E. A. BENSON.

METAL SHOE SOLE.

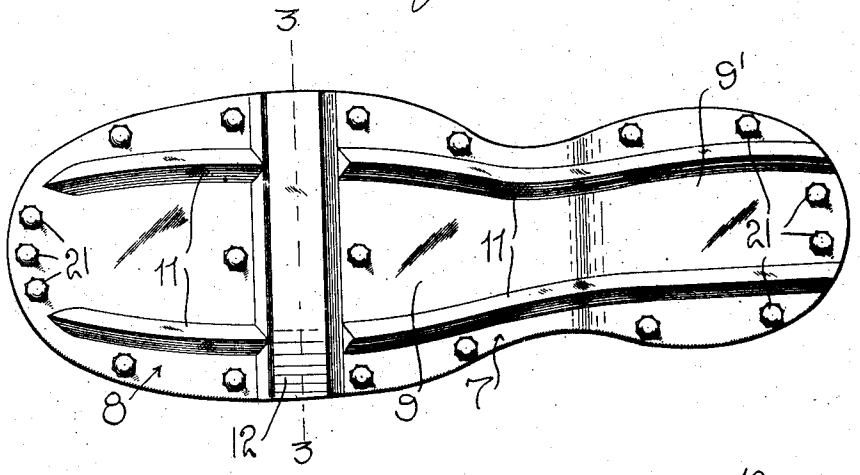
APPLICATION FILED JAN. 17, 1916.

1,210,587.

Patented Jan. 2, 1917.

2 SHEETS—SHEET 1.

Fig. 1



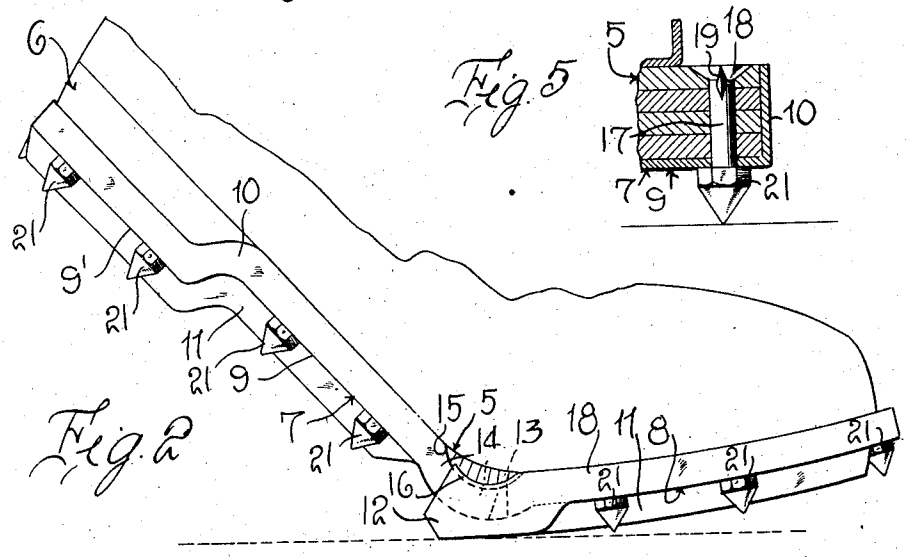


Fig. 2

Fig. 5

Inventor

ELMER A. BENSON

By Watson E. Coleman

Attorney

E. A. BENSON.

METAL SHOE SOLE.

APPLICATION FILED JAN. 17, 1916.

1,210,587.

Patented Jan. 2, 1917

2 SHEETS—SHEET 2.

Fig. 4

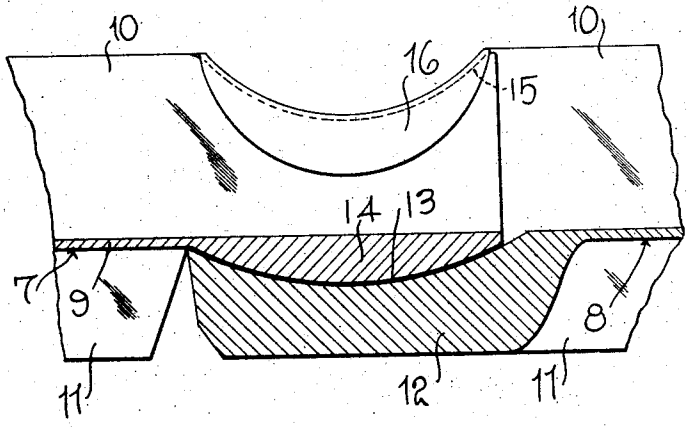


Fig. 3

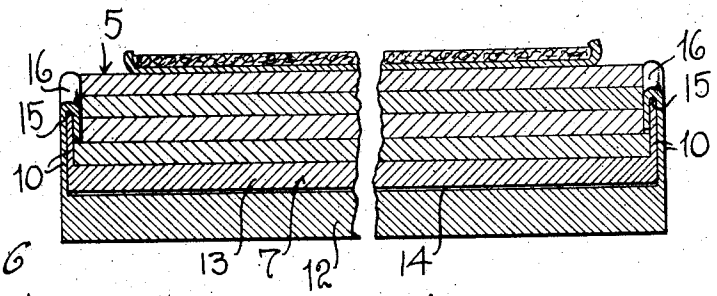


Fig. 6

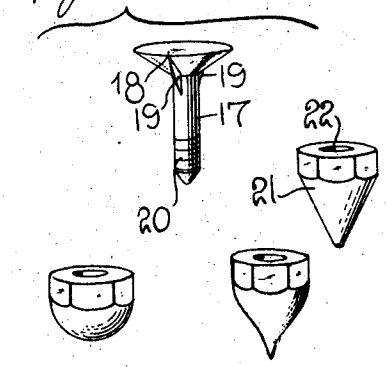
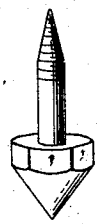


Fig. 7



Inventor

ELMER A BENSON

By Watson E. Coleman

Attorney

UNITED STATES PATENT OFFICE.

ELMER A. BENSON, OF PERU, ILLINOIS.

METAL SHOE-SOLE.

1,210,587. Specification of Letters Patent. Patented Jan. 2, 1917.

Application filed January 17, 1916. Serial No. 72,563.

To all whom it may concern:

Be it known that I, ELMER A. BENSON, a citizen of the United States, residing at Peru, in the county of La Salle and State of Illinois, have invented certain new and useful Improvements in Metal Shoe-Soles, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to an improved metal shoe sole and has for its primary object to provide a metal sole for rubber or leather boots or shoes, which can be easily and quickly attached to the shoe or removed therefrom.

It is an additional object of the invention to provide a metallic sole for shoes, which is so constructed that the same is extremely durable and capable of withstanding the most severe usage while, at the same time, it has a maximum of flexibility and will permit of the free and easy bending of the foot.

The invention has for one of its more important detail objects to provide a metal shoe sole constructed in two sections, an improved flexible joint connection between said sections at the ball of the foot, and means for preventing the entrance of dirt or other foreign matter into the joint.

With the above and other objects in view, my invention consists in the novel features of construction, combination and arrangement of parts to be hereinafter more fully described, claimed and illustrated in the accompanying drawing, in which,

Figure 1 is a bottom plan view of a shoe provided with my improved auxiliary metallic sole; Fig. 2 is a side elevation showing the shoe flexed as in walking, to clearly illustrate the action of the joint between the metallic sole sections; Fig. 3 is a section taken on the line 3—3 of Fig. 1; Fig. 4 is an enlarged fragmentary longitudinal section through the joint; Fig. 5 is an enlarged detail vertical section illustrating the means for fastening the auxiliary sole to the shoe; Fig. 6 is a detail perspective view of one of the fastening bolts or screws and a series of calks of various forms, any one of which may be applied to the threaded end of the bolt; and Fig. 7 is a perspective view of an integral fastening bolt or screw and calk.

Referring in detail to the drawing, 5 designates the sole of the shoe proper which may be of leather, rubber, or any other flexible material, and 6 indicates the heel portion of the shoe which may be built up of layers of leather or of wood.

My improved auxiliary shoes sole sections are preferably formed from aluminum which, as is well known, is exceedingly light, though strong and durable. It is manifest, however, that the device can also be constructed of brass, copper, or any other metal.

The section 7 of the metal sole includes the portion 9 extending rearwardly under the arch of the shoe and the offset heel portion 9'. The other section 8 of the shoe sole constitutes the forward toe portion thereof. Each of these sole sections is formed on its edge with a continuous upstanding flange, indicated at 10, which is adapted to engage against the extended edge of the leather or rubber shoe sole. Upon the bottom face of each of the metal sole sections, spaced longitudinally extending V-shaped ribs 11 are formed or secured in any preferred manner. These ribs provide means for secure gripping engagement with treacherous surfaces of different nature so that the wearer will not slip and fall and suffer probable injury.

Along the rear edge of the forward section 8 of the metal sole, the same is enlarged and offset, as indicated at 12. The forward edge of the other section 7 of the shoe sole is provided with a convex rib or enlargement 14 which laps upon the rib 12 and has sliding contact with the concave face 13 thereof. The ends of the upstanding flanges 10 on the section 7 have their upper edges cut out or recessed, as at 15, and disposed in substantially concentric relation to the convex face of the rib 14. The opposed ends of the walls 10 on the other section 8 of the shoe sole lie exteriorly of the vertical walls of the sole section 7 and have their upper edges turned inwardly or bent over the recessed edges 15, as shown at 16. By thus lapping the upper edges of these walls 10, the sections of the sole are reinforced at the outer edges of the shoe and held against any possibility of relative transverse shifting movement, while a protection is also afforded to the flexible joint and the entrance of gravel or dirt between the contacting faces of the joint is prevented.

Each of the metal sole sections is provided adjacent to its outer edge, with a plurality of spaced openings which, when the auxiliary sole is applied to the shoe, coincide or register with openings which have been formed in the outwardly projecting edge

of the shoe sole proper. Through these coinciding openings, the bolts 17 are disposed. These bolts are provided with flat surfaced heads 18 on one of their ends, and at diametrically opposite points the shank of the bolt is connected to the head by webs 19 which have sharp cutting edges and are adapted to bite into the material of the shoe sole and securely hold the bolt against turning movement. The other extremity of the bolt shank is threaded, as indicated at 28, for engagement with the threaded bore of the socket 22 formed in a calk 21 which also acts as a nut. This calk is screwed up tightly against the surface of the metallic shoe sole and provides additional means for obviating slipping of the foot in walking upon icy surfaces.

As illustrated in Fig. 5, calks of various shapes and sizes may be provided in accordance with the particular requirements of the occupation of the individual wearer of the shoe. In Fig. 7, I have shown an integral construction of the calk and bolt shank, which may be used in the heel of the shoe, said shank being threaded directly into the layers of wood or leather of which the heel is formed.

From the foregoing description, taken in connection with the accompanying drawing, the construction, manner of use and several advantages of my invention will be clearly and fully understood. The sections of the metal sole can be easily and quickly applied to or removed from the boot or shoe and afford reliable and effective means for protecting the foot of the wearer against injury and enabling him to walk with impunity over ice, mud, or other surfaces upon which it is difficult to maintain a proper balance when the ordinary shoes are worn. It is obvious that any desired number of the calks may be used and the longitudinally extending ribs 11 multiplied in number, as preferred. As the auxiliary sole is constructed of aluminum, it will add but little weight to the shoe, and by the provision of the joint connection between the solid sole sections above described, a maximum of flexibility is obtained and the wearer can freely bend the foot in walking without suffering any discomfort or inconvenience.

While I have shown and described the preferred construction and arrangement of the several features of the device, it is to be understood that the same is susceptible of considerable modification and I, therefore, reserve the privilege of adopting all such legitimate changes as may be fairly embodied within the spirit and scope of the invention as claimed.

Having thus fully described my invention, what I desire to claim and secure by Letters Patent is:—

An auxiliary metallic sole for shoes consisting of two sections each having an offset rib on one end, the upper surface of the rib on one section being concave and the rib on the other section lapping upon the rib on the first section and having a convex face for sliding engagement upon said concave face, each of said sole sections having an upstanding continuous flange on its outer edge to lie exteriorly of the extended sole of a shoe, the extremities of the flange on one sole section having their upper edges bent inwardly and lapped over the upper edges of the flanges on the other sole section, the upper margins of the flanges adjacent the ribs of the sections being substantially concentric to the convexed upper surface of the rib of the second section, and means for detachably fastening said metal sole sections to the sole of a shoe.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

ELMER A. BENSON.

Witnesses:
J. V. LIEDLECKI,
OLIVE E. NORBERG.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."