No. 777,653. PATENTED DEC. 13, 1904.

R. E. FOSTER.

METHOD OF MAKING RUBBER HEELS.

APPLICATION FILED FEB. 19, 1904.

NO MODEL.

Fig. 1

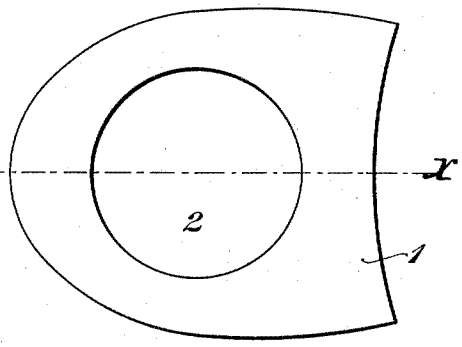


Fig. 2

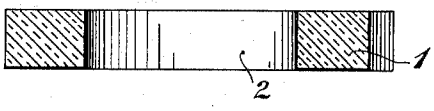


Fig. 3

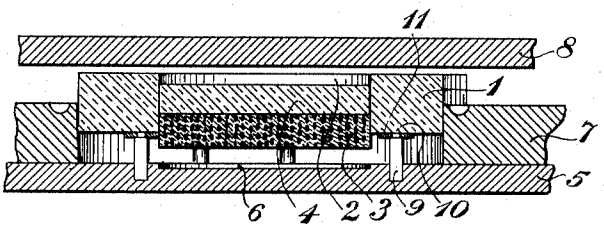


Fig. 4

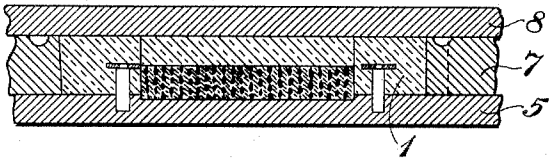
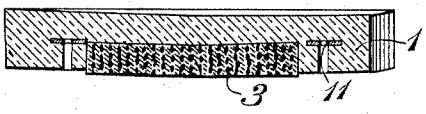


Fig. 5



Witnesses
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No. 777,653. Patented December 13, 1904.

UNITED STATES PATENT OFFICE.

ROLON E. FOSTER, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO FOSTER RUBBER COMPANY, OF KENNEBUNK, MAINE, A CORPORATION OF MAINE.

METHOD OF MAKING RUBBER HEELS.

SPECIFICATION forming part of Letters Patent No. 777,653, dated December 13, 1904.

Application filed February 19, 1904. Serial No. 194,405. (No model.)

To all whom it may concern:

Be it known that I, ROLON E. FOSTER, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Methods of Making Rubber Heels; 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 an improved method of making rubber heels. It is particularly useful in connection with heels made according to United States Letters Patent on rubber treads, No. 695,298, granted to me March 11, 1902. Heels made according to said patent comprise a body of vulcanized rubber and a friction-plug embedded therein and exposed at the lower surface of the heel. This plug consists of a strip of fabric coated with rubber and wound spirally and vulcanized into a solid mass. Since the plug is not as elastic as the rubber body of the heel, it is desirable to interpose some rubber between the plug and the shoe to which the heel is attached in order to provide an elastic backing for the plug, and therefore the plug does not extend entirely through the rubber body of the heel. Heels of the above-described form as previously constructed have comprised two blanks cut from sheet-rubber of substantially the outline of the finished heel, one blank being perforated for the reception of the plug and the other blank being imperforate and forming the upper portion of the heel and the elastic backing for the plug. The perforated blank and the plug are inserted in a mold, nail-receiving washers are laid upon the blank, the solid blank is then superposed, and the whole is united and vulcanized by the application of heat and pressure. A heel made in this way has a horizontal joint running all around the lateral surface of the heel. Since the adhesion between the plug and the rubber of the body is not as strong as that between solid bodies of rubber, the strength of the rear margin of the heel, which is subjected to the hardest wear when the heel is in use, depends largely on the solidity of the slender body of rubber between the plug and the rear of the heel. It is therefore undesirable to have this part weakened by a joint, as in the above-described construction, particularly as it has been found in practice that the vulcanizing process often fails to make a perfect joint at this point, so that the strains of use will cause the joint to open and present an unsightly crack in the exterior of the heel, which may eventually result in its destruction.

The object of the present invention is to produce a heel free from the above-described disadvantages and generally to simplify and improve the method of making rubber heels; and to these ends the invention consists in the improved method hereinafter described, and particularly defined in the claims.

In the drawings, Figure 1 is a plan view of the rubber blank of which the body of the heel is made. Fig. 2 is a section of the same on line X X, Fig. 1. Fig. 3 is a vertical sectional view showing the component parts of the heel in place in a mold preparatory to the pressing and vulcanizing. Fig. 4 is a similar view taken after the mold has been closed, and Fig. 5 is a vertical section through the finished heel.

In making a heel according to this method a blank 1 is first made of rubber composition of substantially the form and size of the body of the finished heel, as shown in Figs. 1 and 2. A perforation 2 extends through the blank, and the form of this perforation is varied according to the form of the friction-plug to be inserted therein. The blank may conveniently be formed by cutting a piece of suitable shape from a sheet of rubber composition of the thickness required in the blank, the piece being cut by a die having a part adapted to cut the perforation at the same operation.

The friction-plug 3, as shown in the drawings, is made as described in the above-mentioned patent and comprises a spirally-wound strip of diagonally-cut fabric intimately associated with rubber compound. The plug is inserted in the perforation, but extends only about half-way through the blank, and a piece 4 of rubber composition cut from a sheet of

suitable thickness is used to fill the remainder of the perforation and to provide an elastic backing for the friction-plug.

After the above-described parts have been assembled they are subjected to heat and pressure, which may conveniently be accomplished by a three-part mold heated by steam and operated by a hydraulic press. As shown in Fig. 3, the mold comprises a bottom plate 5, having a slight depression 6 to allow the friction-plug to project slightly from the tread-surface of the heel, a body 7, having a cavity of the shape of the finished heel, and a smooth top plate 8. Washers for engaging the nails used in securing the heel to a shoe may conveniently be inserted at this point. The bottom plate 5 is provided with posts 9, having reduced extremities 10, upon which the washers 11 are mounted. The assembled parts of the heel are laid in the mold, as shown in Fig. 3, and the mold is then placed in the press and subjected to heat and pressure. Under these influences the material of the blank 1 flows around and under the washers, and the parts are pressed into the final form of the heel, as shown in Fig. 4. After the heel has been subjected to heat in the mold for a sufficient time to vulcanize the rubber compound it is withdrawn from the mold and cooled.

The above-described method produces a homogeneous heel which is free from joints at the lateral surfaces. A further important advantage consists in the fact that after the heel is removed from the mold it assumes a slightly-curved form, as shown in Fig. 5, the upper surface becoming concave, owing probably to the difference in expansion and contraction of the fabric and the rubber. This feature is of value, as it permits a closer union between the heel and the shoe to which it is applied, the use of cement to secure the edges of the heel being thereby rendered optional.

Having thus described my invention, I claim as new and desire to secure by Letters Patent of the United States—

1. The herein-described process of making rubber heels, which consists in cutting a blank of rubber composition of substantially the size and shape of the heel, perforating the blank, inserting a friction-plug and a rubber backing in the perforation, and pressing and vulcanizing the whole into shape, substantially as described.

2. The herein-described process of making rubber heels, which consists in cutting a blank of rubber composition of substantially the shape and thickness of the finished heel, perforating the blank, inserting in the perforation a friction-plug of less thickness than the blank and a rubber filler to fill the portion of the perforation unoccupied by the friction-plug, and pressing and vulcanizing the whole into shape, substantially as described.

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

ROLON E. FOSTER.

Witnesses:
HORACE VAN EVEREN,
FARNUM F. DORSEY.