

(No Model.)

G. M. STEVENS & H. J. CHISHOLM.  
Heel for Boots and Shoes.

No. 237,626.

Patented Feb. 8, 1881.

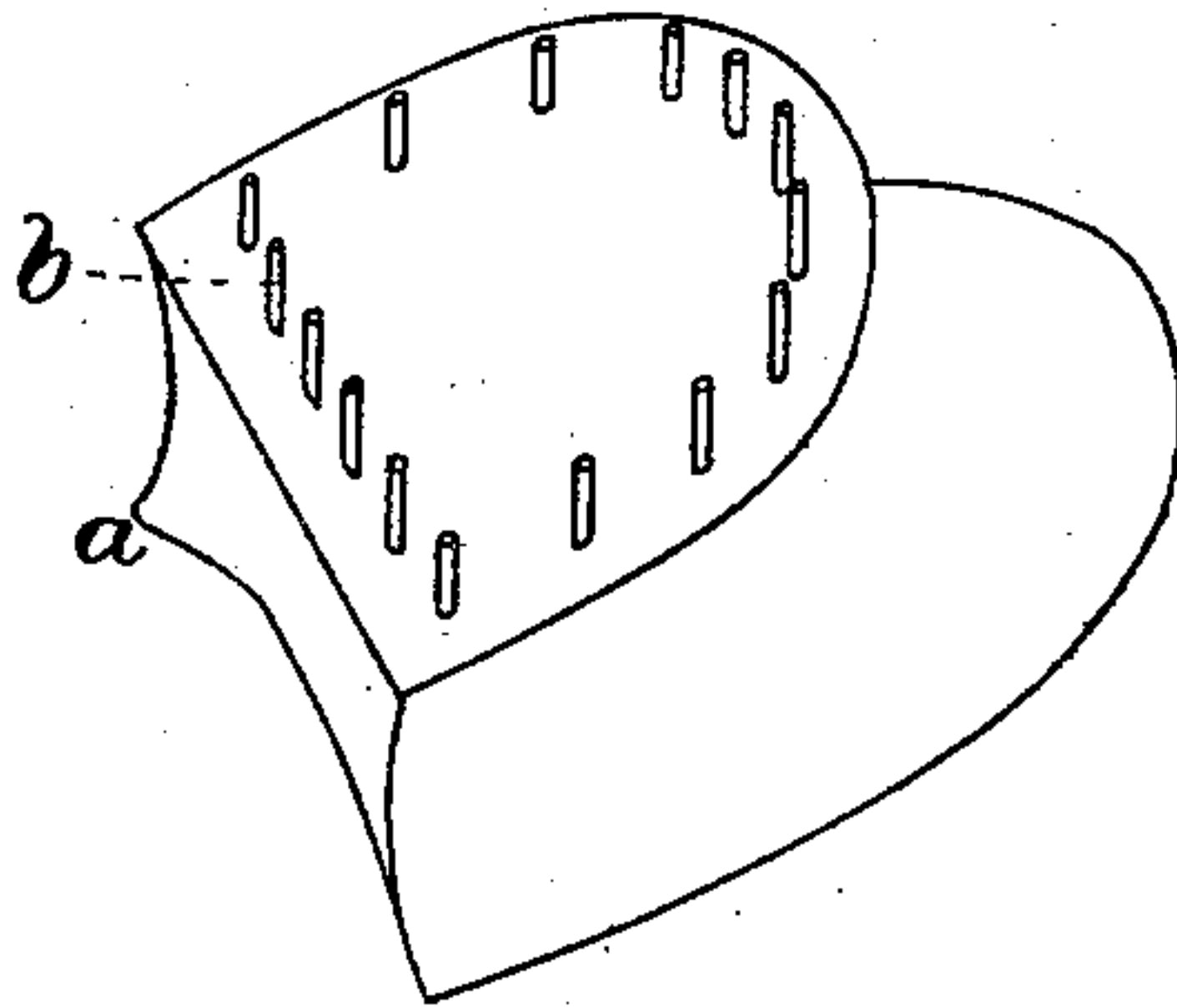


FIG. 1.

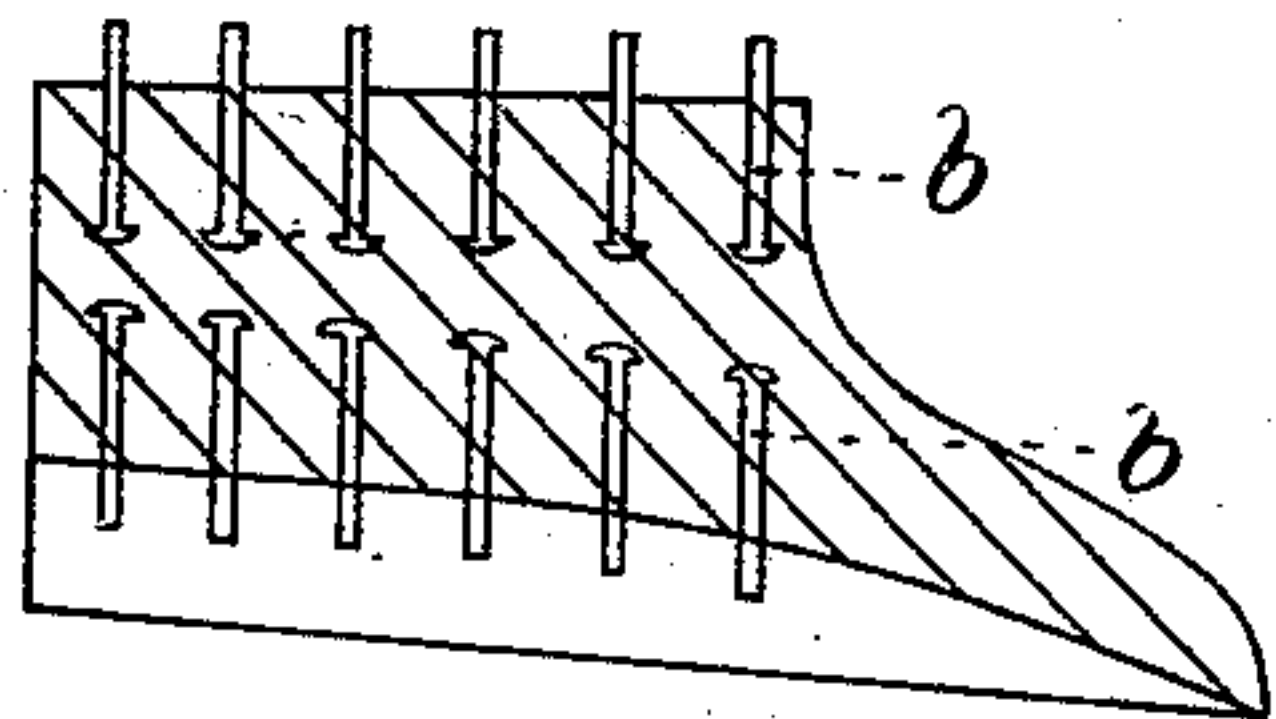


FIG. 2.

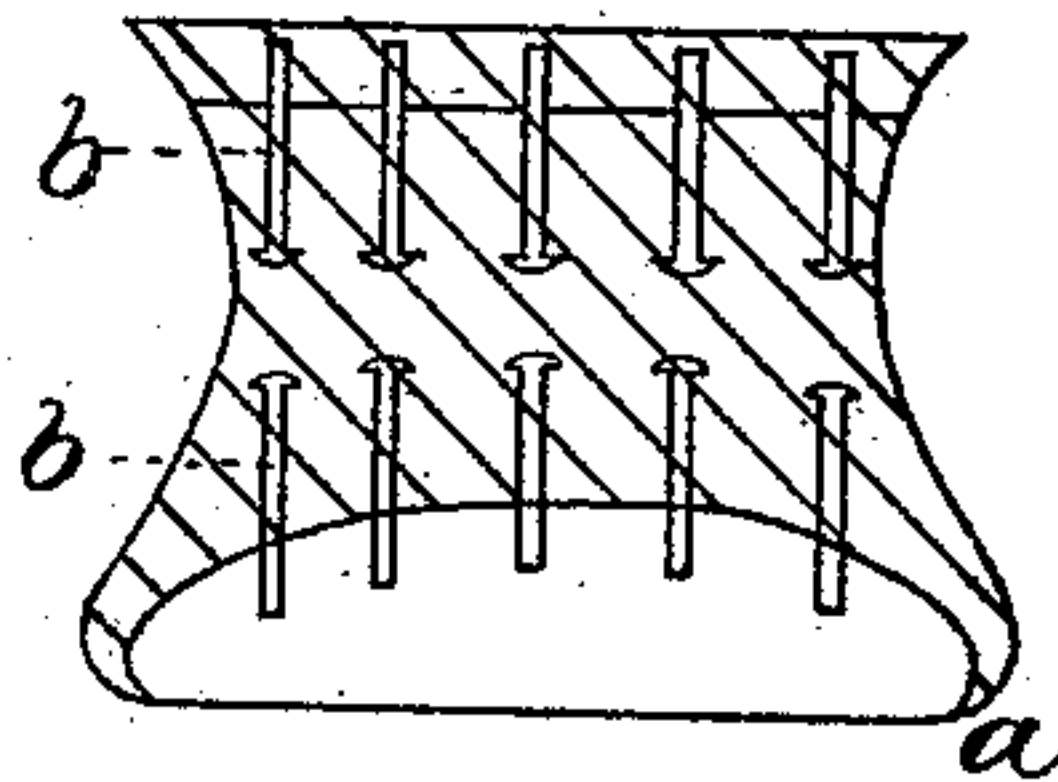


FIG. 3.

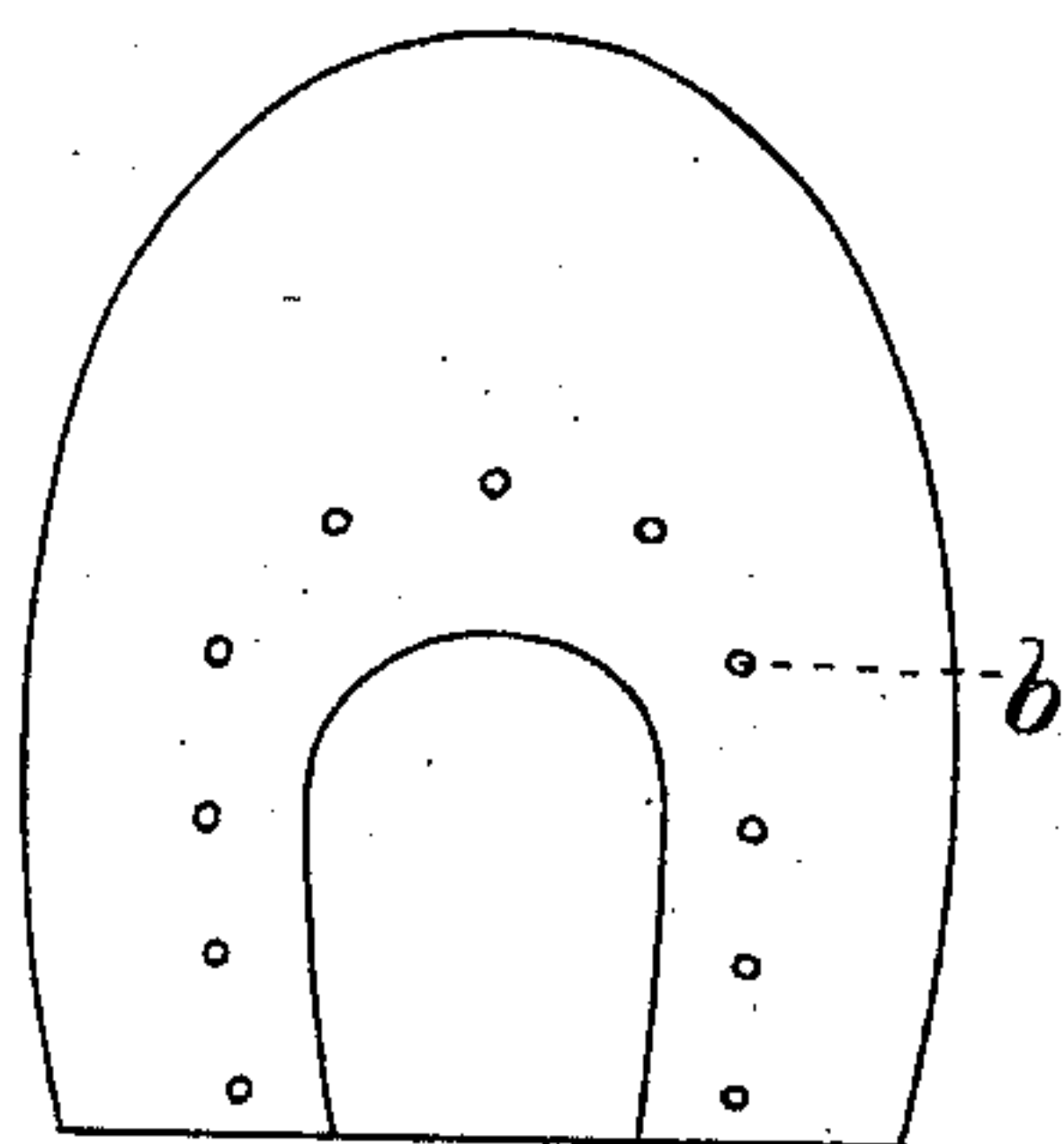


FIG. 4.

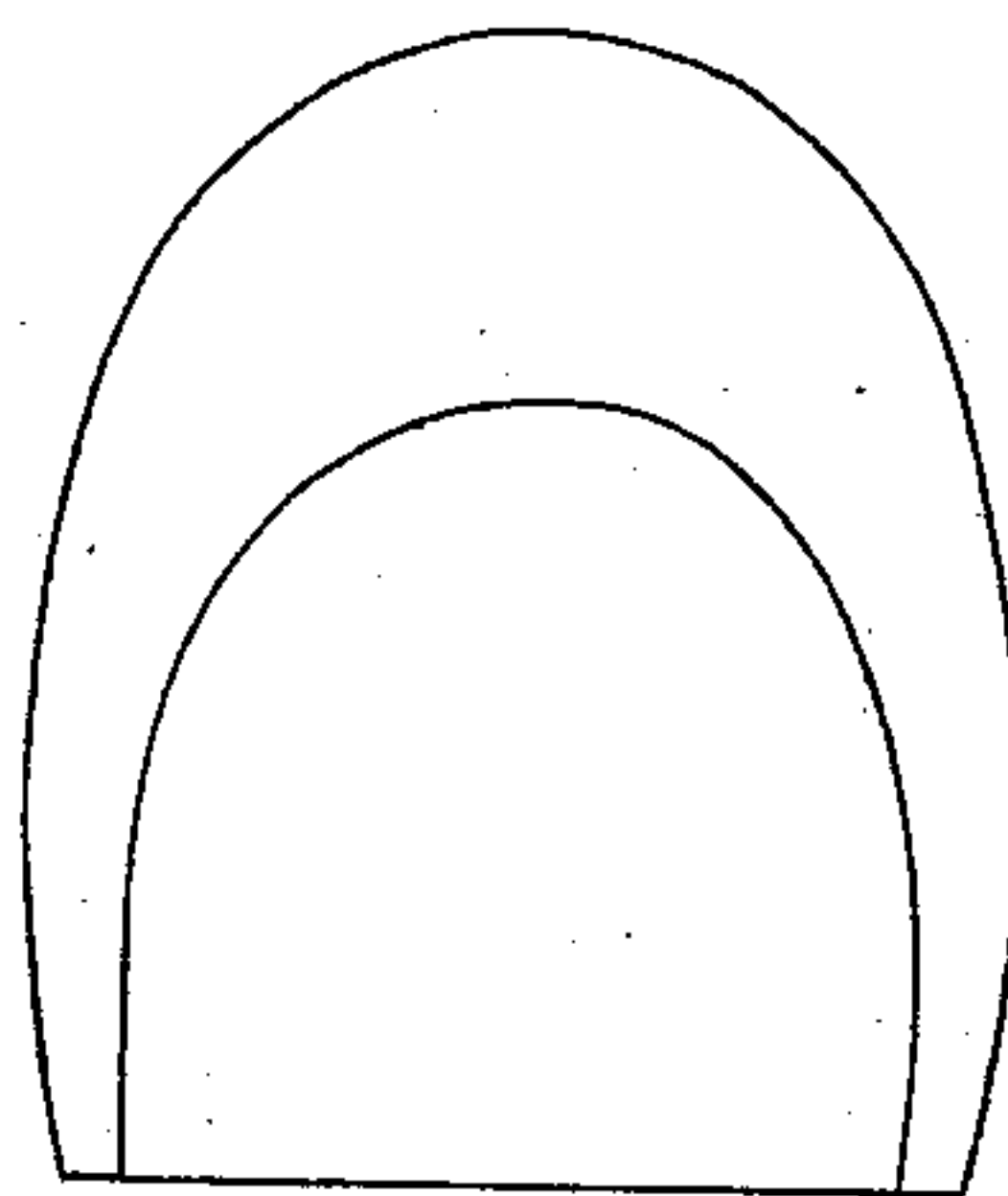


FIG. 5.

WITNESSES:

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Grenville M. Stevens and  
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by  
Clifford and Clifford  
Their Attys

# UNITED STATES PATENT OFFICE.

GRENVILLE M. STEVENS, OF DEERING, AND HUGH J. CHISHOLM, OF  
PORTLAND, MAINE.

## HEEL FOR BOOTS AND SHOES.

SPECIFICATION forming part of Letters Patent No. 237,626, dated February 8, 1881.

Application filed September 14, 1880. (No model.)

*To all whom it may concern:*

Be it known that we, GRENVILLE M. STEVENS, of Deering, and HUGH J. CHISHOLM, of Portland, both in the county of Cumberland and State of Maine, have invented certain new and useful Improvements in Heels for Boots and Shoes; and we do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

Our invention relates to heels for boots and shoes of that class which are composed of a single piece formed by compression or solidification out of soft material.

Heretofore heels for boots and shoes have been made of various plastic materials, such as india-rubber solidified by heat, or by heat and pressure, the solidity of the mass resulting wholly or in part from some molecular change. Heels made of india-rubber and analogous plastic materials are well known; and it has been proposed to form articles out of leather pulp, either alone or mixed with some other material, by heat and pressure, at such a degree as to consolidate the mass by rendering the particles of leather liquescent, thus changing the molecular structure of the mass. Such a process and the article resulting therefrom is described in the patent of Hyatt and Stevens, of June 8, 1880, No. 228,463. It has also been suggested, and to some extent practiced, to make the heels of boots and shoes out of fibrous material by rolling or compressing such fibrous material into sheets and forming the heels of lifts made of such sheets in the same manner in which heels have been commonly made of ordinary lifts of leather. When a concrete substance is used, as suggested in the patent of Morgan, May 11, 1869, it must be simply formed in molds without compression, or with only slight compression, and must depend for its solidification wholly upon the quality of the material itself, or from heat or some chemical change in the material. Materials thus capable of being molded into shape are objectionable, either by reason of their ex-

pense or weight, or unfitness to endure the amount of wear required of such articles, or for other reasons well known to those skilled in the art. A fibrous pulp, such as may be formed from scraps of leather or other material of like nature, is most suitable for articles of this class if it can be properly condensed and solidified. The mode of making heels out of this material by forming the pulp into sheets and then cutting it into lifts is objectionable by reason of the expense attending it. After much experiment we have succeeded in producing a heel in one piece out of pulp, compressed from a liquid or semi-liquid state into a heel of solid homogeneous material, uniting in such heel the lightness, durability, and other good qualities of a heel made from ordinary lifts of leather, together with the cheapness of a heel formed out of plastic material.

Our invention therefore consists, as distinguished from the other articles hereinbefore referred to, of a heel formed in one mass of a simple fibrous material united by pressure and condensation alone, without change of the fibrous character of the material, having no vitreous or like quality, and capable of being penetrated by awls or punches without fracture. This material is produced preferably of leather reduced while moist to a fibrous condition, although other fibrous materials may also be used in the same manner, either wholly or in part.

In carrying out our invention we use the process and apparatus shown in our Letters Patent No. 234,694, of November 23, 1880. No modification is required of the apparatus shown in that patent, except that it is necessary to make the dies to correspond with the shape of the heel. Into the mold of such an apparatus we pour the liquid or semi-liquid pulp, and by gradual compression expel the water and reduce the pulp to a solid mass. The fibers of this mass interlock, and the heel formed of this substance becomes solid, of substantially uniform density, and retains its shape without warping.

Nails may be introduced into these heels in any of the known ways.

In order to form the heel of one solid homogeneous piece without seam or crack, it is nec-



essary that enough of the material should be poured into the mold at one time to form the entire heel.

The heels may be compressed by the apparatus referred to at one operation into a sufficiently solid condition; but we prefer to use a second and more highly-polished die, made slightly smaller in order to give a polished surface to the heel. By this second pressure the heel is finished, and is in condition to be placed upon the boot or shoe.

We have represented in the drawings hereto attached a heel such as may be made out of the material and by the process above described, in which the nails are represented as inserted in the process of making the heel; but this we do not claim.

Figure 1 represents a perspective view of our improved blank with nails projecting, on which to attach a lift, if desired; Fig. 2, a vertical section from front to back. Fig. 3 is

a vertical section from side to side. Fig. 4 is a top view of our blank. Fig. 5 is a bottom view.

It will be therefore understood that we do not claim a heel composed of lifts made of pulp, nor a heel composed of plastic materials solidified by heat or heat and pressure, or by change of the particles or nature of the material.

Having thus described our invention, what we claim is—

A heel for boots and shoes formed wholly of a homogeneous mass of fibrous compressed pulp, as set forth.

In testimony that we claim the foregoing as our own we affix our signatures in presence of two witnesses.

GRENVILLE M. STEVENS.

HUGH J. CHISHOLM.

Witnesses:

JOHN P. KERRIGAN,

HERBERT M. SYLVESTER.