A. H. DE VOE.

SEWING MACHINE ATTACHMENT.

APPLICATION FILED OCT. 5, 1908.

992,942. **Patented May 23, 1911.**

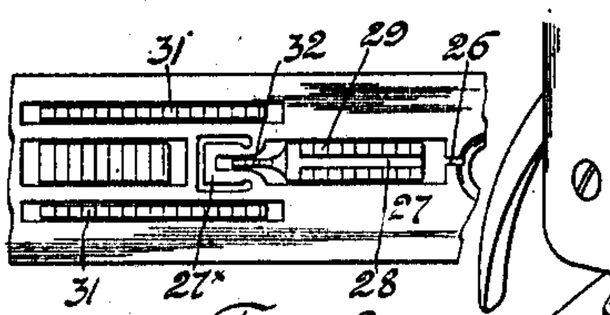

Fig. 8.

Fig. 1.

Fig. 6.

Fig. 2.

Fig. 3.

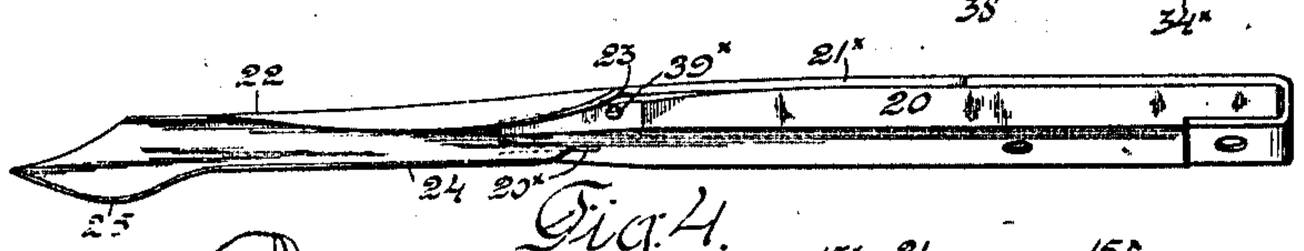

Fig. 4.

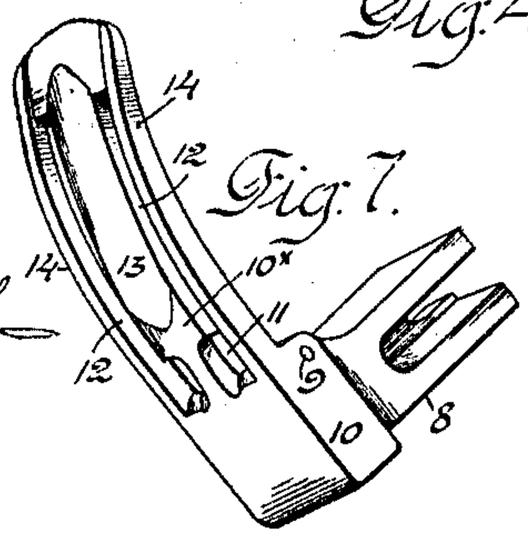

Fig. 7.

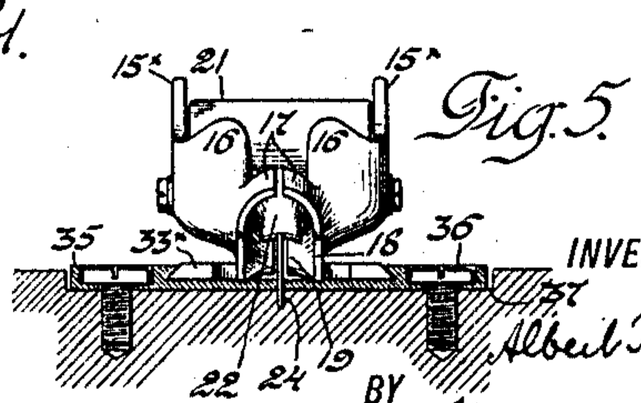

Fig. 5.

WITNESSES

Geza Ferraly

J. L. Diner

INVENTOR

Albert H. De Voe

BY

Henry J. Miller

ATTORNEY

UNITED STATES PATENT OFFICE.

ALBERT H. DE VOE, OF ELIZABETH, NEW JERSEY, ASSIGNOR TO THE SINGER MANUFACTURING COMPANY, A CORPORATION OF NEW JERSEY.

SEWING-MACHINE ATTACHMENT.

992,942. Specification of Letters Patent. Patented May 23, 1911.

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To all whom it may concern:

Be it known that I, ALBERT H. DE VOE, a citizen of the United States, residing at Elizabeth, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Sewing-Machine Attachments, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to an improvement in sewing machine attachments for turning under the edges of a strip of material preparatory to stitching the inturned edges to permit the same to be used as a band or strap for articles of clothing or for other purposes.

The invention has for its principal object to provide a folding attachment capable of turning the marginal portions of and delivering the strip with precision to the stitch-forming mechanism.

As preferably constructed, the attachment comprises a strip-guiding channel-member contracted toward its forward or delivery end and divided so as to form independent spaced side-walls gaged to the desired width of the folded strip, the rearward portion of such channel-member inclosing a spacing block to which is applied the rearward or shank portion of a supporting member formed in its forward portion with a tapering spring-tongue embraced by and spaced from the walls of the guiding channel-member, such tongue being provided centrally with a depending guide-fin whose forward portion enters a central feed-dog aperture in the throat-plate and a clearance slot in the feed-dog to prevent the material working beneath the same in the operation of the machine. The presser-foot is formed with an upturned tongue in advance of the needle apertures normally entering the space intermediate the parallel side-walls of the strip-guiding channel in its forward end portion, rearward of which the latter is provided with inturned wings overhanging the guideway of the channel member to maintain the strip therein in the edge-turning operation, in which the tapering spring tongue, laterally notched at its base to receive the marginal portions of the strip, serves as a yielding supporting arbor, while its depending fin affords a stop for the inturned edges of fabric to insure the central location of their opposed edges beneath the body of the strip. The strip-guiding channel-member is divided centrally through the greater part of its length, and the shank of the inclosed spring-tongue is reduced to permit the lateral yield of the side-walls, whose spacing apart is controlled by adjusting screws passing through the side-walls and tapped into the edges of the spacing block.

By fitting the delivery portions of the side-walls to the forward portion of the presser-foot and the depending fin of the inclosed spring-tongue within the throat-plate and feed-dog, it will be observed that the material is very accurately controlled in its presentation to the stitch-forming mechanism without close attention on the part of the operator, producing with certainty a folded band of uniform width and with its inturned marginal portions symmetrically stitched in place.

In the accompanying drawings, Figure 1 is a perspective view of a part of the forward portion of a sewing machine provided with the present improvements; Fig. 2 is a longitudinal sectional elevation of the folding attachment with the coöperating parts of the sewing machine; Fig. 3 is a transverse section of the folder through the adjusting screws for controlling the width of the delivery end; Fig. 4 is an edge view of the spring-tongue or arbor and the spacing block tilted slightly to expose the lower faces of the same, and Fig. 5 is a front end elevation of the attachment with a portion of the sewing machine bed-plate represented in section. Fig. 6 is a perspective view of the feed-dog with the throat-plate indicated in dotted lines, and Fig. 7 is a perspective view of the presser-foot taken from a point below the same to expose its channeled and slotted lower face. Fig. 8 is a plan view of the throat-plate.

As represented in the drawings, the attachment is fitted to a Singer No. 62 double-chain-stitch machine, which is constructed with the base 1 supporting the work-plate 2 and an overhanging bracket-arm whose head 3 only is partially shown. The machine is provided with the usual needle-bar having needle-clamp 4 carrying the spaced needles 5 coöperating with the usual loop-taker. To the lower end of the presser-bar 6 is secured by means of the fastening screw 7 the shank 8 of the presser-foot pivotally connected, by means of the transverse pin 9,

to the foot-plate 10 having the upper side of its heel portion channeled to receive the lower end of the shank 8 and provided in its forward or toe portion in advance of the pivotal pin 9 with the spaced needle-apertures 11 from the outer sides of which extend forwardly the parallel slots 12 intermediate which the sole is formed with a shallow groove 13 and along the outer sides of which slots are disposed the depending ribs 14 whose lower edges merge into the operative face of the heel portion, the ribs 14 forming a guiding channel for the folded strip delivered by the folder.

The trough-shaped channel-member 15 is formed of rectangular cross-section in its receiving end portion affording upturned parallel guide-lips 15× for the edges of the flat strip introduced into the attachment, and is gradually contracted in its forward portion wherein the upturned guide-lips are materially widened and turned inwardly to form confining wings 16 whose edges are spaced apart at first to expose the middle portion of the strip for convenience in initially advancing the forward end of the same to the stitch-forming devices and are then extended toward each other at 17 to form an arch substantially covering the channel immediately in advance of the upturned toe portion of the presser-foot, beyond which the channel terminates in the parallel edge-guiding side-walls in the form of standing ribs 18 entering the longitudinal slots 12 in the presser-foot and extending into the needle-apertures 11 of the latter in which their forward extremities embrace the paths of reciprocation of the needles 5. The bottom of the channel-member 15 is divided along the central line from the forward end to a point 19 near the opposite end to afford flexibility to its opposed guiding parts and to enable the latter to be adjusted as before indicated.

The toe portion of the presser-foot is turned upwardly at its forward end, and the slots 12 are extended into this upturned portion to permit the ribs 18 to enter the slots beneath the unslotted extreme forward end of the foot. When the parts are in operative relation the needle apertures 11 are closed on the outer sides to closely embrace the needles by means of the ribs 18 of the channel member, and the weakening effect of the contraction or neck produced by them at the base of the tongue 10× intermediate the slots 12 is compensated for by the parallel side members 14 serving as braces joining the outer end of the tongue with the body of the foot.

Within the bottom of the receiving end of the channel-member is inserted the rectangular spacing block 20 to the upper side and outer end of which is fitted the shank 21 of the arched tapering spring-tongue or arbor 22 embraced by and spaced from the walls of the edge-turning portion of the channel-member 15 by means of such block. The shank 21 is contracted in its forward portion at 21× to afford a slight clearance space beneath the same and the upturned guide-lips of the channel-member, and the tongue 22 is laterally notched at 23 where its base joins the shank 21 to accommodate the marginal portions of the strip as they are turned under the tongue by the rounded side-walls of the channel-member 15. The tongue 22 is provided with a depending central guide-fin 24 passing through the slotted bottom of the guide-member 15 and a slot 20× in the forward end of the spacing block 20 and having its forward end cut away upon the upper side to conform to the curvature of the presser-foot and its lower edge formed with a projection 25 to enter the steadying slit 26 formed in the top of the throat-plate 27 and entering a clearance slot 28 formed intermediate the toothed advance work-engaging portion 29 of the feed-dog 30. The feed-dog is provided with the usual serrated feeding members 31 beyond the needle-paths, but is peculiar in the provision of an auxiliary central member 32 having a serrated feeding surface in advance of the clearance slot 28 and extending intermediate the needles 5, the throat-plate being provided with feed-dog openings and needle-apertures corresponding with such arrangement.

The attachment is mounted upon an angular spring holding plate 33 by means of fastening screws 34 passing through the same and the bottom of the channel-member 15 and tapped into the spacing block 20, the foot 33× of the holding plate having beveled edges fitted to a similarly shaped slideway in the fastening plate 35 secured for slight lateral adjustment by means of screws 36 upon a suitable seat 37 formed in the cloth-plate 2. The holding plate is provided with lateral stop-lugs 38 adapted to engage the front edge of the fastening plate 35 to insure the setting of the attachment in its proper endwise relation to the coöperating parts of the sewing machine. As will be observed, the folder may be readily detached from the machine by merely withdrawing the holding slide-plate 33 from the plate 35 to which it is fitted.

To provide the desired independent lateral adjustment for the ribs 18 of the channel-member, threaded holes 39× are provided in the opposite edges of the spacing block 20 to which are applied the adjusting screws 39 passing through suitable apertures in the side-walls of the channel-member, the tightening of which screws serves to draw the delivery ends inwardly to contract the delivery orifice adjacent the stitch-forming mechanism.

As indicated in dotted lines in Fig. 2, the aperture in the plate 33 entered by one of the fastening screws 34 is somewhat larger than the screw so as to allow a small amount of clearance to permit of the slight lateral adjustment of the forward end of the folder upon its holding plate so as to insure the proper register of the same with the stitch-forming mechanism.

As represented in the drawings, the shank of the holding plate 33 is bent upward slightly and its seat for the folder corresponding inclined to project the folder beneath the presser-foot at a slight inclination, whereby the folded strip is delivered to the stitch-forming mechanism in a more advantageous way than if the attachment were directed parallel with the cloth-plate. By this means, the two plies of material to be stitched together are deflected more nearly equally by their contact respectively with the opposed operative faces of the presser-foot and the throat-plate.

As the serrated feeding members 29 and 32 of the feed-dog are opposed to the tongue $10^{\times}$ of the presser-foot intermediate the slots 12 and the portion between the needle-apertures 11, it will be observed that the feed of the folded strip up to the stitch-forming mechanism is effected with certainty and without tendency to distortion of the yet unstitched portion of the fabric while the provision of feed-dog and needle-apertures in the throat-plate to correspond with the arrangement of needles and of the feeding surfaces of the feed-dog insures the proper support of the material in its travel over the throat-plate. Although the groove 13 in the lower face of the presser-foot is not essential to the operation of the device, it is preferable as it tends to smooth out the folded strip in its advance to the stitch-forming mechanism. As will be observed, the longitudinal groove in the presser-foot tongue $10^{\times}$ in advance of the needle-apertures 11 affords a transversely arched pressure surface intermediate the stitching lines tending to receive any fullness intermediate the edges of the folded strip near the stitching point, while the merging of such groove or arched portion into the flat face of the tongue close to the needle-apertures causes the crowding of such fullness in such manner as to press the edges of the strip firmly against the side-walls afforded by the ribs 18 of the channel-member just as it reaches the stitching point, which insures uniformity in the stitching.

In machines of the type represented in the drawings, employing two needles and a single coöperating looper arranged transversely of the direction of feed, it is important that the throat-plate be provided with a work-supporting tongue or chaining finger extended forwardly from the needle-apertures around which the cross stitch produced by the tying looper-thread is laid, for which reason the forward and rearward central feeding members have been separated by a gap in which the formation of the stitching has been effected. In such case the forward feeding member 29 has been required, in connection with the class of attachment herein described, to force the initial end of the folded strip forwardly beneath the presser-foot where it has been obstructed so as to render the clogging of the machine liable. By providing the member 32 in front of the forward feeding surface intermediate the needles, the machine is adapted to readily handle short strips of fabric without any such liability of clogging, the strips being stiffened by the stitching sufficiently to be pushed forward by the feed-dog member 32 for the usual action of the rearward central feeding surface 31. This arrangement is particularly desirable in connection with the folding and stitching of narrow strips which have not sufficient width to come within the range of movement of the lateral feeding surfaces 31, which, with the wider strips are adapted to effectively advance the work across the path of movement of the needles. As will be observed, the cross looper-thread is laid not only beneath the tongue $27^{\times}$ of the throat-plate but beneath the feed-dog member 32 which extends beyond the needle-apertures of the throat-plate.

The present improvement is susceptible of material modification without departure from the invention, but the construction shown and described herein is considered an effective embodiment thereof.

Having thus set forth the nature of the invention, what I claim herein is:—

1. A sewing machine attachment comprising a strip-guiding channel member formed at its delivery end with parallel edge-guiding walls with an intervening space, and a presser-foot constructed with a body portion and a forwardly extending tongue fitted between said edge-guiding walls of the channel member and contracted at its base to form needle apertures adapted to be closed upon their outer sides by the inclosing walls of the channel member, and a rigid connection between the body of said foot and the outer end of said tongue for bracing the latter.

2. A sewing machine attachment comprising a strip-guiding member formed at its delivery end with spaced standing parallel ribs affording edge-guiding walls, and a presser-foot having an upturned forward portion and provided with a plurality of needle apertures and with longitudinal slots leading therefrom into said upturned forward portion, said slots being spaced apart correspondingly with and entered by the standing ribs of the channel member.

3. A sewing machine attachment comprising a strip-guiding member formed at its delivery end with spaced parallel edge-guiding walls, and having the adjacent portions of said side-walls inturned to form an arch above the guiding channel, and a presser-foot having an upturned toe-portion and provided with needle-apertures spaced correspondingly with said edge-guiding walls and with longitudinal slots leading therefrom and through the upturned toe-portion and adapted to register with and receive said edge-guiding walls of the strip-guiding member.

4. A sewing machine attachment comprising a strip-guiding channel-member formed at its delivery end with spaced side-walls adapted for relative lateral adjustment, a longitudinally extending tongue embraced by said channel-member and spaced from the same in its forward portion and provided with a central guide-fin, and means for adjusting the spacing of the side-walls of said channel-member toward and from the edges of the tongue.

5. A sewing machine attachment comprising a strip-guiding channel-member formed at its delivery end with spaced side-walls adapted for relative lateral adjustment, a longitudinally extending tongue embraced by said channel-member, a spacing block to which said channel-member and tongue are secured at the receiving end of the attachment with the forward portion of said tongue laterally spaced from said channel-member, and means applied to opposite sides of said block for effecting independently the lateral adjustment of the side-walls of the channel-member in relation to the intermediate tongue.

6. A sewing machine attachment comprising a strip-guiding channel-member formed at its delivery end with spaced side-walls adapted for relative lateral adjustment, a longitudinally extending tongue embraced by said channel-member, a spacing block to which said channel-member and tongue are secured at the receiving end of the attachment with the forward portion of said tongue laterally spaced from said channel-member, and adjusting screws tapped into the opposite sides of said block and passing through the side-walls of the channel-member whereby the latter may be laterally adjusted in relation to the intermediate tongue.

7. A sewing machine attachment comprising a strip-guiding channel-member longitudinally slotted and formed at its delivery end with spaced side-walls, a longitudinally extending tongue embraced by said channel-member and provided with a depending guide-fin entering the slot in said channel-member, and means for securing said tongue within said channel-member.

8. A sewing machine attachment comprising a strip-guiding channel-member, a longitudinally extending spring-tongue embraced by said channel-member and adapted to yield laterally within the same, and a longitudinal guide-fin also embraced by said channel-member and adapted to yield with said tongue relatively to the channel-member.

9. The combination with a sewing machine comprising stitch-forming mechanism including a pair of spaced needles and feeding mechanism, of an attachment comprising a strip-guiding channel-member formed at its delivery end with spaced side walls whose forward extremities normally embrace the needle paths, and are adapted for relative lateral adjustment, a longitudinally extending tongue embraced by said channel member and spaced from the same in its forward portion, means for adjusting the spacing of the side walls of said channel member toward and from the edges of the said tongue, and a presser-foot formed with needle apertures spaced correspondingly with said edge-guiding walls and with longitudinal slots embracing the forward portions of said side walls and with an intermediate tongue entering the space between the latter.

10. A sewing machine attachment comprising a strip-guiding channel-member, a longitudinally extending tongue embraced by and spaced from the walls of said channel-member, a spacing block interposed between said channel-member and tongue at one end, a holding plate having a shank adapted for attachment to a sewing machine cloth-plate, and common means for securing upon the spacing block the channel-member and the inclosed tongue and fastening the same for lateral adjustment upon said holding plate.

11. The combination with a sewing machine cloth-plate, of a fastening plate secured thereto for lateral adjustment, and provided with an undercut slideway, a holding plate comprising a shank having a foot portion fitted to said slideway in the fastening-plate, a strip-guiding channel-member, a longitudinally extending tongue embraced by and spaced from the walls of said channel-member, a spacing block interposed between said channel-member and tongue at one end, and common means for securing upon the spacing block the channel-member and the inclosed tongue and fastening the same for lateral adjustment upon said holding plate.

12. The combination with a sewing machine cloth-plate provided with a slideway and a throat-plate, of a holding plate having an inclined shank terminating in a foot-portion fitted to said slideway, a strip-guiding channel-member, a longitudinally extending tongue embraced by and spaced from the walls of said channel-member and provided

with a depending longitudinal guide-fin, a spacing block interposed between said channel-member and tongue at one end and provided with a slit entered by one extremity of said guide-fin, and common means for securing upon the spacing block for relative lateral adjustment the channel-member and the inclosed tongue and for fastening said parts for lateral adjustment upon said holding plate.

13. The combination with a sewing machine comprising stitch-forming mechanism including a pair of spaced needles, and feeding mechanism, of a strip-folding attachment comprising a channel-member terminating at its delivery end in spaced parallel side-walls whose forward extremities normally embrace the needle-paths, and a presser-foot formed with needle apertures spaced correspondingly with said needles and provided with longitudinal slots connected with said needle-apertures and entered by the parallel side-walls at the delivery end of said attachment.

14. The combination with a sewing machine comprising stitch-forming mechanism including a pair of spaced reciprocating needles, feeding mechanism including a feed-dog, and a throat-plate provided with needle-apertures and a feed opening in register respectively with said needles and feed-dog, of a strip-folding attachment comprising a channel-member having its delivery end extended into proximity with said needles, a longitudinally extending tongue embraced by and spaced from the walls of said channel-member, and a longitudinal guide-fin carried by said tongue and extended below the upper face of said throat-plate.

15. The combination with a sewing machine comprising stitch-forming mechanism including a pair of spaced reciprocating needles, feeding mechanism including a feed-dog disposed in advance of the needle-paths and provided with a clearance slot extending lengthwise thereof, and a throat-plate provided with needle-apertures and a feed opening in register respectively with said needles and feed-dog, of a strip-folding attachment comprising a channel-member having its delivery end extended into proximity with said needles, a longitudinally extending tongue embraced by and spaced from the walls of said channel-member, and a longitudinal guide-fin disposed beneath said tongue and extended through said throat-plate into the clearance slot in the feed-dog.

16. The combination with a sewing machine comprising stitch-forming mechanism including a pair of spaced reciprocating needles, feeding mechanism including a feed-dog having a serrated feeding surface disposed mainly in advance of and having a portion extended intermediate the paths of reciprocation of said needles, and a throat-plate formed with needle-apertures and a work-supporting and stitch-receiving tongue extended forwardly from and detached at its forward extremity from the body of the same and a feed-dog aperture extended into said tongue between the needles of a strip-folding attachment comprising a channel-member formed at its delivery end with spaced side-walls whose extremities embrace said needle-paths, and a longitudinally extending tongue embraced by and spaced from the walls of said channel-member.

17. The combination with a sewing machine comprising stitch-forming mechanism including a pair of spaced reciprocating needles, and feeding mechanism, of a strip-folding attachment comprising a channel-member formed at its delivery end with laterally yielding spaced side-walls normally embracing said needle-paths, and a longitudinally extending tongue embraced by and spaced from the walls of said channel-member, and a presser-foot entering the space intermediate the needles and the embracing side walls of the channel member.

18. The combination with a sewing machine comprising stitch-forming mechanism including a pair of spaced needles, and feeding mechanism, of an attachment comprising a channel member terminating at its delivery end in spaced side walls whose forward extremities normally embrace the needle paths, and a presser-foot formed with needle apertures spaced correspondingly with said needles and provided with longitudinal slots entered by the side walls at the delivery end of said attachment and provided intermediate said slots and in advance of the needle apertures with a tongue having a transversely arched lower face merging into a flat portion extending between the needle apertures.

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

ALBERT H. DE VOE.

Witnesses:
H. A. KORNEMANN,
JOSEPH F. JAQUITH.