J. P. WEIS & L. KRUG.

FOLDER.

APPLICATION FILED OCT. 21, 1904.

1,003,834.

Patented Sept. 19, 1911.

3 SHEETS—SHEET 1.

Fig. 1.

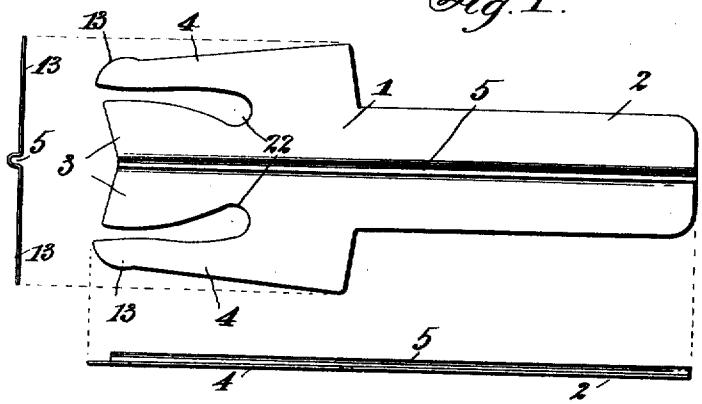


Fig. 2.

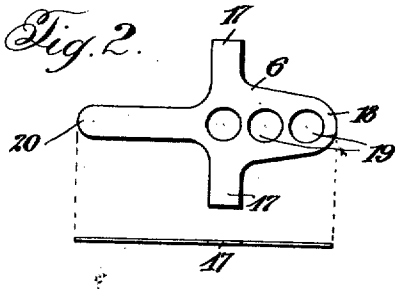
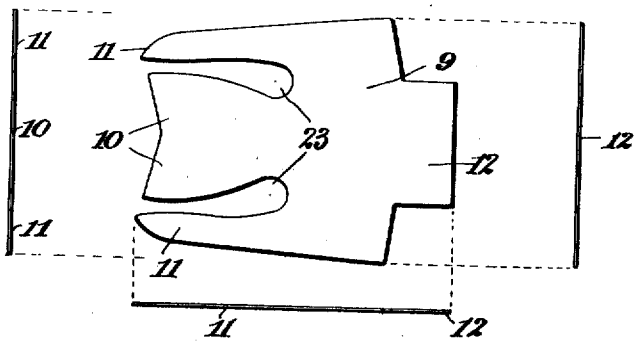


Fig. 3.



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3 SHEETS—SHEET 2.

Fig. 4.

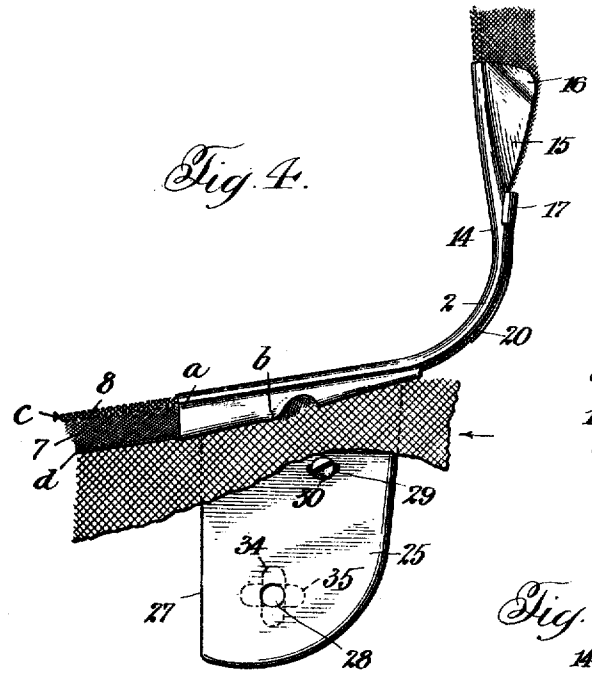


Fig. 7.

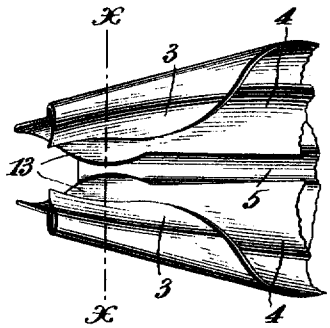


Fig. 8.

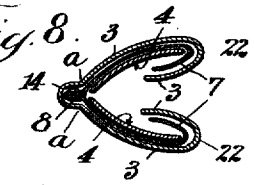


Fig. 5.

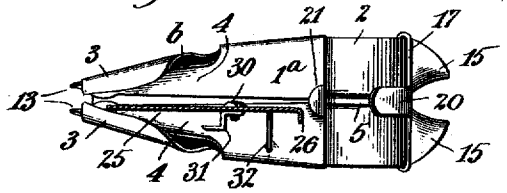
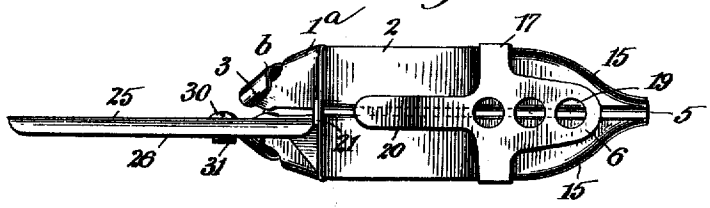


Fig. 6.



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3 SHEETS—SHEET 3.

Fig. 9.

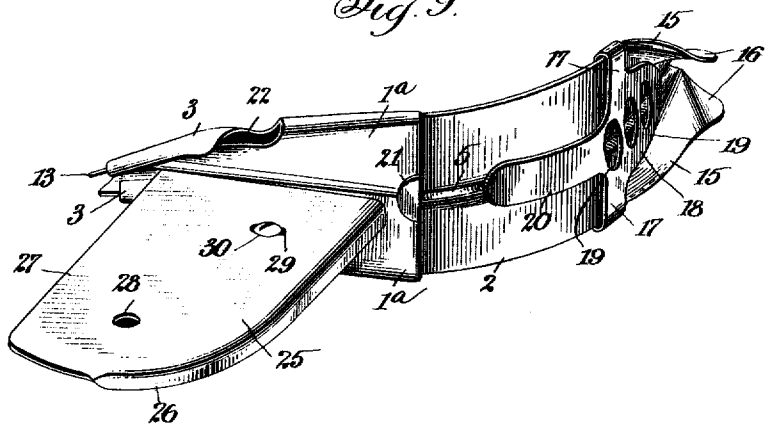


Fig. 10.

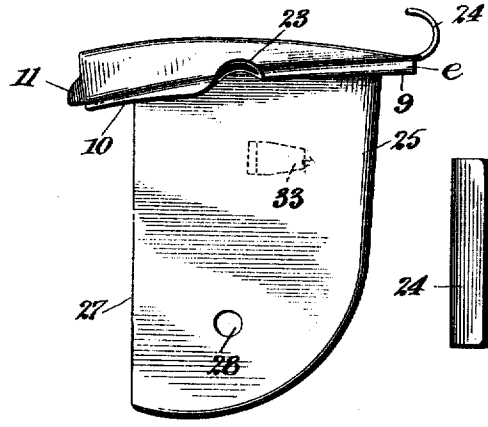
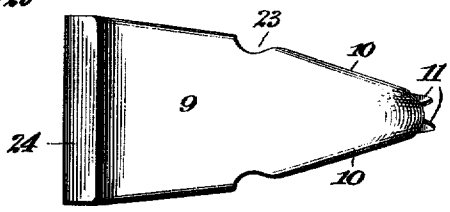


Fig. 11.



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UNITED STATES PATENT OFFICE.

JOHN P. WEIS AND LOUIS KRUG, OF NYACK, NEW YORK, ASSIGNORS TO METROPOLITAN SEWING MACHINE COMPANY, OF NYACK, NEW YORK, A CORPORATION OF NEW YORK.

FOLDER.

1,003,834. Specification of Letters Patent. Patented Sept. 19, 1911.

Application filed October 21, 1904. Serial No. 229,408.

To all whom it may concern:

Be it known that we, JOHN P. WEIS and LOUIS KRUG, both citizens of the United States, residing in Nyack, county of Rockland, and State of New York, have invented a new and useful Improvement in Folders, of which the following is a description.

This invention relates to folders for sewing machines, and particularly to that class of folders or cloth-turning devices which are particularly adapted for manipulating what is technically known as a "collaret". The style of this folder is such that we have chosen to designate it, and it has become known in the trade as a Crescent folder.

An object of this invention is to provide a folder which will so manipulate the material, such as a collaret for knit undershirts, that it may be accurately fed to the stitching point of a sewing machine and its edges properly and evenly hemmed or folded over and attached to the body material of the shirt along the neck opening thereof.

Another object of this invention is to provide a folder so constructed, that a specially prepared collaret or binding material, such as may be provided with a beading or finished edge, may be accurately and properly guided and folded and its folded edges laid upon the edge of the body material for attachment thereto by stitching.

Another object of this invention is to provide a folder, for attachment to a sewing machine, of such construction that it will properly manipulate a collaret or binding material, receive the edge of the body material, and present the two materials in proper condition and juxtaposition for connection by a line of stitching.

With the above objects in view, and others which will be set forth during the course of this description, the invention consists in the parts, features and combination of elements hereinafter described and claimed.

In the drawings forming part of this description, Figure 1 is a view of the blank of one form of folder, the view including a plan, an edge elevation and a delivery-end elevation; Fig. 2 is a view of a blank forming part of this form of the folder, said view including a plan and an edge elevation; Fig. 3 is a view of a blank of another form of folder, said view including a plan, an edge elevation, a delivery-end elevation and a receiving-end elevation; Fig. 4 is a top plan view of the folder made from the blanks of Figs. 1 and 2, said folder having attached thereto its supporting plate, and showing running therethrough the collaret and the body material; Fig. 5 represents a side elevation of Fig. 4, the supporting plate being shown in section and the work being removed; Fig. 6 shows the folder of Fig. 4 in rear end elevation, the work being removed; Fig. 7 shows in enlarged front elevation the delivery-end of the folder of Fig. 4, the work being removed; Fig. 8 illustrates in cross-section, on the line x—x of Fig. 7, the folder of the form of Fig. 4, the direction of sight being toward the rear end; Fig. 9 is a perspective view of the form of folder shown in Fig. 4, the sight being taken from slightly above the folder and looking at the middle thereof, substantially at the bend; Fig. 10 is a top plan view of a folder made from the blank shown in Fig. 3; and Fig. 11 is a rear elevation of Fig. 10, showing the smooth formation of its back as distinguished from the formation of the back of the folder of the form illustrated in Fig. 4.

Primarily, it should be understood that up to the time of the production of this folder it was mechanically impossible to attach what is known as a "French collaret" to the neck opening of a French Balbriggan shirt, and, in fact, it was impossible to so manipulate and control a collaret of any character as to apply the same to the neck of a garment evenly, smoothly and without puckering or wrinkling the same, or the body material. This folder is specially adapted for leading in, hemming the edges of and applying a French collaret to the neck opening of a garment without puckering or wrinkling either the collaret or the body material. The French collaret being the most difficult of all collarets or binding materials to manipulate, it follows, as a consequence, that being able to manipulate a French collaret the folder having the general form or construction hereinafter described is also capable of properly manipulating any form of collaret or binding, either for the neck opening or other portions of a garment.

While the folder of this application in all of its different forms is capable of being used in various connections and in combination with most any character of stitch-form-

ing mechanism, the best results are found to be obtained by combining the same with a sewing machine provided with a differential feed, in the manner and in accordance with the principles disclosed in our application filed of even date herewith.

In order that the folder, of this invention, may be clearly understood, the blanks from which the same are formed have been portrayed in Figs. 1 and 2, and therein 1 designates the body of the folder, 2 the neck, 3 the loop-portions, 4 the tongues, 5 the throat or guide-channel, and 6 the combined brace and spreader. These blanks are made into the folder of the form shown in Figs. 4 to 9, and are specially constructed and adapted for leading in, spreading and properly folding and manipulating a "French collaret" of the form and construction illustrated in Figs. 4 and 8, or one which is composed of the two body-portions 7 and the ornamental finished edge or beading 8. This collaret may be made of either two corresponding pieces of material or a single piece of material folded in the middle lengthwise; and in either event the collaret is so made as to have along its center the selvage, finished edge or beading indicated by 8, which has to be taken care of during the progress of the collaret through the folder.

The blank shown in Fig. 3 is formed into the folder illustrated in Figs. 10 and 11, and such folder is constructed and adapted for leading in, guiding and properly manipulating a plain collaret or binding, or one which is devoid of the ornamental edge or beading illustrated in Figs. 4 and 8. The blank of this form of folder consists of the body-portion 9, the lips 10, the fingers 11 and the neck 12. It will be noted that this form of folder, for a plain collaret, is devoid of the guide-channel or throat 5, the elongated neck 2 and the combined brace and spreader 6. It will also be noted that, in addition to these differences, the form of Fig. 1 has the outer end of the tongues 4 bulged or laterally extended as indicated at 13.

Referring now to Figs. 4 to 9, inclusive, the folder made from the blanks of Figs. 1 and 2 will be understood. The throat or guide-channel 5 is formed along the length of the folder by bulging or ribbing the material of the blank as shown at 14 to produce the channel for receiving, guiding and retaining the beaded or ornamental edge of the collaret. The extreme rear, or entry end, of the neck 2, on opposite sides of the throat 5, is bent to form the wings 15, which extend toward each other, or flare or diverge from the entry end, and at their outer corners or angles are slightly deflected in opposite directions, as shown at 16. This structure or formation is given for the purpose of imparting an initial fold to the material of the collaret, in order to centrally and properly locate the beading or ornamental edge thereof in the throat or channel 5, and the oppositely bent and rounded corners 16 prevent the wings 15 from catching in and dragging on the body of the collaret. At the point where the edges of the wings 15 are lost in the edges of the neck 2, the brace 6 is rigidly secured by means of its arms 17, which latter are folded or bent over the opposite edges of the neck 2, and there soldered, brazed or otherwise secured to the back of the neck, as shown in Figs. 4 and 9. By thus securing the brace 6, a channel is left between the same and the neck 2 for the passage of the collaret, and the perforated tongue 18 extends between the two wings 15 centrally of the channel between the same, and the perforations 19 in said tongue provide means by which the collaret may be engaged and properly manipulated to run the latter into the folder and up to the stitching point. To prevent the collaret from having movement laterally relatively to or across the neck and also to prevent the beaded edge of said collaret from running or working out of the channel or throat 5, the solid tongue 20 is extended forwardly from the brace 6 and disposed centrally and longitudinally of the neck 2 and throat 5 and curved to conform to the contour of the neck as bent and curved, as shown in Figs. 4, 6 and 9. Up to this point, means have been provided for giving an initial fold to the collaret in order to locate properly the beaded or solid edge thereof in the channel or throat 5 and properly direct, guide and control the collaret in its passage to the folding and hemming portions of the device. As clearly indicated in the drawings, the body-portion 1 of the blank of Fig. 1, is also bent longitudinally substantially along the line of the outer edges of the neck-portion 2, so as to cause the outer edges of the body-portion 1 to lie along the length of the channel or throat 5, and be slightly separated from each other, and have a slight divergence from the rear end to the front end, as clearly shown in Figs. 5, 6, 7 and 9. The body-portions thus folded and overlapped are designated by 1^a and said latter portions are connected together, so as to be properly held and to avoid sharp corners, by means of a connecting piece 21 brazed, soldered or otherwise held thereto. This construction holds the two portions 1^a separated and in proper relative position and forms a channel between the same and the body-portion 1 of the blank. The body-portion, at this point, is substantially flat and perpendicular to its supporting plate. By folding the body-portion as described, the tongues 4 are carried into a position such that the enlarged, bulged end portions 13 lie close together and also very close to the delivery-

end of the channel or throat 5, as clearly shown in Figs. 5, 6, 7 and 8. By thus bending the body-portions, it will also be seen that the ends of the tongues 4 project quite a distance beyond the delivery-end of the device. These tongues are also given a bend amounting to substantially a half turn relatively to the body-portion, thus disposing the ends of the tongues, and especially the enlarged portions 13, substantially at a right-angle to the body-parts 1 and 1^a, and at an obtuse-angle, substantially, to the width of the rib 14, or depth of the throat 5. The loops 3 are also bent longitudinally substantially in the line of the bend given to the body-portion, which causes said loops to overlap themselves and the fingers 4, inclose the latter in their fold and form a channel for giving an initial fold for hemming the edges of the collaret. The loops 3 are then given an additional turn or bend, the line of which runs substantially from the point *a* at the channel or throat 5, to the point *b* at the curve of the first fold and practically extending to the throat of the slots 22, this bend of the loops 3 conforming to the bend given the ends of the tongues 4 and causing the edges of the loops 3 to approach the channel or throat 5. See Figs. 4 to 9. Thus, there are formed passages between the two portions of the loops 3 and the tongues 4 and on opposite sides of the latter; and the inner edges of the tongues 4, as shown in the blank of Fig. 1, lie in the folds 22 of the loops 3. This structure forms a guide and produces means for gradually turning the edges of the collaret over upon the body thereof and turning a hem along said edges to be subsequently stitched down upon the neck of the garment, as clearly shown in Figs. 4 and 8, and indicated at 7. The distance between the folding portions, at the delivery-end thereof, is sufficient to permit the easy insertion of any thickness of body material, and this distance may be increased or decreased according to the character of the work, thus changing the angle of the loops and tongues at the delivery-end of the device relatively to the rib 14 in which is formed the channel or throat 5. The enlarged view of the folder, shown in Fig. 7, clearly illustrates the relative position of the parts and the relative arrangement of the different elements of the blank of Fig. 1, and clearly shows how the bulged or enlarged portions 13 of the fingers 4 are disposed to prevent the beading or the solid edge of the collaret from being withdrawn from the throat or channel 5 at the delivery-end of the folder. The extension of the ends of the tongues 4, beyond the end of the folder, as indicated in Figs. 5, 7 and 9, provides a support for the inturned hem along the edge of the collaret beyond the end of the folder and prevents the said hem from springing out or assuming any other position than that which is required at the stitching point for the production of perfect work.

The folder illustrated in Figs. 10 and 11 and produced from the blank of Fig. 3 is, in so far as the bending and disposition of the loops 10, tongue 11 and body-portion 9 are concerned, substantially the same as shown in the other form and figures described, and the slots 23 in the blank of Fig. 3, and the ends of the tongues 11 extend beyond the delivery-end of the folder for the same purpose as described in connection with the first form of folder. As previously noted, the form of folder of Figs. 10 and 11 is devoid of a throat or channel, such as 5, because this folder is intended to receive and deliver a plain collaret or one which is not provided with the solid or beaded edge. For this reason, it is unnecessary to provide the folder with an extended neck such as shown in Fig. 9, nor with the brace 6. However, in order to provide for the proper manipulation of the work, the folder of Figs. 10 and 11 is provided with the short neck 12, Fig. 3, which is curved or bent into substantially semi-circular form toward the back of the folder to form the wing 24, and in order to present a smooth running surface over which the collaret may be fed into the receiving and folding channels. In other respects the folder of Figs. 3, 10 and 11 is substantially the same, so far as the means provided for turning the hem are concerned, as the other form of folder described.

In order that the folder, of any form, may be properly secured to and supported by the cloth-plate of a sewing machine, a supporting-plate 25 is provided substantially of the form shown, the front edge and outer end thereof being rounded and flanged, as shown at 26, to present a smooth edge or surface for the passage of the body material and to prevent the dragging or retardation of the same on the support. The rear edge 27 is made substantially straight and extended to a point such that it will not overlap the slide-plate and the throat-plate of the machine. For the purpose of attaching the folder to the cloth-plate of the machine, the supporting-plate 25 is provided with the aperture 28 for the reception of a binding-screw, as hereinafter described. The supporting-plate 25 is also provided with an elongated slot 29 extending transversely thereof, said slot receiving the shank of a screw 30 which holds in place an angular stop-lug 31 on the bottom of the supporting-plate, the slot 29 permitting the adjustment of the lug 31 and the screw 30 transversely of the plate 25. Lug 31 is substantially L-shaped and engages under the cloth-plate of the machine to prevent any vertical movement of the folder, steady the same on the

cloth-plate, and when once properly set provide a stop for regulating the position and limiting the movement of the folder. The supporting-plate 25 is soldered or otherwise permanently secured to the lower portion 1^a of the body-part of the folder substantially parallel to the rib-guiding groove 5 and with its supporting surface at the lower edge of said groove, as clearly shown in Fig. 9 and, as shown in Fig. 5, a brace 32 is secured to said body-portion 1^a and the bottom of the plate 25 to strengthen the attachment of the said plate to the folder and prevent accidental breaking or bending. The supporting-plate 25 is extended within the scrolls of the folder to almost the delivery-end of the latter, as clearly shown in the several figures, thereby providing a support for the body material substantially to the stitching point and preventing the body material from falling away from or sagging relatively to the collaret or binding, thus insuring the proper disposition of the edge of the body material within the hem and fold of the collaret and close to the rib or selvage thereof.

It is not essential to provide the supporting-plate 25 with the elongated adjusting slot 29, and, if preferred, the stop-lug may be rigidly secured to the bottom of the plate 25 as indicated by the dotted lines 33 in Fig. 10. And it will be obvious that, instead of making the hole 28 circular, it may be extended longitudinally of the plate 25, as shown by dotted lines 34, Fig. 4, for the purpose of adjusting the folder on the cloth-plate of the machine so as to regulate the position of the delivery-end of the folder relatively to the stitching point and line. And another slot may be extended transversely of the plate 25, as shown by dotted lines 35, Fig. 4, thus providing means for universal adjustment of the folder on the machine.

As shown in Figs. 4, 5, 6 and 9, the neck 2 of the folder is bent or curved transversely of its length and substantially midway thereof, so as to cause the receiving-end of the folder to be substantially at a right-angle to the delivery-end thereof. The object of thus bending the neck of the folder is to cause that portion of the receiving-end, extending to substantially midway of the neck, to lie and be disposed longitudinally of the cloth-plate of the machine and extend toward the driving-wheel of the latter. This disposition enables the material of the collaret to be disposed very much at one side of the path of feed of the machine and away from the working position of the operator, thus avoiding any interference with the movements and necessary manipulations of the operator and avoiding the entanglement of the collaret material with the body material, which is led in from the opposite side over the supporting-plate 25. This disposition and subsequent manipulation of materials is clearly illustrated in Fig. 4. This will be appreciated when it is understood that the bulk of a man's shirt, for instance, hangs to the left, looking in the direction of the arrow in Fig. 4, of the line of feed of the combined materials and the operative must with one hand control the travel of the said body material and keep the neck edge portion up to the channel or space between the two scroll-portions of the folder, as shown in Fig. 4, the space for the body material being shown clearly in Fig. 8. The collaret or binding material is usually wound in great lengths upon a reel, bobbin or other suitable holder which is free to revolve, and thus unwind the material freely, according to the demands and pull of the feed. From the reel the collaret material is led into the receiving-end of the folder, as shown in Fig. 4. Thus, by bending the neck-portion as described, the binding or collaret material can be conveniently disposed, supported and fed up to the folder and said material can, without wrinkle or displacement, be accurately and smoothly traversed to the stitching point.

A description of the details of our invention having been given, it will be necessary to describe only briefly the mode of operation of the device and the parts. A collaret, such as illustrated in Figs. 4 and 8, is usually made or formed in bulk, or strips of considerable length, and is mounted upon a spool or otherwise properly supported for delivery to the folder. The "leading" end of the collaret is then folded and cut obliquely so as to produce the point *c*, at the beading or solid edge, this giving to the leading end of the collaret, when the latter is spread out, a V-shaped appearance, the vertex of which is then led into the receiving-end of the folder, or free end of the neck, by inserting the bead or solid edge in the throat or channel 5 of the neck 2. Having thus entered and started the collaret in its passage through the folder, the operative uses a pointed instrument to engage and drag the collaret along the length of the folder up to and beyond the delivery-end, this being accomplished by inserting the implement through the several apertures 19 in the brace 6, engaging the collaret after the end thereof has passed the solid tongue 20 of the brace, and inserting the implement in the diverging slot between the two parts 1^a, leading to the delivery end of the folder. The trimmed end of the collaret having passed the delivery-end of the folder, it is pulled sufficiently far through to make a good start for the hemming and stitching operation. After the collaret has been properly placed in the folder, as above described, the neck of the garment is then placed be-

tween the two scroll-portions of the folder and up against the parts 1^a, and practically up to the stitching point, this disposition enabling the feed-dogs of the machine to engage the materials and advance the same automatically. Obviously, the size of the collaret determines the size of the folder, a properly equipped factory having on hand the various sizes necessary for doing its several classes of work. It will be understood that, as the collaret passes through the folder and the body material is advanced, the outer or raw edges of the collaret are given a single turn or hem, the fold of which is stitched to the adjacent edge of the body material at the neck of the garment. The disposition of the line of stitching *d*, along the hemmed edge of the collaret depends upon the adjustment of the folder in the machine, the means described for adjusting the latter enabling the same to be placed in any position desired, relatively to the stitching point, thus enabling the line of stitching to be disposed in the manner desired and as close to or as far from the hemmed edge of the collaret as may be required. It will be understood that the adjusting means provided between the supporting-plate 25 of the folder and the cloth-plate of the machine, enable folders of different sizes to be disposed with equal accuracy both with regard to the disposition of the line of stitching in the work and the location of the delivery-end of the folder relatively to the stitching point.

The form of folder shown in Figs. 10 and 11 is adapted for the reception and manipulation of a plain collaret or plain piece of binding material, viz., one devoid of the solid, finished or beaded edge. In this form of the folder the binding material is entered at the receiving-end *e* and the body material passes over the supporting-plate 25 and is disposed and manipulated in the same manner as described with reference to the other form of the folder. The short, curved neck-portion 24 of this folder is provided for the purpose of preventing any drag upon the material of the binding as the same is led and drawn into the receiving-end *e*, the said binding material being wound upon a reel or spool and disposed in substantially the same way and delivered in substantially the same manner as described above in connection with the other form of folder. The folding or hemming of the material is accomplished in the same manner as described in connection with the other form of folder and the scroll-portions of the folder are substantially the same.

From the above description it will now be clear that we have provided a folder for collarets, which is simple in construction, effective in operation, capable of properly controlling and guiding the material of the collaret, of whatever form or size, and adapted to be applied to the cloth-plate of any form of machine.

Having thus described our invention, what we claim and desire to secure by Letters Patent is:

1. A cloth-folder for sewing machines having a guiding-channel extending longitudinally thereof, and also having a folding-portion at one end, means at the other end for imparting an initial fold to the body of the work, and an elongated, substantially flat guiding neck extending between and connecting the folding-portion and initial folding means.

2. A folding-device comprising a body-portion having at one end a folding-portion and at the other end work-bending wings, said body-portion having along its length a channel-forming rib projecting from the back of the body-portion and oppositely to the said wings and folding-portion, said rib having a channel formed therein for receiving the selvage of the work.

3. A folding-device comprising a body-portion having at its receiving-end work-bending wings, at its delivery-end work folding means, and between the folding and bending means a transversely curved portion, and a support for the work comprising a brace extending across said curved-portion and having an elongated tongue extending lengthwise of and conforming to said curved portion.

4. A folding-device for sewing machines comprising a body-portion having at one end a folding-device, at the other end work-bending wings the free ends of which are oppositely bent, and along its length a channel-forming rib, substantially as described.

5. A folding-device comprising a body-portion having at one end a folding-device, at its other end work-bending wings, and between the folding-device and bending-wings a substantially flat portion provided with a longitudinal channel, the latter for receiving and guiding the rib or selvage of the binding and the flat portion for guiding the body of the binding, whereby the rib of the binding can be manipulated without affecting the operations upon the body of the binding.

6. A folding-device comprising a portion having means for guiding and folding the binding-material, and a supporting-plate extending longitudinally of said portion and affording a support for the body-material, and said plate having means whereby the folding-device may be attached to a sewing machine and also having a stop-lug on its bottom for controlling the position of said folding-device on the machine.

7. A folding-device comprising a body-portion, one end of which is provided with

work-folding means, and the other end of which is provided with work-bending means, and the intermediate portion being formed to provide an elongated, curved neck for holding the work flat, said device also having a channel-forming rib extending from end to end thereof in the channel of which the selvage is received and guided.

8. A folding-device comprising an elongated portion, one end of which is provided with folding means, and the other end of which is provided with bending means, and means located between the two ends for bracing and guiding the material, said latter means including an elongated tongue, an extended spreading portion, and a broad supporting portion between the two.

In testimony whereof we have hereunto signed our names in the presence of two subscribing witnesses.

JOHN P. WEIS.
LOUIS KRUG.

Witnesses:
W. V. MILLER,
JAS. W. RITCHINGS, Jr.