Dec. 10, 1940. D. J. GERMAIN 2,224,261

BINDING ATTACHMENT FOR SEWING MACHINES

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Fig. 1.

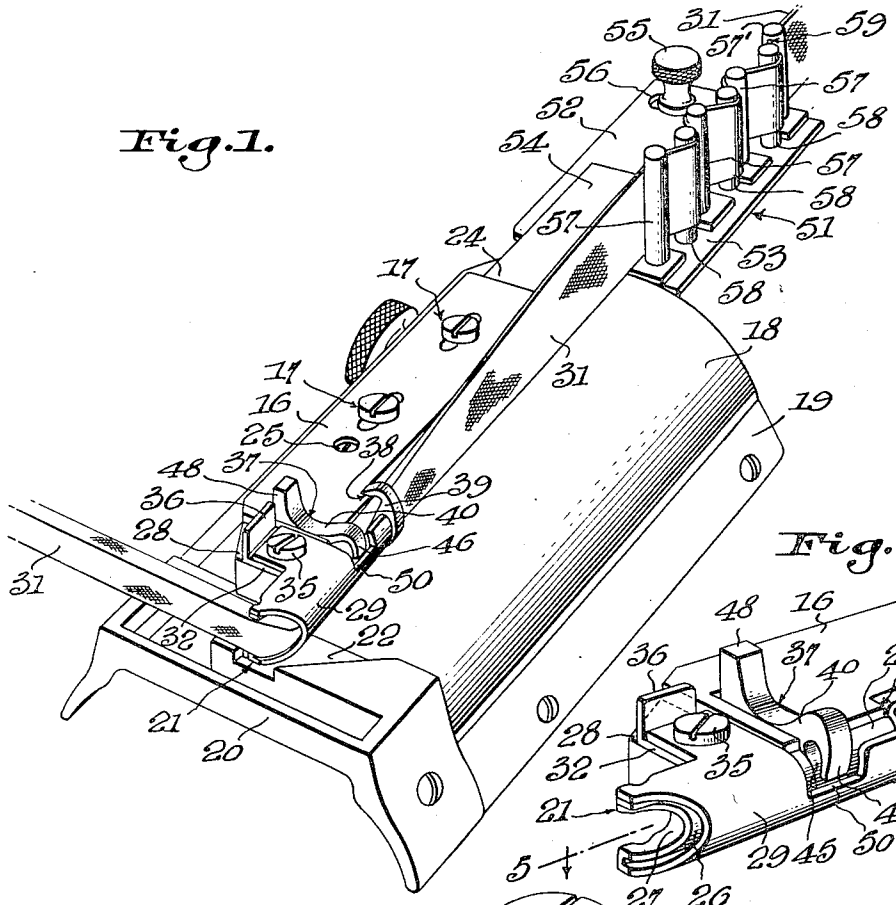
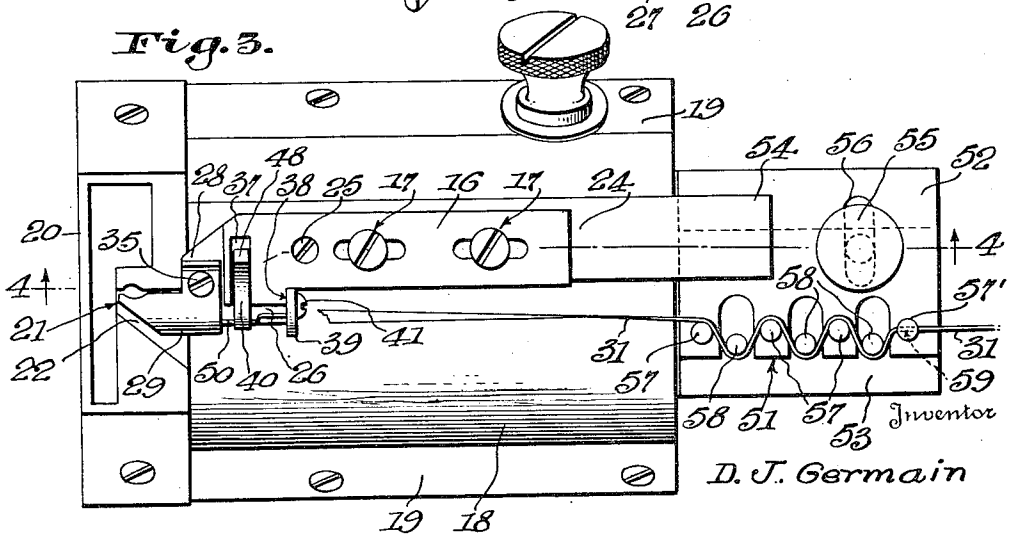


Fig. 2.

Fig. 3.



Inventor
D. J. Germain

WITNESS
H. Wardwell

By A. B. Willson & Co
Attorneys

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Fig. 4.

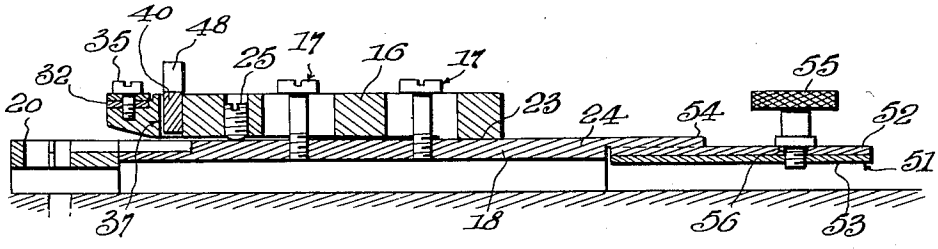


Fig. 5.

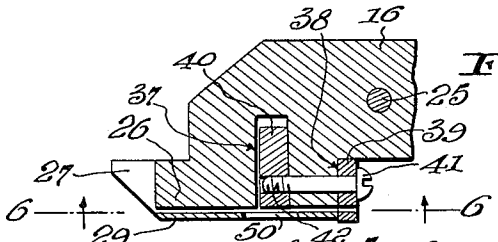


Fig. 6.

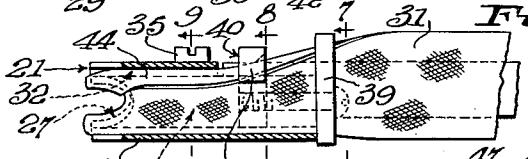


Fig. 7.

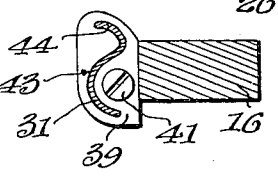


Fig. 8.

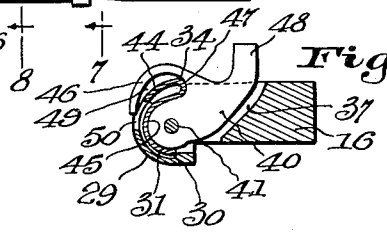


Fig. 9.

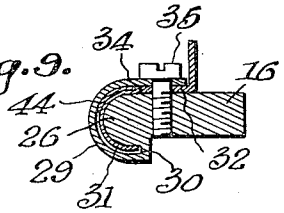
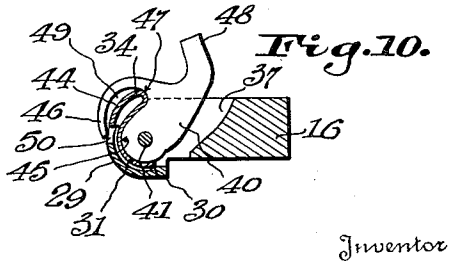


Fig. 10.



Inventor

D. J. Germain

WITNESS

H. Woodard

By A. B. Wilson & Co

Attorneys

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Fig. 11.

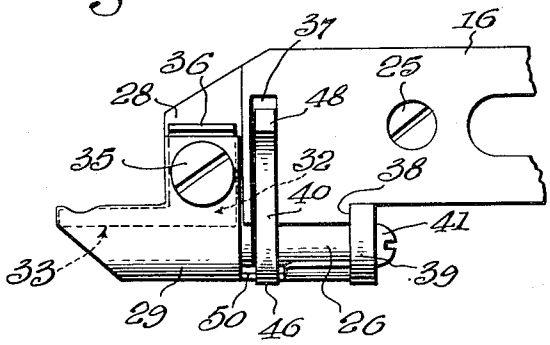


Fig. 12.

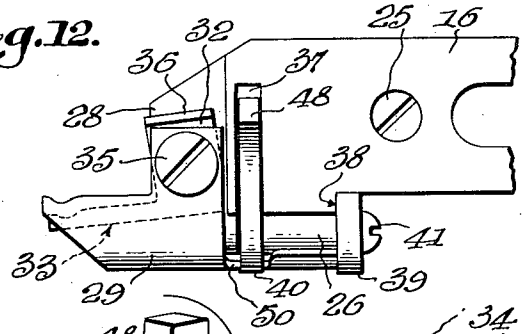


Fig. 14.

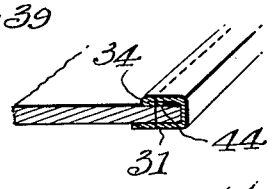


Fig. 13.

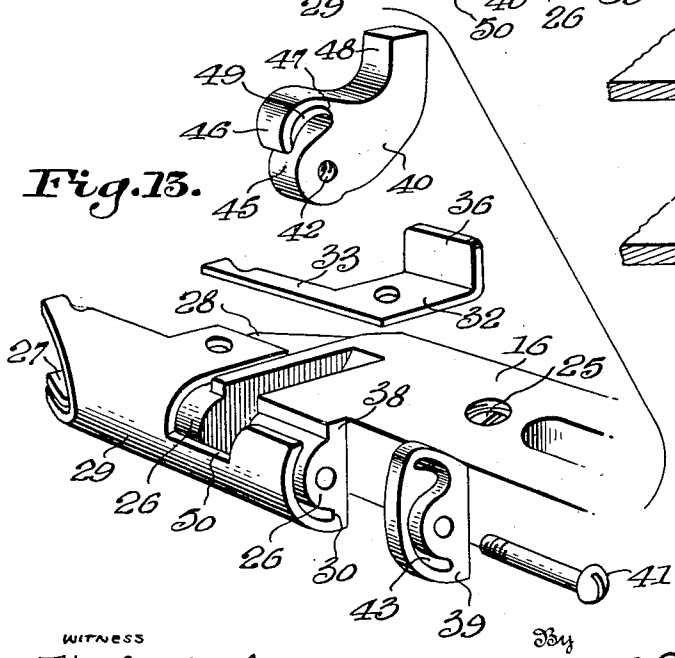
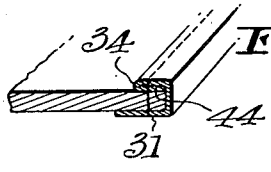


Fig. 15.



Inventor

D. J. Germain

WITNESS

H. Woodard

By

H. B. Wilson & Co

Attorneys

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UNITED STATES PATENT OFFICE

2,224,261

BINDING ATTACHMENT FOR SEWING MACHINES

Daniel J. Germain, Haverhill, Mass.

Application April 7, 1939, Serial No. 266,696

12 Claims. (Cl. 112—138)

The invention relates to devices for use in applying binding tape of any desired form and material to the edges of fabric, leather, leatherette and other sheet materials in the manufacture of shoes, luggage, garments, etc. In applying such bindings, the binding tape is passed through a folding device which curves the tape into longitudinally channeled form, folds one edge of the channeled tape onto the convex side thereof, and then reverses the channeled formation of the tape to place the folded edge at the inner side of the channel. The tape in this condition is applied to an edge of the material to be bound and is stitched on, with the stitching passing through both side walls of the channeled tape and through the folded edge thereof.

The present invention relates to a binding device of the character above mentioned and it aims to provide a new and improved construction permitting quick and easy adjustments to fold over a greater or lesser width of the tape, insuring that a relatively narrow portion or a comparatively wide portion of said tape shall lie at the observe side of the bound material, as may be required.

With the foregoing in view, the invention resides in the novel subject matter hereinafter described and claimed, description being accomplished by reference to the accompanying drawings.

Figure 1 is a perspective view showing the improved binding or folding device mounted upon an adjustably mounted base to be attached to a sewing machine and showing said binding or folding device in operative relation with the throat plate of the machine, the tape being shown in this view.

Figure 2 is an enlarged perspective view of the front end portion of the binding or folding attachment, the tape being omitted.

Figure 3 is a top plan view of the parts shown in Fig. 1.

Figure 4 is a vertical longitudinal sectional view substantially on line 4—4 of Fig. 3.

Figure 5 is an enlarged detail horizontal section on line 5—5 of Fig. 2.

Figure 6 is a vertical longitudinal sectional view on line 6—6 of Fig. 5.

Figure 7 is a transverse sectional view on line 7—7 of Fig. 6 showing the tape-guiding means which initially curves the tape to channeled form and turns one edge of said tape toward the convex side thereof.

Figure 8 is a transverse section on line 8—8 of Fig. 6 showing the tape-guiding means which folds the turned edge of the tape further toward the convex side of the latter and may be adjusted to vary the width of the folded tape portion.

Figure 9 is a transverse section on line 9—9 of Fig. 6 showing the tape-guiding means which folds the previously folded edge portion of the channeled tape into contact with the convex side of said tape.

Figure 10 is a view similar to Fig. 8 but showing the guiding means adjusted to fold over a wider portion of the tape.

Figure 11 is an enlarged top plan view of the front portion of the device showing a pivoted finger which abuts the tape along the fold line, in the position which it assumes when a relatively narrow edge portion of the tape is to be folded over.

Figure 12 is a view similar to Fig. 11 but illustrating an exaggerated adjustment of the finger to a position which it may assume when a relatively wide edge portion of the tape is to be folded over.

Figure 13 is a disassembled perspective view.

Figure 14 is a sectional perspective showing the binding applied to a piece of material with a relatively wide portion of the binding disposed at the obverse side of the material.

Figure 15 is a view similar to Fig. 14 but illustrating a relatively narrow portion of the tape disposed at the obverse side of the material.

A construction has been illustrated which has proven advantageous from standpoints of manufacture and use, and while such construction will be specifically explained, it is to be understood that within the scope of the invention as claimed, variations may be made.

The body 16 of the device is horizontally elongated and is adjustably mounted by screw and slot connections 17 upon a transversely arched supporting base 18, which base is slidably engaged with guide tracks 19 to be carried by the sewing machine. The throat plate of the machine is shown at 20 and the body 16 is provided with a reduced nose 21 extending into a recess 22 in the upper side of said throat plate. The rear end of the body 16 is preferably provided with a heel 23 resting upon a longitudinal rib portion 24 of the base 18 and the front portion of said body is provided with a set screw 25 which rests on said rib portion. By loosening the screws of the connections 17, and adjusting the set screw 25, the body 16 may be vertically adjusted as required with respect to the throat plate 20, and retightening of said screws of the connections

17 will then lock the body in its adjusted position.

One longitudinal edge of the body 16 is provided with a lateral bead 26 which extends to the nose 21, said nose being beveled as usual and being provided with the customary transverse throat 27. The upper side of the bead 26, at the front portion of said bead, is flush with a portion 28 of the upper side of the body 16. A transversely curved wall 29 is spaced outwardly from the bead 26 and is integrally joined at its lower portion to the body 16, said body having a longitudinal edge portion 30 at said lower portion of the wall 29 to abut the lower edge of the tape 31. At its front portion, the upper part of the wall 29 overlies the above mentioned upper side 28 of the body 16, and a flat horizontal plate 32 is interposed between said wall portion and said upper side, said plate 32 being provided with an integral forwardly projecting finger 33 to contact with the tape 31 along the fold line 34 thereof. A clamping screw 35 passes through the upper portion of the wall 29, through the plate 32 and is threaded into the body 16 for clamping said plate 32 and its finger 33 in desired adjusted position, and to permit easy swinging adjustment of said plate and finger when the screw is loosened (see Figs. 11 and 12), said plate is preferably provided with an upstanding finger lug 36.

Behind the plate 32, the body 16 is provided with a transverse notch 37 which extends through the bead 26, and behind said notch 37, said body is provided with a vertical rearwardly facing shoulder 38. One tape-guiding plate 39 abuts the shoulder 38 and another tape-guiding plate 40 is disposed in the notch 37. A clamping screw 41 passes forwardly through the plate 39 and through the portion of the body between this plate and the plate 40 and is threaded at 42 into said plate 40 (see Fig. 5). The single screw 41 thus secures the two guide plates 39 and 40 in operative position. Moreover, when said screw 41 is loosened, a pivotal adjustment of the plate 40 may be effected to vary the width of the turned-over edge portion of the tape, as hereinafter more fully explained.

The plate 39 is formed with an S-shaped slot 43 (see more particularly Figs. 2, 7 and 13). The tape 31 passes through this slot and the major portion of said slot gives the tape a transversely channeled form as shown in Fig. 7. At the same time, the upper portion of the slot 43 turns an edge 44 of the tape 31 toward the outer convex side of said tape.

The plate 40 (see more particularly Figs. 2, 8, 10 and 13) is provided with a convexly curved edge 45 for reception in the channel of the tape 31, and said plate 40 is provided with a finger 46 in outwardly spaced relation with said convexly curved edge 45 to fold the previously turned edge portion 44 of the tape further toward the convex side of said tape. The plate 40 is also provided with a small concavely curved edge 47 which abuts the tape along the fold line 34 thereof, said edge 47 merging into the convexly curved edge 45 and into the curved inner side of the finger 46. By loosening the screw 41 and swinging the plate 40 so that the edge 47 moves toward the lower edge of the tape 31 (see Fig. 10), a greater width of the tape will be folded over onto the convex side thereof, whereas with the plate 40 so adjusted that 47 is more distant from the lower edge of the tape (Fig. 8), a relatively narrower width will be imparted to the folded tape portion 44. To aid in adjusting the plate 40 as required, it is provided with an upstanding finger-piece 48. To assist in smoothly guiding the tape between the edge 45 and the finger 46, the entrance side of said finger is preferably somewhat beveled as shown at 49. To accommodate the finger 46, the curved wall 29 is formed with a notch 50.

The tape 31 as it comes from the spool (not shown) passes through a tensioning device 51 hereinafter described, then passes through the slot 43, then through the tape guide of the plate 40, then between the bead 26 and the wall 29 and at the nose 21 turns at right angles and passes through the throat 27 into engagement with the material to be bound. The slot 43 curves the tape 31 into longitudinally channeled form as seen in Fig. 7 and turns an edge portion 44 of said tape toward the outer convex side thereof. The convex edge 45 of the plate 40 which is substantially continuous with the outer face of the bead 26, is received in the channel of the tape and the finger 46 folds the edge portion 44 further toward the convex side of the tape. As this tape passes on between the bead 26 and the wall 29, the portion 44 is folded into contact with the convex side of the tape as shown in Fig. 9. As the tape turns laterally through the throat 27, the channeled formation of said tape is reversed, disposing the inwardly folded edge 44 at the inner side of the channel for application to the material in the usual way.

It will be recalled that the small curved edge 47 of the plate 40 abuts the tape along the fold-line 34 thereof, and that the same is true of the finger 33. Assuming that the device has previously been set for folding over a relatively narrow portion of the tape, said device may be readily adjusted to fold over a wider portion. This is done, by loosening screw 41 and swinging plate 40 to bring its curved edge 47 nearer to the lower edge of the tape, as seen in Fig. 10, and by loosening the screw 35 and swinging the finger 33 inwardly (see Fig. 12). With the screws then tightened, the device will fold over a wider portion of the tape (see Fig. 15). A reverse adjustment of the plate 40 and the finger 33 will insure that a narrower portion of the tape shall be folded over as seen more particularly in Figs. 8 and 14.

In order to provide proper tension for the tape under all conditions which may be encountered, the tensioning device 51 is of novel adjustable form. This tensioning device includes upper and lower flat plates 52 and 53 in sliding contact with each other, plate 52 being rigidly carried by the base 18, for instance, by a rigid extension 54 projecting rearwardly from the rib portion 24. The two plates 52 and 53 are connected by a set screw 55 passing through a slot 56 in plate 52 and threaded into an opening in plate 53. Plate 52 carries a series of fixed upstanding fingers 57 and plate 53 is provided with a series of upstanding fingers 58 which are staggered with respect to the fingers 57 and may be moved with respect thereto by loosening the screw 55 and sliding the plate 51 transversely of the plate 52. The two series of fingers 57 and 58 are adapted to be positioned at opposite sides of the tape 31, to impart a zig-zag formation to said tape and create the desired drag or friction thereon. By so adjusting the plate 51 as to increase the length of the zig-zag tape portions, the tension on the tape will be increased, and vice versa.

It is preferable that an additional finger 57' be provided on the plate 52, said additional finger having a slot 59 through which the tape 31 passes, as seen in Figs. 1 and 3.

From the foregoing, taken in connection with the accompanying drawings, it will be seen that novel and advantageous provision has been made for attaining the desired ends, but attention is again invited to the possibility of making variations within the scope of the invention as claimed.

I claim:

1. A tape folding device comprising initial guiding means for curving the tape into channeled form and turning one of its edges toward its convex side, a second guiding means disposed forwardly of said initial guiding means for further folding said turned edge toward said convex side, and a third guiding means disposed forwardly of said second guiding means for pressing the previously folded edge into contact with said convex side; said second guiding means having a portion which abuts the tape along the fold line thereof, and means whereby said fold-line-abutting-portion may be adjusted toward or from the other edge of the tape to vary the width of the folded edge; said third guiding means having one portion to abut the tape along its fold line and another portion to abut said other edge of the tape, and means whereby said fold-line-abutting-portion of said third guiding means may be adjusted toward or from the portion which abuts said other edge of the tape.

2. A tape folding device comprising initial guiding means for curving the tape into channeled form and turning one of its edges toward its convex side, a second guiding means disposed forwardly of said initial guiding means for further folding said turned edge toward said convex side, and a third guiding means disposed forwardly of said second guiding means for pressing the previously folded edge into contact with said convex side; said second guiding means comprising a plate in a plane transverse to the tape path, said plate having a guide for the folded tape edge, said guide being provided with a portion which abuts the tape along the fold line, and means adjustably mounting said plate to effect movement of said fold-line-abutting-portion toward or from the other edge of the tape to vary the width of the folded edge; said third guiding means having one portion to abut the tape along its fold line and another portion to abut said other edge of the tape, and means whereby said fold-line-abutting-portion of said third guiding means may be adjusted toward or from the portion which abuts said other edge of the tape.

3. A tape folding device comprising initial guiding means for curving the tape into channeled form and turning one of its edges toward its convex side, a second guiding means disposed forwardly of said initial guiding means for further folding said turned edge toward said convex side, and a third guiding means disposed forwardly of said second guiding means for pressing the previously folded edge into contact with said convex side; said second guiding means comprising a plate disposed in a plane transverse to the path of the tape, said plate having a convexly curved edge for reception in the tape channel and a finger spaced outwardly from said convexly curved edge to lie against the outer side of the folded edge portion of the tape, said plate having a concavely curved edge at the inner end of said finger which merges into said convexly curved edge and the inner edge of said finger to abut the tape along the fold line thereof, and means adjustably mounting said plate to effect movement of said concavely curved fold-line-abutting edge toward or from the other edge of the tape to vary the width of the folded edge; said third guiding means having one portion to abut the tape along its fold line and another portion to abut said other edge of the tape, and means whereby said fold-line-abutting portion of said third guiding means may be adjusted toward or from the portion which abuts said other edge of the tape.

4. A tape folding device comprising initial guiding means for curving the tape into channeled form and turning one of its edges toward its convex side, a second guiding means disposed forwardly of said initial guiding means for further folding said turned edge toward said convex side, and a third guiding means disposed forwardly of said second guiding means for pressing the previously folded edge into contact with said convex side; said second guiding means comprising a plate disposed in a plane transverse to the path of the tape, said plate having a convexly curved edge for reception in the tape channel and a finger spaced outwardly from said convexly curved edge to lie against the outer side of the folded edge portion of the tape, said plate having a concavely curved edge at the inner end of said finger which merges into said convexly curved edge and the inner edge of said finger to abut the tape along the fold line thereof, and a clamping screw pivotally mounting said plate for swinging adjustment transversely of the tape path to effect movement of said concavely curved fold-line-abutting edge toward or from the other edge of the tape to vary the width of the folded edge, said clamping screw serving to lock said plate after adjustment thereof, said third guiding means having one portion to abut the tape along its fold line and another portion to abut said other edge of the tape, and means whereby said fold-line-abutting portion of said third guiding means may be adjusted toward or from the portion which abuts said other edge of the tape.

5. A tape folding device comprising initial guiding means for curving the tape into channeled form and turning one of its edges toward its convex side, a second guiding means disposed forwardly of said initial guiding means for further folding said turned edge toward said convex side, and a third guiding means disposed forwardly of said second guiding means for pressing the previously folded edge into contact with said convex side; said second guiding means having a portion which abuts the tape along the fold line thereof, and means whereby said fold-line-abutting portion may be adjusted toward or from the other edge of the tape to vary the width of the folded edge; said third guiding means having an elongated finger provided with an edge to longitudinally abut the tape along its fold line, said third guiding means also having a fixed portion to abut the other edge of the tape, and a clamping screw upon which said finger is pivoted for swinging adjustment toward or from said fixed portion, said clamping screw serving to lock said finger after adjustment thereof.

6. A tape folding device comprising a body having a lateral bead on one edge, adjustable means in advance of said bead for folding over either a wide or a narrow portion of the upper edge of a longitudinally channeled tape, said body having an upper side merging into the upper side of said bead, a transversely curved wall carried by said body in outwardly spaced relation with said bead

and coacting therewith in forming a guide for the longitudinally channeled tape, said body having a permanently fixed longitudinal edge at the lower part of said wall to abut the lower edge of the tape, said wall having a horizontal upper portion spaced upwardly from said upper side of said body; a member between said horizontal portion of said wall and said upper side of said body to abut the tape along its fold line, and means whereby said member may be adjusted inwardly or outwardly as required by the width of said folded edge portion.

7. A tape folding device comprising a body having a lateral bead on one edge, adjustable means in advance of said bead for folding over either a wide or a narrow portion of the upper edge of a longitudinally channeled tape, said body having an upper side merging into the upper side of said bead, a transversely curved wall carried by said body in outwardly spaced relation with said bead and coacting therewith in forming a guide for the longitudinally channeled tape, said body having a permanently fixed longitudinal edge at the lower part of said wall to abut the lower edge of the tape, said wall having a horizontal upper portion spaced upwardly from said upper side of said body; a finger between said horizontal portion of said wall and said upper side of said body and having a longitudinal edge to abut the tape along its fold line, and a clamping screw extending through said horizontal wall portion and said finger and threaded into said body for normally holding said finger against movement, release of said screw permitting swinging of said finger inwardly or outwardly as required by the width of said folded edge portion.

8. A tape folding device comprising a body having a lateral bead on one edge, means carried by said body in outwardly spaced relation with said bead and coacting therewith in forming a guide for a longitudinally channeled tape, a tape-guiding and folding member disposed transversely of the path on which the channeled tape travels through said guide, said member having a convexly curved edge for reception in the tape channel and also having a concavely curved edge in outwardly spaced relation with said convexly curved edge to fold an edge of the tape toward the convex side of said tape, said member also having a short edge extending from one end of said convexly curved edge to the corresponding end of said concavely curved edge to abut the tape along the fold line, and means for adjusting said member to move said fold line abutting short edge thereof toward or from the other edge of the tape to vary the width of the folded tape edge.

9. A tape folding device comprising a body having a lateral bead on one edge, means carried by said body in outwardly spaced relation with said bead and coacting therewith in forming a guide for a longitudinally channeled tape, a plate disposed transversely of the path on which the tape travels to said guide, said plate having a convexly curved edge for reception in the tape channel, said plate having a finger in outwardly spaced relation with said convexly curved edge to fold an edge of the tape toward the convex side of said tape, said plate also having a concavely curved edge merging into said convexly curved edge and the inner side of said finger to abut the tape along the fold line, and means pivotally mounting said plate on said body with said convexly curved edge of said plate substantially continuous with the tape-contacting surface of said bead and allowing swinging adjustment of said plate to move said concave fold-line-abutting edge toward or from the other edge of the tape to vary the width of the folded tape edge.

10. A tape folding device comprising a body having a lateral bead on one edge, means carried by said body in outwardly spaced relation with said bead and coacting therewith in forming a guide for a longitudinally channeled tape, a plate disposed transversely of the path on which the tape travels to said guide, said plate having a convexly curved edge for reception in the tape channel, said plate having a finger in outwardly spaced relation with said convexly curved edge to fold an edge of the tape toward the convex side of said tape, said plate also having a concavely curved edge merging into said convexly curved edge and the inner side of said finger to abut the tape along the fold line, and a clamping screw pivotally mounting said plate on said body with said convexly curved edge of said plate substantially continuous with the tape-contacting surface of said bead and allowing swinging adjustment of said plate to move said concave fold-line-abutting edge toward or from the other edge of the tape to vary the width of the folded tape edge.

11. A tape folding device comprising a body having a lateral bead on one edge, a transverse notch opening through said bead and a transverse shoulder behind said notch, means carried by said body in outwardly spaced relation with said bead and coacting therewith in forming a guide for a longitudinally channeled tape, a plate disposed in said transverse notch and having a guide for folding an edge of the tape toward the convex side of said tape, said guide having a portion to abut the tape along the fold line; another transverse plate lying against said shoulder and having a guide for the tape, and a clamping screw passing through both of said plates and the intervening portion of said body to secure both plates in operative position, the first mentioned plate being pivotally adjustable when said screw is loosened, to move said fold-line-abutting portion thereof toward or from the other edge of the tape to vary the width of the folded tape edge.

12. A tape folding device comprising a body having a lateral bead on one edge, a transverse notch opening through said bead and a transverse shoulder behind said notch, means carried by said body in outwardly spaced relation with said bead and coacting therewith in forming a guide for a longitudinally channeled tape, two plates having tape guiding and folding means, one of said plates being disposed in said notch and the other against said shoulder, and a clamping screw extending through both of said plates and the intervening portion of said body to secure said plates in operative position.

DANIEL J. GERMAIN.