METHOD OF PREMARKING SHOE VAMPS PREPARATORY TO HAND STITCHING

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This application is a division of application Serial No. 125,174, filed July 19, 1961, and entitled Shoe Machinery, which has matured into Patent No. 3,132,361.

This invention relates to the manufacture of shoes and it is more particularly directed to new and improved methods of premarking shoe vamps preparatory to hand stitching. Therefore, hand stitching, such as quantone stitching, applied to one-piece shoe vamps, was accomplished by highly skilled workers. These workers were expected to have the ability to complete their stitching expertly. For example, in quantone stitching, the skilled worker, by sight, judge the point on the vamp at which stitch quantone was started, i.e., the needles or awls were inserted in the vamp and the point at which the hidden needles or awls were withdrawn from the vamp upon completion of each stitch. It will be appreciated that the evenness of the row of quantone stitches depends upon the proper location of each stitch and the relationship of adjacent stitches to one another. Accordingly, uniformity, evenness, and the overall appearance of the shoe depend upon competency, experience, and efficiency of the stitcher. If an error is made by the stitcher in judging the proper location of the start or completion of a stitch, the needles or awls must either be withdrawn from the vamp, if the stitch had not been completed, and the stitch restarted, or, if the stitch had been completed, the stitch thread must be removed from the vamp and the stitch restarted. In either event, damage to the vamp occurs with the attendant possibility of marring the appearance of the shoe to such an extent that ultimately the shoe may be rejected as unsuitable for this reason. Thus, the quantone stitching operation is time-consuming, and the production time of the stitcher is even further reduced by the existence of the above-noted possibilities.

With the present invention, the problems and difficulties of the prior art are substantially overcome by providing a quantone marking device which accurately scores the vamp of the shoe for quantone stitching and which, in one simple operation, provides a plurality of spaced marks on a shoe vamp in true alignment, each of which marks serves as a guide line for the start of each quantone stitch. It is therefore an object of the present invention to minimize the occurrence of the human error in hand stitching of shoe vamps.

Another object of the present invention is to provide new and improved methods for accurately marking shoe vamps for hand stitching.

Still another object of the present invention is to provide a new and improved method for applying carrying a plurality of spaced markers for accurately scoring shoe vamps for quantone stitching.

A further object of the present invention is to provide a method for marking shoe vamps with a plurality of marks in true alignment to facilitate quantone stitching of the vamp.

A still further object of the present invention is to provide a new and improved method in which existing lasting equipment is adapted for marking shoe vamps with quantone stitch guide lines.

Another object of the present invention is to provide a new and improved method for marking quantone stitch marks on shoe vamps employing apparatus which is simple and compact in construction and efficient and high-speed in operation.

Yet another object of the present invention is to provide an improved method for marking shoe vamps for quantone stitching.

The above and further objects are realized in accordance with the present invention by providing a rotatable head carrying marking teeth thereon which cooperate with a rotatable shoe support member to provide a shoe vamp with a plurality of spaced markings in true alignment to facilitate initiation of each stitch required in hand stitching so that, upon completion of the stitching, the stitches are in substantially true alignment and add to the pleasing and uniform visual appearance of the vamp. In accordance with another aspect of this invention, a rotatable marking head may be provided which marks the shoe vamp with not only guide lines for start of stitches, but also guide lines for termination of each stitch.

These and other objects, features, and advantages of the present invention will become readily apparent from a careful consideration of the following detailed description, when considered in conjunction with the accompanying drawings illustrating preferred embodiments of the present invention and wherein like reference numerals and characters refer to like and corresponding parts throughout the several views, and wherein:

FIG. 1 is a side elevational view of a shoe provided with quantone stitching which may be premarked in accordance with the teaching of the present invention;

FIG. 2 is a fragmentary side elevational view of an edge trimming device adapted for quantone stitch marking;

FIG. 3 is a side elevational view, in partial section, of apparatus constructed in accordance with the present invention for marking shoe vamps with quantone stitch guide lines;

FIG. 4 is a top elevational view of the apparatus of FIG. 2 illustrating the ease of operation of the apparatus;

FIG. 5 is a side elevational view of the marking wheel of the apparatus of FIG. 2;

FIG. 6 is an enlarged fragmentary view in said elevation of another marking wheel adapted to mark stitch start and withdrawal locations on a shoe vamp; and

FIG. 7 is a fragmentary view in vertical section of the wheel of FIG. 6 illustrating the marking edges of the wheel.

Referring now to the drawings and particularly to FIG. 1, there is shown a shoe, generally indicated by the numeral 1, including a vamp 2, a heel 3, and an outer sole 4. The shoe 1 is of generally conventional construction and the vamp 2 has a quantone stitching 5 extending around the forward part of the shoe a short distance up from the sole. In quantone stitching, the stitcher would insert needles or awls into the vamp for each stitch in such a manner that threads would cross beneath the leather and, upon completion of the stitch, the stitcher would draw both threads outwardly to bulge the leather outwardly and present a raised portion between the stitches.

Generally, the quantone stitch is hand sewn around the periphery of the vamp by an experienced stitcher who must choose, by eye, the point of initiation and termination of each stitch so that, when completed, the quantone stitching presents a raised portion 2a on the vamp which, between the stitches, is of generally uniform width. To present the raised portion 2a as being of uniform width, the stitcher must select the point of initiation of each stitch or introduction of the needles or awls into the shoe vamp, as well as the point of termination of each stitch or withdrawal of the needles or awls from the shoe vamp in such a manner that the raised portion of leather be-
between each stitch appears uniform with respect to every other stitch.

Should the operator make an error in judgment in starting a stitch, the needles or awls must be withdrawn and the stitcher restored. The possibility of marring the appearance of the vamp.

A feature of the present invention resides in the elimination of the possibility of human error in determining the point of starting and withdrawal of the needles or awls by the stitcher for each stitch and the alignment of each stitch relative to every other stitch.

With the present invention, the vamp 2 of the shoe 1 is premarker or prescored with a line of spaced guide marks which the stitcher need only follow for start of each stitch, or, alternatively, start and termination of each stitch, as is more fully discussed hereinafter. The quan tone stitching operation usually occurs after the conventional ribbed strip has been applied to the bottom of the insole, and after the insole has been assembled to the vamp, but before the outsole has been assembled to the shoe. The reason, the extraneous marks in the present invention are shown adapted to mark the shoe vamp with the quan tone guide lines after the vamp has been attached to the insole and before the outsole has been attached. Marking of the vamp occurs after the shoe vamp has been contoured and preferably is sewn to the insole. It would be impossible to premark the vamp with stitch guide lines when the vamp was a flat blank, prior to assembly with the insole, because the subsequent operations performed on the vamp include that of contouring it for connection to the insole which would cause relative displacement of each stitch mark to the other stitch marks and render such premarking useless.

In the embodiment of apparatus for marking shoe vamps for quan tone stitching thereof appearing in FIG. 2, a conventional edge trimming machine, generally indicated by the numeral 6, is adapted for marking stitch lines. The machine 6 includes a base 7 mounted on a plurality of legs 8 and supporting a frame 9. The frame 9 supports a bracket 10 which includes a housing 11 which is bored, as indicated at 12, to slidably receive a rod 13 carrying a radially extending and adjustable shoe support arm 14.

The edge trimming machine 6 is adapted for marking stitch lines by the simple expedient of severing the shaft 15 of the portion, such as that indicated at 16, to provide a rod 17 carrying at its outer end a freely rotatable marking wheel 18.

The marking wheel 18 is shown in the shoe marking position by the solid lines in FIG. 2. It will be appreciated that to remove a shoe or place a shoe on the shoe support arm 14, either the shoe support arm 14 or the wheel 18 must be moved from the shoe marking position, and, for this purpose, the wheel rod 17 is mounted to the frame 9 in such a manner that the wheel 18 may be pivoted vertically to the position shown by the dotted lines in FIG. 2. For pivoting the rod 17, the rod 17 may be rotated by a laterally extending pin 19 to an arm 20 which is fulcrumed on a set screw 21 to the frame 9. A chain 22 is connected, as indicated at 23, to the arm 20 and, as indicated at 24, to a foot pedal 25 pivoted as at 26 to a bracket 27 connected to the floor 28 of the room in which the machine 6 is employed. A compression spring 29 urges the foot pedal 25 to the marking position, and, by operator, by depressing the foot pedal 25 may pivot the arm 20 and wheel-carrying rod 17 vertically upward, as shown by the dotted lines in FIG. 2, to position the wheel 18 out of the marking position.

Operation of the marking apparatus of FIG. 2 is controlled by the action of a pair of opposed compression springs 30 and 31. The compression spring 30 is connected at one end 32 to the arm 20 and at its opposite end 33 to the frame 9. The spring 31 is connected to the pin 19 at one end and to an eyelet 34 secured, as indicated at 35, to the frame bracket 16. Thus, when the operator presses the foot pedal 25 to pivot the wheel 18 it is elevated upward, and the spring 31 expands to provide a smooth movement to the arm 20. Similarly, as the wheel 18 is returned or moved to the marking position, the spring 31 compresses and the spring 30 expands. The force required to provide a positive marking pressure in the leather of the vamp 2 by the marking wheel 18 is provided by a compression spring 36 secured to the bar 17 and to the eyelet 34.

The quan tone stitching marking wheel 18 is provided with a plurality of spaced radial lugs or teeth 37, each of which preferably tapers in cross-section to a leading edge 44a which is adapted to contact and score the leather of the shoe vamp 2 in suitably spaced locations. The wheel 18 is provided with a hub 38 which slip-fits on the rod 17, and the wheel 18 is rotatably secured to the rod 17 by a set screw 39 threaded in the end of the rod 17 and bearing against a washer 40 which prevents misalignment of the wheel during operation.

To support the proper marking position with the teeth 37a of the wheel 37 firmly pressed into the vamp of the shoe, the support arm 14 carried at its end adjacent the marking wheel 37 a rotatable head or roller 41 having a flat surface 42 adapted to engage the outer surface 43 of the insole 44. The roller 16 is frusto-conical in configuration and the flared side surface 45 thereof rolls on the inclined inner surface of the ribbed strip 46 secured to the insole 44 when the operator, with a hand inside the shoe, causes travel of the shoe along on the support roller 41. It will be observed that the support arm 14 extends through the rod 13 and is maintained in the desired marking position by a set screw 47 which is threaded into the end of the support rod 13 and which bears against the support arm 14. Vertical adjustment of the arm 14 is thereby provided so that the pressure on the shoe vamp applied by the marking wheel 18 may vary depending upon the type of shoe to be marked.

The distance between the location on the vamp where the guide marks 48 are to be marked and the insole 46 may be varied by adjusting the position of the support rod 13 either to the right or left, as viewed in FIG. 2, and, a set screw 49 may be provided for maintaining the support rod 13 in the adjusted position.

With the adjustable support rod 13, adjustable support arm 14, and roller 41 cooperating with the marking wheel 18, the shoe 1 may be adjusted so that the wheel teeth 37 are firmly pressed in the shoe vamp and the distance between the insole and the stitch marks 48 may be varied, depending upon the type of shoe to be marked. A feature of the present invention resides in the employment of apparatus, such as that disclosed, which will mark each shoe in a pair of shoes with the guide lines a fixed distance from the insole 46 so that, upon completion of the quan tone stitching, the stitching is uniform and a fixed distance from the insole on each shoe in each pair of shoes.

The support arm 14 is angled, as indicated at 14a, to prevent the shoe insole from binding on the support rod 13 as the operator rotates the shoe while marking the guide lines 48.

In operation, the operator depresses the foot pedal 25 and vertically pivots the rod 17 and the wheel 18 from the marking position. The operator then seats the shoe 1 on the roller 41. The operator then removes the foot from the pedal 25 and the wheel 18 pivots to the marking position shown in FIG. 2 with the wheel pressed into the leather of the vamp 2. Next, the operator rotates the shoe on the support roller 41 in a plane perpendicular to the plane of the rod 17 and the edges 37a of the teeth 37 of the wheel 18 score the quan tone stitch guide marks 48 on the vamp 2, which marks extend parallel with the insole.
46. It will be appreciated that the guide line presented by the vamp stitch marks 48 is a fixed distance from the insole 46 and extends parallel therewith. Thereafter, the stitcher can use these guide marks for the quantone stitches.

Depending upon the cross-sectional width of the shoe, the support rod 13 may be adjusted to move either to the right or left, as viewed in FIG. 2, so that, for each size of shoe, the wheel teeth 37 may press into the vamp in the correct location relative to the insole 46 and mark the vamp area where required. After the shoe has been so marked, the operator depresses the foot pedal again and swings the marking wheel 18 from the marking position and removes the shoe from the roller 41. The operator then seats another shoe on the roller 41 and swings the wheel 18 to the marking position to start a new marking operation.

Thus, existing obsolete edge trimming machines may be cheaply converted to marking devices in accordance with the present invention.

In the embodiment of apparatus found useful in the practice of the present invention appearing in FIGS. 3 and 4, the base 7 supports a two-piece frame for the marking wheel which includes a support 51 and a horizontally rotatable housing 52. The housing 52 is maintained in rotatable relation with the support 51 by a bolt 53 which is threaded to the support 51. The housing 52 receives a rod 54 which is secured thereto by a set screw 55, and the rotatable wheel 18 is carried at the end of the rod 54. The housing 52 may be horizontally rotated from the shoe marking position shown in solid lines in FIG. 3 to the position shown by the dotted lines by means of a handle 56 carried by the rod 54. A spring detent arrangement 57 is employed to maintain or lock the housing 52 and rod 54 in the shoe marking position. The spring detent arrangement 57 is of conventional construction and the detent 58 thereof seats in a depression 59 formed in the support 51 when the shaft is in the marking position. The detent is forced from the groove 59 as the rod 54 is moved from the marking position to the position shown by the dotted lines in FIG. 4.

The operation of the apparatus appearing in FIGS. 3 and 4 is similar to the operation of the apparatus appearing in FIG. 2 with the noted exceptions that the marking wheel is swung horizontally from the marking position and a handle 56 rather than a foot pedal 25 is employed for actuating movement of the wheel 18 to and from the marking position.

If desired, the marking wheel 18, as appears in FIGS. 6 and 7, may be provided with marking teeth 60 having tapered edges 61 for providing spaced markings on the shoe vamp which serve as guides for the initiation or start of each stitch, and, in addition, may be provided with marking teeth 62 having tapered edges 63 for scoring the vamp in locations extending parallel with the spaces 64 between the teeth 60 employed for the start of each stitch. Thus, a guide line is provided for withdrawal of the needles or awls by the stitcher and, in this manner, the production time of the stitcher may be increased since the stitcher is provided not only with guide lines for the start of each stitch, but also with guide lines for the termination of each stitch.

Although various minor modifications of the present invention will become readily apparent to those versed in the art, it should be understood that it is desired to embody within the scope of the patent warranted hereon all such embodiments as reasonably and properly come within the scope of the contribution to the art hereby made.

What is claimed as the invention is:

1. In the method of marking shoe vamps with guide marks for quantone stitching, the steps comprising: attaching the vamp to a shoe insole, supporting the vamp in pressure contact with a freely rotatable scoring wheel and rotating the shoe to mark the vamp with said guide marks.

2. In the method of marking shoe vamps with guide marks for quantone stitching, the steps comprising: attaching the vamp to a shoe insole having an outwardly extending peripheral strip, supporting said strip on a freely rotatable roller with the vamp in pressure contact with a freely rotatable scoring wheel having spaced marking teeth thereon, and rotating the shoe around said roller, with said strip engaging said roller during the rotation of said shoe, to mark the vamp with said guide marks.

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