

W. J. DREY.
ART OF MAKING WELT SHOES.
APPLICATION FILED OCT. 3, 1910.

1,023,555.

Patented Apr. 16, 1912.

Fig.1.

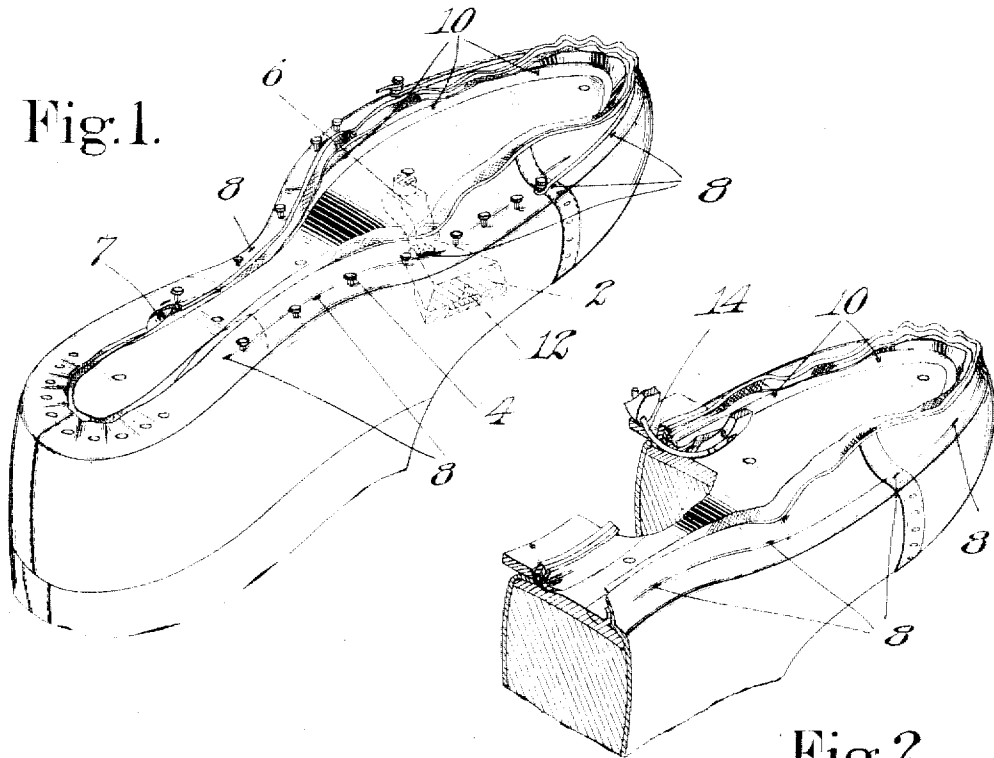


Fig.2.

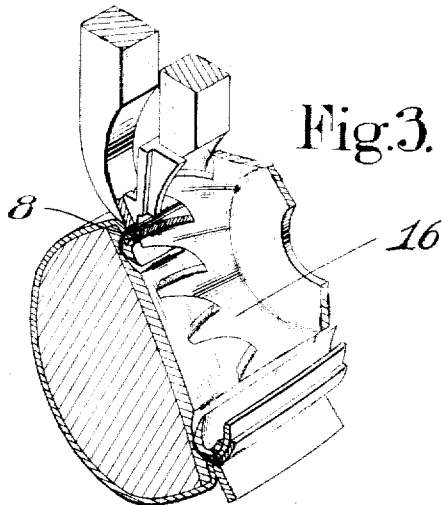


Fig.3.

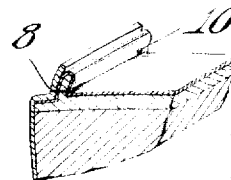


Fig.4.

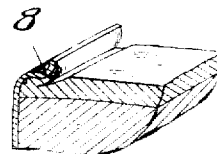


Fig.5.

WITNESSES.

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ART OF MAKING WELT-SHOES.

1,023,555.

Specification of Letters Patent.

Patented Apr. 16, 1912.

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To all whom it may concern:

Be it known that I, WILFRED J. DREY, a citizen of the United States, residing at Catawissa, in the county of Columbia and State of Pennsylvania, have invented certain Improvements in the Art of Making Welt-Shoes, of which the following description, in connection with the accompanying drawings, is a specification, like reference characters on the drawings indicating like parts in the several figures.

The general object of the present invention is an improvement in the art of making boots and shoes, the invention being especially applicable to the manufacture of the better grades of boots and shoes, such, for example, as welt shoes.

According to the usual practice, the upper of a shoe which is to receive a sole attaching welt is lasted over the edge of an insole and is secured in lasted position by tacks which are driven into the body of the insole in the angle of union between the feather of the insole and the shoulder or rib against which the welt is sewed, the tacks extending usually through the insole into the last. The upper is then allowed to set in its lasted shape, after which, according to the preferred practice, the lasting tacks are removed and a few tacks, somewhat lighter than the lasting tacks, are inserted in such locations that they will hold the upper during the succeeding welt sewing operation. In the welt sewing operation the welt, upper and insole are fastened together with a single line of stitches. After the welt sewing operation the remaining tacks are removed and the insole is trimmed. Although this mode of procedure has many drawbacks, up to the present time no method has been devised which will produce shoes of as good quality as those made in the above-described manner, or which will permit the successive operations upon the shoes to be performed with equal facility and speed.

A serious objection to the manufacture of shoes in the manner above described arises from the frequent breaking of the needles of the welt attaching machines by reason of their striking the tacks which hold the upper during the welt attaching operation, these tacks being driven into the insole and usually through the insole into the last in directions which intersect the path of move-

ment of the needle of the welter. Replacing the needles so broken takes much of the operator's time and involves heavy expense in the cost of the needles. Frequently also the tacks are broken by the needles so that their points are left in the shoe projecting through the insole or in such position that, as the shoe is worn, they will work up through the insole. This is very objectionable; and it has long been the endeavor of manufacturers of shoes, particularly welt shoes, to have the insides of their shoes entirely free from any metallic fastenings of any description or broken parts thereof. Another objection to the foregoing method arises from the difficulty which is encountered in obtaining a tight insole around the upper holding tacks, owing to the resistance which they offer to drawing together the parts to be united by stitches. Moreover when this method of making shoes is employed, it is necessary to perform a second tack pulling operation before the insole can be trimmed, and the initial tack pulling operation is retarded by the necessity for inserting these lighter tacks at intervals during said tack pulling operation.

Various attempts have been made to devise a method of making shoes which would avoid the disadvantages above pointed out, but for one reason or another all of these attempts have been unsuccessful. No device which has been suggested and no expedient which has been proposed has been considered practicable and none of them has gone into commercial use.

The present invention consists in a method of making shoes by which many difficulties and disadvantages heretofore involved in the manufacture of shoes are eliminated or avoided, much economy is effected, and a better product is secured.

In the foregoing statement of the objects of the invention and in the following description emphasis is placed upon the fact that the invention relates especially to a method which is employed in the manufacture of shoes which are lasted in the usual manner with tacks. It will be observed, however, that with suitable appliances some of the characteristic steps of the method herein described may be practiced to advantage in the initial lasting operation. Such use of the invention is contemplated and in

so far as it is useful in lasting, it is my intention to claim the invention when thus used.

Having reference now to the accompanying drawings, which illustrate a preferred manner of carrying out the invention, and in which Figure 1 is a perspective view of a lasted shoe having the upper and insole channel lip united according to the method of this invention preparatory to the removal of the lasting tacks; Fig. 2 is a perspective view, partly in section, of the shoe shown in Fig. 1 after the lasting tacks are removed, this view showing the manner of attaching the welt, the location of the welt seam and the path of the needle of the welter during the welt attaching operation; Fig. 3 is a view illustrating the in-seam trimming operation and showing the position of the fastening, which holds the upper and channel lip together, with reference to the operation of the in-seam trimmer; Fig. 4 illustrates the method when employed with shoes having Gem insoles; and Fig. 5 illustrates the method when employed with shoes having shouldered insoles; the improvements in the art of making shoes which constitute the present invention will be described in detail.

It will be understood, however, that the various means employed and the order and nature of the steps of the method described may be modified somewhat, without departing from the invention, and that the scope of the invention should be determined by the broadest construction of the terms of the claims which is permitted by the prior art.

In accordance with a convenient mode of practicing the invention, which is now to be described with especial reference to its use in the manufacture of welt shoes, the shoe upper is first lasted over the edge of the insole and is secured in lasted position by temporary fastening means, such as the usual lasting tacks. The upper and the insole are then united by inserting through the upper and the channel lip of the insole, while the shoe is still in its original lasted condition, permanent individual fastenings. The lasting tacks or other temporary fastening means are then removed and the welt, upper and insole are united with stitches. After the stitching operation the in-seam is trimmed.

In carrying out the invention I preferably employ a fastening inserting machine which is especially constructed to facilitate the insertion of fastenings of the desired type or types in the required locations. Such a machine is disclosed in United States Letters Patent No. 1,011,592, dated December 12, 1911. The machine shown in the Letters Patent above identified comprises a nose or throat 2 constructed to enter between the lasting tacks 4 of a lasted shoe, (see Fig. 1 of the drawings), while the shoe is still in its original lasted condition, to guide the

fastenings during the inserting operation so that they will be inserted through the upper and channel lip, or rib of the insole in a line substantially parallel to the feather, or to the bottom, of the insole. The machine also preferably comprises a clenching tool 6 which may be positioned behind the channel lip, or behind the rib, or in the inner channel, as preferred, to clench the end, or the ends, of the fastening which projects through the parts to be united. It will be understood, however, that the invention is not restricted to use with the machine shown in the Letters Patent above identified, but that it may be carried out either with other machines for inserting the same or other types of fastenings, or even with the use of hand-operated tools.

The machine shown in the Letters Patent above identified is constructed to insert a staple of fine wire and a fastening of this type is the preferred fastening employed in carrying out the method, such a fastening having, in proportion to the strength of the material employed in forming it, a holding power which is superior to that of other types of fastenings. Moreover, to facilitate driving them straight and clenching them properly these staples are preferably blunt at their ends, that is, the wire which is to form the staple is severed at right angles to its length.

As above suggested, the staples or other fastenings are inserted while the shoe is in its original lasted condition with the upper secured by temporary fastening means and the number of fastenings inserted is preferably only that required to hold the upper in lasted position during the welt attaching operation. The number required will, of course, vary with the materials employed in making the shoe, with the time allowed for the upper to set in its lasted condition, and with other conditions of shoe manufacture which vary in different factories, although it will be understood that there is no fixed rule for determining the number of staples required for a shoe, both the number and the locations of the staples being substantially arbitrarily determined by the operator.

In the shoe shown in Fig. 1, eight staples have been inserted through the upper, the upper lining and the outer channel lip and clenched upon the inside of the outer channel lip to hold the forepart and shank of the upper in its lasted condition during the welt attaching operation, and, in addition, two staples have been inserted, one upon each side of the shank, to hold down the forward end of the intumed flange 7 of the counter and to cause it to be pressed into close contact with the shoulder against which the welt is sewed, these staples being also preferably inserted through the upper and outer channel lip, as well as through the interven-

ing upper lining and counter. The staples are indicated by the reference numeral 8 in the various figures, and the clenched inner ends of the staple are indicated by the numeral 10, these ends being preferably clenched by turning them both down at substantially right angles to the plane of the body of the staple.

It will be noted that, of the staples shown in Fig. 1, one is inserted upon each side of the forward end of the shank, one upon each side of the ball of the shoe, and two upon each side of the toe, one of these two being located near each of the stay tacks for the binding wire which is now commonly used in lasting the toe. When the toe is lasted in the manner shown in Fig. 1, by the use of a binding wire, this binding wire is preferably raised slightly during the staple inserting operation so that the staple is inserted substantially under the binding wire and thus holds the upper in substantially the same position in which it was held by the binding wire.

In order that the upper may be properly positioned to receive the staples, before the staple inserting operation, it is preferably forced into the angle of union between the feather of the insole and the shoulder or channel lip against which the welt is sewed in advance of the staple inserting operation, this operation being also preferably so performed that it tends to draw the upper more tightly over the edge of the last in the region where the staple is to be inserted and to press the parts to be united firmly together close to the line of insertion of the staple. In order to facilitate this operation when the machine shown in the Letters Patent above identified is employed in carrying out the method, said machine is provided with a tucking tongue 12 which forms a wall of the staple guiding throat, said tongue being moved forward to push the upper into the defined location in the angle of union between the feather and shoulder or channel lip just before the staple is inserted, this tongue also serving to guide the staple so that it is inserted in a line above the path of movement of the needle of the welter.

Whether the staple be inserted by the machine shown in the Letters Patent above identified or by hand, it is preferably so positioned that it will be above the path of the needle 14 of the welter, as shown in Fig. 2 of the drawings, and below the field of operation of the in-seam trimmer 16 as shown in Fig. 3. As above pointed out, however, these staples or other fastenings are preferably of fine wire.

A principal object of making the staples or other fastenings of fine wire is to prevent injury to the needle of the welter, or other sewing machine used in performing the succeeding stitching operation, in the event of

accidental contact, and also to prevent injury to the in-seam trimming knife or cutter in the event that the staples are misplaced during the inserting operation, whereby they come into the field of operation of said knife or cutter, or are pushed up into said field of operation during the stitching operation. In practice I have found that wire of a diameter of about 16/1000 of an inch is satisfactory and that it is preferable that the diameter of the wire should not exceed 35/1000 of an inch. Preferably the staples or other fastenings are formed of material which is softer than the sewing needle and softer than the in-seam trimming knife or cutter, although it will be apparent that the relative hardness of the wire is not so important when very fine wire is used. As to strength, the fastenings should, of course, be strong enough to exert the required holding power but should not be so strong that they cannot be easily broken in the event of accidental contact with the barb of the welter or other sewing needle.

When the shoe has been stapled as shown in Fig. 1, all of the lasting tacks are removed, together with the binding wire and the stay tacks for the same, and the welt, upper and insole are united by stitches in the usual manner, the staples, as above pointed out, being so located that they form a part of the permanent fastenings employed in making the shoe, thus not only facilitating the welt attaching operation but also insuring a more permanent attachment of the upper and insole.

It will be noted that an advantage of the method of making shoes herein described is that no tacks are in the way of the welter needle and no tacks are in the way of the welt as it is being attached, the parts being substantially free between the points at which the staples are located so that, during the welt attaching operation, the welt, upper and the channel lip or the rib of the insole may be drawn tightly together by the in-seam. When tacks are left in the shoe to hold the upper during the welt stitching operation, these tacks being driven into the last prevent the movement of the upper over the insole which is sometimes required to permit the in-seam to draw the welt and upper tight against the shoulder of the insole.

When a leather insole is employed, such as shown in Fig. 1, it is found to be preferable to insert the staples only through the upper and the outer channel lip and to clench them against the inside of the channel lip, particularly if these parts are dry at the time the staples are to be inserted. If preferred, however, the staples may be inserted through both the outer and inner channel lips and clenched in the inner channel, or they may be inserted through the be-

tween-substance and clenched in the inner channel, it being possible to insert them in the last mentioned location and at the same time have them positioned above the path of movement of the needle of the welter, and this is, of course, within the scope of the invention. When a Gem insole is employed, as shown in Fig. 4, the staple is preferably inserted through the upper and the insole rib and clenched upon the inside of the insole rib. When a shouldered insole is used, such as shown in Fig. 5, the staple will preferably be clenched upon the inside of the inner channel lip, or in the inner channel.

In all the cases herein illustrated, it will be noted that the fastenings which hold the upper in lasted condition during the welt attaching operation and which remain in the shoe as permanent fastenings do not project inside the insole, thereby presenting a further advantage over the tacks ordinarily employed which are frequently broken off by the needle of the welter during the welt attaching operation so that the points remain in the shoe after the final tack pulling operation. These tacks are frequently overlooked in the final inspection of the shoes and cause considerable annoyance and often injury to the foot of the wearer. Moreover the probability that tacks will thus be found broken off and projecting into the interior of the shoe necessitates an additional operation upon all of the shoes and thus further increases the cost of manufacture of the shoes.

In the following claims the expression "channel lip" should be construed broadly, wherever the context admits of or requires such a construction, since, as above pointed out, the invention is not restricted to use with shoes having insoles of the ordinary type, that is, leather insoles having outer and inner channels and outer and inner channel lips, but the invention may be employed to great advantage in the manufacture of shoes having other types of insoles, such, for example, as Gem insoles, or shouldered insoles. Moreover, although the method has been described as a method of making welt shoes and the advantages of the method are most marked when it is applied to the manufacture of such shoes, it will be apparent that the method can be practiced also in the manufacture of shoes of other types, for example turn shoes, with a realization of many of the important advantages of the invention. The claims should therefore be construed accordingly.

The novel shoe produced by the method of shoe manufacture herein disclosed has been made the subject-matter of a co-pending application of Wilfred J. Drey, Serial No. 597,054, filed December 13, 1910.

Having described my invention, what I

claim as new and desire to secure by Letters Patent of the United States is:

1. That improvement in the art of making shoes which consists in lasting the upper over the edge of the sole and securing it in lasted position by temporary fastening means, permanently uniting the upper and the sole by inserting individual fastenings through the upper and channel lip of the sole while the shoe is in its original lasted condition, removing the temporary fastening means, and then uniting the upper and sole with stitches.

2. That improvement in the art of making welt shoes which consists in lasting the upper over the insole, securing the upper in lasted position by tacks, pressing the upper and channel lip together at points located between the lasting tacks, uniting these parts by inserting permanent fastenings through said parts while so pressed together, removing the lasting tacks and then uniting the welt, upper and insole with stitches.

3. That improvement in the art of making welt shoes which consists in lasting the upper over the insole and securing the upper in lasted position by tacks in substantially the usual manner, permanently uniting the upper and the outer channel lip while the shoe is in its original lasted condition by inserting fastenings through these parts in location outside the path of movement of the needle of the welter and at separated points between the lasting tacks, removing the lasting tacks and then uniting the welt, upper and insole with stitches.

4. That improvement in the art of making welt shoes which consists in lasting the upper over the edge of the insole and securing it in lasted position by tacks, permanently uniting the upper and insole by permanent fastenings inserted at separated points located between the lasting tacks and outside the path of movement of the needle of the welter, which fastenings remain as permanent parts of the shoe, removing the lasting tacks and then uniting the welt, upper and insole with stitches.

5. That improvement in the art of making welt shoes which consists in lasting the upper over the insole, confining the upper in lasted position by tacks driven through the body of the insole, uniting the upper and the channel lip while the shoe is in its original lasted condition by inserting permanent metallic fastenings through these parts at separated points located between the lasting tacks, above the body of the insole and below the insole trimming line, then removing the lasting tacks and uniting the welt, upper and insole with stitches.

6. That improvement in the art of making welt shoes which consists in lasting the upper over the edge of the insole, securing it

in lasted position by means of tacks and a toe binding wire, inserting permanent metallic fastenings through the upper and the channel lip of the insole at separated points
5 between the lasting tacks, lifting the toe binding wire and inserting other fastenings through the aforementioned parts in the region of the toe and substantially beneath the toe binding wire, then removing the
10 lasting tacks and the toe binding wire and uniting the welt, upper and insole with stitches.

7. That improvement in the art of making welt shoes which consists in lasting the
15 upper over the edge of the insole and securing it in lasted position by temporary fastenings forcing the upper and intervening parts into the angle of union between the feather of the insole and the shoulder against
20 which the welt is stitched, while the shoe is in its original lasted condition, uniting these parts by inserting separate metallic permanent fastenings through the upper and the channel lip and through the inter-
25 vening parts, removing the temporary fastenings and then uniting the welt, upper and insole with stitches.

8. That improvement in the art of making
30 welt shoes which consists in pressing the upper and channel lip of the insole into close contact with each other, permanently uniting these parts, while in this relation, by inserting therethrough and clenching a

staple of fine wire and then uniting the welt, upper and insole with stitches.

9. That improvement in the art of making
35 welt shoes which comprises the step-by-step operation of forcing the upper into the angle of union between the lip and feather of an insole at a plurality of arbitrarily
40 selected points, irregularly spaced apart, uniting the upper to the insole at each of the said points by inserting through the upper and the lip or rib of the insole an individual permanent fastening that will not
45 interfere with the operation of the welter needle or with the inseam trimming operation, and subsequently attaching a welt to the upper and insole by stitching.

10. That improvement in the art of mak-
50 ing shoes which consists in lasting the upper over the sole, securing the upper in lasted position by tacks, permanently uniting the upper and sole by inserting staples of fine wire through the upper and channel
55 lip at points located between the lasting tacks, removing the lasting tacks, uniting the upper and sole with stitches, and then trimming the seam formed by the stitches.

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

WILFRED J. DREY.

Witnesses:

ROBERT MORRIS ZIEGLER,
H. DORSEY SPENCER.