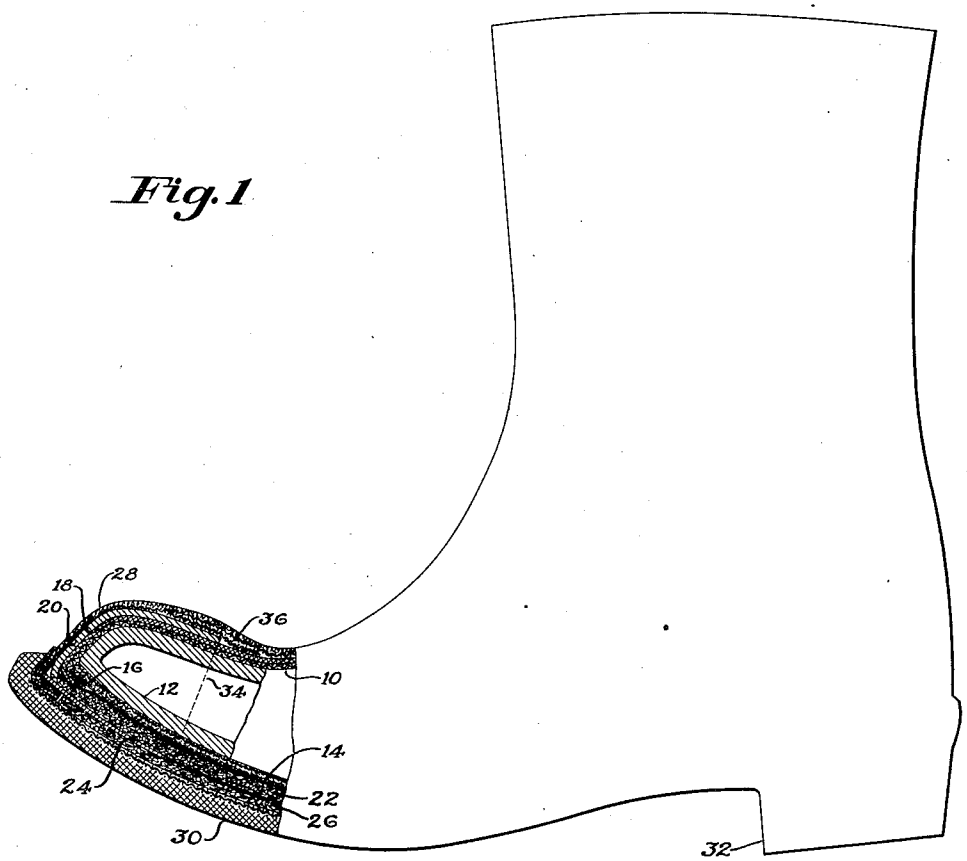
Oct. 6, 1931. J. U. BERGQUIST 1,826,645

SHOE PAC

Filed March 1, 1930

Fig. 1



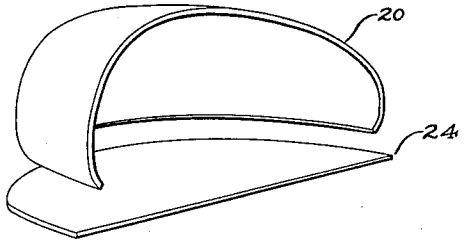


Fig. 2

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UNITED STATES PATENT OFFICE

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SHOE PAC

Application filed March 1, 1930. Serial No. 432,473.

The present invention relates to rubber shoes and more particularly to shoe pacs adapted to the use of miners, lumbermen, and in similar occupations.

It is the object of my invention to practically incorporate in a rubber shoe of this character a metallic protective box which does not become displaced during the life of the shoe, and which affords adequate protection to the foot of the wearer under the most severe blow which may be encountered in use.

With this and other objects in view, the invention comprises a metallic box extending over the top and about the sides of the toe of the shoe, and normally open at the bottom or toe portion. The lower edge of the box is supported throughout by a plate of sufficient strength to resist whatever thrust may be delivered to the box without substantial distortion or de-formation, and sufficiently thin to occupy a minimum of space within the shoe.

In actual practice I propose to incorporate this box during the assembly of the rubber shoe, and to this end the shoe lining is first assembled with the hollow metallic last, the inner sole placed in position, and the lining drawn thereabout. The metallic box coated on both inner and outer faces with cement is then assembled over the lining, an intermediate rag sole next assembled with the inner sole, and a metallic supporting plate positioned with its surface in metallic contact with the lower edges of the box, this metallic plate having been previously coated with rubberized cement. Thereafter, the combination filler, gummed counter pieces, cloth backing, vamp, and the soles of the shoe are applied and the whole vulcanized or cured under suitable conditions of temperature and pressure.

Referring to the accompanying drawings,

Fig. 1 represents a gummed shoe with the toe portion cut away and shown in section; and

Fig. 2 is a detail illustrating a metallic box and supporting plate.

Referring to the illustrated embodiment of the invention, the lining 10, which may be of calendered net, is drawn over and assembled upon a hollow metallic last 12. A gummed inner sole, indicated at 14, is next assembled at the bottom of the last and the edges of the lining drawn thereover and cemented in place as at 16. Thereafter an inner gummed vamp, indicated at 18, is cemented about the lining with its edges folded over the bottom. Surrounding the gummed vamp at the toe portion is a steel box 20 which may be hardened and of sufficiently heavy gage to resist de-formation by any blow which may be encountered. This box is indicated particularly in Fig. 2 having a rounded top and side portions with the under edges turned inwardly to aid in securing and supporting the box within the shoe. The box is coated upon both inner and outer surfaces with heavy cement to effectually bond it to the inner and outer vamps of the shoe at opposite sides. After assembly and cementing the box in position, a so-called rag sole 22 is assembled over the inner sole, and thereafter a supporting plate, which may be of galvanized iron or other suitable sheet material previously coated with cement, is assembled below the box and in metallic contact with the lower edges of the box, as indicated at 24. Subsequently to the assembly of the box and supporting plate, a combination filler, indicated at 26, is assembled beneath the plate. An outer gummed vamp 28 is assembled about the box, an outer gummed sole 30 and heel 32 are assembled, and such other additional portions added to the shoe as desired to complete the assembly without removal from the last, and the whole cured under vulcanizing temperatures and pressures.

I consider it desirable to interpose between the rear edge 34 of the metallic box and the outer gummed vamp, a reinforcement 36 which may be of calendered fabric, or its equivalent, this reinforcement being adapted to prevent cutting of the outer vamp by the edge 34 in the employment of the shoe.

I have found that the shoe, as described, is exceedingly practical from the standpoint of protection and practicability. The metallic box is so effectually bonded within the shoe

that it does not cut through the surrounding material under the most arduous wear, and yet is sufficiently rigid to protect the foot of the wearer regardless of whatever blow may be encountered. The supporting plate prevents the lower edge of the box from cutting through the shoe sole in the event of a blow, and yet permits the foot to be disengaged in the event that a blow of such severity is encountered as to flatten or otherwise distort the box by merely cutting through and severing the flexible material of the shoe between the lower edge of the box and the plate. Furthermore, the production of the box and supporting member in separate parts permits of the effectual bonding of both members within the shoe.

What is claimed is:

1. A rubber shoe comprising inner and outer porions extending about the toe of the shoe, a metallic box interposed therebetween and effectually bonded thereto in the vulcanizing operation, a separate supporting plate for the lower edges of the box, and inner and outer sole portions assembled on opposite sides of the supporting plate and effectually bonded to the plate and to the inner and outer toe portions during the vulcanizing operation.

2. A rubber shoe comprising a metallic box for reinforcing the toe, a separate supporting plate engaging the lower edge of the box, and means for completely enclosing the box and supporting plate on both the inside and outside of the shoe, the metallic box and supporting plate being bonded to the enclosing material.

3. A vulcanized rubber shoe comprising a metallic box, a separate supporting plate for the box, inner and outer vamp portions surrounding the box, inner and outer sole portions at opposite sides of the plate, and means for effectually bonding the box, plate, vamp and sole portions together during the vulcanizing operation.

4. A rubber shoe comprising inner vamp and sole portions, a metallic box and separate supporting plate located outside of the inner vamp and sole portions, a flexible reinforce surrounding the edge of the box, and vulcanized rubber completely surrounding the outer surfaces of the box and supporting plate on the completed toe portion of the shoe.

JOHN U. BERGQUIST.