

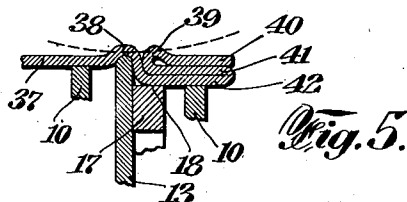
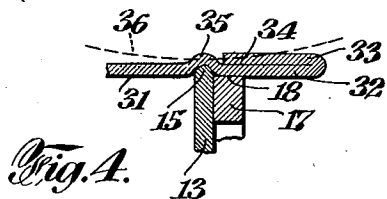
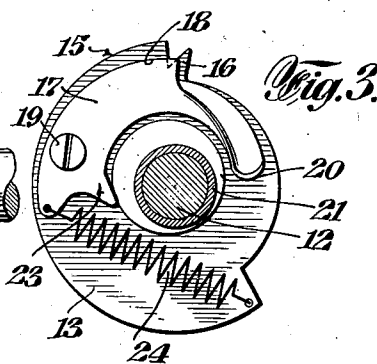
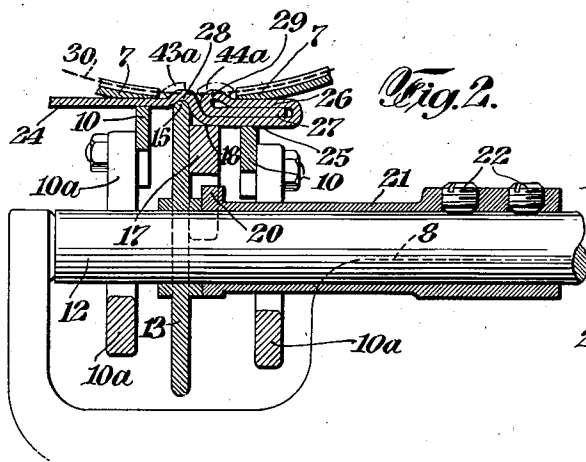
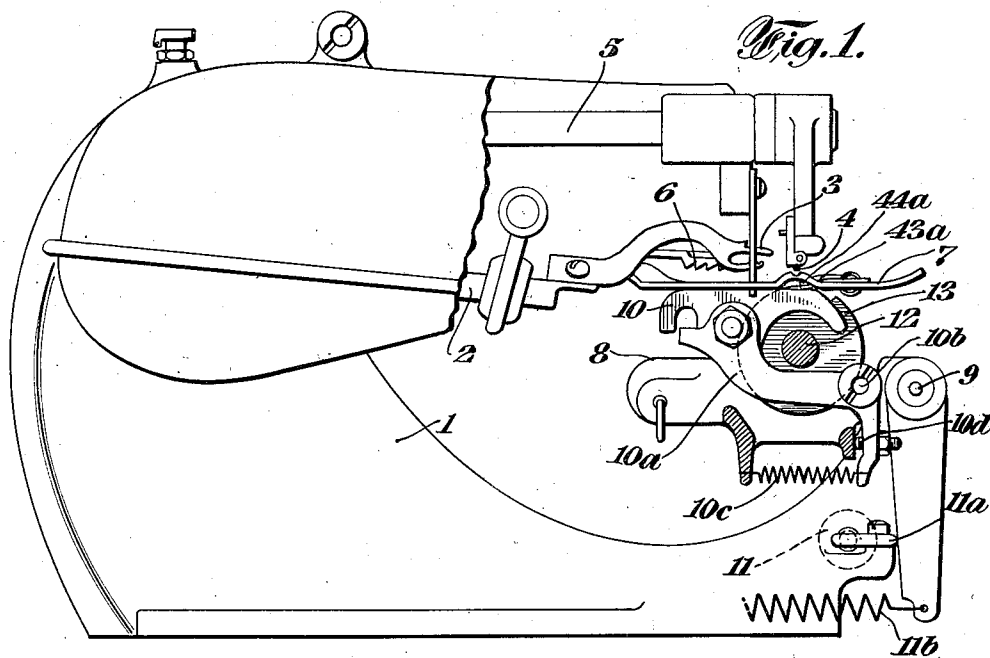
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SEWING MACHINE CONSTRUCTION

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SEWING MACHINE CONSTRUCTION

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6 Claims. (Cl. 112—178)

The present invention relates more particularly to blind stitch sewing machines of the general type disclosed in U. S. Patent No. 1,531,850 dated March 31, 1925, as well as various modifications of this general type of machine which have been widely used in the practical arts. The invention has to do particularly with the work-supporting and positioning elements of the machine which are relied upon to present the work properly to the needle, and the primary object of the invention is to provide such a work-supporting and positioning construction which may be differently set or adjusted in accordance with the character of the work on which the machine operates from time to time, to present the work correctly to the needle when materials of different thicknesses, or having a greater or lesser number of plies, are being stitched. Further objects and advantages of the invention will be in part obvious and in part specifically referred to in the description hereinafter contained which, taken in conjunction with the accompanying drawing, discloses the invention as applied to a sewing machine having certain features of preferred specific construction; from the standpoint of invention in its broader aspects, however, the disclosure should be regarded as merely illustrative of the principles of the invention. In the drawing—

Fig. 1 is a general side view with certain parts cut away of a sewing machine constructed to operate in accordance with the invention.

Fig. 2 is a detail view, partly in section, showing certain parts of the machine with which the invention is more particularly concerned, as such parts appear looking from the direction at the right of Fig. 1.

Fig. 3 is a detail section taken on a plane perpendicular to the plane of Fig. 2, as viewed from the right of Fig. 2.

Figs. 4 and 5 are diagrammatic views illustrating adjustment of the machine to accommodate material to be stitched with different numbers of plies therein.

In respect to many of the elements of the machine, the invention is not particularly concerned therewith from the standpoint of novelty, and certain of these parts will be only briefly referred to since they may be assumed to be constructed as in previously known machines or of other appropriate construction. The illustrated sewing machine (of the blind stitch type) has a main frame 1 carrying a looper bar 2 which actuates the looper 3 in known manner, and the needle 4 is oscillated by a rock shaft 5 so as

to have an arcuate path of movement in a plane transverse to the line of stitch, a feed dog 6 intermittently advances the work to be stitched and the work passes beneath a slotted stationary presser foot 7, the work being supported from underneath by a table-like work support 8 pivoted at 9 to frame 1 and carrying work supporting platens 10 which underlie the work on opposite sides of the line of stitch to press the work up against the feed dog 6 when the latter is advancing the work, and hold the work up against presser foot 7 while the needle is penetrated into the work. As shown these platens 10 are carried by rocking levers 10a, pivoted at 10b, and urged by springs 10c to press the platens 10 upwardly into engagement with the work to an extent determined by the setting of the adjustable stop members 10d. All of the above parts may be of previously known construction and mode of operation, and the elevation of the table 8 and parts carried thereby also is preferably made adjustable in known manner to conform to work of different thicknesses; as by adjustment of a suitable thumb screw 11 and stop 11a controlled thereby, a tension spring 11b being provided to hold the table 8 yieldably in position.

The work support may also carry an oscillating shaft 12 of previously known construction and mode of operation, which periodically advances and retracts a ridge-forming member 13 having an upper arcuate work-engaging portion 15 and a tooth 16, such ridge-forming member as thus far described being similar in construction and mode of operation to the corresponding member of U. S. Patent No. 1,531,850 above referred to.

In accordance with the present invention I employ in conjunction with the ridge-forming member 13, an auxiliary work-supporting member 17 which is positioned at one side of said ridge-forming member, and is provided with an upper work-engaging portion 18 which may be set or adjusted so as to be confined to different levels beneath the level or zone of operation of the work-engaging portion 15 of ridge-forming member 13. In the illustrated embodiment of the invention the auxiliary work-supporting member 17 is pivotally mounted on ridge-forming member 13 by means of a pivot pin 19, and the adjusting mechanism for the above purpose takes the form of a cam member 20 fixed to a sleeve 21 which loosely surrounds shaft 12 and may be held in various angular positions with respect thereto by set screws 22. The cam member 20 engages a heel 23 (Fig. 3) on auxiliary supporting member 17, and as cam member 20 is moved

to different angular positions as above described, the work-engaging surface 18 of auxiliary work-supporting member 17 is moved to correspondingly higher or lower levels with respect to the work-engaging portion 15 of ridge-forming member 13.

The construction may be such as to allow the auxiliary work supporting member 17 to move temporarily under abnormal conditions to a level lower than that at which it is set by adjustment of the cam 20 as above described. As shown a spring 24 urges member 17 toward an upper position in which the heel 23 seats against cam 20, the cam thus serving as an adjustable stop determining the normal position of the work engaging portion 18, but if work of abnormal thickness (such as might be caused by one or more extra folds of the material being stitched) passes over the work engaging portion 18, the latter may move down temporarily to a lower level against the action of a spring 24 but will be immediately restored to the normal position determined by the setting of cam 20, after the abnormally thick part of the material has passed. The primary function of the cam member 20 is to insure that the work engaging portion 18 of member 17 will normally be held at a level beneath the work engaging portion 15 which is correct for the normal thickness of the material being stitched.

In Fig. 2 the parts are shown in an adjustment appropriate for stitching to a piece of material 24, a hem consisting of a lower ply 25, an upper ply 26, and an inner turned-in ply 27. The work engaging portion 15 of member 13, when the latter is oscillated by shaft 12 to assume its upper active position, forms a ridge 28 in the material 24, this ridge protruding into the slot of presser foot 7 as best shown in Fig. 2, in such manner that the ridge 28 is located in the path of action of the needle as indicated by the dotted line 30 in Fig. 2. The stop 11a and the stop 10d of the platen 10 which is at the left of ridge 28 in Fig. 2, will be suitably adjusted in accordance with known prior art practice to form the ridge 28 as above described.

By loosening the set screws 22 and turning the sleeve 21 as above described, the work engaging portion 18 of member 17 will be set at the operating level which is necessary to position the fold 29 at the level of the ridge 28, and in the path of the needle indicated by the dotted line 30. A spring pressed presser foot shoe having fingers 43a and 44a, supported by presser foot 7 as in previously known constructions, may be used to press the material downwardly against the work engaging portions 15 and 18 when the latter are in active position, and thus insure that the ridge 28 and fold 29 assume their correct relative positions as determined by the settings of the above described members 13 and 17. The setting of the stop 10d of the platen 10 which is at the right of Fig. 2, may also be adjusted in accordance with prior art practice according to the thicknesses of plies 25, 26 and 27, the distinction of the present mechanisms over the prior art being in respect to the above described adjustment of member 17 to insure that the fold 29 will neither be too high nor too low in position at the point which is to be stitched. It should be understood that an edge-guide to line up parts of the material such as the fold 29 properly with respect to member 13 as the material is fed into the machine, may be used for the operator's convenience, the same being neither illustrated nor described in detail since appropriate construc-

tions for the purpose are well known in the art.

Fig. 4 illustrates another setting of the members 13 and 17 to accommodate a piece of material 31 having a hem to be stitched thereto which consists of a bottom ply 32 and a top ply 33. In this setting the auxiliary work supporting member 17 has been raised by adjustment of cam 20 to a higher level, so that the edge 34 of the hem is located in proper position with respect to the ridge 35 and the path 36 of the needle.

Thus the work engaging portion of the auxiliary work supporting member 17, in different settings thereof, provides what may be called a shelf at one side of the ridge forming member 13, which shelf is positioned at various levels below the work engaging portion of said ridge-forming member, according to the setting of the auxiliary work supporting member 17.

Fig. 5 illustrates a stitching operation analogous to Fig. 2, wherein a piece of material 37 having a ridge 38 formed therein by member 13, is to be stitched to the fold 39 connecting the upper ply 40 to the intermediate ply 41, a bottom ply 42 resting on the work-engaging portion 18 of member 17. Assuming the material to be of the same thickness, the sewing operation of Fig. 5 will require that the member 17 be set to operate at a lower level as compared to Fig. 4.

While the invention has been disclosed as carried out by a machine of one particular construction, it should be understood that many changes may be made therein without departing from the invention in its broader aspects, within the scope of the appended claims.

I claim:

1. A sewing machine of the class described including a needle mounted to operate in a path transverse to the line of stitch, a presser foot and a work supporting shoe underneath the same, an angularly movable ridge-forming member mounted beneath said presser foot and having an upper work engaging portion, an angularly movable auxiliary work supporting member positioned at one side of said ridge-forming member and also having an upper work engaging portion positioned to move angularly in a path of lesser radius than the work engaging portion of said ridge-forming member, and mechanism adjustable to position said auxiliary work supporting member selectively in various settings wherein its work engaging portion is confined in position to correspondingly different levels below the work engaging portion of said ridge-forming member, the work engaging portion of said auxiliary work supporting member, in various settings thereof as aforesaid, being constructed and arranged to provide a shelf positioned at various levels below the upper work engaging portion of said ridge-forming member.

2. A sewing machine of the class described including a needle mounted to operate in a path transverse to the line of stitch, a presser foot and a work supporting shoe underneath the same, a ridge-forming member mounted beneath said presser foot and having an upper work engaging portion, an auxiliary work supporting member positioned at one side of said ridge-forming member and also having an upper work engaging portion, and mechanism adjustable to position said auxiliary work supporting member selectively in various settings wherein its work engaging portion is confined in position to correspondingly different levels below the work-engaging portion of said ridge-forming member, said auxiliary work supporting member also hav-

ing means operative in different settings thereof yieldably urging the work-engaging portion thereof toward the uppermost level for which the aforesaid mechanism is set, whereby said work-engaging portion of the auxiliary work supporting member may move to a lower level in different settings thereof when work of abnormal thickness is passing through the machine, the work engaging portion of said auxiliary work supporting member, in various settings thereof as aforesaid, being constructed and arranged to provide a shelf positioned at various levels below the upper work engaging portion of said ridge-forming member.

3. A sewing machine of the class described including a needle mounted to operate in a path transverse to the line of stitch, a presser foot and a work supporting shoe underneath the same, a ridge-forming member mounted beneath said presser foot and having an upper work engaging portion, an auxiliary work supporting member positioned at one side of said ridge-forming member and also having an upper work engaging portion, said auxiliary work supporting member being movable between different levels below the work engaging portion of said ridge-forming member, an adjustable stop member engageable with said auxiliary work supporting member, said stop member being constructed and arranged to confine the position of the work engaging portion of said auxiliary work supporting member to various different levels below the work engaging portion of said ridge-forming member, the work engaging portion of said auxiliary work supporting member, in various settings thereof as aforesaid, being constructed and arranged to provide a shelf positioned at various levels below the upper work engaging portion of said ridge-forming member.

4. A sewing machine of the class described including a needle mounted to operate in a path transverse to the line of stitch, a presser foot, an oscillating shaft mounted beneath said presser foot, a ridge-forming member mounted to oscillate with said shaft and having an upper work engaging portion, an auxiliary work supporting member positioned at one side of said ridge-forming member and also mounted to oscillate with said shaft, said auxiliary work supporting member being also provided with an upper work engaging portion positioned to move angularly in a path of lesser radius than the work engaging portion of said ridge-forming member and being adjustably supported to afford movement thereof to different levels below the work engaging portion of said ridge-forming member, and mechanism adjustable to position said auxiliary work supporting member selectively in various settings wherein its work engaging portion is

confined in position to correspondingly different levels below the work engaging portion of said ridge-forming member, the work engaging portion of said auxiliary work supporting member, in various settings thereof as aforesaid, being constructed and arranged to provide a shelf positioned at various levels below the upper work engaging portion of said ridge-forming member.

5. A sewing machine of the class described including a needle mounted to operate in a path transverse to the line of stitch, a presser foot, an oscillating shaft mounted beneath said presser foot, a ridge-forming member mounted to oscillate with said shaft and having an upper work engaging portion, an auxiliary work supporting member positioned at one side of said ridge-forming member and also mounted to oscillate with said shaft, said auxiliary work supporting member being also provided with an upper work engaging portion and being pivotally mounted to afford movement thereof to different levels below the work engaging portion of said ridge-forming member, and a cam member adjustably carried by said shaft, said cam member being constructed and arranged to position said auxiliary work supporting member selectively in various settings wherein its work engaging portion is confined in position to correspondingly different levels below the work engaging portion of said ridge-forming member.

6. A sewing machine of the class described including a needle mounted to operate in a path transverse to the line of stitch, a presser foot, an oscillating shaft mounted beneath said presser foot, a ridge-forming member mounted to oscillate with said shaft and having an upper work engaging portion, an auxiliary work supporting member pivotally carried by said ridge forming member, said auxiliary work supporting member being also provided with an upper work-engaging portion and the said pivotal mounting affording movement thereof to different levels below the work-engaging portion of said ridge-forming member, a spring yieldingly urging the said auxiliary work supporting member toward an upper position, a sleeve surrounding said shaft and angularly adjustable with respect thereto, adjustable means for positioning said sleeve in various angular positions, said sleeve carrying a cam member which is constructed and arranged to position said auxiliary work supporting member selectively in various settings according to the angular position of the sleeve, in which positions the work engaging portion of said auxiliary work supporting member is confined in position to correspondingly different levels below the work-engaging portion of said ridge-forming member.

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