March 11, 1952 O. N. GREDELL 2,588,919

SHOE PROTECTOR

Filed Sept. 15, 1949

Fig. 1.

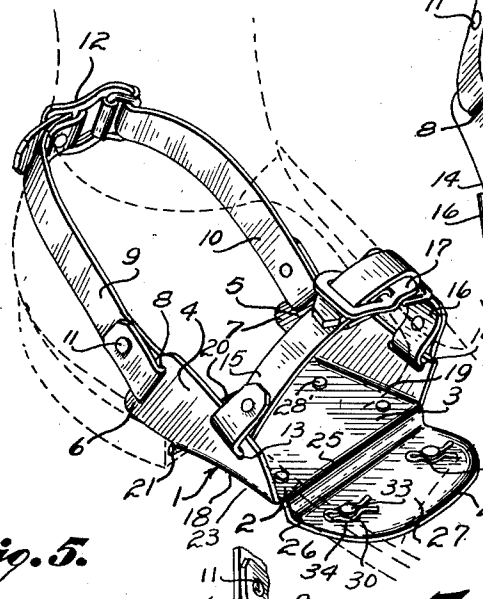


Fig. 2.

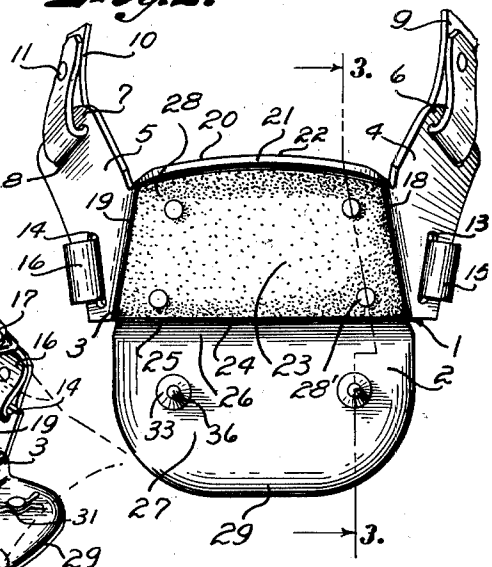


Fig. 5.

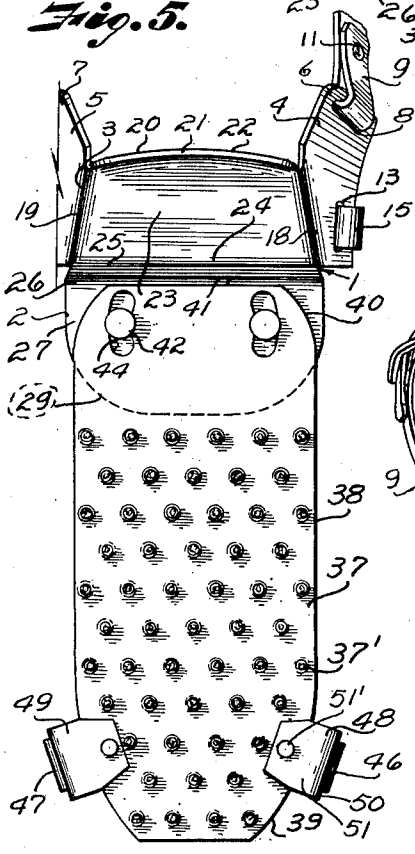


Fig. 3.

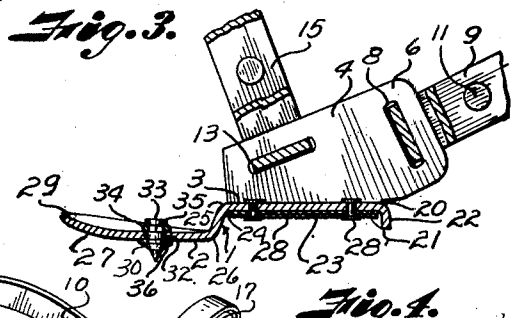
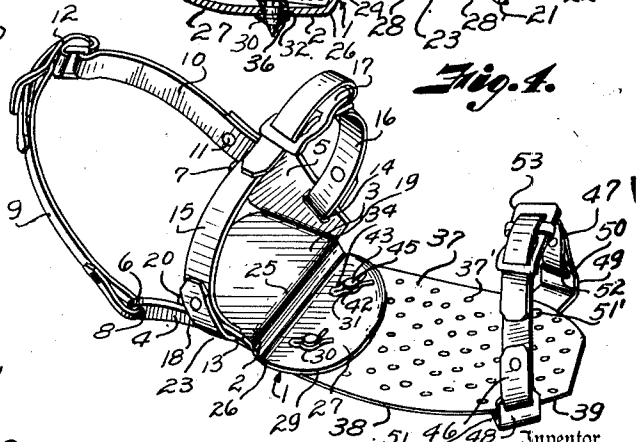


Fig. 4.



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UNITED STATES PATENT OFFICE

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SHOE PROTECTOR

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Application September 15, 1949, Serial No. 115,825

5 Claims. (Cl. 36—7.7)

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This invention relates to supports for the feet of workmen when climbing ladders, roofs and other places usually offering insecure or uncomfortable footing and has for its principal object to provide a support of this character that is adapted to be safely attached to the shoes of the workman and provide safe and comfortable support for the feet.

Other objects of the invention are to provide a device for protecting the instep of the foot from fatigue by shock and the forces exerted in digging with a spade or other type of shovel and to provide protection of the shoe of the worker from damage by the comparatively sharp edges of the shoulders of such tools.

Other objects of the invention are to provide a foot support which fits within the instep of the shoe sole and is held in place by straps that extend respectively across the instep and around the heel whereby thrusts acting on the support are taken and distributed through the heel and sole of the shoe, the straps serving merely to retain the support in position; to provide a shoe support having a shape to form a downwardly facing channel-like seat for engaging the rungs of a ladder or the shoulders of a spade; to provide the supports with guards engageable under the instep of the sole to prevent catching and tripping; to provide the guard with removable caulks; and to provide antislip sole plates that may be attached to the guard portions in place of the caulks.

It is also an object of the invention to provide a foot support that is adapted for attachment to either foot so that right and left are not required.

In accomplishing these and other objects of the invention as hereinafter pointed out, I have provided improved structure, the preferred form of which is illustrated in the accompanying drawing wherein:

Fig. 1 is a perspective view of a foot support constructed in accordance with the present invention showing attachment thereof to the foot of a workman.

Fig. 2 is an underneath plan view of the support particularly illustrating the channel-like seat adapted to engage the rungs of a ladder.

Fig. 3 is a longitudinal section through the support on the line 3—3 of Fig. 2.

Fig. 4 is a perspective view similar to Fig. 1, but showing an antislip sole plate attached to the guard portion of the support.

Fig. 5 is an underneath plan view of the structure as shown in Fig. 4.

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Referring more in detail to the drawings:

1 designates a foot support constructed in accordance with the present invention and which includes a plate-like member 2 adapted for attachment to the shank portion of the shoe. The plate-like member 2 is preferably formed of suitable gauge metal and adapted to be die formed to provide a substantially flat body portion 3 of ample width to extend across the sole of a shoe at the shank portion thereof and which terminates at the sides in lateral wings 4 and 5 that flare outwardly to accommodate the inner and outer sides of a shoe at the shank as shown in Fig. 1. The rear ends of the wings terminate in ears 6 and 7 that are directed toward the back of the heel-upper and are provided with transverse slots 8 for attachment of straps 9 and 10.

The straps 9 and 10 have ends extended through the slots folded retractively to be secured by fastening devices such as rivets 11. The straps 9 and 10 are adapted to extend around the counter of the shoe and one of the straps is provided with a buckle 12 to connect the free end of the other strap as shown in Fig. 1. The wings 4 and 5 are also provided with slots 13 and 14 in transverse alignment with the shank of the shoe for the attachment of ends of straps 15 and 16 in the same manner as the straps previously described. The free end of one of the straps, for example 15, is provided with a buckle 17 for connecting the strap 9 over the instep of the shoe.

The junctures of the wings with the side edges of the plate portion of the support converge inwardly toward the front of the heel, as indicated at 18 and 19, to conform with the sides of the sole as best shown in Fig. 2. The rear edge 20 of the plate portion is formed on an arc substantially conforming to the curvature of the front of the face of the heel of the shoe and is turned downwardly to provide a transverse flange 21 having a convex curving outer face 22 that abuts against the concave inner face of the heel and which forms a stop for retaining the support in contact with the heel when the straps are fastened about the shoe upper. The flange 21 also provides one side of a transverse channel-shaped seat 23 that extends across the shoe and has the forward side 24 formed by offsetting the plate portion through transverse bends 25 and 26, the depth of the offset being ample to provide a front stop but is sufficiently shallow to be contained entirely within the shank portion of the shoe as shown in Fig. 1.

The plate portion extends forwardly from the

offset to provide a guard portion 27 having an upwardly curved arcuate front edge 29 adapted to closely engage the sole of the shoe to prevent tripping. The guard portion also serves to distribute weight of the wearer over a considerable area of the foot and away from the shank portion when climbing or standing for long periods on the rung of a ladder.

To prevent slipping of the round of a ladder the face of the seat 23 may be faced with an antislip lining 28 which may consist of a grit coated material and be secured by rivets 28'.

If desired, the guard portion of the support may be provided with laterally spaced openings 30 and 31 to receive the shanks 32 of the caulks 33, the caulks being retained by means of spring clips 34 of hairpin shape that are adapted to engage in grooves 35 that are formed in projecting portions of the shanks 32, as shown in Fig. 3, the spring slips 34 cooperating with flanges 36 on the underside of the caulks to engage the respective upper and lower surfaces of the guard portions of the support. The projecting portions of the shanks 32 of the caulks are accommodated in the space that is formed between the sole and the plate portion of the guard by reason of the upwardly curving arcuate front edge 29 of the guard 27 so that they do not interfere with action of the guard portion of the support.

Another attachment which is desirable for use in climbing roofs and other steep surfaces is an antislip sole plate 37 that is formed of light weight, spring-like metal or other suitable material adapted to flex with the sole of the shoe and having protrusions 37' or a rough bottom face. The sole plate 37 may conform generally with the sole of the shoe so as to provide a maximum antislip area, however, to avoid rights and lefts, the sides 38 thereof extend forwardly in substntially parallel relation and converge at the toe end in rounding curves 39. The rear end is curved at the corners as indicated at 40 to join with the rear edge 41 that extends along the offset portion 24 of the support. The rear end of the sole plate 37 overlaps the guard portion of the support and is adjustably secured thereto by fastening devices 42 that are substituted for the caulks previously described and have the shanks 43 thereof extended through arcuate openings 44 in the sole plate and through the openings 30 and 31 in the guard portion of the support. The heads 45 of the fastening devices 42 are substantially flat so as to not interfere, and the shanks are grooved on the projecting side guard portion of the support to accommodate the spring clips 34.

From this attachment it is obvious that the sole plates 37 are adapted to be positioned relative to the sole of either foot and secured by straps 46 and 47 that are attached to the outer ends of the plate by angle members 48 and 49 having ears 50 hingedly secured to the toe portion of the sole plate by fastening devices such as rivets 51' and ears 51 extend upwardly at the sides of the shoe sole and are provided with transverse slots 52 to secure the ends of the straps 46 and 47 in the same manner as the straps previously described. One of the straps is provided with a buckle 53 for connecting the straps over the toe of the shoe as shown in Fig. 4.

In applying the supports to the shoe of a wearer, they are inserted within the shank with the flanges 21 bearing against the front face of the heel and with the guard portion engaging under the sole at the forward portion of the shank. In this position, the wings 4 and 5 extend over the sides of the shoe. The straps 15 and 16 are brought over the arch and secured by the buckle 17. The heel straps 9 and 10 are then extended about the heel and secured together by the buckle 12. The supports may then be used, supporting the weight of the wearer when climbing a ladder, or cushioning the reaction of the forces exerted when digging; the feet being placed so that the channel-shaped seats of the supports engage the rungs of a ladder or the shoulders of a spade. When thus engaged, the flanges on the respective sides of the seats prevent slipping. The supports prevent breaking of the sole portions of the shoes as well as prevent fatigue of the feet of the wearer ordinarily caused by the weight being concentrated on the rungs of a ladder or by the reaction of the forces extended on the shoulders of a spade or shovel.

When the supports are used on inclined surfaces the caulks 33 may be applied as shown in Fig. 3, or if desired the sole plates 37 may be applied as shown in Figs. 4 and 5 with the fastening devices 42 holding the extensions in contact with the guard portions of the supports and the toe straps 46 and 47 holding the toe portions in contact with the soles.

From the foregoing it is obvious that I have provided a support that is adapted to be securely and safely attached to the shoes of a workman to provide safe and comfortable support of the feet when climbing ladders or roofs or other objects affording insecure footing and to cushion the reaction of forces exerted when digging. It is also obvious that the supports, constructed as described, are adapted to either foot and that the structure is sufficiently flexible to accommodate several sizes of shoes.

What I claim and desire to secure by Letters Patent is:

1. A foot support adapted for insertion under the shank area of a shoe said support being formed of sheet metal and having a substantially flat shank engaging portion to extend substantially across the width of the shank area and having a depending transverse flange at one end adapted to engage the breast of the heel of the shoe and having a transverse downwardly directed offset spaced forwardly from said flange to cooperate with said flange and shank engaging portions in forming a downwardly opening transverse channel and providing a guard portion extending smoothly from said offset at the forward end of said support and also adapted to be received in said shank area and having the bottom face thereof substantially in plane with the sole of the shoe, said guard portion having forward and side edges curving upwardly for contact with the shank of the shoe, side wings flaring upwardly from said shank engaging portion, and fastening means having connection with said wings and adapted to extend about the shoe for retaining said support in contact with said shank area and the flange in contact with the breast of the heel.

2. A foot support adapted for insertion under the shank area of a shoe, said foot support being formed of sheet metal and having a substantially flat shank engaging portion to extend substantially across the width of the shank area and having a depending transverse flange at one end adapted to engage the breast of the heel of the shoe and having a transverse offset spaced forwardly from said flange to cooperate with said flange and shank engaging portions in form-

ing a downwardly opening transverse channel and providing a guard portion offset downwardly from said flat shank engaging portion and extending smoothly from said offset, said guard portion also adapted to be received completely in said shank area with the bottom face thereof in substantial plane with the sole of the shoe, said offset being of a depth to provide a space between the guard portion and said shank forwardly of said offset, said guard portion having marginal edges curving upwardly to contact with the shank area and close said space, fastening means having connection with said support and adapted to extend about the shoe for retaining said support in contact with said shank area and the flange in contact with the breast of the heel, said guard portion having openings, caulks having shanks extending through said openings into said space and fastening means contained in said space and engaged with said shanks to retain the caulks on said guard portion.

3. A foot support adapted for insertion under the shank area of a shoe and having a substantially flat shank engaging portion to extend substantially across the width of the shank area and having a depending transverse flange at one end adapted to engage the breast of the heel of the shoe and having a transverse offset spaced forwardly from said flange to cooperate with said flange and shank engaging portions in forming a downwardly opening transverse channel and providing a guard portion at the forward end of said support also adapted to be received in said shank area and in substantial plane with the sole of the shoe, said offset being of a depth to provide a space between the guard portion and said shank forwardly of said offset, said guard portion having marginal edges curving upwardly to contact with the shank area and close said space, fastening means having connection with said support and adapted to extend about the shoe for retaining said support in contact with said shank area and the flange in contact with the breast of the heel, said guard portion having openings, a flexible sole plate having a rear portion lapping said guard portion and provided with arcuate slots registering with said openings, fastening devices extending through said slots and openings to anchor the overlapping portion of the sole plate to said guard portion, and means for retaining the sole plate in contact with the sole of the shoe.

4. A foot support adapted for insertion under the shank area of a shoe and having a substantially flat shank engaging portion to extend substantially across the width of the shank area and having a depending transverse flange at one end adapted to engage the breast of the heel of the

shoe and having a transverse offset spaced forwardly from said flange to cooperate with said flange and shank engaging portions in forming a downwardly opening transverse channel and providing a downset guard portion at the forward end of said support also adapted to be received in said shank area and with the bottom face thereof in substantial plane with the sole of the shoe, an antislip facing on the channel side of said shank engaging portion, side wings flaring upwardly from said shank engaging portion, and fastening means having connection with said wings and adapted to extend about the shoe for retaining said support in contact with said shank area and the flange in contact with the breast of the heel.

5. A foot support adapted for insertion under the shank area of a shoe and having a substantially flat shank engaging portion to extend substantially across the width of the shank area and having a depending transverse flange at one end adapted to engage the breast of the heel of the shoe and having a transverse offset spaced forwardly from said flange to cooperate with said flange and shank engaging portions in forming a downwardly opening transverse channel and providing a guard portion at the forward end of said support which is also adapted to be received in said shank area with the bottom face thereof in substantial plane with the sole of the shoe, said offset being of a depth to provide a space between the guard portion and said shank of the shoe forwardly of said offset, fastening devices having connection with said support and adapted to extend about the shoe for retaining said support in contact with said shank area and the flange in contact with the breast of the heel, a flexible sole plate having a rear portion lapping said guard portion, fastening devices extending through registering openings in the guard and overlapping portions to secure the flexible sole plate, and means for retaining the sole plate in contact with the sole of the shoe.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
579,577	Hanscom	Mar. 30, 1897
702,476	Price	June 17, 1902
875,560	Vaughan	Dec. 31, 1907
1,493,322	Carter et al.	May 6, 1924
1,592,886	Harman	July 20, 1926
2,484,935	De Rooy	Oct. 18, 1949