A. H. DE VOE.
SEWING MACHINE PORDER.
APPLICATION FILED APR. 27, 1908.

970,474.

Patented Sept. 20, 1910.
2 SHEETS—Sheet 2.
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 Folders, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention has for its object to provide a folding attachment for sewing machines of which the component parts may be readily opened out for insertion of the material to receive the hem or other fold. The invention consists essentially in a folder comprising a scroll composed of a plurality of independently sustained separable and laterally abutting sections, with means for separating said sections for convenient introduction of the material. It also includes a work-bending tongue or arbor adapted to be shifted out of its normal alinement with the scroll.

In its preferred form, the folder is mounted upon the presser-foot with the separable portions of its scroll rigidly connected with separable portions of the presser-foot, one of which latter comprises a section containing the needle-hole and disposed in direct alinement with the delivery end of the folder, so that the raising of a section of the scroll involves a corresponding lifting of a portion of the presser-foot surrounding the needle-path in order to insure the unobstructed advance of the initial end of the folded material beneath the needle. The presser-bar is provided with a well-known form of lifter including an operating rod extending behind the table of support of the sewing machine and connected with a suitable treadle or knee-lever, whereby not only may the presser-foot be lifted, but the folder may be opened out for introduction or removal of the material without the use of the operator’s hands.

The invention will be understood by reference to the accompanying drawings, in which—

Figure 1 is a rear side elevation of a sewing machine provided with the present improvements, and Fig. 2 a front end view of the same. Fig. 3 is a plan of a portion of the work-plate of the sewing machine with the attachment in place thereon. Fig. 4 is a rear elevation of the attachment with its component parts in operative position, and Fig. 5 a similar view showing the presser-foot raised and the folder parts in retracted position. Fig. 6 is a perspective view, upon an enlarged scale, of the attachment with a section of the material undergoing a folding and stitching operation, and Fig. 7 a similar view of the attachment with its component parts in retracted position.

The machine is shown herein constructed with a frame comprising the base 1 and overhanging bracket-arm 2 in the forward end of which is journaled the reciprocating needle-bar 3 carrying a needle 4 cooperating with the rotary looper 5 in the production of the chain-stitch seam. The had of the bracket-arm carries the usual presser-bar 6 provided with the thrust-collar 7 between which and the end of the adjusting screw 8 is interposed the pressure spring 9, the collar 7 having a lateral lug 10 adapted for engagement with the cam portion of the lifting lever 11 fulcrumed at 12 upon the head of the bracket-arm. Beneath the collar 7 the presser-bar 6 is embraced by a perforated lateral ear 13 upon the lower end of a link-bar 14 pivotally connected at its upper end by means of a stud-screw 15 with the forward end of a lifting rock-lever 16 fulcrumed at 17 upon the bracket-arm and having in its rearward end an eye 18 entered by the hooked upper end of a connecting rod 19 extending downwardly below the base of the machine and adapted to be connected with and operated by a treadle or knee lever in a manner well known. The forward end of the lever 16 is normally maintained down in inoperative position by means of the spring 19 secured to the same at one end and at the opposite end to the head of the bracket-arm 2.

Within the transversely slotted lower end of the presser-bar 6 is secured by means of a fastening screw 20 the slotted flat shank 21 of the presser-foot having a rigid main foot-portion 22 and a separable needle-hole portion 23 provided with the needle-hole 24 and having its forward portion offset at 25. The forwardly extending rigid toe portion 26 at the right of the needle-hole portion 23 has affixed thereto the main scroll section 27 having arranged continuously with its lower edge the flat work-supporting plate 28 arranged flush with the lower operative face of the presser-foot. The conical scroll

UNITED STATES PATENT OFFICE.

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SEWING-MACHINE FOLDER.


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is closed upon the opposite side by a removable section 29 whose upper edge abuts against the adjacent edge of the main scroll section in a longitudinal line extending toward the needle-hole 24. The forward end of the scroll section 29 is secured to and carried by the lateral cross member 30 of a forwardly extending lever 31 fulcrumed upon a stud-screw 32 mounted upon a bearing lug 33 upon the presser-foot and having a rearwardly extending tail portion 34. To the cross member 30 of the lever 31 is also rigidly secured the needle-hole section 33 of the presser-foot, which is thus adapted to rise and fall with the scroll section 29 around the horizontally disposed fulcrum-screw 32, and the member 29 thus having a movement in a direction transverse to the axis of the scroll and to its own operative surface where it abuts the other section. The scroll sections 27 and 29 afford, at opposite sides of the center line of the continuous involute work-guiding element which they together constitute, edge-turning portions adapted to turn the material along the opposite edges of the hem. Disposed normally in alignment with the scroll 27 29, is the work bending member or arbor, herein represented as a conical tongue 35, which is secured upon the forward end of a laterally curved lever 36 having a hollow post 37 fitted upon the vertical stud-screw 38 carried by the body of the presser-foot and having a rearwardly and laterally extending tail portion 39 terminating in a backwardly extending finger 40. The post 37 is surrounded by a spring 41 having one extremity connected with the presser-foot shank 21 and the other end embracing the edge of the lever 36, whereby the tongue 35 is maintained normally with the scroll 27 29. As will be seen by reference to Fig. 3, the forward arm 36 of the arbor-supporting lever is adapted to rest against the adjacent edge of the foot-member 25 which serves as a stop to insure the normal disposition of the arm 35 in proper relation with the scroll under the action of the spring 41.

A flat spring 42 is secured at one end by means of screws 43 to the presser-foot shank and has its opposite end resting upon the forward end of the lever 31 for maintaining the parts 23 and 29 normally in operative relation with the parts 22 and 27. The shank of the presser-foot is shown provided with a lateral bearing lug 44 carrying a fulcrum-screw 45 upon which is mounted an angular lever having a downwardly and transversely inclined arm 46 having its lower edge formed with a straight cam portion 47 adapted to operatively engage the top of the tail portion 34 of the lever 31 and a second concaved portion 48 adapted to operatively engage the finger 40 of the tailportion 39 of the supporting lever 36. An upwardly and transversely inclined arm 49 of this angular lever is provided with an upwardly extending contact screw 50 provided with a lock nut 51 and adapted to engage the lower face of the lower bearing member 52 of the head of the bracket-arm when the presser-foot is raised, as shown in Fig. 2, being at other times disposed slightly beneath such fixed part of the machine, as represented in Fig. 1.

In practice, the boss of the lever 31 surrounding the stud-screw 32 is fitted loosely to the latter so as to allow a small amount of lateral play to the lever and the operative parts carried thereby. As will be observed, the right-hand edge of the needle-hole section 23 of the presser-foot is fitted closely to the adjacent edge of the body portion 22, while the opposite edge of the needle-hole 55 portion is closely confined by the adjacent edge of the spring-pressed lever 36. Thus, when the operating lever 46 49 is tilted to shift the levers 31 and 36 by engagement of the cam portions 47 and 48 with the parts 90 34 and 40, respectively, the upward movement of the lever 36 relieves the side pressure upon the presser-foot section 23 and permits the latter with its carrying lever 31 to yield laterally in case the lower edge of the scroll section 29 extends sufficiently beneath the work bending tongue 35 to rub against the latter in its rising motion so as to be sufficiently deflected to avoid possible interference therewith.

In the operation of the device, the presser-foot is raised, either by operation of the finger lever 11 or the knee or foot actuated rock-lever 16, and the several component parts of the attachment are opened out as 105 represented in Figs. 3, 5 and 7, and the forward end of the margin of the material is introduced above the work-supporting plate 28 and into the laterally open scroll section 27, where it can be readily guided beneath the raised needle-hole section of the presser-foot by the use of a stiletto, if found necessary. The material being in position and partially formed into the desired hem 6, the presser-foot is lowered upon the work plate 55, which causes the tongue 35 to move laterally toward the scroll-member 27 to bend the margin of the material in conformity with the latter, while the descent of the scroll section 29 serves to bend the edge portion of the material downwardly around the tongue 35 and within the curl in the margin of the material produced by the members 27 and 35. As the needle-hole portion 23 of the presser-foot does not wholly resume its normal working position until the parts 29 and 35 are in normal relation with the fixed scroll member or section 27, it is evident that the formation of the hem is fully completed before pressure is applied.
to the same beneath the needle-hole to determine its permanent form preparatory to the stitching operation.

While the present improvement is designed particularly for use in connection with thin materials lacking sufficient stiffness for easy control in the usual manner, it is evident that the improvement is susceptible of general use with any class of material.

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

1. A sewing machine folder comprising a scroll composed of a plurality of independently sustained separable sections having abutting edges and constructed and arranged to afford a continuous involute edge-turning surface, and means for shifting one of said sections out of operative relation with the other and in a direction transverse to the axis of the scroll and to its own operative surface where it abuts the other section.

2. A sewing machine folder comprising a scroll and a work-bending member or arbor bodily movable in relation to said scroll, a spring-actuated carrier for said arbor, a stop for determining the normal operative position of the arbor, and means for laterally shifting said arbor from operative relation with said scroll for introduction of the work.

3. A sewing machine folder comprising a scroll composed of a plurality of separable sections, a work-bending member or arbor normally in alignment with said scroll but supported independently of said sections, and means for separating said scroll sections and shifting them out of operative relation with each other and with the work-bending member or arbor for introduction and removal of the work.

4. A sewing machine folder comprising a scroll composed of a plurality of independently sustained and relatively movable sections having edge-turning portions respectively upon opposite sides of the center line and a work-bending member or arbor normally in alignment with said scroll intermediate said edge-turning portions but independently supported and differentially movable in relation to the scroll sections.

5. A sewing machine folder comprising a scroll composed of a plurality of separable sections one of which is laterally movable in relation to the other, a longitudinally tongued normally embraced by said scroll but mounted for lateral movement transversely to the direction of relative lateral movement of the scroll sections, and means for shifting said tongue out of operative relation with said sections.

6. A sewing machine folder comprising a scroll composed of a plurality of separable sections one of which is extended laterally to form a work-supporting plate and the other of which is independently supported and laterally movable toward and from said plate, a tongue normally disposed in line with said scroll and supported for lateral movement parallel with said plate, and means for simultaneously shifting said movable section and tongue out of operative relation with the other scroll section.

7. The combination with a sewing machine presser-foot, of a folder comprising a scroll composed of a plurality of separable sections one of which is rigidly attached to and carried by said presser-foot, a lever pivotally attached to said presser-foot and carrying another of said scroll sections, a work-bending member or arbor in alignment with said scroll, a second lever pivotally attached to and carried by said presser-foot and carrying said work-bending member or arbor, and means for moving said levers to bring the component parts of the hemmer respectively into operative and inoperative relation.

8. The combination with a sewing machine presser-foot, of a folder comprising a scroll composed of a plurality of separable sections one of which is rigidly attached to and carried by said presser-foot, a lever pivotally mounted upon said presser-foot and carrying another of said scroll sections, a work-bending member or arbor in alignment with said scroll, a second lever pivotally mounted upon said presser-foot and movable transversely of the movements of the first-named lever and carrying said work-bending member or arbor, and means for moving said levers to bring the component parts of the hemmer respectively into operative and inoperative relation.

9. The combination with a sewing machine presser-foot, of a folder comprising a scroll composed of a plurality of separable sections one of which is rigidly attached to and carried by said presser-foot, a lever pivotally attached to said presser-foot and carrying another of said scroll sections, a work-bending member or arbor in alignment with said scroll, a second lever pivotally attached to and carried by said presser-foot and carrying said work-bending member or arbor, an operating lever adapted to operatively engage and shift said pivot levers, and means for actuating said operating lever.

10. The combination with a sewing machine presser-foot, of a folder comprising a scroll divided longitudinally and vertically into separable laterally abutting sections one of which is rigidly attached to and carried by said presser-foot, a horizontally fulcrumed lever carried by said presser-foot and carrying the other of said scroll sections, a work-bending member or arbor in alignment with said scroll, a vertically fulcrumed lever carried by said presser-foot.
and carrying said work-bending member or arbor, and means for moving said levers to bring the component parts of the hemmer into operative and inoperative relation.

11. The combination with a sewing machine presser-foot, of a folder comprising a scroll divided longitudinally and vertically into separable laterally abutting sections one of which is rigidly attached to and carried by said presser-foot, a horizontally fulcrumed lever carried by said presser-foot and carrying the other of said scroll sections, a work-bending member or arbor in alignment with said scroll, a vertically fulcrumed lever carried by said presser-foot and carrying said work-bending member or arbor, springs applied to said levers to press the component parts of the hemmer yieldingly in operative relation, and a common operating member for shifting said levers in opposition to their springs to throw the relatively movable parts of the hemmer out of operative relation.

12. The combination with a sewing machine presser-foot composed of a body portion and a relatively movable needle-hole portion, of a folder comprising a scroll composed of a plurality of separable sections one of which is rigidly attached to and carried by the body portion of said presser-foot, a lever carrying another of said scroll sections and the needle-hole section of the presser-foot and mounted upon a fulcrum disposed parallel with the operative face of the main portion of the presser-foot, and means for operating said lever to shift the parts carried thereby into operative and inoperative position.

13. The combination with a sewing machine presser-foot composed of a body portion and a relatively movable needle-hole portion, of a folder comprising a scroll composed of a plurality of separable sections one of which is rigidly attached to and carried by the body portion of said presser-foot, a lever carrying another of said scroll sections and the needle-hole section of the presser-foot and mounted upon a fulcrum disposed parallel with the operative face of the main portion of the presser-foot, a work-bending member or arbor normally in alignment with said scroll, a second lever having a fulcrum upon said presser-foot disposed transversely of the operating face of its body portion, and carrying said work-bending member or arbor, springs applied to said levers for yieldingly maintaining the members carried thereby in operative position, and means for shifting said levers to separate said parts.

14. The combination with a sewing machine presser-foot composed of a body portion and a needle-hole portion, of a folder comprising a scroll composed of a plurality of separable sections one of which is rigidly attached to and carried by the body portion of said presser-foot, a lever carrying another of said scroll sections with the needle-hole section of the presser-foot fulcrumed upon said presser-foot to move transversely of the operative face of the same, a work-bending member or arbor normally in alignment with said scroll, a second lever fulcrumed upon said presser-foot to move transversely of the movements of the first-named lever and carrying said work-bending member or arbor, and means for moving said levers to bring the component parts of the hemmer into operative and inoperative relation.

15. In a sewing machine, the combination with the presser-foot, of a hemmer composed of a plurality of separable scroll sections with laterally abutting edges and flush operative faces, a presser-foot lifter, and operative connections between said presser-foot and the component parts of said hemmer whereby the lifting of the presser-foot effects the separation of the hemmer parts in the direction of movement of the presser-foot for introduction and removal of the work.

16. In a sewing machine, the combination with the presser-foot, of a hemmer comprising a scroll including a plurality of separable sections with abutting edges and flush operative faces and independently mounted and relatively movable upon said presser-foot, a presser-foot lifter, and an operative connection intermediate the movable parts of said hemmer and a fixed portion of the machine whereby the lifting of the presser-foot effects the separating of the hemmer parts.

17. In a sewing machine, the combination with the work-plate, of a hemmer composed of a plurality of separable scroll sections and an axially disposed work-supporting tongue and means, including a connection extending downwardly below the work-plate, for divergently shifting said scroll sections and tongue to separate the component parts of the hemmer for introduction and removal of the work.

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, JR.,
JOSEPH F. JAQUITH.