

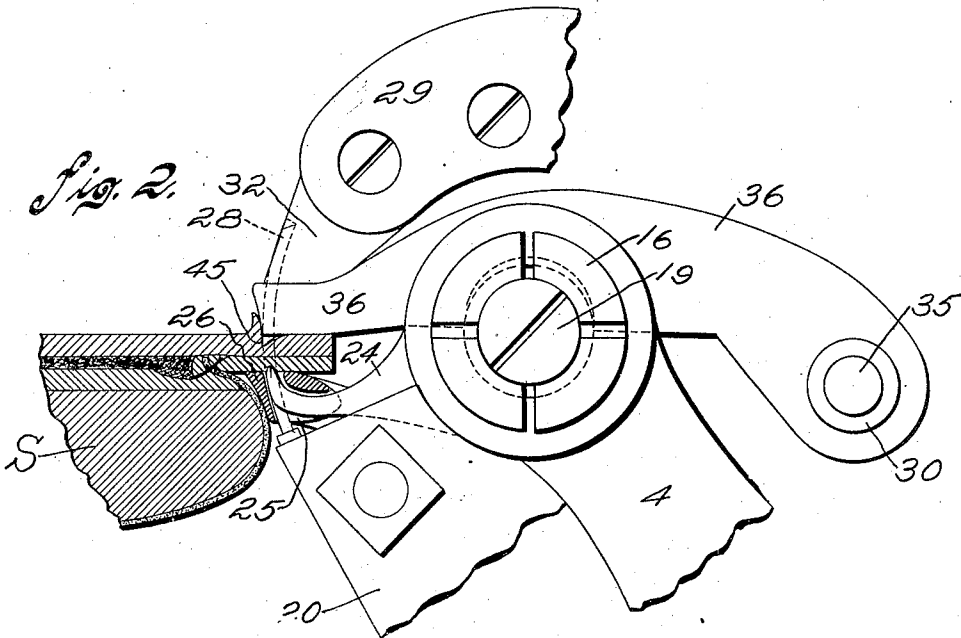
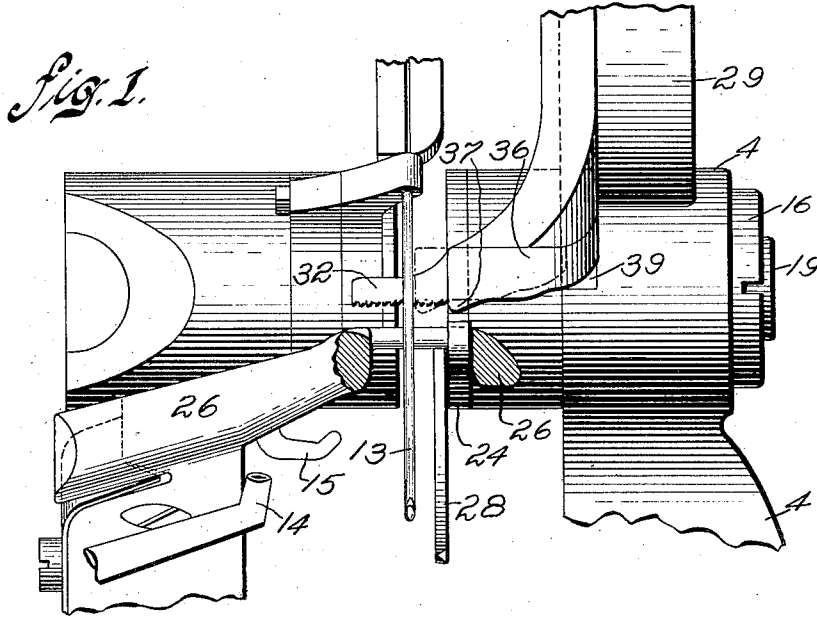
T. G. PLANT.
SHOE SEWING MACHINE.

APPLICATION FILED JUNE 3, 1908. RENEWED NOV. 22, 1909.

958,294.

Patented May 17, 1910.

3 SHEETS—SHEET 1.



Witnesses:

Rowell F. Hatch,
Redfield Allen

Inventor,
Thomas G. Plant
by Robt J. Hains,
Attorney.

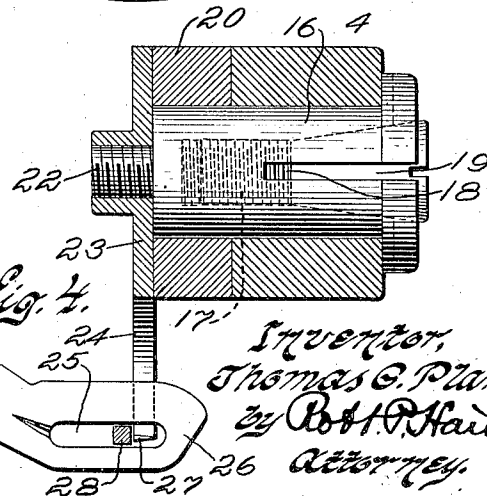
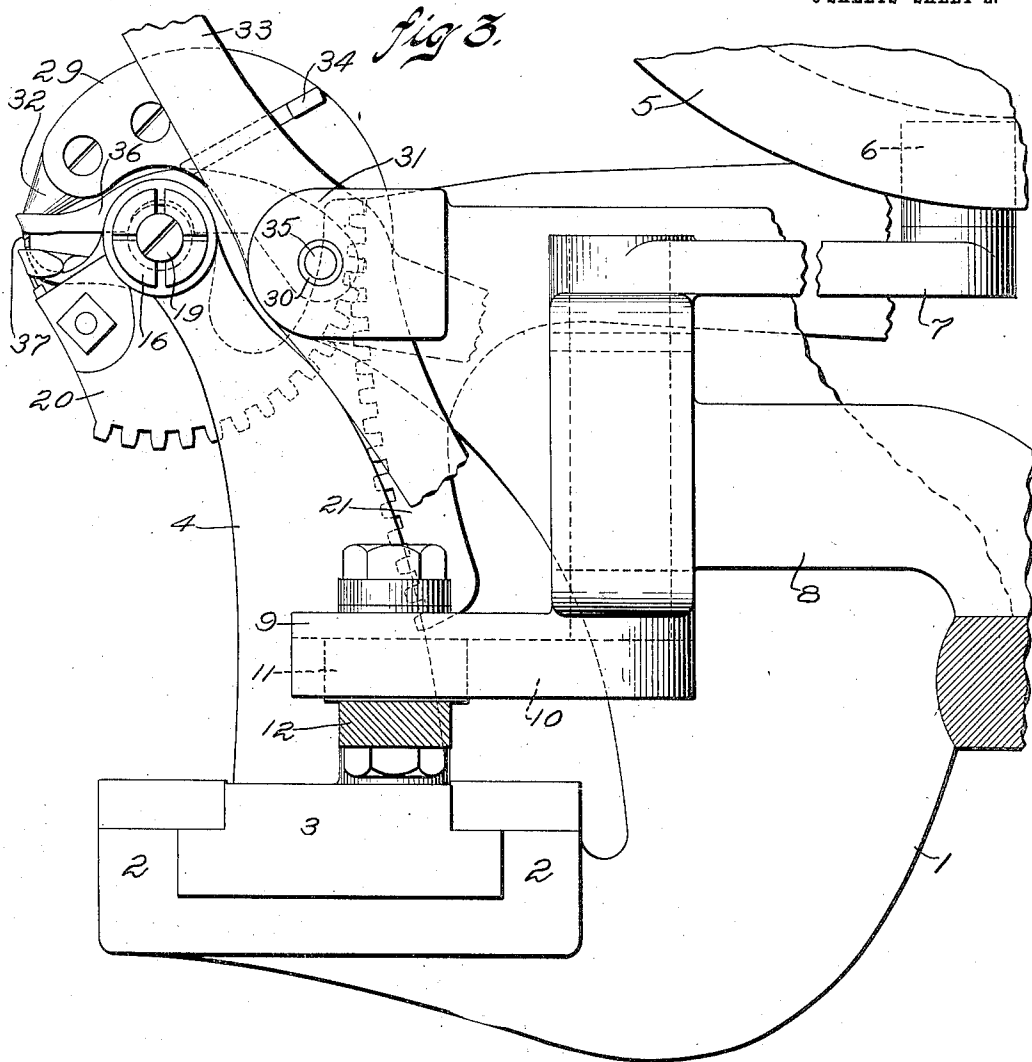
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3 SHEETS—SHEET 2.



Witnesses:
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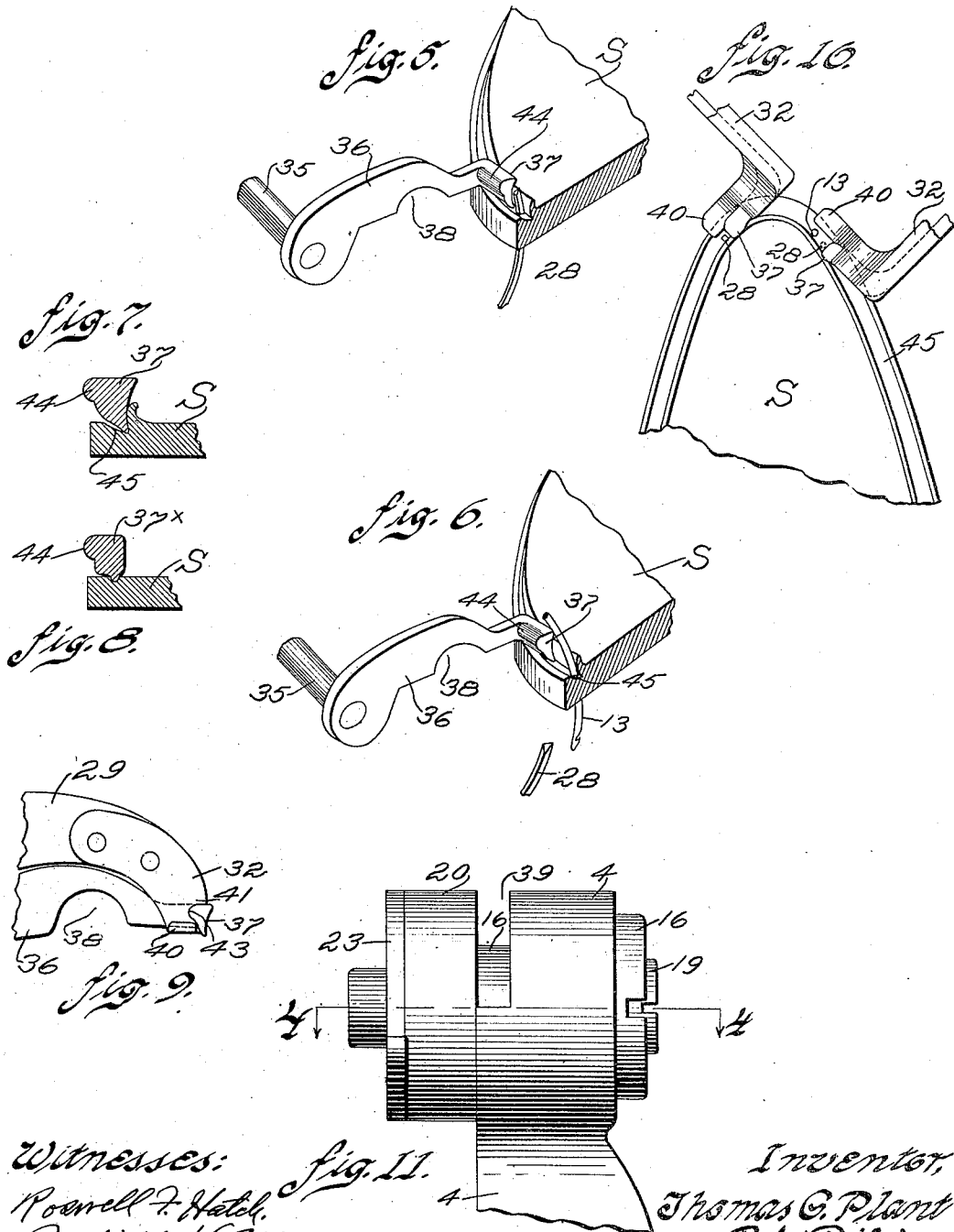
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3 SHEETS—SHEET 3.



Witnesses:

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Fig. 11.

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UNITED STATES PATENT OFFICE.

THOMAS G. PLANT, OF BOSTON, MASSACHUSETTS.

SHOE-SEWING MACHINE.

958,294.

Specification of Letters Patent.

Patented May 17, 1910.

Application filed June 3, 1908, Serial No. 436,329. Renewed November 22, 1909. Serial No. 529,302.

To all whom it may concern:

Be it known that I, THOMAS G. PLANT, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented an Improvement in Shoe-Sewing Machines, 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 sewing machines, and more particularly to that type employed in sewing shoes. In this general type of machine as heretofore constructed, the work is supported on a table or work support and is clamped thereon during the intervals between feed movements by a presser-foot, but when the work is to be fed, this clamping action of the presser-foot is released, the presser-foot being then held upon the work usually by light pressure. The work is fed by the awl, which penetrates the work, and then moves a stitch length in the line of feed, withdraws from the work and returns to initial position. In the meantime the needle passes through the hole made by the awl and during the stitch formation, of which such action of the needle forms a part, the presser-foot clamps the work upon the table or work-support. In other words, while the needle is forming the stitch, the presser-foot clamps the work upon the table or work-support, but during the feed movement, while the awl is in the work, this clamping action of the presser-foot is released and the presser-foot rests with comparatively light pressure upon the work. Notwithstanding the light pressure action of the presser-foot during the feed movement, there is much strain placed upon the awl in dragging the work over the table and under the presser-foot, and difficulty has likewise been encountered in properly swinging the work during the feed movement to keep the line of stitches in the proper direction, owing to the fixed nose or projection on the presser-foot that usually travels in a channel formed in the shoe sole, as will be readily understood by those skilled in the art.

With these general considerations in view the present invention aims to relieve the strain placed upon the awl in feeding the work and to facilitate swinging and feeding movement of the work in maintaining the line of stitches properly disposed therein and of desired length, all as will hereinafter

more fully appear and be definitely pointed out in the claims.

The drawings herewith illustrate the invention applied to a sewing machine for fastening an outsole to the welt of a shoe, but it is to be understood that the invention is not confined in its application to such type of machine, but may be employed in various other types of shoe sewing machines, as will be apparent.

In the drawings: Figure 1 is a front elevation of sufficient portions of a shoe sewing machine to illustrate the relation of the present invention thereto, some of the parts being broken away, and the awl being in initial position prior to penetrating and feeding the work; Fig. 2 is a side elevation and part sectional view of like elements, showing the awl as having penetrated the work and the movable nose of the presser-foot located in the channel of a shoe sole; Fig. 3 is a side elevation and part sectional view, disclosing the elements adjacent the stitch forming portion of the machine, the feed slide, and associated parts; Fig. 4 is a detail sectional view on line 4-4, Fig. 11, also showing the lower cutter, the table end, and the awl; Fig. 5 is a detail showing the movable nose of the presser-foot, its relation with the awl during feeding of the work, and its position in the groove or channel to act as a guide for the work; Fig. 6 is a detail showing the movable nose of the presser-foot detached, as in Fig. 5, and its relation to the awl and needle during the formation of the stitch; Figs. 7 and 8 are cross-sectional views, showing somewhat different forms of the movable nose, and its position in somewhat different forms of channel or groove; Fig. 9 is a detail of the presser-foot end and movable nose, showing the relation of these two parts and their connection, so that as the presser-foot is raised, the nose will go with it; Fig. 10 is a diagrammatical illustration to show the constant relation of the awl and nose and their movement with respect to the main part of the presser-foot and needle in feeding and guiding the work; and Fig. 11 is a detached detail of the upper part of the feed slide, showing the connection of the awl segment and the lower cutter therewith, and the slot for receiving the shank of the movable nose to cause it to move with the awl in the line of feed and return.

The invention herein has been illustrated in connection with a shoe sewing machine of

the general type of that disclosed in the French and Meyer Patent No. 473,870, to which reference may conveniently be made for a description of those general parts of the machine which do not pertain to the present invention.

The machine frame 1, having the guide box 2, in which is fitted the feed slide 3, having the feed arm 4; the cam 5, the roller or stud 6 traveling therein; the lever 7 carrying said roller or stud 6; the stand 8 on which said lever is fulcrumed; the arm 9 having a groove 10 to receive the block 11, carried by the regulating lever 12; connected to the feed slide 3, said parts co-acting to move the feed slide and feed arm 4, are or may be as pointed out in the said French and Meyer patent before mentioned. Likewise the needle 13, Fig. 1, the looper 14, the thread finger 15 and their actuating parts may conform to the said elements as set forth in said patent.

Mounted in the top portion of the feed arm 4, Fig. 4, is a split stud 16, said stud being preferably hollowed out for a part of its length and provided with interior screw threads 17 to engage the exterior screw threads 18 on the end of a conical or expanding plug 19, the construction being such that by screwing the plug 19 to place, the split stud 16 will be expanded to tightly engage the seat in the upper end of the feed arm 4; as will be readily understood. The stud 16 extends, Fig. 4, to the left beyond the face of the feed arm 4, and receives upon it the awl carrying member 20, which, as indicated in Fig. 3, is provided with a toothed segment through which, and the engaging segment 21, the awl 28 may be oscillated on the stud 16, substantially as pointed out in the patent hereinbefore mentioned, to cause the awl 28 to penetrate the work and withdraw therefrom.

The end of the split stud 16, Fig. 4, is provided with means, preferably screw threads 22, to engage the scoring or grooving tool 23, the arm 24 of which extends upward through the slot 25 in the table or work support 26, and carries at its end a cutter or scoring implement 27, the cutting edge of which extends to the right, as indicated in Fig. 4, and slightly above the plane of the table top.

From the construction thus far described, it will be clear that since the awl and cutter or scoring tool are thus mounted upon the feed slide arm 4, in closely adjacent vertical planes, and move together during the feed movement and return, that not only will the awl serve to feed the work, as pointed out in the patent referred to, but the cutter or scoring implement will assist in this operation, and when the awl has been withdrawn to be thereafter returned to its initial position as set forth in said patent, the cutter

or scoring implement will score or cut a groove in the under portion of the work then clamped upon the table, as will be clear to those skilled in the art. It will also be noted that the table or work support 26 presents a rest for the work on each side of the slot 25, and that the lower cutting or scoring tool projects upward through said slot closely adjacent to the awl.

Mounted upon the machine frame so as to be capable of being raised from and depressed upon the work supported on the table 26, is the presser-foot carrying arm 29, such mounting being shown as comprising a sleeve 30 supported by a bracket 31, Fig. 3, secured to the machine framing. This arm 29 is shown in Fig. 3 as extending rearwardly, where it may be provided with suitable connections, as pointed out in said patent or otherwise, for clamping the presser-foot 32 upon the work during the stitch forming and setting operation or during the intervals between feed movements, as will be clear from the said patent. Also mounted upon the machine frame, and preferably on the sleeve 30, is a hand lever 33, which, as pointed out in another application filed by me, Ser. No. 414,161, filed February 4, 1908, may release the presser-foot and permit it to be raised from the work when desired, said lever 33 contacting with a lug 34 on the carrying arm 29 as will be clear without further details of description.

Heretofore, so far as I am aware, it has been the practice to form the presser-foot of one piece extending some distance along the top of the work, and provide it with a fixed or integral bur or projection which should follow in the channel of the shoe sole being sewed. Under these conditions the awl has been required to drag the work at the time held upon the table by the presser-foot and against the resistance due to the action of these parts, thereby putting excessive strain upon the awl at times, even though, during the feed movement, the presser-foot has been forced with only light pressure upon the work. Moreover, in sewing shoes, the course of the seam must be changed from time to time in conformity with the contour desired, and since the work is clamped fixedly upon the table by the presser-foot, except during the intervals of feed movement, it follows that turning or swinging movement of the work can be conveniently accomplished only during the feed intervals. During the feed intervals the awl is in the work and moving with it, so that any turning or swinging movement of the work must be about the awl as a center. In prior constructions, however, the bar or projection on the presser-foot formed a fixed or integral part of the presser-foot and, as it traveled in the channel of the shoe sole, remote from the position of the awl during

the feed, it materially interfered with the proper turning or swinging of the work in keeping the line of stitches in the lower part of the channel, and such interference became emphasized as the awl moved in the line of feed farther away from the bur or projection. This interference was caused either by the upturned channel lip, the outer wall of the channel, or, in case the stitches were to be located in a groove or score, by the walls of such groove or score, contacting with the side of the bur or projection, and consequently limiting the arc of shoe swing. In other words, a proper turning or swinging movement of the work could not be made about the awl as a center because, the fixed bur or projection being remote from the swinging point or awl, would contact with the walls of the depression, or if such swinging movement were accomplished the line of stitches would not be properly located. These matters will more fully appear in connection with the following description of the present improved construction and its operation.

The end portion of the presser-foot 32, connected to the presser-foot arm 29, and having no movement in the line of feed, is preferably formed as indicated in Figs. 9 and 10, the portion 40 extending laterally thereof being adapted to rest upon the work outside or beyond the channel or score in the sole S and serving to clamp the work upon the table or work support 26, and the said portion 32 being recessed to present a shoulder 41 to receive between it and the part 40 the relatively movable nose 37.

Mounted to turn upon and be movable longitudinally of the stud 35, Figs. 3, 5 and 6, is a nose carrier 36 extending in a forward direction and having a nose 37, the end or lower edge of which, adjacent the vertical plane of the awl movement, is adapted to engage the channel formed in the work to be sewed. The nose carrier 36 is recessed at 38 and extends over the upper portion of the feed slide arm 4 and is connected therewith so as to partake of the feed movement and return. As indicated in Fig. 11, this connection is preferably made by means of a slot 39 formed in the upper portion of the feed arm 4, and proportioned to receive the arm of the nose carrier 36, the recessed portion 38 of said carrier preferably straddling the stud 16 as indicated, so that while the nose carrier is thus caused to partake of the movements of the feed arm 4 and consequently of the awl, it is free to be raised.

In order that the movable nose 37 may thus partake of the awl feed movement and yet rise with the presser-foot 32 when it is raised to finally release the work, the portion of the presser-foot, Fig. 9, between the parts 40 and 41 is recessed or channeled, as at 43, and receives within it the shouldered or projecting

portion 44 of the nose, Figs. 5 and 6, the said recessed portion of the presser-foot and projecting portion of the nose serving to maintain the nose pressed upon the work, as dictated, by the presser-foot, and as a directing means or guide for the nose as it moves relative to the presser-foot in the direction of feed and return. Since the presser foot remains in contact with the work during the feed and return movements of the awl, it follows that the nose likewise remains in contact with the work at these times.

The channel or score engaging portion of the movable nose 37 is disposed closely adjacent the vertical path of movement of the awl 28, and since the nose 37 and awl 28 are each connected to the feed mechanism hereinbefore described, and consequently move in unison during the feed, said nose not only assists the awl in giving feed movement to the work, but also offers no opposition to the swinging or turning movement of the work about the awl as a center, due to change in direction of the channel or score in the work. This action is diagrammatically illustrated in Fig. 10, wherein the work S is shown as having a channel 45, in which the end of the movable nose 37 travels, the full line position of the awl, to the left in said Fig. 10, representing the substantial completion of the feed movement, the nose 37 having moved with the awl from a position such as indicated to the right in said Fig. 10, to the position of the parts at the left, and since, during this movement, the nose 37 and awl 28 remain close together, and the swinging or turning of the work is to be accomplished during this feed interval while the presser-foot is unclamped but still on the work, it follows that the portion of the nose engaging the channel is close to the pivotal or turning point of the work and consequently offers no substantial obstruction to the proper manipulation of the work, as will be readily understood by those skilled in the art.

Thus it will be apparent that the present invention contemplates a movable nose, which may, in effect, constitute part of the presser-foot, such nose having its work engaging portion disposed closely adjacent to the awl when the latter is in the work and movable with the awl to assist in the feed movement and, by reason of its close proximity to the point about which the work must be swung in changing the direction of the line of stitches, offering substantially no opposition to the proper turning of the work as dictated by the changing direction of the line of stitches.

Obviously the form of the movable nose may be varied to suit the conditions of the work, one of the essentials in this regard being that it travel in the channel or groove or score of the work, and be maintained in such close relation to the awl that it will not

obstruct the proper turning or swinging movement of the work when the latter is moved about the awl as a center. For instance, in Fig. 7, the nose is formed for use in connection with a shoe sole having a channel made therein by turning up a channel lip, as in the so-called "English channel" work, in which case the outer face of the movable nose is curved to fit against the inner surface of the channel lip; whereas, in Fig. 8, the nose 37* is formed to cooperate with a score or small depression in the sole in producing the "stitch aloft" work. It will be likewise obvious that if the groove, score, or channel of whatever kind be disposed about the shoe sole with regard to the character of extension edge desired for the sole, the nose will serve to properly position or guide the line of stitches and determine the distance of such stitch line either from the edge of the work or from the usual in-seam, which connects the upper to the insole.

It will be clear to those skilled in this class of machines and with the general objects of the present invention in view, that changes may be made in the details of structure, the described and illustrated embodiment thereof being intended as an exploitation of its underlying essentials, the features whereof are definitely stated in their true scope in the claims herewith.

What is claimed is:

1. In a shoe sewing machine, the combination of a work support or table, stitch forming mechanism, awl feeding means, a presser-foot to clamp the work upon the work support or table during the stitch forming operation, and having a movable nose to engage the work, said nose being disposed adjacent to the plane of movement of the awl as it penetrates the work, and means to move the said nose with the awl in the line of feed.

2. In a shoe sewing machine, the combination of stitch forming mechanism, an awl, means to cause the awl to penetrate the work and withdraw therefrom, means to move the awl to feed the work, a work support or table, a presser-foot, a nose movable relative to said presser-foot in the direction of work feed, and means to move the nose with the awl in the work feeding and return movements while the nose is in contact with the work.

3. In a shoe sewing machine, the combination of stitch forming mechanism including a needle and its actuating means, an awl, means to cause the awl to penetrate the work and withdraw therefrom, means to move the awl to feed the work while the needle is withdrawn, a presser-foot to bear upon the work and provided with a nose movable with relation to the presser-foot in the direction of work feed, said nose engaging a channel in the work and being dis-

posed adjacent the path of the awl as it penetrates the work, and means to move the nose with the awl during work feeding movement and return it to initial position while the work is clamped by the presser foot.

4. In a shoe sewing machine, the combination of stitch forming mechanism, awl feeding means, a presser-foot to bear upon the work, a nose movable in relation to the presser-foot in the direction of feed, said nose being forced upon the work by the presser-foot, and means for moving the nose with the awl during work feed.

5. In a shoe sewing machine, the combination of stitch forming and awl feeding means, a presser-foot to bear upon the work, a nose carrying arm, a nose connected therewith to engage the work, said arm being movable with the presser-foot to place the nose in engagement with the work, and connections between the awl feeding means and said arm to impart movement to the nose in the direction of feed.

6. In a shoe sewing machine, the combination of stitch forming mechanism, a presser-foot to bear upon the work, a movable nose held upon the work by said presser foot, and means to move the nose relative to the presser-foot in the line of feed.

7. In a shoe sewing machine, the combination of a work support or table, stitch forming mechanism, a presser-foot to bear upon the surface of the work and having a nose movable relative thereto and to engage a groove in the work, feeding means for the work, and means to move the nose relative to the presser foot and with the feeding movement of the feeding means and maintain it in close relation with said feeding means.

8. In a shoe sewing machine, the combination of stitch forming mechanism, awl feeding means, a presser-foot to bear upon the exterior surface of the work, said presser-foot having connected thereto a movable nose, and means for imparting to the said movable nose movement relative to the connected presser foot in the line of feed.

9. In a shoe sewing machine, the combination of a table or work support, stitch forming mechanism, a presser-foot to bear upon the work sustained upon the work support, a relatively movable nose engaged by said presser foot, an awl, means for causing the awl to penetrate the work at a point adjacent to the movable nose, and to withdraw from the work, and means to move the awl and nose in the direction of work feed.

10. In a shoe sewing machine, the combination of a table or work support, stitch forming means, a presser-foot to bear upon the work sustained upon the table or work support, a nose movable relative to the presser-foot in the direction of work feed,

means for causing the nose to move with the presser-foot as it is raised or lowered relative to the work, work feeding means, and means to move the nose in the direction
5 of work feeding movement.

11. In a shoe sewing machine, the combination of a table or work support, stitch forming means, a presser-foot to bear upon the work, a nose movable relative to the
10 presser-foot in the direction of work feed and return while said nose is in contact with the work, an awl, means for causing the awl to penetrate the work adjacent the movable nose and to withdraw from the work, and
15 means to move the awl and nose together in the direction of work feeding movement and return them to initial position.

12. In a shoe sewing machine, the combination of a table or work support, stitch
20 forming and awl feeding means, a presser-foot to bear upon the work and having a movable nose to engage a groove or depression in the work, said nose having its work engaging portion adjacent the awl when the
25 latter is in the work, and means to cause the nose to travel with the awl during work feeding movement.

13. In a shoe sewing machine, the combination of a table or work support, stitch
30 forming and awl feeding means, a presser-foot to engage the work, a movable nose associated with the presser-foot to move therewith when said presser-foot is raised or lowered, and to be movable independently
35 of the presser-foot in the direction of feed, and connections between the said nose and awl feeding means to move the nose with the awl during feed movements.

14. In a shoe sewing machine for producing a line of stitches in a shoe sole having a channel or depression, the combination of
40 stitch forming mechanism, an awl, means for moving the awl to cause it to penetrate the work and withdraw therefrom, and
45 means for moving the awl in the direction of feed while said awl is in the work, a presser-foot to bear upon the work beyond the channel or depression, a nose disposed adjacent the awl when the latter is in the
50 work and engaging said channel or depression, and means for moving the nose with the awl in the direction of work feeding movement.

15. In a shoe sewing machine, the combination of stitch forming and awl feeding
55

means, a presser-foot, a nose movable relative thereto in the direction of work feed, said presser-foot having a part to bear upon the work at one side of said nose and another part to bear upon the nose, and means
60 for moving the nose with the awl during work feeding movement.

16. In a shoe sewing machine, the combination of a table or work support, stitch forming an awl feeding means, a presser-
65 foot to bear upon the work, a movable nose, a cutting or scoring tool, said nose and tool being disposed on opposite sides of the work, and means for moving said nose and tool with the awl during its work feeding
70 movement and return to initial position.

17. In a shoe sewing machine, the combination of a table or work support having a closed slot therein, stitch forming and awl feeding means, a presser foot and a movable
75 nose to bear upon the work supported on the table or work support, a cutting or scoring tool projecting upward through said slot in the table adjacent the awl when the latter is in the work, and means for moving said
80 cutter and movable nose with the awl as the latter moves in the direction of feed and back to initial position.

18. In a shoe sewing machine, the combination of a table or work support, stitch
85 forming and awl feeding means, a presser-foot having a movable nose, a cutting or scoring tool, and means for connecting the movable nose and tool to the awl feeding means to cause said parts to move with the
90 awl as the latter moves in the direction of feed and back to initial position.

19. In a shoe sewing machine, the combination of a work support, a needle and an awl, means for causing them to alternately
95 engage the work on the work support, means for moving the awl in the line of feed while the needle is disengaged from the work, a presser foot, and a nose movable with the awl as the latter feeds the work, and mov-
100 able to initial position with the awl while the work is clamped between the work support and presser foot.

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

THOMAS G. PLANT.

Witnesses:

THOMAS BREEN,
ALFRED H. HANDLEY.