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METHOD OF MAKING SEAMLESS UPPERS.

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To all whom it may concern:

Be it known that I, DANIEL G. CARTER, a citizen of the United States, residing at Mosheim, in the county of Greene and State of Tennessee, have invented new and useful Improvements in Methods of Making Seamless Uppers, of which the following is a specification.

This invention relates to improvements in the manufacture of boots, shoes, and other articles of leather, and proposes a method for producing a seamless, shaped article the form of which is maintained, not by stressing the material in any way, but by a "set" which is inherently acquired by the material in the course of manufacture of the article, which set determines that the form of the article shall be the position of repose of the material, to which position said material tends always to return when forced to deviate therefrom.

As applied to the manufacture of seamless shoe uppers, my invention broadly contemplates the shaping of the upper to the required form from a piece of green hide which is plastic or pliable, and then setting the shape of said upper by subjecting it to a tanning process.

More specifically, my invention is consummated by the method of first bending the green hide around a form or last having the desired shape, holding it on the last while subjecting it to a tanning process a sufficient length of time to permanently set its shape, removing it from the last and completing the tanning process.

It is well known that in tanning hides, having the usual form of substantially flat sheets, the tanning process gives the leather a permanent set so that when it is subsequently bent, in the act of making shaped articles, there is always the tendency of the material to return to the flat position. In the making of shoe uppers from tanned hides it is therefore necessary to cut out portions of the pattern or blank from which the upper is made, and to bring the cut edges together in seams in order to attain the requisite shape of the finished upper. Or if a seamless upper is the object in view, it is then essential to resort to crimping, pressing or stiffening the leather while held in the desired form, so as to cause it to retain the shape impressed upon it.

All of the prior methods of treatment in shaping the upper from tanned leather fail to give a high degree of permanence to said shape, due to the original set of the tanned sheet from which the upper is turned up. And when the upper becomes subject to flexure during use, the effect of whatever shape retaining expedient may have been used, is nullified and the leather tends to revert to its original form as tanned, causing the shoe into which the upper is fabricated to become misshapen.

By my improved method the upper is made from green or untanned hide, after the preliminary treatment of the latter including soaking, fleshing, liming, and dehairing has been completed.

When a hide has reached this stage of treatment it is substantially white in color and consists of a fibrous gelatinous substance which has the peculiar property, of being substantially plastic or perfectly pliable, by the use of which terms I mean that it has no predominant set or position of repose, but may be bent into any position and will remain in said position without an inclination to revert to, or assume another shape. When the term "green hide" is used in the specification and claims it refers to a hide which has reached this stage of treatment and is characterized by this quality of plasticity.

In the carrying out of my method, a pattern or blank of the appropriate shape is made from the green hide, placed upon a last and shaped to the conformation of said last with the hand or with any suitable piece of apparatus. It is held in position on the last by lacing, or by any desirable securing means. The last and pattern are then subjected to a tanning process for a sufficient length of time to cause the pattern to become permanently set in the shape to which it is conformed by contact with the last. The process of tanning could be carried to completion with the pattern upon the last, but in order to make the maximum number of uppers with the minimum number of lasts, and to conserve the space within the tanning vat, the pattern is removed from the last before the completion of the tanning process, but not until the latter has been carried on far enough to have given the permanent shape to the pattern. The partially tanned upper is then nested with the number of other similar uppers and held in nested relation by a cord or other means passed through said uppers, which are then suspended in the

tanning bath and left there until the tanning process is completed.

By so nesting the uppers, one serves as a support for the other so that their shape is retained although they may have been taken prematurely from the lasts in the first stage of the tanning process.

In an upper made according to this method the finished shape is the position of repose of the leather, as it is the position in which the latter was tanned, and consequently the upper resists stresses which tend to cause it to deviate from this shape, and it will return to said shape if temporarily deformed.

By this method the article produced is superior to similar articles made by other known processes. In addition to this, a substantial saving is made in the quantity of material used as there is no cutting out of small pieces from within the periphery of the pattern in order to give a shape to the upper as in the method of manufacturing seamed uppers. Moreover, the wastage which necessarily attends the cutting out of the blanks or patterns from the green hide is a decidedly more valuable by-product than the scraps from tanned hides, being immediately available for the manufacture of glue or other gelatinous substances. A large percentage of the liquor used in tannage is also saved since none of the latter is wasted in tanning the scraps.

I claim as my invention:—

1. The method of making seamless uppers which consists in conforming a pattern of green hide to a last, subjecting it while so conformed to a tanning process for a sufficient length of time to permit the tanning process to give it a set shape, removing it from the last and subjecting it for a further length of time to the tanning process until tanned.

2. The method of making seamless uppers which consists in conforming a pattern of green hide to a last, subjecting it while so conformed to a tanning process a sufficient length of time to permit the tanning process to give it a set shape, removing it from the last, nesting it with other similarly shaped patterns and subjecting the nested group of patterns for a further length of time to the tanning process until tanned.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

DANIEL G. CARTER.

Witnesses:
H. J. WISECANER,
R. R. WISECANER.