

May 13, 1958

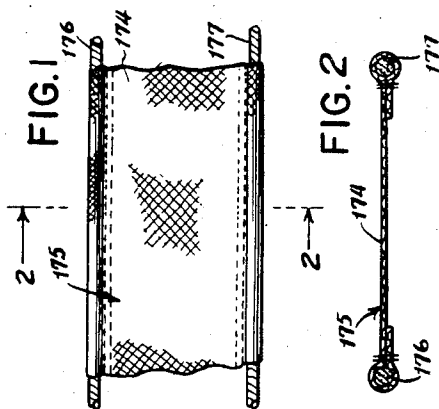
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2,834,308

FOLD GUIDES

Filed July 31, 1956

3 Sheets-Sheet 1



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3 Sheets-Sheet 2

FIG. 3

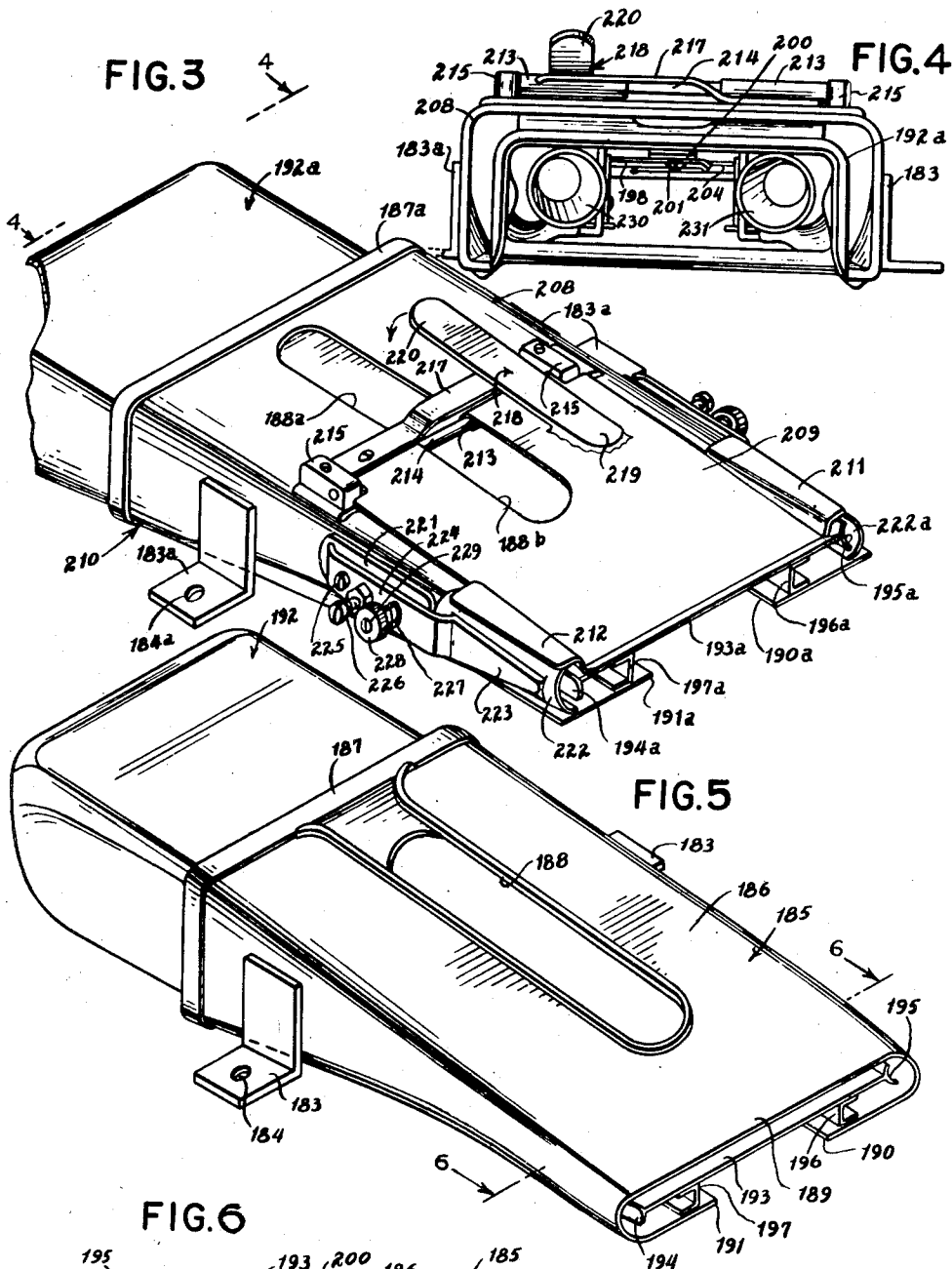


FIG. 4

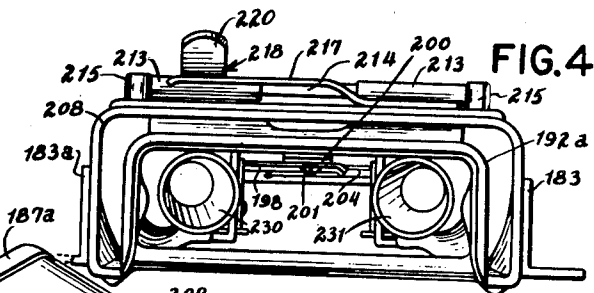


FIG. 5

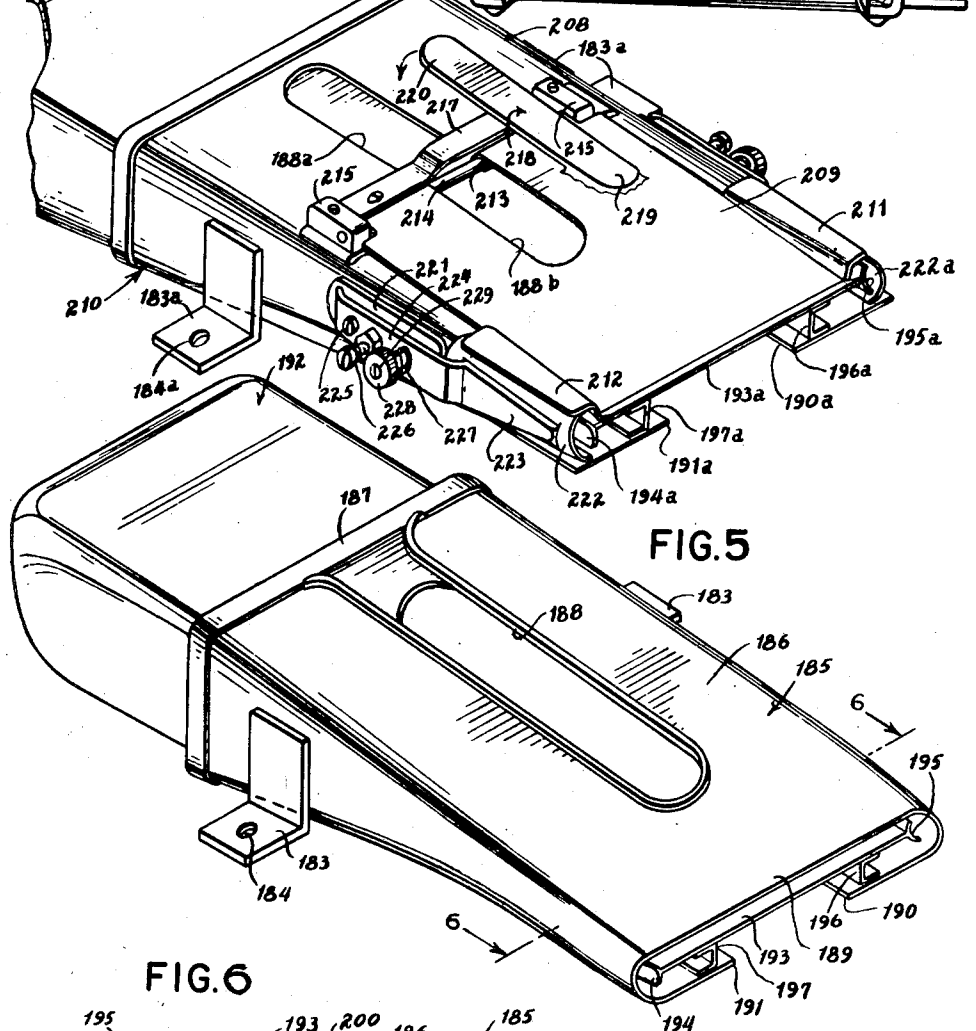
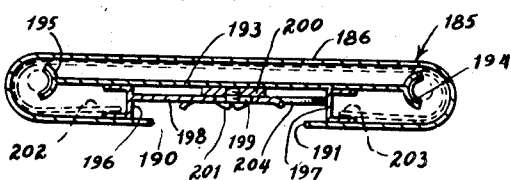


FIG. 6



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2,834,308

FOLD GUIDES

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Original application January 9, 1956, Serial No. 558,149, now Patent No. 2,773,266, dated December 11, 1956. Divided and this application July 31, 1956, Serial No. 601,247

14 Claims. (Cl. 112—139)

This invention relates to improvements in fold guides, commonly called "folders," and has for an object the provision of a folder for the formation of a double welt fabric strip wherein the edges of said strip are folded around or about a pair of spaced apart cords so that said edges may be stitched at one pass through a suitable two-spaced needle machine, and thereby said edges are retained in embracing relation with said cords and is a division of application Serial Number 558,149, filed January 9, 1956, now Patent No. 2,773,266, dated December 11, 1956.

Another object of the invention is the provision of a folder having spaced apart passages therein for a pair of cords and guide means for a strip of fabric, said guide means being adapted to fold the extremities of said strip about said cords in such a manner that the extremities of said strips may be simultaneously stitched adjacent to and outside of said cords for producing a side or cushion boxing to which covers may be attached with invisible stitching.

Other objects and advantages of the invention will be apparent to those skilled in the art, upon a study of this specification and the accompanying drawings.

Referring to the drawings which are given by way of example to illustrate the invention:

Figure 1 is a view of a longitudinal portion of a welted boxing, which is shown as an example of one of the many operations performed by the machine;

Figure 2 is a sectional view taken along the line 2—2 of Figure 1;

Figure 3 is a perspective view of one of my improved welt forming devices;

Figure 4 is a view taken along the line 4—4 of Figure 3;

Figure 5 is a perspective view of a modified form of welt forming device;

Figure 6 is a sectional elevation taken along the line 6—6 of Figure 5;

Figure 7 is a perspective view of a modified form of folder devised to form double welt boxings and the like;

Figure 8 is a view of the folder as seen on the line 8—8 of Figure 7;

Figure 9 is a cross-sectional elevation taken on the line 9—9 of Figure 7, showing a fabric strip being folded around the cords;

Figure 10 is a view showing the double welt boxing as it comes from the folder ready to be delivered to stitching means in the machine;

Figure 11 is a view showing the boxing after it has been stitched in the machine;

Figure 12 is a sectional view taken along the line 12—12 of Figure 1;

Figure 13 is a cross-sectional view of one of the welts having a cover or the like stitched thereto; and

Figure 14 is a sectional elevation of a portion of a cushion showing how the cover is folded over the stitches

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to produce a cushion with invisible or concealed stitches throughout.

A folder 185 shown in Figs. 5 and 6 has brackets 183 with screw holes 184 therein to be employed in mounting the folder on a support, as will be hereinafter explained. The folder 185 has an outer casing 186 which is tapered, and which has a strengthening bead 187 about its larger end, and which has an elongated slot 188 extending from the bead to a point spaced apart from the small end 189.

Adjacent to the end having the bead 187 on opposite sides of the outer casing are the brackets 183 above referred to. As shown in Fig. 6, the outer casing 186 has extremities 190 and 191 terminating on lines spaced apart from each other. The folder has an inner member 192 which forms an inner guide, and this inner guide is identical with the one shown at 192a. Supported within the U form of the member 192 are spaced-apart generally funnel shaped cord guides 230 and 231. Cords are inserted into these funnel shaped members from the large end of the guide and they extend forwardly within the body of the guide and as they approach the small end 189 of the guide the cords are guided by arcuate members to be presently described. Within the space between the inner member 192 and the outer casing a plate portion 193 extends inwardly from the end 189 and joins the portion 192. On each edge of the plate portion 193 are arcuate cord guides 194 and 195 that are secured to the edges of the plate portion 193 and face in opposite directions for providing accurate guidance for the cords 176 and 177 (Figures 1 and 2).

Between the plate portion 193 and the extremities 190 and 191 are elongated laterally disposed U-shaped channels 196 and 197. Preferably formed integral with the channel 196 is a support member 198 having a slot 199 therein which extends laterally with respect to the folder body. Secured midway of the plate portion 193 is a strip 200 which carries threaded holes to accommodate clamping screws 201 which pass through the clearance hole or slot 199 and enables an operator to adjust the channel relative to the lower extremity 202 of the web 174.

The other channel 197 has preferably formed integral therewith a support member 204, like the one shown at 198 which also includes a lateral slot and is adjustably secured in the same manner as the one shown at 198, a locking screw like the screw 201 being employed to retain the channel in the proper relation to guide the inner extremity 203 of the web 174. This means that the channels may be adjusted for any desired width of the extremities 202 and 203.

Referring now to Figures 3 and 4, I show a modified form of folder wherein the elements which are substantially identical with corresponding ones described in connection with Figures 5 and 6 are designated by the same numerals used in the latter figures, followed by the letter "a" or "b."

The modified folder 210 has mounting brackets 183a with holes 184 therein. This folder has an outer casing 208 which is tapered and which has a stiffening bead 187a about its larger end, and which has an elongated slot 188a in said outer casing and a continuation slot 188b in a hinged top plate 209. This top plate has its extremities in the form of rolls, one of which is shown at 213, embracing a rod or shaft 214 which is journaled in spaced apart blocks 215 which are mounted on the member 208.

Secured to the casing 208 is an offset spring 217, and cooperating therewith is a lever 218 which has one end 219 thereof soldered to the hinged top plate 209, and the other end 220 is free to be depressed for raising the

top plate 209 about its hinge shaft 214. The stop plate 209 has lateral extensions 211 and 212 which are offset upwardly and which extend laterally at a level above that of the plate 209 to overlie and cooperate with curved plates to be presently described.

Secured on the side of the outer casing near the small end is a reinforcing plate 221. A curved plate 222 is secured to a straight portion 223 of an arm 224. This arm is curved and it has a screw 225 securing it to the plate 221. A screw 226 engages a threaded hole in the arm 224 and forms a settable limit for the minimum distance between the curved plate 222 and the curved face of the arcuate cord guide 194a, which is identical with the guide 194 shown in Figures 6 and 7, and such setting may be retained by means of the locknut shown. A threaded screw 229 is screwed into the plate 221 and extends through a clearance hole in the arm 224. A spring 227 embraces the body of 229, and a thumb nut 228 is for adjusting the arm 224 so that it exerts a predetermined or wanted urge upon said arm and the curved plate 222 carried thereby.

Secured on the opposite side of the casing is a like reinforcing plate which is in alignment with the plate 221 and a curved plate 222a is secured to a straight portion of an arm like the arm 224 which is curved and which has a screw similar to the screw 225 securing it to said plate, and this group of elements functions in the same manner as described for the elements 221 to 228, inclusive.

As stated above, the top plate 209 has offset lateral extensions and these, as may be seen in the drawings, overlie the curved plates 222a and 222 and thus cooperate with the latter and with the elements 195a and 194a, respectively, and thus the cord with the fabric folded thereabout is continuously resiliently supported conjointly by the elements 194, 222 and 212, for example, or the corresponding set on the opposite side. Within and secured to the member 192a (Figs. 3 and 4) in any suitable manner are spaced-apart cord guide tubes 230 and 231. These guide the cords within the member 192a and deliver them to the cord guides 194a and 195a, respectively.

Operation

With both forms of the folder above described, the cords are pushed through the passages via the guides (such as guides 230 and 231) and they exit from the folders engaged by the guides 194 and 195 of the form of folder shown in Figure 5. In the form of folder shown in Figure 4, the cords exit from the folder between the guide 194a and its cooperative curved plate 222, on one side and between the guide 195a and the curved plate 222a on the other side.

These cords are pulled forward, with the presser foot, of the machine upon which the folder is used, raised and when they are far enough forward to be engaged by the presser foot, the latter is let down, the operator making sure that the cords lie in grooves provided on the machine with which the folder is used, to accommodate said cords.

Then the fabric strip 174 is fed into the folder by placing it upon the inner member 192, centralizing it in a lateral sense and then pushing it forwardly (toward the small end 193 of the folder) using the finger in the slot 188 (or the slot 188a, 188b) to facilitate the operation, thereby causing the fabric web to emerge from the folder in embracing relation with the two cords. As the machine is operated, the cords are advanced, so that the fabric embraced cords pass under the presser foot, and the fabric strip 174 is stitched to retain it in said embracing relation.

Referring now to Figures 7, 8 and 9, I show yet another modified form of folder for forming a double welt boxing or the like adapted to form cushions with concealed or invisible stitches. This folder is generally

inverted as compared with the other two folders described above. This folder, generally designated by the numeral 330, has a main body 237 with sides 238 and 239 extending upwardly and forming a trough. Mounting brackets 240 and 241 are secured on the outside surfaces of the sides 238 and 239 and they carry mounting holes which, when screwed to the plate 178 of the machine by means of screws 207, the discharge end (to be presently described) is in the proper position to feed the welts to the presser foot and the needles.

On the underside of the large end of the main body is a reinforcing bead 242. The side 238 tapers toward the discharge end, and it has slightly curved portion 243, where the side is depressed inwardly to accommodate a frustro-conical cord guide tube 247. This tube is soldered, brazed or otherwise positively secured on the side 238. It has a reinforcing bead 248 about the large end thereof, and it has a small end 249 adjacent to a curved cord guide plate 246. The guide 246 is secured on the edge of a curved portion 245 of the material of the side 238 beyond a notched portion 244, and the portion 245 is formed into a semi-circle to bring the remaining flat portion substantially parallel to the small end 250 of the main body 237.

The side 239 is also tapered towards the end 250 and it has a similar slightly curved portion (not shown) to accommodate a like frustro-conical cord guide tube 251, which is positively secured on the side 239. This tube has a reinforcing bead 252 about its larger end. The small end of the tube 251 is positioned adjacent to a cord guide 254 in substantially the same manner as the small end 249 is described to be relative to the guide 246. The portion 254 is formed into a semi-circle to bring the remaining flat portion 253 substantially parallel to the small end 250 of the main body 237.

The folder has an inner body 331 which is generally U-shaped in section at the larger end. It has formed integral therewith substantially parallel sides 255 and 256, and the side portion 255 has an angular portion 257, while the side 256 has an angular portion 258. These angular portions rest upon the upper edges of the sides 238 and 239, and are secured thereto in certain zones, which will be presently described. The proportions of the sides and the angular portions are such that the space 259 between the surface of the main body 237 and the inner body 331 at the large end, the space 260 between the sides 239 and 256, and the space 261 between the sides 238 and 255 are substantially equal for the admittance of fabric web materials into the folder. The larger end of the inner body 331 may be provided with a bead or the like reinforcing strip 262.

The angular portion 257, Figure 8, rests upon and is positively secured to the upper edge of the side 238 by means of a line of soldering, brazing or any other suitable means in a zone extending from a point 263 to the point where the curved portion 243 borders one edge of the notched portion 244 as is clearly shown in Figure 7.

The angular portion 258 rests upon and is secured to the upper edge of the side 239 in the same manner from a point 263a and within a zone like that in which the portion 257 is secured to the edge of 238 as just described.

A tongue portion 264 extends forwardly to the discharge end of the folder, and an extra folding plate 265 is secured on the tongue 264 in cooperative relation with the cord guide 246 as shown in Figure 9. This folding plate has a semicircular portion 267, and a straight portion 266 which is substantially parallel to the tongue 264, and the straight portion supporting the cord guide 246. It also has a laterally extending portion 268 which is soldered or otherwise positively secured to the surface of the tongue 264. The folding plate 271 overlaps and is also secured to the upper surface of an angular portion continuous with the angular portion 258 on the op-

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posite side and lying in a zone extending from a point 269 to a point 270, shown in dotted lines in Figure 7.

The second folding plate 271 is substantially identical with the folding plate 265 and is secured on the tongue 264 in cooperative relation with the cord guide 254. This folding plate has a semi-circular portion 272 and a straight portion 273 which is substantially parallel to the tongue 264, and the straight portion 253 supporting the cord guide 254. It also has a laterally extending portion 274 which is soldered or otherwise secured to the tongue 264. The folding plate 265 overlaps and is also secured to the upper surface of the angular portion 257 in a zone extending from a point 288 to a point 290.

An elongated slot 275 is formed in the inner body and has a central axis which is substantially central of said inner body to facilitate the pushing of the fabric strips through said folder.

It will be noted that from Figures 1, 2 and 6 that the folders of Figures 3 and 5 fold the edges of the fabric strip over the cords, and the strip is stitched between, and yet adjacent to the two welts. However the stitching is visible.

The folder of Figures 7, 8 and 9 forms a similar fold 281 and 282 of the fabric web 276 (which is inverted), and then as the fabric web reaches the folding plates 271 and 265, extra folds 277 and 278 are formed about the cords 279 and 280, as seen in Figures 9, 10 and 12.

Now, as seen in Figures 11 and 12, a row of stitching 283 is applied adjacent to but outside of the welt 277, and simultaneously with the formation of the row of stitches 283, a second row of stitches 284 is formed adjacent to but outside of the welt 278 at a single pass of the welt through the machine.

To form a cushion with invisible stitches, a cushion cover 285 is applied wrong side up by matching its border 286 with the border 278 (Figure 13) and securing them and the fold 278 together with a row of stitching 287. Following this the cushion cover is folded over; as shown in Figure 13 to position the right side upper most in a horizontal sense and with the web 276 on the front, as shown. The other welt 279 with its folds 281 and 277 may have a bottom cover attached thereto in the same manner, and the cushion may have any desired kind of stuffing applied inside.

Although I have herein shown and described by way of example improvements in sewing machines of the type employing loopers for handling the bottom threads and modifications thereof including means to drop stitches at will and means to change welts from one width to another with a minimum of substitutions in the set-up, I am not limited by the exact structure herein shown and described as many changes may be made in the arrangements shown and described within the scope of the following claims.

I claim:

1. In a folder for the formation of double welting, a casing having an inlet end and an exit end, said inlet end being larger than said exit end and generally U shaped in cross section, while said exit end is smaller and generally rectangular in form with its lateral sides rounded, a second casing secured to said first casing and having a portion extending outwardly from said inlet end to form a web support upon which a web may be fed therethrough, and having an extending plate portion terminating at a point adjacent to said outlet end, said extending plate portion being supported therein to divide said outlet end into upper and lower passages, said plate portion having free lateral edges adjacent to said rounded lateral sides, a pair of spaced-apart cord tubes supported by said folder through which cords are fed to form said welting, said casings conjointly defining a graded passage for the transit of a fabric web therethrough, wherein the borders of said fabric web being passed therethrough are folded about said cords and delivered to double stitching means which forms a row of stitches in said

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web adjacent to each of said cords, and longitudinal slot means in the upper surface of the upper of said casings to facilitate the guiding of a fabric web therethrough during a setup.

2. In a folder for the formation of double welting, an outer casing having an inlet end and an exit end, said inlet end being larger than said exit end and generally U shaped in cross-section, while said exit end is smaller and generally rectangular in form with its lateral sides rounded; and inner casing secured within said outer casing and having a portion extending outwardly from said inlet end to form a web support over which a web is fed therethrough, and having an extending plate portion terminating at a point adjacent to said outlet end; said extending plate portion being supported therein to divide said outlet end into upper and lower passages, said plate portion having free lateral edges adjacent to said rounded lateral sides, a pair of spaced-apart cord tubes in said inner casing through which cords are fed to form said welting, said inner casing defining a graded passage between itself and the inner surface of said outer casing, wherein the borders of said fabric web being passed therethrough are folded about said cords and delivered to double stitching means which forms a row of stitches in said web adjacent to each of said cords, and longitudinal slot means in the upper surface of said first or outer casing to facilitate the guiding of a fabric web therethrough during a setup.

3. In a folder for the formation of double welting, a casing having an inlet end and an exit end, said inlet end being larger than said exit end and generally U shaped in cross-section, while said exit end is smaller and generally rectangular in form with its lateral sides rounded, a second casing secured to said first casing and having a portion extending outwardly from said inlet end to form a web support upon which a web may be fed therethrough, and having an extending plate portion terminating at a point adjacent to said outlet end, said extending plate portion being supported therein to divide said outlet end into upper and lower passages, said plate portion having free lateral edges adjacent to said rounded lateral sides, elongated cord guide shoes arcuate in cross-section and carried on said lateral edges adjacent to and facing the rounded lateral sides of said exit end, a pair of spaced-apart cord tubes supported by said folder through which cords are fed to form said welting, said casings conjointly defining a graded passage for the transit of a fabric web therethrough, wherein the borders of said fabric web being passed therethrough are folded about said cords and delivered to double stitching means which forms a row of stitches in said web adjacent to each of said cords, and longitudinal slot means in the upper surface of the upper of said casings to facilitate the guiding of a fabric web therethrough during a setup.

4. In a folder for the formation of double welting, an outer casing having an inlet end and an exit end, said inlet end being larger than said exit end and generally U shaped in cross-section, while said exit end is smaller and generally rectangular in form with its lateral sides rounded; an inner casing secured within said outer casing and having a portion extending outwardly from said inlet end to form a web support over which a web is fed therethrough, and having an extending plate portion terminating at a point adjacent to said outlet end; said extending plate portion being supported therein to divide said outlet end into upper and lower passages, said plate portion having free lateral edges adjacent to said rounded lateral sides, elongated cord guide shoes arcuate in cross-section and carried on said lateral edges adjacent to and facing the rounded lateral sides of said exit end, a pair of spaced-apart cord tubes in said inner casing through which cords are fed to form said welting, said inner casing defining a graded passage between itself and the inner surface of said outer casing, wherein the borders of said fabric web being passed therethrough are folded about said cords

and delivered to double stitching means which forms a row of stitches in said web adjacent to each of said cords, and longitudinal slot means in the upper surface of said first or outer casing to facilitate the guiding of a fabric web therethrough during a setup.

5. In a folder body for the formation of double welting, an outer casing having an inlet-end and an outlet end, the inlet end being larger than the exit end and generally U shaped in cross-section, a panel hinged on to said casing and extending from said exit end to a lateral line intermediate the ends of said casing, means urging said panel toward its closed or normal position, opposed lateral spring loaded guides on the sides of said casing adjacent to said exit end and adapted to apply pressure laterally upon said welting, said panel having extensions on opposite sides formed to at least partially overlie said lateral spring loaded guides, an inner casing embraced by said outer casing and defining a graded passage between said casings, said inner casing having a portion extending outwardly from said inlet end to form a support over which a web is fed therethrough and having an extending plate portion having free edges and terminating at a point adjacent to said outlet end; said extending plate portion being supported therein to divide said outlet end into upper and lower passages, elongated arcuate cord guide shoes carried on said free edges of the extending plate and facing oppositely toward said spring loaded guides, a pair of spaced-apart cord tubes secured in said body through which cords are fed to form said welting, whereby the borders of a fabric web being passed through said passage are folded about said cords and delivered to double stitching means adapted to simultaneously stitch the web about said cords, and bracket means on said body for mounting the same on said stitching means.

6. The invention according to claim 5 in which U-shaped border guides facing in opposite directions are supported on said extending plate portion and are adapted to engage the borders of the fabric web passing therethrough.

7. The invention according to claim 5 in which U-shaped border guides facing in opposite directions are adjustably supported on said extending plate portion and are adapted to be set to be contacted by the borders of the fabric web passing therethrough.

8. A folder according to claim 1 in which said opposed spring loaded guides on the sides of said casing carry adjusting screws for varying the spring load in accordance with the nature of the material of which said welting is formed.

9. A folder according to claim 1 in which said opposed spring loaded guides on the sides of said casing carry adjusting screws for varying the spring load in accordance with the nature of the material of which said welting is formed, and settable stop means carried by said opposed spring loaded guides for defining zones in which said spring loaded guides may function.

10. The invention according to claim 1 in which said hinged panel has its lateral extensions curved and in which said spring loaded guides are also curved so that both curved elements on each side cooperate to maintain the borders of said fabric web in embracing relation with the cords.

11. In a folder for the formation of a double welt fabric strip, a generally U-shaped channeled member having tapered sides, a second U-shaped channeled member

having tapered sides each carrying oppositely disposed flanges which rest on and are secured to said first sides for a substantial portion of the length of the latter, notches or gaps formed in said sides near the small end thereof, frustro-conical cord tubes secured on said first sides and bridging said gaps, opposite auxiliary folding plates mounted on said second member near the small end thereof and forming oppositely facing U-shaped passages, portions of said first member near the small end each being curved and extending toward one another and bordered by a flat portion, and an arcuate cord guide shoe secured to each of said flat portions in cooperative relation to said auxiliary folding plates, whereby said folder may form an inverted double welted strip embracing cords extending through said tubes and double stitched along lines between said cords and the edges of said strip.

12. In a folder for the formation of welting or the like, an inverted casing having an inlet end and an exit end, the inlet end being larger than the exit end and generally U-shaped in cross-section, a pair of spaced apart cord guides fixed within said casing, an inner casing within and shorter than said outer casing and forming a support for said cord guides, said inner casing being also inverted, and defining a graded passage between itself and the inner surface of said outer casing, wherein the borders of a fabric web being passed therethrough are folded around said cords and adapted to be delivered to double stitching means which simultaneously forms a row of stitches in each of said webs adjacent to said cords.

13. In a folder for the formation of welting or the like, an inverted casing having an inlet end and an exit end, the inlet end being larger than the exit end, a pair of spaced apart cord guide tubes within said casing, an inverted inner casing in said outer casing forming a support for said cord guide tubes and defining a graded passage between itself and the inner surface of said outer casing, wherein the borders of a fabric web being passed therethrough are folded around said cords and delivered to double stitching means which forms a row of stitches in said web adjacent to each of said cords, and longitudinal slot means in the upper surface of said outer web to facilitate the guiding of a fabric web therethrough during a set up.

14. A folder according to claim 13, wherein said passage is generally U-shaped in cross-section adjacent to one end thereof and generally C-shaped in cross-section at the other end thereof.

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