Oct. 8, 1946. W. A. CRAWFORD 2,408,738

MOCCASIN SEWING MACHINE

Filed June 14, 1945

Fig. 1

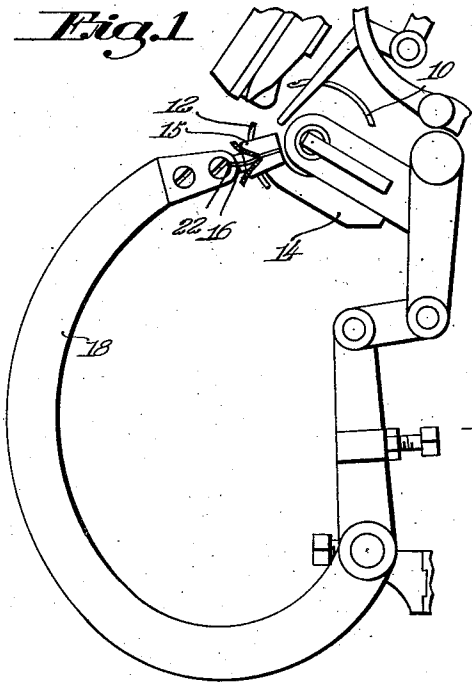


Fig. 2

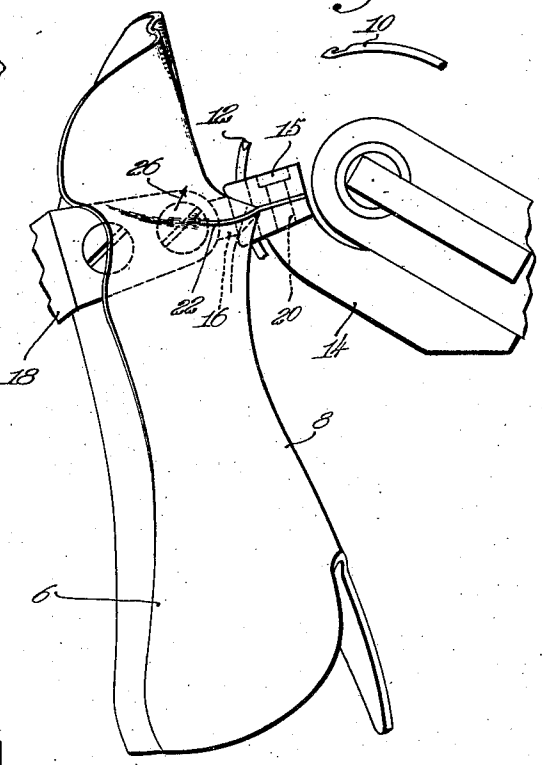


Fig. 3

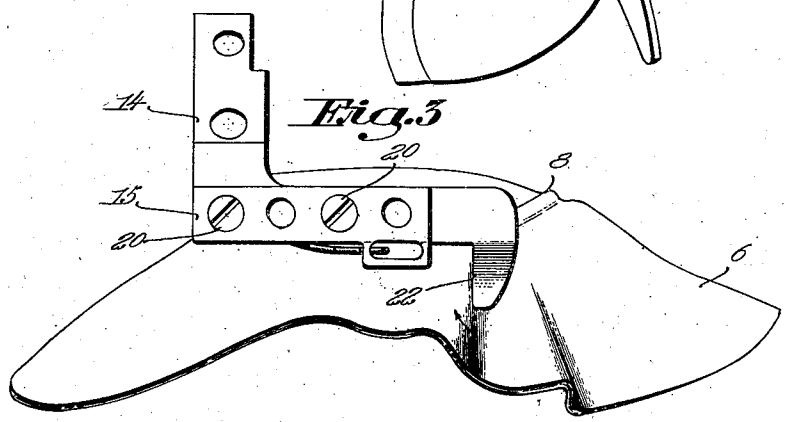
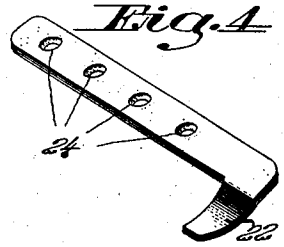


Fig. 4



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MOCCASIN SEWING MACHINE

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2 Claims. (Cl. 112—60)

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The present invention relates to improvements in moccasin seam sewing machines more particularly intended for operation on one-piece shoe uppers to insert a U-shaped seam similar to that utilized to join together the top piece or tongue and the side piece or vamp of a moccasin type shoe upper.

An example of a machine which may be employed satisfactorily to sew a moccasin seam of this nature is disclosed in United States Letters Patent No. 1,975,914, granted October 9, 1934, and No. 2,221,320, granted November 12, 1940, both upon application of Fred Ashworth, having a work support provided with re-entrant work engaging surfaces disposed at an angle to each other and extending in the direction of work feed to hold the parts of the upper in proper relationship during sewing. This type of machine also is employed to advantage in the formation of a moccasin seam for a one-piece shoe upper where the seam is merely for the purpose of ornamentation and simulation of a true moccasin seam. For sewing a one-piece shoe upper with a moccasin type seam, no substantial changes or additions are required in the machine of the patents referred to, the upper being presented to the machine in such a way that a moccasin seam simulated ridge is raised automatically by the shape of the work supporting and clamping parts and retained permanently by the tension of the stitches inserted.

A one-piece shoe upper being cut from a single sheet of stock necessarily resists conformity to the angularly disposed work engaging surfaces of the work support in this type of machine, particularly where the seam has its greatest curvature at the toe portion of the upper. When the curved toe portion of the seam is reached in presenting the upper to a machine similar to that of the patents, it is frequently necessary to manipulate the upper and to hold those portions of the upper manually as they enter the re-entrant angle of the work support to obtain a smooth, uniform feeding action without puckering effects or tendencies to throw the upper out of the proper path of movement. Manipulating the upper in this way requires the exercise of special skill on the part of the operator and is more or less difficult as the stiffness or resiliency in the stock in the upper varies.

The object of the present invention is to avoid the necessity of manipulating a one-piece upper while presenting it to a machine intended to sew a moccasin seam and provided with a work support having work engaging surfaces disposed to

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form a re-entrant angle within which the upper moves during the sewing operations, and generally to improve the construction and mode of operation of a moccasin seam sewing machine. The illustrated form of the machine, constructed to attain this object, comprises a work support having work engaging surfaces disposed with relation to each other and in the direction of work feed to form a re-entrant angle and an internal presser having similarly shaped work engaging surfaces complemental to those of the work support mounted to operate toward and from the work support to form a permanent moccasin seam simulating ridge or fold, in which machine there is provided a stationary finger engaging the upper along the line of the fold in advance of the point of entry of the upper between the work engaging surfaces of the work support to deflect a portion of the upper outside the seam line from the position which it naturally assumes into one conforming more closely with the angle of the work engaging surfaces as the upper is fed. With the use of a finger properly arranged with relation to the work engaging surfaces of the work support, the deflection of the upper will be uniform regardless of the quality of the work being operated upon without the necessity for the operator to manipulate the upper or to give special attention aside from properly presenting it to the machine while sewing the curved portion of the seam. In its preferred form, the work support is constructed in two parts and the deflecting finger is in the form of a plate having its deflecting portion of angular shape extending in advance of and forwardly of the machine with respect to the point of entry for the upper into the angle of the work support.

These and other features of the invention are embodied in the devices, combinations and arrangements of parts hereinafter described and claimed, the advantages of which will readily be understood from the following description taken in connection with the particular drawing, in which

Fig. 1 is a view in side elevation looking from the right of so much of a moccasin seam sewing machine as is necessary for an understanding of the features of the present invention;

Fig. 2 is a detailed view on an enlarged scale of the work support, stitch forming devices and presser of the machine illustrated in Fig. 1, taken during insertion of a moccasin type seam in a one-piece shoe upper;

Fig. 3 is a plan view of the parts illustrated in Fig. 2; and

Fig. 4 is a detailed perspective view of the upper deflecting finger embodying the present invention.

The machine illustrated in the drawings in its construction and mode of operation is similar to that of Patent No. 1,975,914 above referred to and is primarily intended to operate on bevel edged moccasin parts including a top piece or tongue and a vamp or side piece of a shoe upper previously assembled with cement as a temporary connecting agent. The machine is also well adapted in the use of sewing a moccasin seam and one-piece shoe upper indicated in the drawing at 6 to raise a permanent U-shaped ridge about the toe of the upper both for ornamental as well as for structural reinforcing purposes.

To assist in guiding during formation of a moccasin seam in a one-piece shoe upper, it heretofore has been the practice to trace along the grain surface a U-shaped line to be followed in inserting the seam. When particularly heavy stock is employed, the upper is clamped between heated dies which form a temporary ridge of the same shape so that less effort is required in bringing the upper in conformity to the angle of the work engaging surfaces of the work support during sewing. The upper 6, illustrated in the drawing, has been preformed in this way with a temporary U-shaped ridge 8 and, in forming this ridge, the upper is stretched somewhat along its central portion resulting in a shape which has a tendency to resist the action of the machine while inserting stitches.

The illustrated machine is provided with a curved hook needle 10, a curved work penetrating and feeding awl 12 and other lockstitch forming devices of the usual construction and mode of operation. The work is fed through the machine by the movement of the awl while engaging the work toward a position of alinement with the needle and, between feeding movements, the upper is clamped between a work support 14 and a presser 16 which is secured to the upper end of a horn 18. The cooperating work engaging surfaces of the work support and presser extend in the direction of feed and are disposed with relation to each other to form an angle, the surfaces on the presser being complemental to those on the work support. The work support has two parts with a reentrant angle between them one of which is already designated by the number 14 and the other of which, indicated at 15, is secured to the part 14 by a pair of spaced screws 20. A continuation of the plane of division between the parts 14 and 15 intersects the angle formed by the re-entrant work engaging surfaces thereof.

In presenting a one-piece shoe upper to the machine, the seam is started at one side of the toe portion of the upper where the ridge 8 or other marking line is relatively straight and the sewing progresses ordinarily without difficulty until the curved toe end of the seam is reached. When the toe end of the seam is reached, substantially half of the seam has been inserted, and the tension of the thread in the stitches causes the stock along the seam to be drawn together somewhat resulting in an accumulation of fullness along the edge of the upper in advance of the sewing point. Unless precautions are taken to hold the edge of the upper in as smoothly curved condition as possible, overlapping folds will be formed and there is a likelihood that a doubled-over section of the upper will be carried into the angle of the work support and sewed in this relationship. Thus a faulty seam may result. Even if stitches are not inserted

through a doubled-over portion of the upper, the accumulation of fullness in advance of the sewing point may retard the feed of the work to some extent, thus causing variation in length of stitches and other undesirable results. To avoid these difficulties, it is ordinarily necessary for the operator, in addition to taking the precautions in guiding the upper along the curved part of the seam, to manipulate the edge of the upper carefully while sewing about its toe portion and, unless the manipulation is carefully performed, an unsightly appearance will be given the completed upper.

To avoid the necessity of exercising special skill on the part of the operator in addition to the need of guiding a one-piece shoe upper in a machine of this type during insertion of a moccasin type seam and, according to the present invention, the work support 14 is provided with an upper deflecting finger 22 arranged to engage the upper sufficiently in advance of its point of entry within the angle formed by the work engaging surfaces of the work support, to reduce the fullness at a position remote from the line of the seam through and along the edge of the upper at the toe portion thereof and to bring the upper into general conformity with the angle of the work support. The work engaging end of the upper deflecting finger is curved to present a convex surface, thus avoiding sharp edges which might resist the movement of the upper during feed or cause injury to the finished surface of the upper.

The upper deflecting finger 22 consists of a sheet metal plate with a shank disposed at an angle to the forwardly extending upper engaging portion and provided with suitable perforations 23 so that it may be clamped between the parts 14 and 15 of the work support, the screws 20 passing through certain of the perforations. When secured in position, the upper engaging end of the finger extends forwardly and in advance of the sewing point in the machine and acts upon the upper at a position where the greatest fullness in the upper naturally occurs while sewing about the curved toe portion of the seam. In this way, the fullness at the edge of the upper is uniformly reduced about the toe portion, the upper moving during feed somewhat in the direction of the arrow 26 to redistribute the fullness as the sewing progresses. Once having finished the curved portion of the seam, the sewing enters a substantially straight portion where the curvature and accumulation of fullness decreases along the straight portion of the seam. Therefore, the upper deflecting finger has little or no effect on the sewing operations along this portion of the seam and does not otherwise interfere with the presentation of the upper to the stitch forming devices.

The nature and scope of the invention having been indicated and a construction embodying the invention having been specifically described, what is claimed is:

1. A machine for sewing a U-shaped moccasin seam in a one-piece shoe upper, having a work support provided with work engaging surfaces disposed with relation to each other and extending in the direction of work feed to form a re-entrant angle, an internal presser formed with angularly disposed work engaging surfaces to force the upper into the angle between the work engaging surfaces of the work support, and stitch forming and work feeding devices including a needle moving in a path intersecting the material of the

upper along that portion within the angle of the work engaging surfaces on the work support and acting progressively along the line of the seam to form a permanent fold in the upper, in combination with a finger engaging the upper along the line of the fold in advance of the point of entry of the upper between the work engaging surfaces of the work support, to deflect a portion of the upper outside the seam line and to bring that portion of the upper into general conformity with the angle of the work engaging surfaces of the work support as the upper is fed.

2. A machine for sewing a U-shaped moccasin seam in a one-piece shoe upper having a two-part work support formed with work engaging surfaces disposed with relation to each other and extending in the direction of work feed to form a re-entrant angle, an internal presser formed

with angularly disposed work engaging surfaces to force the upper into the angle between the work engaging surfaces on the work support, and stitch forming and work feeding devices including a needle moving in a path intersecting the material of the upper along that portion within the angle of the work engaging surfaces on the work support and acting progressively along the line of the seam to form a permanent fold in the upper, in combination with an angular plate with its shank secured between the parts of the work support and with a finger portion projecting to a position in advance of the point of entry of the upper within the angle of the work support for deflecting a portion of the upper outside the seam line to bring it into general conformity with the angle of the work support as the upper is fed.

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