

W. B. ARNOLD.
PROCESS OF FORMING WELTING.
APPLICATION FILED NOV. 22, 1912.

1,059,698.

Patented Apr. 22, 1913

Fig. 4.

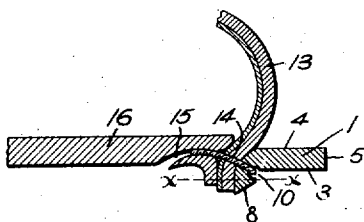


Fig. 5.

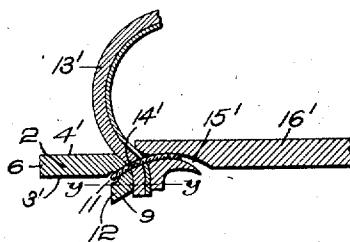


Fig. 1.

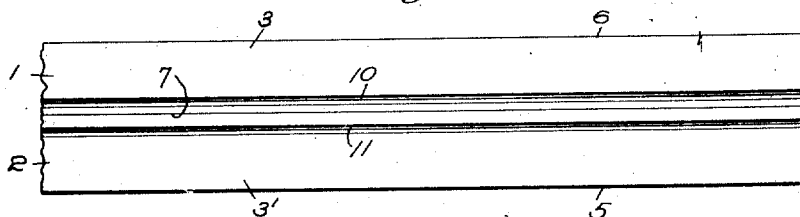


Fig. 2.

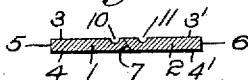
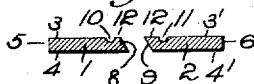


Fig. 3.



Witnesses:

Horace A. Grozman
Carl L. Choate

Inventor:

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by Emory, Bond, Jamney & Waring

UNITED STATES PATENT OFFICE.

WILLIAM B. ARNOLD, OF NORTH ABINGTON, MASSACHUSETTS.

PROCESS OF FORMING WELTING.

1,059,698.

Specification of Letters Patent.

Patented Apr. 22, 1913.

Application filed November 22, 1912. Serial No. 732,803.

To all whom it may concern:

Be it known that I, WILLIAM B. ARNOLD, a citizen of the United States, and a resident of North Abington, in the county of Plymouth and State of Massachusetts, have invented an Improvement in Processes of Forming Welting, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention relates to the process of forming and applying welting to boots and shoes.

In order that the principle of the invention may be readily understood, I shall set forth the steps constituting the process and the best mode known to me for carrying the process into effect.

In the accompanying drawing, I have shown the welts produced by my process and have therein indicated the steps involved in applying the same to boots or shoes and in finishing the welt when so applied.

Referring more particularly to the drawing; Figure 1 is a plan view of a portion of a duplex welting strip constructed in accordance with my invention; Fig. 2 is a transverse section taken through said strip, the line of severance being indicated; Fig. 3 is a view similar to Fig. 2, but representing the two welting strips segregated; and Figs. 4 and 5 are partial transverse sections taken through a shoe and representing the manner of applying thereto the two welting strips produced in accordance with my invention.

The high cost of leather renders necessary the saving of all possible material. It is therefore extremely desirable that the welts of boots and shoes be cut with the least possible waste. Welts are usually cut as strips of indeterminate length from a blank by cuts which are normal to the faces of the blank, so that the welt is rectangular in cross section when cut from the blank. In order that the welt may be properly applied to the boot or shoe, it is desirable that its inner edge be of reduced thickness or tapered. This taper is usually given to the welt after the welting has been cut from the blank, though in some cases a strip wide enough for two welts is cut from a blank, as shown, for example, in Figs. 3 and 6 of the patent to Hadaway, No. 744,752,

the said strip being cut into two welts by a cut inclined to the faces of the strip, as there indicated. Welts vary in width, but are customarily from one-half to three-quarters of an inch in width. Assuming the normal welt to be about one-half inch in width, I am enabled in the practice of my invention to save a portion of the leather depending upon and substantially equaling the inclination of the beveled inner edge of the welt. Assuming that the extreme width of a welt is to be one-half inch, and assuming that each welt should have a tapered inner edge to permit it to be secured in more effective manner to the shoe, instead of cutting the leather blank into strips each rectangular in cross section and one-half inch in width along each face, I cut the blank, in order to form a duplex welt, into two strips by three continuous longitudinal cuts, two of which are normal to the surface of the blank and are spaced apart a distance equaling the width of two welting strips,—that is, the width of the duplex strip,—thereby to form the outer edges of such duplex strips, and by an intermediate longitudinal cut extending entirely through the blank at an inclination to the surfaces thereof to form the inner edges of said strips. Either previous to, simultaneously with or subsequent to the cutting of the duplex welting strips, I groove the flesh face of the material along lines adjacent to the inner edges of the said strips. These grooves are comparatively shallow, and therefore each groove is spaced from the extreme inner edge of each strip by a continuous or unbroken ridge formed by the flesh surface of the welting strip, such ridge being of the full, unpaired thickness of the welting strip, and hence providing a most efficient stitch anchoring shoulder. Moreover, I save a step in the manufacture of one of the welting strips, because heretofore it has been customary to cut the welt into a rectangular form in cross section and thereafter to bevel the inner edge. I am enabled to dispense with said beveling as a separate operation, and after the welting strip has been applied to the boot or shoe, I then remove from the inner edge of the welting strip by one operation all the material required to be severed at any time from the inner edge of such welting strip subsequent to the separation of such welting strip from the stock.

Referring more particularly to the drawing, I have in Figs. 1, 2 and 3 represented at 1, 2 a duplex welt, the flesh face whereof is indicated at 3, 3' and the grain face whereof is indicated at 4, 4'. This duplex welting strip has been severed from the stock by two continuous longitudinal cuts normal to the surface of the blank and spaced apart a distance equaling the width of the two welting strips, thereby to form the outer edges of said two welting strips or duplex welting strip, said two cuts being indicated at 5, 6. The duplex strip is severed into two welting strips by an intermediate longitudinal cut 7 extending entirely through the blank at an unvarying angle,—that is, by a single cutting operation effected by a single severing blade inclined to the surface of the strip. In this manner, the inner edge 8, 9 of each strip is inclined. It will be noted that in the case of the welting strip 1, the grain face extends inwardly beyond the flesh face, while the converse is true of the welting strip 2. Each of the welting strips possesses advantages flowing from each characteristic, as will be set forth more fully with respect to Figs. 4 and 5. Each welting strip is grooved as indicated at 10, 11 to provide a stitch anchoring shoulder, and it will be observed that in each case the groove is at the same distance from the extreme inner edge of the welting strip, measuring along a surface of said strips. Moreover, it will be observed that in each case the portion of the welting strip that is between its groove 10 or 11 and its inclined inner edge 8, 9 is of the full thickness of the welt, or in other words that each groove is spaced from the inner edge of the welt by an unbroken longitudinal ridge 12, 12 formed by the very or actual flesh face of the welting strip. Thus, between the inclined edge and the stitch anchoring shoulder of each welting strip there is preserved a longitudinal portion thereof of the full, unimpaired thickness of the welting strip. This is of extreme importance, inasmuch as the stitch by which the welt is secured to the shoe passes through the base of the grooves, and were the ridge between such groove and the inner edge of the welt of less than the full thickness of the welt, then said stitching is exceedingly apt to and will in practice tear through the inner edge of the welt. If, for example, a duplex welting strip be severed into two welting strips, each of the desired width for use, by an irregular groove or similar cut, thereby to furnish an inner inclined edge of each welt, and at the same time to furnish a stitch receiving groove, into which the inclined edge merges or from which it is not separated by a ridge of the full, unimpaired thickness of the welting, then the stitch is apt to and will in practice tear through the inner edge of the

welt. The welting strip 1 is secured to the upper 13 by a line of through and through stitching 14 extending into the channel 15 of the insole 16 and passing through the base of the groove 10 of the welt. It will be observed that the grain face of the welt 1 extends to the extreme inner edge of said welt, so that the grain faces of the upper and the welt contact to the extreme inner edge of the welt and co-act to exclude moisture. After the welt 1 has been secured as described, the inner edge of the welt is severed along substantially the line $x-x$, thus removing superfluous material. It will, however, be observed that this removal of superfluous material still leaves the ridge separating the groove 10 from the inner edge of the welt of the actual or full thickness of the welt, and thus prevents tearing out of the through and through stitching. The welt strip 2 is also secured to the upper 13' by a line of through and through stitching 14' extending into the channel 15' of the insole 16' and piercing the groove 11 of the welt. Whether the strip be beveled or inclined at its inner edge as shown in Fig. 4, or whether it be beveled or inclined at its inner edge as represented in Fig. 5, such beveling or inclination facilitates the flexing or bending of the strip in its own plane and especially does it assist the flexing or bending of the strip in or substantially in its own plane, when it is bent about the toe of the boot or shoe. In other words, the inner edge, whichever be the direction of beveling, lends itself more readily to flexure of the strip in its own plane than does a square inner edge. Furthermore when the strip is beveled in the direction indicated in Fig. 4—that is, as indicated at the left hand portions of Figs. 2 and 3—it will be observed that the grain face of the welt projects beyond the flesh face thereof at the inclined or beveled edge. The grain face is of greater strength than the flesh face, and therefore there is less tendency or danger of the stitches tearing through the shoulder or ridge in that form of strip shown in Fig. 4 than there is in that form shown in Fig. 5, wherein the direction of beveling or inclination is such that the grain surface of the ridge or shoulder is of less lateral extent than the opposite or flesh face thereof.

It will be observed that in accordance with my process, none of the material has been removed from the inner edge of the welt 2 at any time prior to the securing of said welt to the upper 13'. Heretofore it has been customary to remove by an inclined cut the upper inner edge or shoulder of the welt strip prior to the securing of the welt to the shoe, and this has necessitated a distinct separate operation. I avoid the necessity of such operation because of the fact that the duplex welting strip is severed

by an inclined cut. After the welt 2 has been secured to the shoe, then by a single cut along substantially the line Y—Y, I remove all superfluous material from the inner edge of the welt and insole. Even after the removal of the superfluous inner edge of the welt 2, it will be observed that the groove 11 is separated from the extreme inner edge of the welt by a ridge of the full thickness of the welt strip, thus overcoming all liability of the through and through stitching to tear through the inner edge of the welt. The beveling of the inner edge of the welt so prepares the welt that when applied to the shoe, it is not only more elastic, but it is necessary to cut off far less material beyond the lines of stitching $x-x$ and $y-y$ than in those welts which are rectangular in cross section. In fact, it is unnecessary to remove a substantial amount of such inner edge. After the welts have been secured as described, and the extreme inner edges thereof have been removed as stated, all outer edges of the welt may be treated in any suitable manner.

Having thus described one illustrative embodiment of my invention, I desire it to be understood that although specific terms are employed, they are used in a generic and descriptive sense and not for purposes of limitation, the scope of the invention being set forth in the following claims.

Claims:

1. That process of forming welting in intermediate lengths which consists in cutting a leather blank into two welting strips by two continuous longitudinal cuts normal to the surface of the blank and spaced apart a distance equaling the width of two welting strips, thereby to form the outer edges

of two welting strips, each of the desired width, and by an intermediate longitudinal cut extending entirely through the blank at an inclination to the surface thereof, thereby to form the inner edges of said strips, and in grooving the flesh face of each strip near the inclined edge, but spaced therefrom by an unbroken ridge formed by a flesh surface of the welting strip, thereby to provide a stitch anchoring shoulder.

2. That process of forming welting in indeterminate lengths which consists of cutting a leather blank into two welting strips by two continuous longitudinal cuts normal to the surface of the blank and spaced apart a distance equaling the width of two welting strips, thereby to form the outer edges of two welting strips each of the desired width and by an intermediate longitudinal cut extending entirely through the blank at an unvarying angle, and which is inclined to the faces of said blank, thereby to form the inner edges of said strips and in grooving the flesh face of each strip near the inclined edge but wholly spaced therefrom by an unbroken longitudinal ridge formed by a flesh face of the welting strip, of such width that between the inclined edge and the stitch anchoring shoulder of each welting strip there is preserved a longitudinal portion thereof of the full, unimpaired thickness of the welting strip.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

WILLIAM B. ARNOLD.

Witnesses:

EVERETT S. EMERY,
MAY H. LOWRY.

Correction in Letters Patent No. 1,059,698.

It is hereby certified that in Letters Patent No. 1,059,698, granted April 22, 1913, upon the application of William B. Arnold, of North Abington, Massachusetts, for an improvement in "Processes of Forming Welting," an error appears in the printed specification requiring correction as follows: Page 3, line 35, for the word "intermediate" read *indeterminate*; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 2nd day of September, A. D., 1913.

[SEAL.]

THOMAS EWING,

Commissioner of Patents.

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