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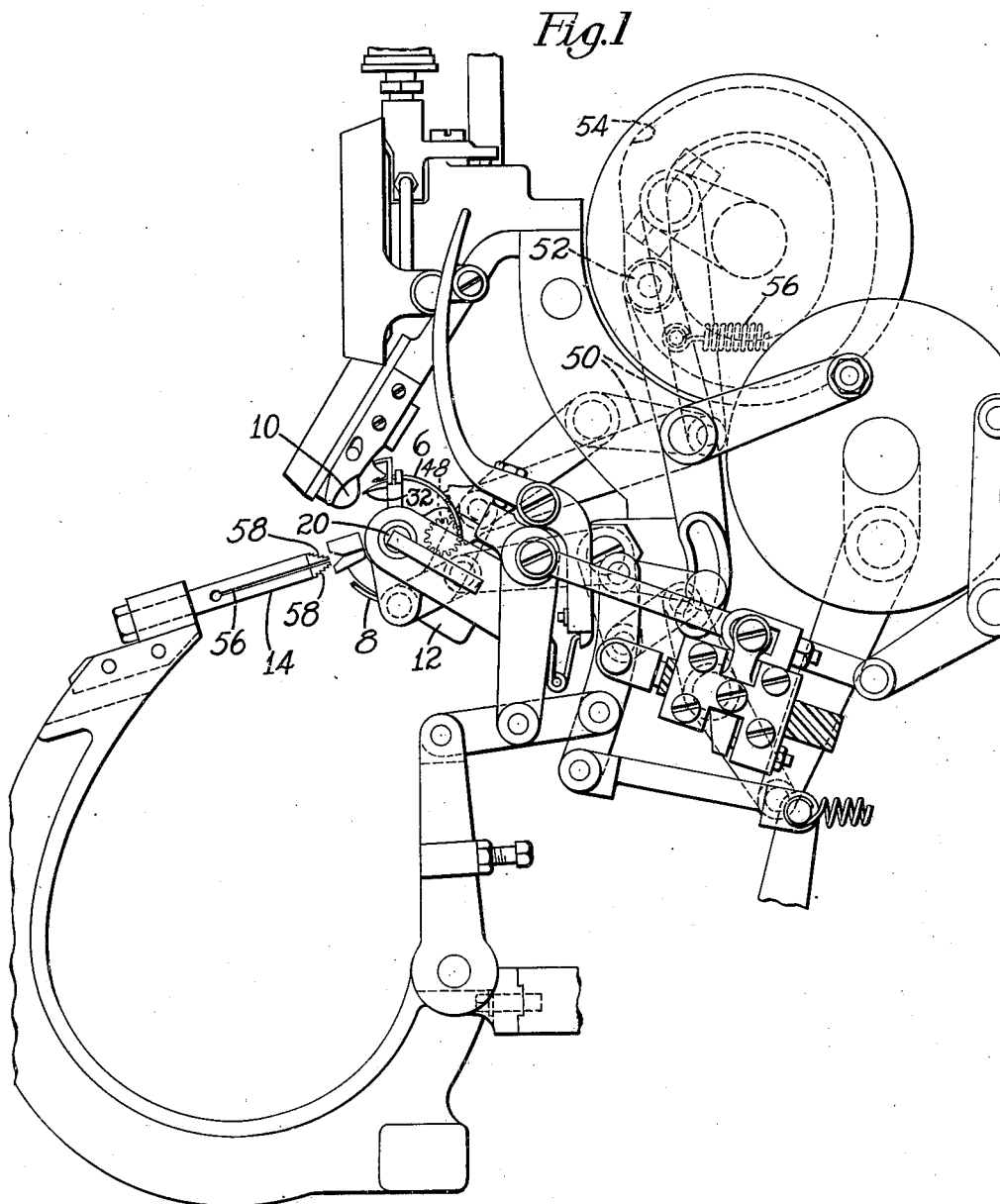
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2,487,918

MOCCASIN SEAM SEWING AND TRIMMING MACHINE

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2 Sheets-Sheet 1



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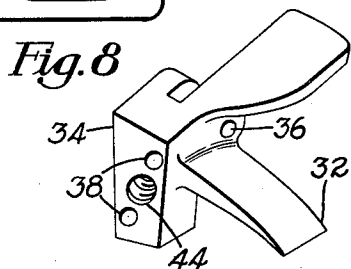
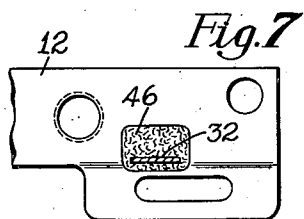
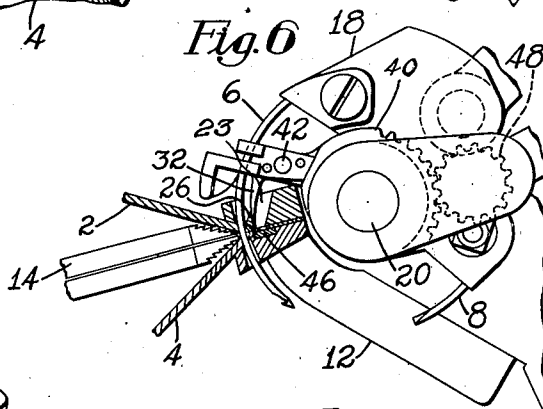
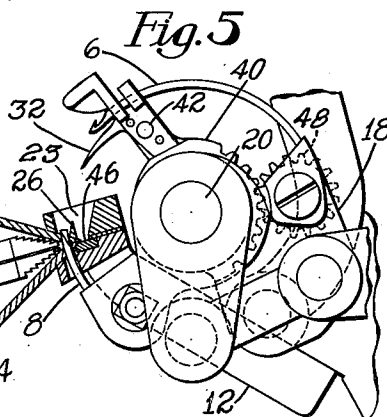
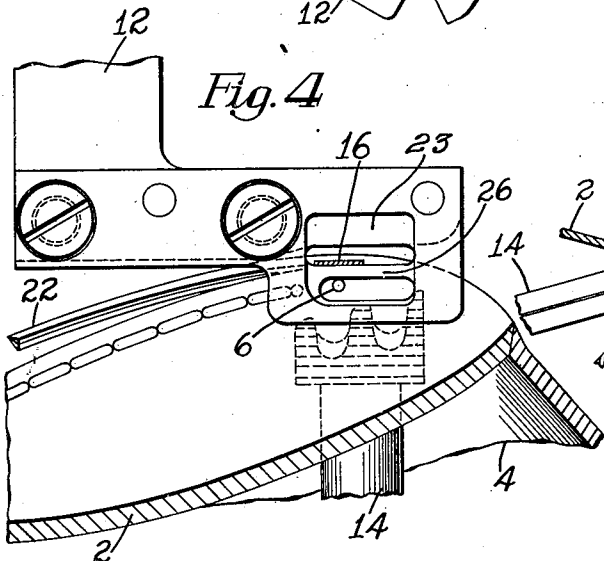
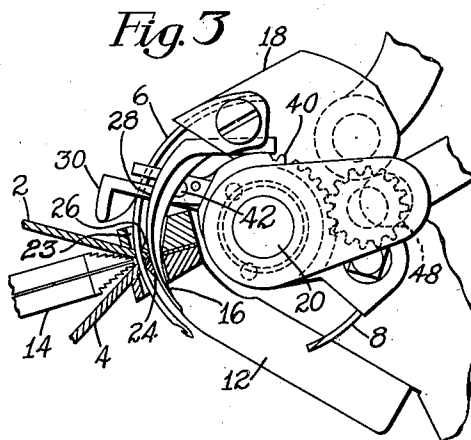
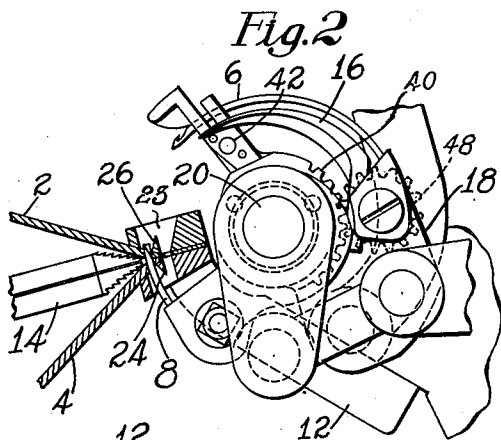
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MOCCASIN SEAM SEWING AND TRIMMING MACHINE

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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

2,487,918

MOCCASIN SEAM SEWING AND TRIMMING
MACHINEFred Ashworth, Wenham, Mass., assignor to
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4 Claims. (Cl. 112—123)

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The present invention relates to machines for sewing together and trimming the edges of the top piece or tongue and the side piece or vamp of a moccasin or imitation moccasin type shoe and is hereinafter described as embodied in an improvement over the machine disclosed in United States Letters Patent No. 2,284,514, granted May 26, 1942, on application of Joseph A. Cordeau and No. 2,387,813, granted October 30, 1945, on application of Francis R. Speight.

In the machine of the patents referred to the pieces of a moccasin type shoe upper are sewed and simultaneously trimmed by a stationary knife clamped between the separate parts of a work support provided for guiding the moccasin pieces externally during sewing. In order to insure smooth and effective trimming action of the knife it must be kept well sharpened and in proper alinement and adjustment with relation to the other parts of the machine. If the moccasin pieces are composed of extremely soft flexible material it is difficult to obtain effective trimming action, the moccasin pieces engaged by the edge of the knife frequently being deflected out of line with the knife without being trimmed properly.

An object of the present invention is to avoid this difficulty and to enable a uniform trimming operation to be performed simultaneously with the sewing of a moccasin type seam, in which fine adjustment and careful sharpening of the trimming knife are unnecessary. A further object is to improve the construction and mode of operation of a moccasin seam sewing and trimming machine to render the machine more effective for the purposes intended and to enable the machine to produce results and effects not obtainable with the machine disclosed in the patents referred to.

To these ends the machine of the present invention has stitch forming and work feeding devices together with a work support and presser of the usual construction provided with work engaging surfaces disposed at an angle to each other, the presser acting to compress the work within the angle of the work support, across which angle the needle moves and within which there is provided a trimming knife, the knife having imparted to it a cutting movement for insuring complete severance of a strip from the extreme edges of the moccasin pieces in such a way that there is little or no opportunity for the edges of the moccasin pieces to be deflected out of the path of the knife. Accordingly, the trimming action is less dependent upon the use

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of a well-sharpened knife and a uniform result may be obtained under a wider range of conditions and with softer material than is possible with a stationary knife. Preferably, the knife is constructed to operate with a chopping action on the moccasin edges. In the illustrated form of this feature the knife is arranged to act against a chopping block mounted in 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 accompanying drawings in which,

Fig. 1 is a view in side elevation looking from the right of the operating parts of a moccasin seam sewing and trimming machine embodying the features of the present invention;

Fig. 2 is a detail view in side elevation on an enlarged scale in partial section of the work support, presser and stitch forming devices of a machine similar to that illustrated in Fig. 1 but of modified construction, taken in the positions of the parts assumed during the feeding movement of the work;

Fig. 3 is a similar view of the same parts illustrating the shearing action of the trimming knife in the machine of Fig. 2;

Fig. 4 is a plan view of the parts illustrated in Figs. 2 and 3;

Fig. 5 is a sectional view in side elevation similar to that of Figs. 2 and 3 of some of the parts including the form of trimming knife illustrated in Fig. 1, taken during the feeding movement of the moccasin pieces in the machine;

Fig. 6 is a similar view of the parts illustrated in Fig. 5 taken during the trimming action of the knife;

Fig. 7 is a partial sectional plan view on an enlarged scale of the parts illustrated in Fig 6; and

Fig. 8 is a perspective view on an enlarged scale of the knife illustrated in Figs. 1, and 5 to 7, inclusive.

The machine of the drawings is similar to that of the Cordeau and Speight patents above referred to and is adapted to operate on bevel edged moccasin pieces comprising a top piece or tongue and a vamp or side piece indicated respectively at 2 and 4. During the sewing operation a seam is inserted through the registering bevel surfaces of the moccasin pieces with the stitches exposed only at the outer surfaces by lockstitch forming devices including a curved hook needle 6, a work

penetrating and feeding awl 8, a shuttle 10, an external work support 12 and an internal presser 14, both of which latter are provided with complementary work engaging surfaces disposed at angles to each other and extending in the direction of work feed, the re-entrant angle being provided in the work support.

During operation of the machine the presser compresses the moccasin pieces operated upon between the work engaging surfaces of the work support and releases the pieces during feeding movements of the awl. Outward movement of the presser to release the moccasin pieces from the angle between the work engaging surfaces of the work support is along a line approximately bisecting the angle. The angle between the work engaging surfaces being less than 90°, causes the moccasin pieces to be crowded firmly into the angle with a wedging action when the presser moves into the angle.

In the machine of the patents noted, the edges of the moccasin pieces are trimmed by a stationary knife during feeding movements. Not only does the resistance offered by the knife tend to retard the feeding movement of the moccasin pieces but also there is a likelihood that the extreme edges of the moccasin pieces when prepared with a sharp bevel will become displaced by engagement with the knife and as a result will not be trimmed uniformly.

To avoid improper trimming action of the knife in the machine of the present invention, the knife is mounted for movement across the angle of the work support outside the seam line. In the illustrated form of this feature trimming takes place while the moccasin pieces are compressed by the presser in timed relation to the operation of the stitch forming devices between feeding movements. During work feed the knife is entirely withdrawn from engagement with the moccasin pieces so that there is no retarding effect on the feeding movements.

Referring more particularly to the drawings, the trimming knife illustrated in Fig. 2 consists of an arcuate blade 16 secured to a segment 18 in which the needle 6 is clamped. The arcuate portion of the knife 16 is arranged substantially concentrically to a stud 20 about which the segment 18 oscillates. The cutting edge of the knife extends along the angle of the work support and is spaced by a short angular distance from the point of the needle to insure entry of the needle into the moccasin pieces before the knife engages their edges. With this arrangement there is no possibility for the material of the moccasin pieces becoming so distorted or displaced by the knife that slippage occurs to cause the needle to form its own perforation in the moccasin pieces outside that cut by the awl. Thus, interference with the sewing operations is avoided.

The knife 16 operates with a chopping action on the edges of the moccasin pieces and to support the edges of the moccasin pieces against the thrust of the knife and to insure complete severance of a strip indicated at 22 in Fig. 4 the work support is provided with a supporting strut 24 intersecting an opening 23 through which the needle and knife pass during operation of the machine. Opposite the strut 24 there is a similar strut 26 engaging the uppermost surfaces of the moccasin to hold it in place. The corners of these struts which are closest to the apex of the angle in the work support are provided with sharpened edges to improve the shearing action. Between the point where the knife 16 is secured to the

segment and the cutting edge of the knife, the knife bears along its outer arcuate surface against a shoulder 28 formed on a needle guide 30 which is actuated toward and from the work support with the needle.

With certain types of work, particularly where extremely flimsy materials are being operated upon, instead of employing a knife which operates with a shearing action against a strut on the work support, it is preferable to employ a knife which engages a chopping block for supporting the edges of the moccasin pieces against the thrust of the knife, the extreme edges of the moccasin pieces being nipped off between the knife and chopping block in timed relation to the operation of the stitch forming devices. A machine embodying this form of chopping knife is illustrated in Figs. 1 and 5 to 8, inclusive. In this machine the knife consists of a blade 32 formed integrally with the needle guide as best shown in Fig. 8. The needle guide is in the form of a block 34 having a needle guiding passage 36 and perforations 38 for receiving locating pins on a needle guide carrier 40 constructed and actuated in a manner more fully described in United States Letters Patent No. 1,169,909, granted February 1, 1916. The needle guide is clamped to the carrier by a screw 42 entering a threaded opening 44 in the needle guide (Fig. 8).

The knife 32 acts against a fiber chopping block 46 mounted within a recess on a surface of the work support in line with the path of movement of the knife. With this arrangement the knife will sever lightweight flimsy edges on the moccasin pieces even though the cutting edge of the knife becomes somewhat dulled. Furthermore, with flimsy materials the compression of the work by the presser causes the edges of the material to bulge slightly in a rearward direction into the opening 23 through which the knife acts so that when the compression is released a distinct concavity is formed along the incised edge surfaces. This is advantageous in the production of ornamental effects not possible with a stationary knife.

To cause the knife to act with a uniform pressure against the chopping block 46 the mechanism for moving the needle guide carrier is urged downwardly by a yielding force only at the time the trimming knife engages the chopping block at the end of its cutting stroke. As in the machine of Patent No. 1,169,909, the needle guide carrier 40 is actuated by a pinion 48 meshing with the gear teeth on the hub of the carrier. The pinion is rotated by a bell crank 50 (see Fig. 1) having rack teeth at one end engaging the pinion and a cam roll 52 at the other end engaging a slot 54 in a cam on a sewing shaft of the machine. The cam slot is shaped to fit the cam roll throughout the major portion of its length but along that portion engaging the roll while the trimming knife is acting the slot is widened so that the mechanism may move until arrested by engagement of the knife with the chopping block. To provide yielding actuation for the knife of the illustrated machine at this time the bell crank 50 is connected to one end of a tension spring 56, the other end of which is secured to the machine frame.

To insure firm compression of the moccasin pieces within the angle between the work engaging surfaces of the work support while the trimming knife is acting, the presser 14 is formed in the manner illustrated in Fig. 1 with a longitudinal slot 56 and serrations 58 along its angu-

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larly disposed work engaging surfaces. The serrations 53 act on the moccasin pieces to secure a firm bite on their surfaces. Movement of the presser into the angle of the work support causes the two halves of the presser above and below the slot 56 to move yielding toward each other, carrying the moccasin pieces along with them and forcing them to their limit of possible movement into the apex of the angle of the work support within the path of the trimming knife.

The nature and scope of the invention having been indicated and a particular embodiment having been described what is claimed is:

1. A machine for sewing and trimming moccasin seams having stitch forming devices including a curved hook needle, a needle guide, a work support having work engaging surfaces extending in the direction of work feed and disposed with relation to each other to form an angle across which the needle moves, and a presser having a tip formed with angularly disposed work engaging surfaces arranged to compress the moccasin pieces operated upon between the work engaging surfaces of the work support, in combination with a knife secured to the needle guide and arranged to act across the angle formed by the work engaging surfaces of the work support to sever a strip from the extreme edges of the moccasin pieces outside the line of the seam.

2. A machine for sewing and trimming moccasin seams having stitch forming devices including a curved hook needle, a needle guide, a work support having work engaging surfaces extending in the direction of work feed and disposed with relation to each other to form an angle across which the needle moves, and a presser having a tip formed with angularly disposed work engaging surfaces arranged to compress the moccasin pieces operated upon between the work engaging surfaces of the work support, in combination with a knife secured to the needle guide and arranged to act across the angle formed by the work engaging surfaces of the work support to sever a strip from the extreme edges of the moccasin pieces outside the line of the seam, and a chopping block in the work support against which the knife acts at the end of its cutting stroke.

3. A machine for sewing and trimming moccasin seams having stitch forming devices including a curved hook needle, a needle guide, a

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work support having work engaging surfaces extending in the direction of work feed and disposed with relation to each other to form an angle across which the needle moves, and a presser having a tip formed with angularly disposed work engaging surfaces arranged to compress the moccasin pieces operated upon between the work engaging surfaces of the work support, in combination with a knife secured to the needle guide and arranged to act across the angle formed by the work engaging surfaces of the work support to sever a strip from the extreme edges of the moccasin pieces outside the line of the seam, a chopping block in the work support against which the knife acts at the end of its cutting stroke, and mechanism for actuating the knife including a spring for urging the knife against the chopping block at the end of its cutting stroke.

4. A machine for sewing and trimming moccasin seams having stitch forming devices including a curved hook needle, a work support having work engaging surfaces extending in the direction of work feed and disposed with relation to each other to form an angle across which the needle moves, and a presser movable toward and from the angle of the work support approximately along a line bisecting the angle to compress the moccasin pieces operated upon between the work engaging surfaces of the work support, in combination with a knife acting across the angle formed by the work engaging surfaces of the work support while the moccasin pieces are compressed by the presser to sever a strip from the extreme edges of the moccasin pieces, said work support having an opening into which the extreme edges of the moccasin pieces may bulge at the point of operation of the knife under compression of the presser.

FRED ASHWORTH.

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The following references are of record in the file of this patent:

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Number	Name	Date
2,222,972	Ashworth	Nov. 26, 1940
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2,337,631	Whitaker	Dec. 28, 1943
2,387,813	Speight	Oct. 30, 1945