Oct. 26, 1926. 1,604,659

B. ROSS

RUBBER HEEL

Filed June 3, 1921

Fig. 1

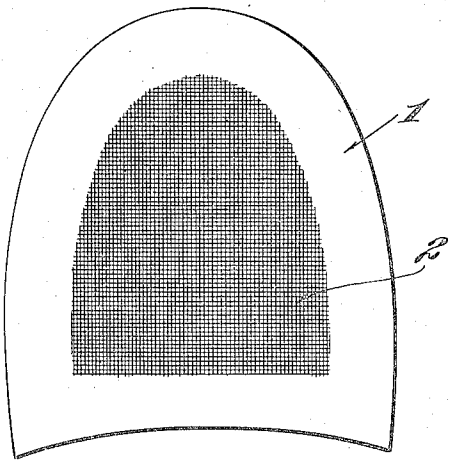


Fig. 2

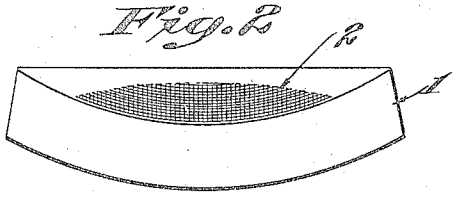
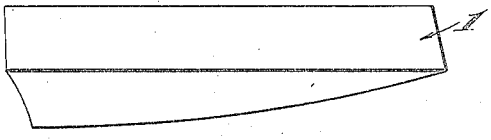


Fig. 3



Witness
M. E. Cryer

Inventor
Benjamin Ross
by his attorneys
Van Etten & Hildreth Kay

Patented Oct. 26, 1926. 1,604,659

UNITED STATES PATENT OFFICE.

BENJAMIN ROSS, OF CHELSEA, MASSACHUSETTS, ASSIGNOR TO PANTHER RUBBER MANUFACTURING COMPANY, OF STOUGHTON, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

RUBBER HEEL.

Application filed June 3, 1921. Serial No. 474,711.

The present invention relates to an improvement in rubber heels, and more particularly to concavo-convex rubber heels.

In concavo-convex rubber heels the flattening of the heel on the shoe heel is availed of to secure a close joint between the rubber heel and the shoe heel. When the heel has been nailed fast to the shoe heel, the tendency of the heel to reassume its original curved form causes it to press against the edges of the shoe heel. A concavo-convex heel made of firm rubber compound will, in such case, form a close joint, or a tight edge, between the rubber heel and the shoe heel, but where the rubber compound is a soft, yielding and elastic character, the tendency of the rubber heel to reassume its shape is not as great as in the case of a stiff, firm rubber heel, and as a consequence the joint between the rubber heel and the shoe heel is not as tight, and besides the strains to which the heel is subjected in use tend to move it on the shoe heel, so that it will over-shoot the edges of the shoe heel, sometimes in one place and sometimes in another. The heels are secured by means of nails driven through washers embedded in the rubber, and where a heel is of firm, comparatively inelastic compound, the washers being secured in place by the nails, hold the heel in fixed position, but where the rubber heel is of soft, highly elastic, yielding compound, the resistance which the washers offer to the movement of the heel is greatly less, with the result that the heel, for this reason also, is liable to over-shoot the shoe heel at various points after trimming. Again, in the trimming operation of a rigid, firm rubber heel, the edge of the rubber heel can be brought into very close correspondence to the size of the shoe heel, and by reason of its rigidity and firmness, it will maintain such relation, but where the heel is made of soft, resilient, and highly elastic rubber compound, in the trimming of the heel to correspond to the shape of the shoe heel, the rubber gives way under the trimming tools, and thereafter when the heel is walked upon it over-shoots the shoe heel, and presents an unsightly and unworkmanlike appearance.

The object of the present invention is to produce a concavo-convex rubber heel having provision by virtue of which, when attached to the shoe heel, it maintains a close joint between itself and the shoe heel, and in which the liability of over-shooting the shoe heel is diminished. To this end, the present invention consists in the improved rubber heel hereinafter described and particularly defined in the claims.

In the accompanying drawings illustrating the preferred form of the invention, Fig. 1 is a plan view of the heel, shown with its concave attaching face uppermost; Fig. 2 is a front elevation, looking toward the breast of the heel; and Fig. 3 is a side elevation. The heel consists of the usual rubber body 1, made preferably of soft, flexible, highly elastic rubber. In order to prevent the attaching portion of the heel from expanding when it is nailed on the shoe heel, or when it is subjected to the blows and pressures of use, it is provided on its concave attaching face with a reinforcement 2 of canvas, which is securely united to the heel by vulcanization. This is accomplished preferably by using friction canvas, a piece of which of substantially the shape of the heel, but smaller in size, is placed in the mould on top of the piece of compound of which the heel is to be made, and then the mould parts are put together and it is subjected to pressure and heat. The rubber compound, under the influence of the heat and pressure, flows out and fills the cavity, and when the mould is finally closed, assumes the shape of the cavity. At the end of the vulcanization, the heel with the canvas layer on its concave face vulcanized therein, comprises a single unitary rubber heel, having a reinforcement on its concave side preventing elongation of the fibres of the concave side of the heel.

Viewed in its broader aspects, the present invention contemplates a concavo-convex heel having its concave surface formed of material of greater tensile strength than the material of the body of the heel. This prevents the widening and lengthening of the attaching surface of the heel, in use on the shoe, and exerts a tension on the attaching surface of the rubber heel, which causes the heel strongly to tend to reassume its original form, and thereby causes the rubber heel edges to press with efficient pressure upon the edges of the shoe heel, thereby making a close joint and securing a tight edged heel.

While the preferred embodiment of the invention contemplates the use of soft, flexible, highly elastic rubber compound for the

body of the heel, and while the best results are secured by the use of such compound, still it is within the purview of the invention to make the heel of any suitable compound, and to provide it with an attaching face of greater tensile strength than the body of the heel. The heel has an attaching face of relatively greater tensile strength than the body of the heel.

The presence of this attaching face of greater tensile strength and relatively less elasticity than the body of the heel stiffens the heel near the shoe heel, so that it will not yield as does a rubber heel during the trimming operation, with the result that a nicer register of outline between the heel and the shoe heel is secured, and the maintenance of such register obviates the overshooting of the shoe heel by the rubber heel. Furthermore, the presence of this layer on the attaching face of the heel of greater tensile strength and less elasticity, secures a more efficient action of the washers of the heel, because the washers, being supported in rubber near this layer of relatively greater tensile strength and less elasticity, are held more firmly in the body of the heel, and therefore they more firmly hold the heel in position on the shoe heel.

The present invention is broad and generic in character, and while I have shown it as embodied in a scoop-shaped rubber heel, it is to be understood that it is adapted for use on any form of concavo-convex rubber heel, whether spherical, like the I. T. S. heel, or scoop-shaped, like the Nerger heel, or cylindrical, or of other concavo-convex form.

Having thus described the invention, what is claimed is:

1. A rubber heel for boots and shoes in unflexed condition being considerably concavo-convex and of substantially uniform thickness, adapted to be flattened against the shoe heel when nailed thereto and thereby caused to bear with increased pressure on the edges of the shoe heel, having a body of relatively yielding and elastic rubber, and an attaching face provided with a canvas reinforce vulcanized thereto, which being of relatively greater tensile strength and stiffness than the body of the heel, supports it with greater rigidity during trimming and causes the marginal portion of the heel to bear upon the shoe heel with joint-closing pressure greatly in excess of that of a similarly curved unreinforced heel.

2. A rubber heel normally of concavo-convex form deformable to flatness and having an unbroken edge surface of rubber from its tread face to its attaching face, having a relatively thin layer of substantially inextensible material at its attaching face so that the neutral axes of the heel lie approximately at its attaching face.

3. A deformable heel normally of concavo-convex form having an unbroken edge surface of rubber from its tread face to its attaching face, said heel having at its attaching face a layer of substantially inextensible material which is perforable by nails, said layer being relatively thin, to cause the neutral axes of the heel to lie approximately at its attaching face.

4. A deformable heel normally of concavo-convex form, comprising a body portion of rubber and a substantially inextensible, reinforcing element vulcanized to the body portion of the heel at its concave attaching face, terminating inside of the edge of the heel and embedded in and flush with the rubber, the area of said reinforcing element sufficiently approximating the area of said concave attaching face to prevent substantial stretching of said concave face during the application of pressure in the heel attaching operation.

5. A deformable heel normally of concavo-convex form comprising a body portion of rubber and a substantially inextensible, fabric reinforcing element, said fabric reinforcing element terminating inside of the edge of the heel and being embedded in and flush with the rubber at the attaching face of the heel.

6. A deformable heel normally of concavo-convex form on every plane of cross section comprising a body portion of rubber and a substantially inextensible fabric reinforcing element united to the body portion of the heel at its concave attaching face, said fabric reinforcing element terminating inside of the edge of the heel and being embedded in and flush with the rubber.

BENJAMIN ROSS.