UNITED STATES PATENT OFFICE.

FREDRICK G. HITZFELD, OF DENVER, COLORADO, ASSIGNOR TO M. E. HITZFELD, OF SAME PLACE.

ART OF MAKING SHOE-MAKERS' LASTS.

SPECIFICATION forming part of Letters Patent No. 381,551, dated April 24, 1888.

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To all whom it may concern:

Be it known that I, FREDRICK G. HITZFELD, a citizen of the United States, residing at Denver, in the county of Arapahoe and State of Colorado, have invented a certain new and useful process or method of making a true and correct pattern of the human foot, from which a last may be formed, enabling properly-shaped and accurately-fitting boots and shoes to be made; and I do 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.

Heretofore shoe-makers' lasts have been made of various forms which in a greater or less degree conform to the shape of the foot; but long experience and careful experiment have shown me that in order to make a proper and easy boot or shoe it is necessary to have a pattern for a last of the form of the whole under surface of the foot at a time when the whole weight of the body is resting thereon, and the under surface of the foot at such a time would be distorted if it rested on a firm flat surface. Therefore the foot should rest on some soft yielding substance which will allow the natural features of the foot to be preserved. Another feature in last-making has been overlooked which is of vital importance in making properly-formed boots and shoes, which is to provide ample space for the operations of the extensor proprius pollicis, which should have free action, enabling the toes to perform their proper functions.

Now, therefore, the objects of my invention are, first, to produce a last which will be of the form of the foot when it is resting on soft or yielding material and supporting the weight of the body, and, second, to provide a last over which boots and shoes may be made which will allow the proper action of all portions of the foot.

To carry my invention into effect I prefer to use a box of dry sand large enough to allow a person to stand in the same with both feet. I then level the sand by drawing a straight edge across the top. I then proceed to wet with water one or more sheets of paper, which I then lay smoothly over the sand. The patron is then required to stand on the paper, occasionally transferring the weight of his or her body from one foot to the other, in order that a proper impression of the under surface of the foot may be made in the paper. A strip or strips of wet paper are then placed over the upper surface of the foot, over which I sprinkle plaster-of-paris. The foot is allowed to remain in the before-mentioned position until the plaster has set, when it may be removed and the paper impressions of the upper and under surfaces of the foot allowed to dry, careful measurements of the foot being taken. I carve a last from wood in conformity with the impressions left in the paper and in accordance with the measurements before mentioned.

The advantages gained by my process of obtaining the form of the foot while it is in the natural position while supporting the weight of the body will be readily understood when it is remembered that a boot or shoe constructed over a last produced by my method will have a depression corresponding to each projection on the foot, and also a projection corresponding to each depression on the foot. Therefore the ball of the foot will be held in and supported by the sole of the shoe in such a manner that it will have no tendency to spread the upper-leather out of its original shape. Therefore the depression in the upper corresponding with the extensor proprius pollicis will remain intact.

Having now fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The herein-described process of obtaining an impression of the upper and under surface of the human foot, which consists of placing the foot supporting the body on wet paper, the whole being supported on a yielding substance, and covering the upper surface of the foot with a thin layer of wet paper and covering the same with plaster-of-paris and allowing the paper to set to the form of the foot before the same is removed.

2. The herein-described process of making a pattern for a last conforming to the shape of the foot while it is supporting the body, which

consists in placing the foot upon sand covered with wet paper while supporting the weight of the body, covering the upper surface of the foot with wet paper, and then covering such paper with plaster-of-paris, allowing time for the plaster and paper to set before removing from the foot, substantially as set forth.

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

FREDRICK G. HITZFELD.

Witnesses:
H. H. HURD,
B. L. POLLOCK.