 4 is a detail section on the line 4—4 of Figure 3.

The guard body 10 is formed of any suitable rigid material such as fibre, metal, leather or other stiff and rigid material capable, when formed as an arch, of supporting heavy blows or weights without serious deformation. The body 10 is of substantially wedge shape and consists of an upper transversely arched portion 11 merging into substantially vertical lower side walls 12 having straight bottom edges 13. The walls 12 and arch 11 merge forwardly into a rounded end closure 14, forming substantially a half dome adapted to cover the toe of a shoe. A structure of this kind when resting with the edges 13 on a supporting surface forms a strong support highly resistant to deformation against blows and the pressure of heavy objects.

A transverse strap or support 15 extends across the shield or guard 10 within the forward part thereof and has downturned ends 16 fitting against the lower side walls of the guard. Rivets or bolts 17 secure these down-turned ends to the side walls. This member 15 is preferably formed of flexible material and serves to hold the forward part of the guard spaced from the shoe S and normally spaced from the surface on which the shoe rests.

A reinforcing arch 18 is fitted within the rear portion of the guard 10 and closely engages against the arch 11 and side walls 12 of this rear portion. Preferably this reinforcing arch is made of spring metal. Rivets or bolts 19 pass through the arch 18 holding it firmly in position. Opposed prongs 20 extend toward each other from the lower ends of the arch 18 and are preferably formed by continuations of the material of the arch 18. It will be noted that these prongs lie normally in a substantially horizontal plane both longitudinally and transversely, the arch material being not only bent inwardly but also spiral twisted to thus form said prongs.

A socket member 21 is fixedly secured to the shoe sole beneath the shoe arch or instep portion as by nails or rivets 22. This socket member is provided with a slot 23 extending transversely of the shoe and of proper size and shape to receive the ends of the prongs 20. Means, here shown by the boss or nipple 24 struck from the socket material, are provided to limit the insertion of the prongs 20 into the slot 23 so that the reinforcing arch 18 and the guard 10 are properly centered transversely of the shoe S. The guard 10 is sufficiently wide so that, when thus centered, its side walls will be well spaced from the sides of the shoe and the height of the reinforcing arch 18 above the prongs is such that the guard and arch are constantly held spaced above the shoe even when the guard is depressed by a blow or weight so that its edges 13 rest on the ground or shoe supporting surface. From an inspection of Figure 3 it will be seen that only the end portions of the prongs 20 engage in the socket so that those parts of the prongs which lie between the lower ends of the reinforcing arch and the socket constitute springs which yield when the guard receives a

downward blow or has a weight imposed thereon. Consequently an impact from a falling body, such as a chunk of coal, instantly carries the guard downwardly so that the force of the blow is transmitted to the ground, free from the shoe. As the space between the top of the shoe and the inside wall of the foot-guard is greater than the normal distance between the bottom edge of the guard and the ground, when the guard is struck by a blow or a falling weight, the foot is always protected from the force of the blow by a space above the shoe. As soon as the weight is removed the springs 2 lift the guard into normal position supported by the shoe above the ground. The guards, therefore, do not interfere with the natural walking.

In applying the guard to a shoe the forward part of the shoe is passed through the reinforcing arch until the prongs are opposite the socket member. Then one of the prongs is inserted in the socket after which the lower part of the reinforcing arch is spread and the other prong inserted in the socket. The guard is removed by reversing the steps of this operation.

I claim:—

1. A shoe guard comprising a rigid body shaped to cover the top and sides of the forward portion of a shoe in spaced relation thereto when the body and shoe are resting on the ground or a supporting surface, and yieldable means for securing the guard to a shoe in spaced relation to such surface, said means permitting the lower edge of the guard to bear upon said surface when forced down by a weight.

2. A shoe guard for the forward portion of a shoe comprising a transversely arched body having substantially vertical side walls, said body being wider than the shoe to which it is to be applied and being higher than the shoe at corresponding points in the length of the shoe and guard, and means for yieldingly securing said body to a shoe with the lower edges of the body in spaced relation above a plane tangent to the bottom of the shoe.

3. A shoe guard comprising a rigid body shaped to cover the top and sides of the forward portion of a shoe in spaced relation thereto when the body and shoe are resting on the ground or a supporting surface, means to hold the forward portion of the body in spaced relation to the shoe, a socket member adapted to be secured to the under side of the arch of a shoe sole, and prongs extending from the lower rear portions of the body and having their ends removably fitted in the socket member.

4. A shoe guard comprising a rigid body shaped to cover the top and sides of the forward portion of a shoe in spaced relation thereto when the body and shoe are resting on the ground or a supporting surface, means to hold the forward portion of the body in spaced relation to the shoe, a socket member adapted to be secured to the under side of the arch of a shoe sole, prongs extending from the lower rear portions of the body and having their ends removably fitted in the socket member, and means to limit the insertion of said prongs in said socket member.

5. A shoe guard comprising a rigid body shaped to cover the top and sides of the forward portion of a shoe in spaced relation thereto when the body and shoe are resting on the ground or a supporting surface, a transverse strap extending across the forward part of the body and having its ends secured to the side walls of the body, a reinforcing arch secured within the body at the rear end thereof, opposed prongs extending from the lower ends of the arch, and a socket member adapted to be fixed beneath the arch of the shoe sole and having a transverse slot with the ends of the prongs removably engaged therein.

6. A shoe guard comprising a rigid body shaped to cover the top and sides of the forward portion of a shoe in spaced relation thereto when the body and shoe are resting on the ground or a supporting surface, a transverse strap extending across the forward part of the body and having its ends secured to the side walls of the body, a reinforcing arch secured within the body at the rear end thereof, opposed prongs extending from the lower ends of the arch, a socket member adapted to be fixed beneath the arch of the shoe sole and having a transverse slot with the ends of the prongs removably engaged therein, and means to limit the insertion of the prongs in said slot, the portions of the prongs projecting from the slot forming springs normally holding the body spaced from said surface.

7. A shoe guard for the forward portion of a shoe comprising a transversely arched body having substantially vertical side walls, said body being wider than the shoe to which it is to be applied and being higher than the shoe at corresponding points in the length of the shoe and guard, a transverse strap extending across the forward part of the body and having its ends secured to the side walls of the body, a reinforcing arch secured within the body at the rear end thereof, opposed prongs extending from the lower ends of the arch, and a socket member adapted to be fixed beneath the arch of the shoe sole and having a transverse slot with the ends of the prongs removably engaged therein.

8. A shoe guard for the forward portion of a shoe comprising a transversely arched body having substantially vertical side walls, said body being wider than the shoe to which it is to be applied and being higher than the shoe at corresponding points in the length of the shoe and guard, a transverse strap extending across the forward part of the body and having its ends secured to the side walls of the body, a reinforcing arch secured within the body at the rear end thereof, opposed prongs extending from the lower ends of the arch, a socket member adapted to be fixed beneath the arch of the shoe sole and having a transverse slot with the ends of the prongs removably engaged therein, and means to limit the insertion of said prongs in said slot, the portions of the prongs projecting from the slot forming springs normally holding the body spaced above the surface on which the shoe to which it is applied may rest.

9. A shoe guard comprising a rigid body shaped to cover the top and sides of the forward portion of a shoe in spaced relation thereto when the body and shoe are resting on the ground or a supporting surface, means to hold the forward portion of the body in spaced relation to the shoe, and resilient means detachably secured to the sole of the shoe and yieldably supporting the rearward portion of the guard, said resilient means permitting the lower edge of said body to bear upon said supporting surface when forced downwardly.

ALBERT A. STRAUSS.