Dec. 21, 1943. W. F. SMITH 2,337,503

WORKPIECE GUIDING ATTACHMENT FOR SEWING MACHINES

Filed Sept. 12, 1940

Fig. 1.

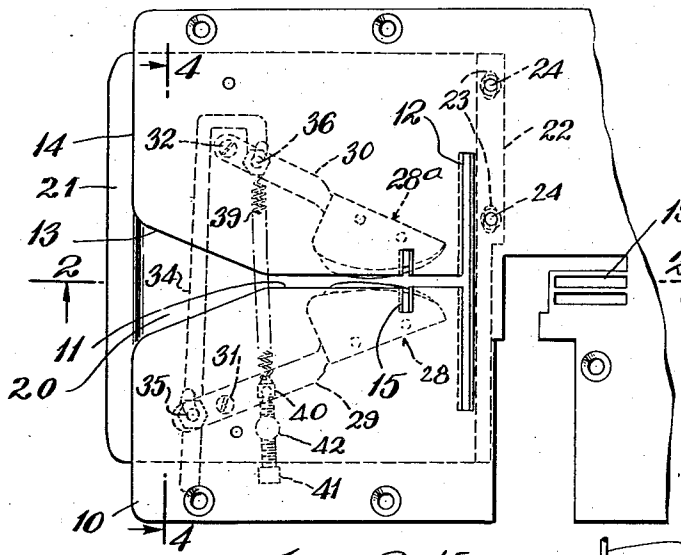


Fig. 5.

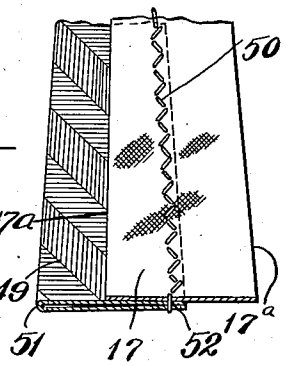


Fig. 2.

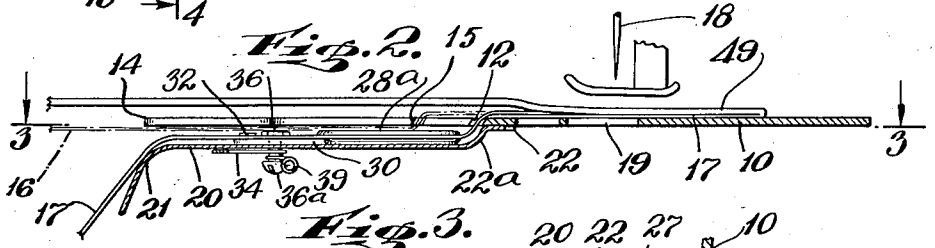


Fig. 3.

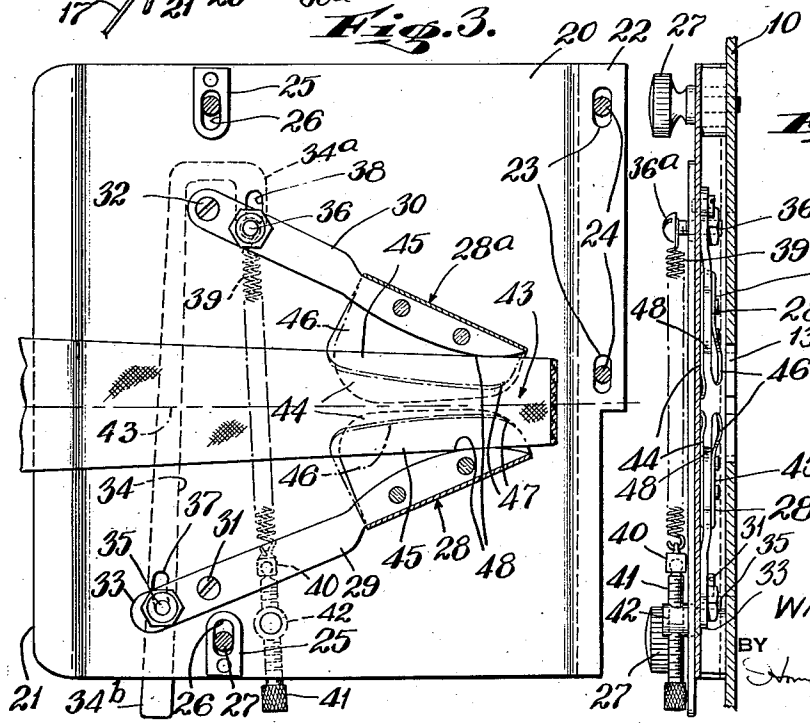


Fig. 4.

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WORKPIECE GUIDING ATTACHMENT FOR SEWING MACHINES

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8 Claims. (Cl. 112—152)

The invention relates to stitching or sewing machines; and the object of the invention is to provide an attachment to machines of this class for guiding a workpiece of irregular edge contour to properly position the same with respect to the needle or stitching mechanism of the machine and with respect to another workpiece or workpieces guided through the machine so as to accurately locate or centralize the stitching longitudinally of the first named workpiece as well as with respect to the other workpiece fed through the machine. More particularly the invention relates to the use of an attachment of the character described in stitching a lining to a necktie and still more particularly in attaching the lining to the necktie by what is commonly referred to as a zig-zag or lateral stitch which will provide in the resultant necktie free longitudinal extensibility of the tie; and with these and other objects in view, the invention consists in a device of the class and for the purpose specified, which is simple in construction, efficient in use and which is constructed as hereinafter described and claimed.

The invention is fully disclosed in the following specification, of which the accompanying drawing forms a part, in which the separate parts of my improvement are designated by suitable reference characters in each of the views, and in which:

Fig. 1 is a plan view of a workpiece guiding plate of a sewing machine illustrating the arrangement of my improved attachment thereon.

Fig. 2 is a longitudinal sectional view substantially on the line 2—2 of Fig. 1 illustrating the passage of workpieces through the machine and indicating the general position of the needle.

Fig. 3 is a section substantially on the line 3—3 of Fig. 2.

Fig. 4 is a partial section on the line 4—4 of Fig. 1; and

Fig. 5 is a perspective view through a part of a tie showing the lining attached thereto with part of the construction shown in section.

In illustrating one adaptation of my invention, the same is shown applied to the guiding of a necktie lining through a sewing machine to centralize the lining with respect to the needle of the machine in the operation of stitching the lining to the necktie. In the accompanying drawing 10 represents the table plate of a sewing machine over which a workpiece passes. In the construction shown, this plate has an elongated slot 11 opening into a long transverse slot 12 at its inner end and having an outwardly flared wall structure as indicated at 13 opening through the edge 14 of the plate. Another shorter transverse slot 15 is also provided in the plate 10. The latter serves as a guide and centering means for a narrow ribbon or strip which is indicated in dot and dash lines at 16 in Fig. 2 of the drawing. This particular ribbon may or may not be employed, depending upon the type and kind of necktie produced. The longer transverse slot 12 provides for the passage of a necktie lining 17 upwardly through the plate 10 to extend beneath the needle 18 of the stitching machine which is indicated in Fig. 2 of the drawing and disposed over the apertured portion 19 of the plate 10.

The attachment comprises a mounting sheet 20 having an outer downwardly curved edge portion 21 arranged adjacent the edge 14 of the plate 10. At the inner edge thereof, the sheet has an offset flange portion 22 provided with spaced elongated apertures 23 through which screws or other devices 24 are passed in mounting the sheet 20 upon the undersurface of the plate 10. On the upper surface of the mounting 20 are two coupling blocks 25 welded or otherwise secured thereto which have elongated apertures 26 for receiving the shanks of milled screws 27, one of which is shown in Fig. 4 of the drawing, the latter being in threaded engagement with the plate 10. This construction provides transverse adjustment of the mounting sheet 20 in centralizing the attachment with respect to the needle of the machine.

Arranged upon the mounting member or sheet 20 are two substantially triangular channeled guide members 28, 28*a* mounted respectively on arms 29 and 30 pivoted to the member 20 as at 31 and 32. The arm 29 extends beyond the pivot as seen at 33, and to this extension is pivoted a hook-shaped link 34 as seen at 35. The other hook end 34*a* of the link is pivoted to the shorter arm 30 adjacent the pivot 32 as seen at 36. The mounting member 20 is provided with two arc-shaped apertures 37 and 38 to receive the pivots 35 and 36 respectively so as to dispose the link 34 and other parts later described, on the lower surface of the member 20, while leaving the channeled guide members 28, 28*a* including the arms thereof upon the upper surface of the member 20. The link 34 has the other end 34*b* thereof projecting slightly beyond one side edge of the member 20 so as to be accessible to the operator, whereby the guides 28, 28*a* may be actuated from time to time to insure freeness of action thereof.

The pivot 36 is extended below the member 20 and headed as seen at 36a, note Fig. 4, to form the mounting for one end of a long, light tensioned coil spring 39. The other end of the spring is coupled with a swivel sleeve 40 at the end of an adjustable screw 41 which is arranged in a post 42 secured to the mounting 20 and projecting at the lower surface thereof. The screw 41 serves to adjust the tension of the spring, thereby controlling the sensitiveness of the automatically actuating guide jaws or members 28, 28a to adapt them for use in connection with materials of different textures. In the present illustration the lining 17 is of a fairly substantial structure, and this lining is fed into the machine between the mounting 20 and plate 10 in the manner indicated in Fig. 2, and passes between the channeled jaws 28, 28a which move along the tapered or other irregular side edges 17a of the lining, note Fig. 5, in centralizing the lining with respect to the dot and dash line 43 illustrated in Fig. 3 of the drawing which represents a line in direct alinement with the needle 18 of the machine. In the present construction the two workpiece guide members or jaws 28, 28a operate collectively in open and closed positions. This may be varied, however, to care for different types and kinds of workpieces by simply changing the lengths of the operating arms and the pivotal arrangement of the coupling link thereon.

The channeled jaws or workpiece guide members 28, 28a, each have bottom plates 44 which are slightly wider than the top plates 45. The plates 44 are arranged in close proximity to the upper surface of the mounting 20, whereas the front corner portions 46 of the upper plate are flared and curved upwardly as is indicated in Fig. 4 of the drawing to provide free entrance of the workpiece into the guide members 28, 28a and particularly in threading the workpiece through the attachment. Further, the workpiece is guided upwardly through the aperture 12 by the offset wall 22a of the flange portion 22 as will appear in Fig. 2 of the drawing. The inner ends of the plates 44 and 45 are also preferably rounded as seen at 47 to provide free passage of the workpiece over these ends upwardly through the aperture 12. Furthermore, the inner surfaces of the arms 29 and 30 are rounded as seen at 48 to form smooth guides for engaging the opposed edges of the workpiece 17 fed through the members 28, 28a.

In Fig. 2 of the drawing as well as in Fig. 5, part of a necktie is indicated at 49. In forming the zig-zag or other stitch 50 to couple the lining 17 with the tie 49, the tie is fed through the machine over the plate 10 by the operator in the usual manner with the tie folded as at 51 with the free side edges 52 thereof disposed in alinement with and adjacent to the needle 18, thus arranging the edge portions 51 centrally and longitudinally of the lining 17 by reason of the fact that the lining 17 is guided to a centralized position with respect to the needle 18 by the guide members 28, 28a.

Fig. 5 shows a partial view of a necktie indicating part of the same in section and representing the rear surface of the assemblage when stitched; it being understood that the necktie 49 is arranged over the lining in the stitching operation as will clearly appear at the right of Fig. 2 of the drawing.

In dealing with linings of different textures, the tension of the spring 39 may be adjusted through the medium of the screw 41 as will be apparent. When the supplemental or reinforcing strip 16 is used, this strip is guided to a centralized position by the slot 15. It will be understood that by removing the screws 24 and the screws 27, the entire attachment comprising the mounting member 20 with the various parts arranged thereon can be removed for repair or other purposes.

It will be apparent that in the structure as shown the workpiece guide members in addition to being spring tensioned to control relative movement of said members toward and from each other, the members are also coupled by a link which provides simultaneous or collective movement of said members toward and from each other. An attachment of the type and kind disclosed may be used for guiding workpieces of any kind, and in some instances a single guide member alone may be used to engage one edge portion only of the workpiece.

It will also be apparent that the apertures 37 and 38 limit movement of the members 28, 28a in both directions, and any means may be provided to control and regulate the independent limit of movement of the members in operating upon different workpieces.

Having fully described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A sewing machine attachment comprising means for automatically guiding a workpiece having irregular edges to centralize the same with respect to the stitching mechanism of the machine, said means comprising oppositely disposed light spring tensioned guide members adapted to engage opposed edges of the workpiece to be guided and movable toward and from each other to follow the contour of said edges of the workpiece, said guide members comprising independently pivoted arms having channeled workpiece receiving portions at the free ends thereof, a link coupling the pivot end portions of said arms, and means adjusting the spring tension of said guide members.

2. The combination with a sewing machine having a table plate provided with a T-slot arranged forwardly of a stitching mechanism of the machine, of a workpiece guide unit comprising a mounting sheet, means detachably and adjustably supporting the sheet beneath said plate, two workpiece guide members independently and movably supported on said sheet transversely with respect to the T-slot of said mounting plate to centralize a workpiece with respect to said slot and the stitching mechanism of the machine, and tensional means controlling the movement of said members toward and from each other in engaging opposed side edges of a workpiece fed therebetween and through the cross slot of said T-slot.

3. The combination with a sewing machine having a table plate provided with a T-slot arranged forwardly of a stitching mechanism of the machine, of a workpiece guide unit comprising a mounting sheet, means detachably and adjustably supporting the sheet beneath said plate, two workpiece guide members independently and movably supported on said sheet transversely with respect to the T-slot of said mounting plate to centralize a workpiece with respect to said slot and the stitching mechanism of the machine, tensional means controlling the movement of said members toward and from each other in engaging opposed side edges of a workpiece fed

therebetween and through the cross slot of said T-slot, means coupling said members to provide collective movement thereof toward and from each other, and means adjusting said tensional means in adapting the guide unit to different workpieces.

4. A workpiece guide unit of the character described comprising a supporting sheet, two arms arranged upon one surface of the sheet and pivoted thereto on independent spaced pivots, the free ends of the arms having workpiece guide jaws, a link arranged upon the other surface of the sheet and pivoted to said arms adjacent the pivot ends thereof to couple said arms for collective movement, and an elongated coil spring coupled with said link and with said sheet and normally urging the jaws of said arms toward each other and controlling tensional engagement with opposed edges of a workpiece guided between the jaws in passing through said attachment.

5. A workpiece guide unit of the character described comprising a supporting sheet, two arms arranged upon one surface of the sheet and pivoted thereto on independent spaced pivots, the free ends of the arms having workpiece guide jaws, a link arranged upon the other surface of the sheet and pivoted to said arms adjacent the pivot ends thereof to couple said arms for collective movement, an elongated coil spring coupled with said link and with said sheet and normally urging the jaws of said arms toward each other and controlling tensional engagement with opposed edges of a workpiece guided between the jaws in passing through said attachment, means limiting the movement of said jaws in both directions, and means adjusting the tension of said spring.

6. A workpiece guide unit of the character described comprising a supporting sheet, two arms arranged upon one surface of the sheet and pivoted thereto on independent spaced pivots, the free ends of the arms having workpiece guide jaws, a link aranged upon the other surface of the sheet and pivoted to said arms adjacent the pivot ends thereof to couple said arms for collective movement, an elongated coil spring coupled with said link and with said sheet and normally urging the jaws of said arms toward each other and controlling tensional engagement with opposed edges of a workpiece guided between the jaws in passing through said attachment, means limiting the movement of said jaws in both directions, means adjusting the tension of said spring, said supporting sheet being curved downwardly at one edge and upwardly at the other edge in guiding a workpiece over said sheet, and means adjustably supporting the sheet in the direction of relative movement of said jaws.

7. A sewing machine attachment for automatically guiding a flat workpiece having irregular edge contours to centralize the same with respect to the stitching mechanism of a machine, said attachment comprising a pair of uniformly spring tensioned guide members mounted on independent widely spaced pivots, the free ends of said members having spaced parallel plates adapted to overlie upper and lower surfaces of a workpiece adjacent the opposed edges thereof, and the portion of each guide member between said plates having a smoothly curved contour providing for free movement of a workpiece there along in all positions of pivotal movement of said guide member in the passage of an irregular workpiece therethrough.

8. A sewing machine attachment for automatically guiding a flat workpiece having irregular edge contours to centralize the same with respect to the stitching mechanism of a machine, said attachment comprising a pair of uniformly spring tensioned guide members mounted on independent widely spaced pivots, the free ends of said members having spaced parallel plates adapted to overlie upper and lower surfaces of a workpiece adjacent the opposed edges thereof, the portion of each guide member between said plates having a smoothly curved contour providing for free movement of a workpiece there along in all positions of pivotal movement of said guide member in the passage of an irregular workpiece therethrough, a link coupling said members, said link engaging the guide members at opposed sides of the pivots thereof, and a spring coupled with said link forming the means for uniformly urging the workpiece engaging portions of said guide members toward each other.

WILL F. SMITH.