(No Model.)

W. A. FORD.

SOLE.

No. 518,060. Patented Apr. 10, 1894.

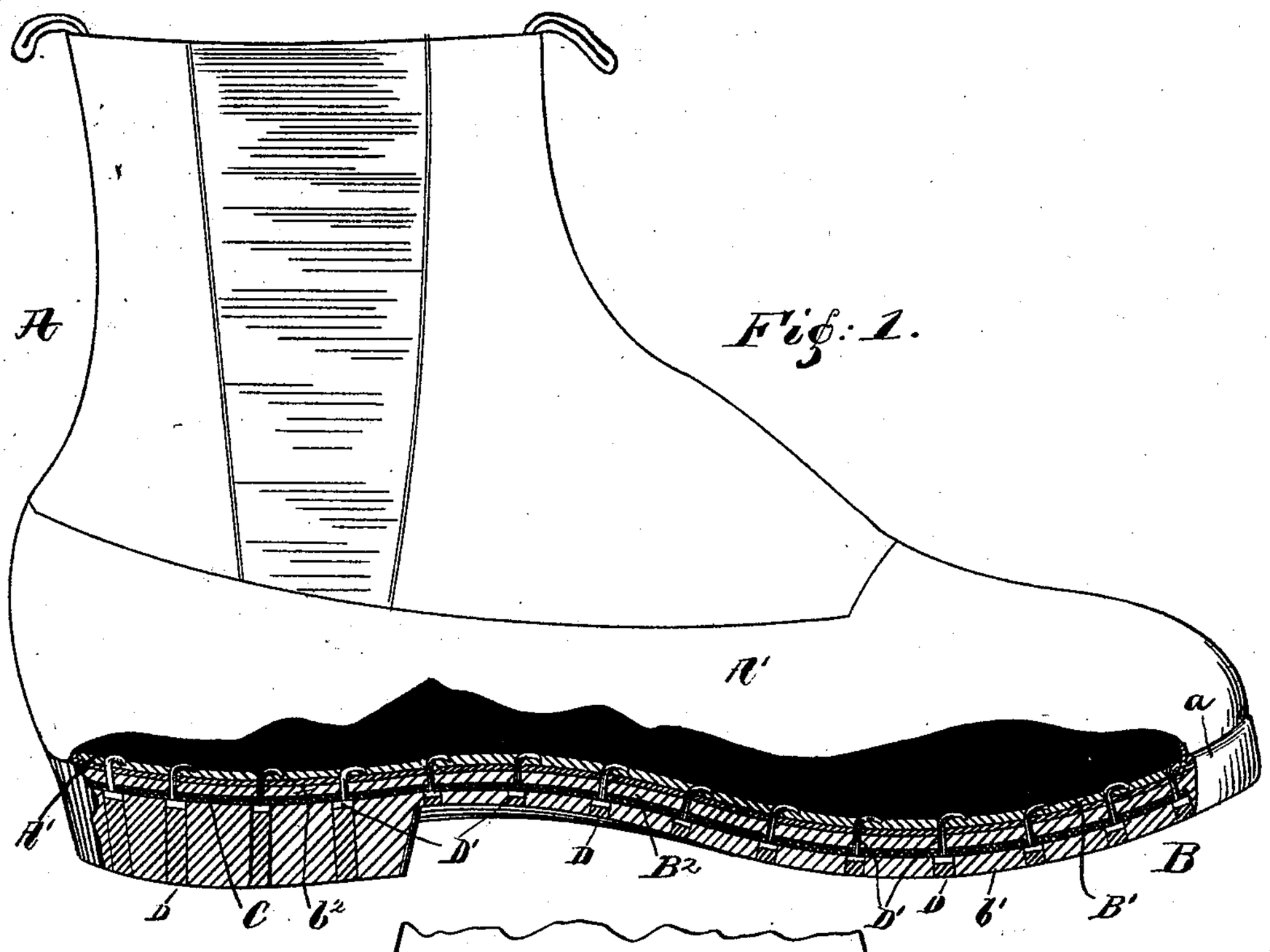

Fig: 1.

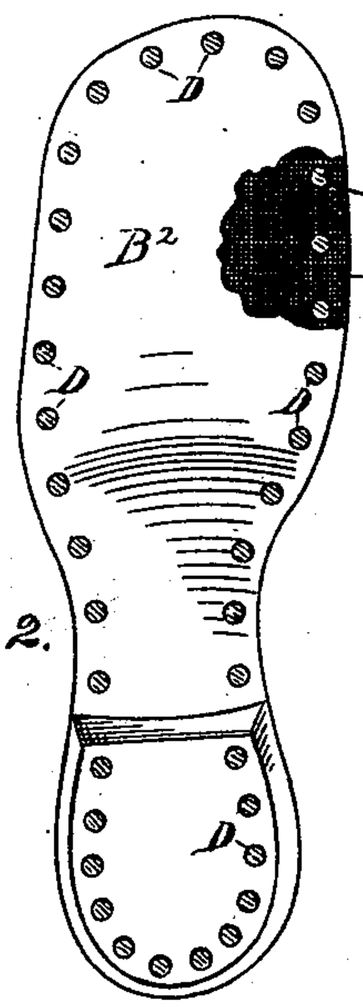

Fig: 2.

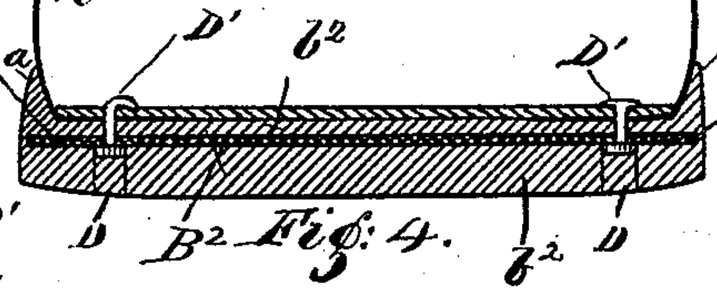

Fig: 4.

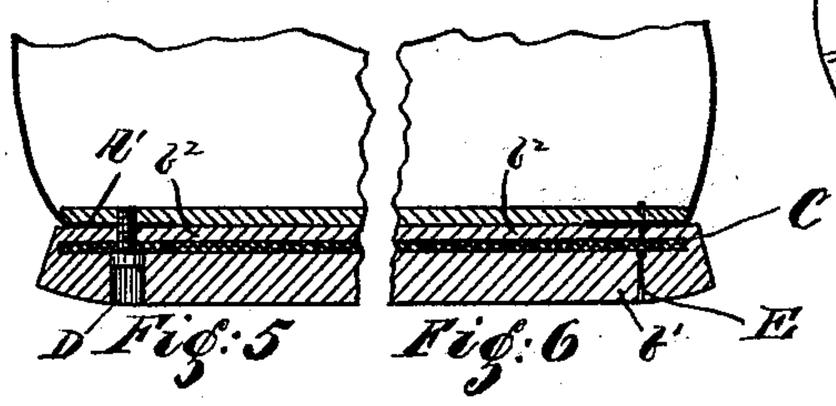

Fig: 5 Fig: 6

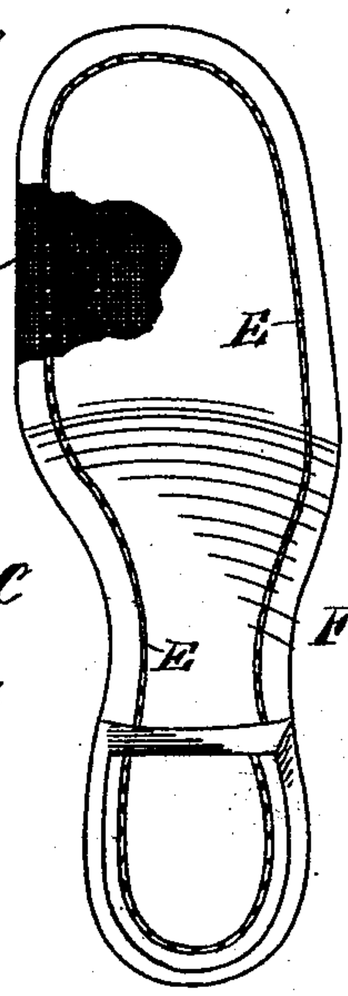

Fig: 3.

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WILLIAM A. FORD, OF INDIANAPOLIS, INDIANA.

SOLE.

SPECIFICATION forming part of Letters Patent No. 518,060, dated April 10, 1894.

Application filed December 26, 1891. Serial No. 416,225. (No specimens.)

To all whom it may concern:

Be it known that I, WILLIAM A. FORD, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented certain new and useful Improvements in Rubber Soles for Shoes; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in foot wear and has special reference to improvements in soles for boots or shoes.

The object of the invention is to provide means for securing an outer covering of rubber to the soles of shoes in a manner that will present a neat appearance, will be durable and will be inexpensive. The object of rubber as thus applied, is to produce an elastic sole that will "give" in walking so as to act like a spring and prevent the jar and concussion to the body which proves so tiresome and injurious to pedestrians with leather soles especially on the hard pavements of cities and the elasticity of the rubber acting as a spring, also assists in increasing the speed with less effort to the pedestrian. The rubber being waterproof does not absorb the moisture as leather does, and shoes made with rubber soles or with soles having an outer covering of rubber, will keep the feet of the wearer dry thereby greatly facilitating the preservation of his health. The soft and elastic nature of the rubber will obviate the noise and disturbance occasioned by the use of hard soles and will also prevent the wear on carpets and floors which is unavoidable with hard soles. Much disturbance and annoyance is occasioned by the squeaking of new shoes and that will be wholly obviated by the use of rubber soles.

This invention consists in a novel and improved construction whereby a rubber sole may be attached to a shoe, as hereinafter described.

I accomplish the objects of the invention by the mechanism illustrated in the accompanying drawings, in which—

Figure 1, is a view in side elevation of a shoe with a sole secured thereto, constructed in accordance with my invention. In this view the shoe upper is broken away and the sole sectioned to illustrate the construction of same. Fig. 2, is an under side view of a sole in which the attachment is made by means of tacks inserted through a series of holes made through the sole for that purpose. The outer layer of the sole is broken away in part to show the canvas stiffening. Fig. 3, is a similar view of a sole which is attached by sewing to the uppers instead of being secured by tacks. It is also broken away to show the canvas. Fig. 4, is a vertical transverse section of a shoe sole. This figure shows a clinched tack on one side and on the other side a tack which has been riveted instead of clinched. Fig. 5, is a detail in transverse section of a shoe-sole secured by screws instead of tacks, and Fig. 6, is a similar view showing the sole secured by sewing the same to the uppers.

Similar letters refer to like parts throughout the several views.

A, represents the shoe. A′ the shoe upper and B, the shoe sole, which is constructed of the leather insole B′, and the rubber outer sole B^2, the special construction of which and method of attachment to the balance of the shoe constitute my invention.

The outside sole B^2, is made preferably of the two layers of rubber b' and b^2, and between these two layers and permanently secured to each layer by having the molten rubber applied thereto, is a canvas C. This canvas is of some very strong material as ducking, such as will afford strong affinity to the rubber and at the same time provide a fabric that will engage the heads of tacks or the stitches required in fastening the soles to the balance of the shoe. While a woven fabric is deemed preferable for this purpose it is not the intention of this invention to limit the construction to any particular material, the spirit of the invention being to provide a strong and tenacious layer backed on each side or upon its outer side with rubber with which it will be intimately connected and to fasten the layer of canvas or other strong and tenacious material to the uppers, whereby the rubber will also be secured.

D, Figs. 1, 2, 4, and 5, represent holes which are formed through the outside rubber layer,

b', but do not extend through the layer C, or b^2, and D', are tacks which are inserted into the holes D, and are driven through the layers C, and b^2, and through the upper A', which will be turned under in the usual manner, and also through the insole B' against the inner side of which, the end will be clinched riveted or otherwise shaped to form a fastening to prevent the removal of the tack. After the tack has been inserted the opening, D, will be closed as shown in Figs 1, and 4, so as to form a sole with a continuous unbroken surface.

Figs. 3, and 6, show a modification in which the soles are secured by sewing, and for this purpose the outer layer of rubber is split or furrowed as shown at E, so as to drop the stitches below the surface next the canvas, and after they have been inserted the furrow is sealed by cementing the sides together.

Other means of fastening the soles to the uppers may be adopted as by using screws as shown in Fig. 5, and it is not desired therefore to limit this invention to the construction here shown. A flanged edge as shown at, *a*, Figs. 1, and 4, may be provided, in which case the upward projection or flange serves as a shield to protect the uppers of the shoe.

My improved sole may be applied to new work or it may be used as half soles and heels in repairing old and partly worn shoes and for this purpose will be manufactured in whole soles, half soles and heels to suit the demands of the trade.

It is believed soles of rubber will outwear leather soles and will also obviate the necessity of rubber overshoes, and by the construction as described, in which an insole of leather to be worn in contact with the foot, is provided, the injurious effects on the feet, resulting from the constant wear of rubber shoes as commonly constructed will be entirely overcome.

I am aware that rubber shoes have been constructed having a double layer of rubber with an intermediate layer of canvas or stout woven fabric, and I do not claim such construction broadly, as my invention does not reside therein, but consists in improved means for securing such rubber soles to the insoles. I am the first, so far as I am aware, in attaching rubber soles of this construction, to provide, in the lower layer of rubber, round perforations when nails are used and longitudinal grooves when stitches are used, the perforations or grooves extending entirely through the thickness of the lower layer. This construction is advantageous either with nailed or stitched shoes, but the advantage is greater in the former case, and consists in the fact that this method is the only practical one for nailing rubber soles directly on to the shoe, as unless holes are made in the lower layer of rubber extending completely to the layer of canvas so that the head of the nail can abut against the canvas, the resiliency of the rubber, intervening between the head of the nail and the canvas, effectually prevents any firm or permanent hold of the nail in the shoe. A similar objection applies to stitched rubber soles unless grooves extending to the canvas, are formed to receive the stitches. Unless this is done, the stitches will in time cut through the rubber, and the whole of the stitching will in time become loose. Hence the importance of having either nails or stitching abut against the canvas layer, which can only be effected by providing holes or grooves, as the case may be, to receive the nails or stitches, which holes or grooves must extend entirely through the lower layer of rubber.

I claim—

1. The combination, with the insole of a boot or shoe, of an outsole consisting of two layers of rubber with an intermediate layer of canvas or equivalent tenacious material, the outer layer of rubber being provided with perforations extending completely therethrough, and fastening devices let into said perforations and passed through the canvas, the inner layer of rubber, and the insole, and securing the same together, the outer portion of said devices abutting directly against the canvas, substantially as described.

2. The combination, with the insole of a boot or shoe, of an outsole consisting of two layers of rubber with an intermediate layer of canvas or equivalent tenacious material, the outer layer of rubber being provided with perforations extending completely therethrough, and nails let into said perforations and perforating the canvas, the inner layer of rubber, and the insole, and securing the same together, the heads of said nails abutting directly against the canvas, substantially as described.

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

WILLIAM A. FORD.

Witnesses:
JOSEPH A. MINTURN,
W. L. BUSHONG.