May 23, 1933. S. J. McAULEY 1,910,848

COLLAR AND METHOD OF SHAPING THE SAME

Filed June 21, 1930

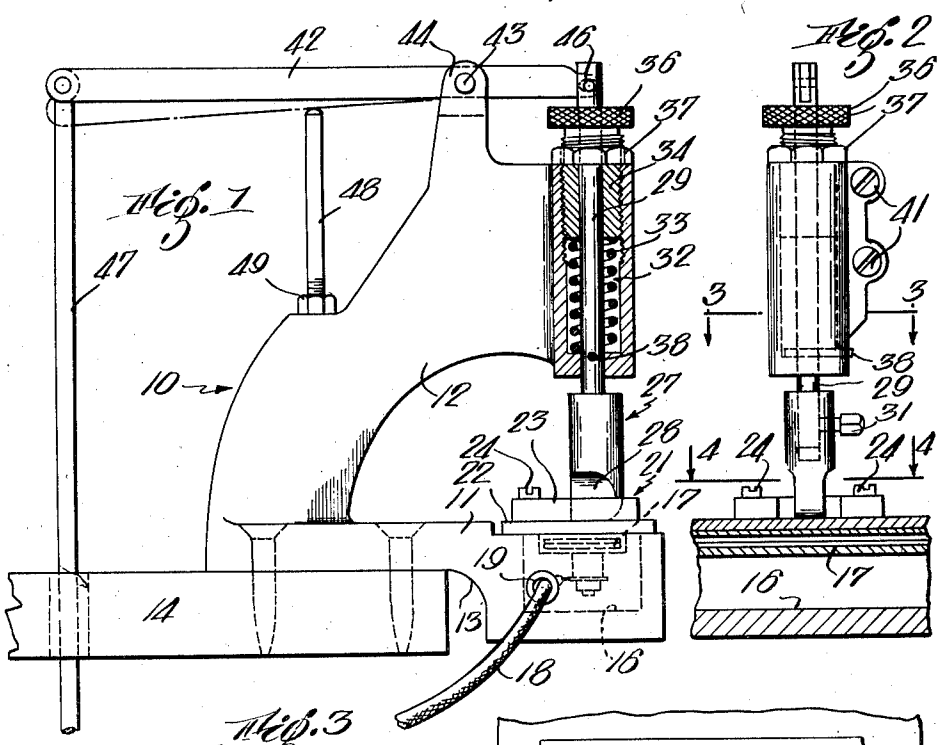


Fig. 1

Fig. 2

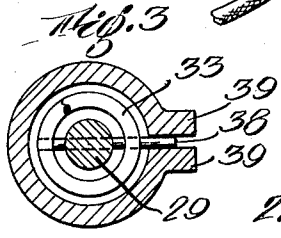


Fig. 3

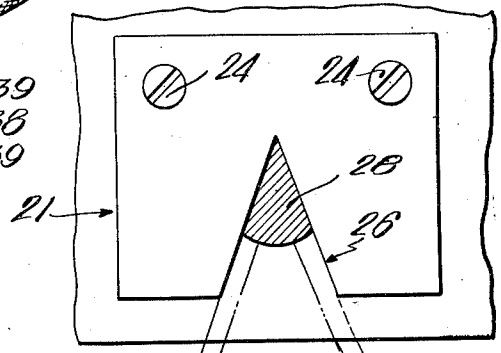


Fig. 4

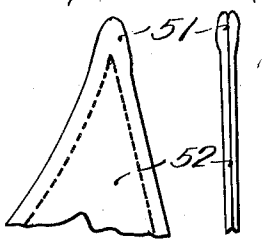


Fig. 5

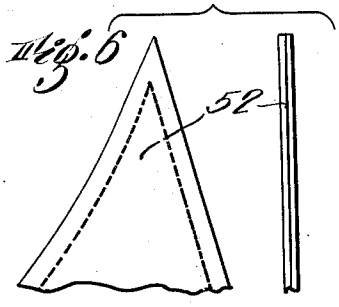


Fig. 6

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UNITED STATES PATENT OFFICE

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COLLAR AND METHOD OF SHAPING THE SAME

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This invention relates particularly to shaping a portion of a manufactured article of one or more plies of fabric such as a collar or a cuff, or other parts of a garment, and to apparatus for accomplishing such an object, as well as to an improved article so-shaped. A stitched collar is representative of a class of articles, the manufactured and designed form of which may be improved by the present invention. A manufactured collar either attached to, or attachable to a shirt, generally consists of one or more plies of fabric that have been operated upon; in the case of a single ply of fabric by turning in the edges generally in a machine and by stitching or binding the edge; in the case of a collar composed of two or more plies of fabric by stitching operations and turning operations either by hand or by machine. It is customary in the ordinary processes of collar manufacturing to stitch the plies together with an interliner forming an outer ply and to turn the plies inside out to bring the interliner between the plies. A second row of exposed stitches may then be run around the turned edges forming a hand-turned collar. It is also common practice to assemble the plies with the edges turned and an interliner disposed between the plies. When assembled in this manner the plies are stitched, usually with two rows of exposed stitching forming what is commonly known as a machine-turned collar. Thus in the latter case the plies are turned and stitched while in the former they are stitched and turned, this step being commonly described as run stitched and turned. This invention applies generally to the manufacture of collars and like products having turned edges whether these edges are formed according to the above-mentioned processes or otherwise. Owing to the large amount of material that of necessity must be turned into the point of the collar, a lump or bulge is formed in the point which is accentuated when the collar is ironed. Such bulges may occur prior to stitching or may occur after stitching, but they are particularly noticeable in soft collars attached to shirts, the tops of which have been run-stitched, hand-turned, and stitched.

Objects of the present invention are to improve the art of shaping folded portions, such as the turned edges of collars or like manufactured articles, so that the edges of such portions will assume a well defined shape substantially free from edge convexity; to form the edge portions in such a manner as to reduce the tendency for bulging thereof and to cause the edges permanently to assume their intended shape; to improve the efficiency of manufacture of articles of the class described so that they may be produced in considerable quantities with greater precision and uniformity of workmanship; to provide an edge-turned collar having an improved edge construction particularly at the points thereof; to provide a collar of this type having form-retaining, squared edge portions substantially free from edge convexity; to provide apparatus for improving the manufacture of such collars and like products; and also to provide such apparatus of simple, efficient and yet strong and durable construction consisting of few parts which are relatively inexpensive to manufacture.

In the drawing:

Fig. 1 is a side elevation, with parts broken away, of an apparatus for shaping the points of collars;

Fig. 2 is a front elevation of the apparatus shown in Fig. 1 with a portion of the support shown in section;

Fig. 3 is a section taken substantially along the line 3—3 of Fig. 2;

Fig. 4 is a section taken substantially along the line 4—4 of Fig. 2 showing the manner in which a collar is placed in the apparatus; and

Figs. 5 and 6 are combined plan and edge views of collar points.

Various convenient forms of mechanism may be employed for pressing or molding the article into the desired shape. Approved apparatus for practicing the invention may comprise a unitary support, indicated generally at 10, and having a lower platform portion 11 and an arm 12 which overhangs or extends above the platform.

The under side of this platform portion may be cut away, as indicated at 13, to facilitate attachment of the device to a bench 14 or other suitable support. The platform portion 11 has a recess or depression 16 opening into the upper side thereof to receive a heating unit 17, this unit preferably being of the electrical type and being supplied with heating current by a conductor 18 which extends through an opening 19 in the end wall of the platform portion 11.

A matrix for the forming die, indicated generally at 21, is mounted upon the support 10 and comprises a base plate 22 which extends over the recess 16 to enclose the latter and is affixed to the support in any approved manner, as by means of screws (not shown). The heating unit 17 preferably is attached to the under side of the plate 22 so as to assure good heat conduction to this plate and also to facilitate insertion or removal of the heating unit. A matrix or forming plate 23 is disposed on the upper side of the base plate 22 and affixed thereto by means of attaching screws 24. This plate has an approximately V-shaped notch 26 extending inwardly from the front edge thereof, the edges of this notch being in the form of substantially vertical side walls which meet at an acute angle and follow the contour which it is desired that the collar point shall ultimately assume.

A plunger 27 has a detachable head 28 having a contour complementary to and receivable within the side walls of the notch 26. The head 28 is attached to the vertically disposed plunger rod 29 by means of a set screw 31. The overhanging arm 12 has a bore therein to receive the plunger rod 29 and a counterbore 32 to provide a chamber for an actuating spring 33 which encompasses the plunger rod 29. The upper end portion of the counterbore 32 is threaded to receive a similarly threaded plug 34 through which the upper end of the plunger rod extends. The upper end of the plug 34 has a knurled head 36 and a lock or jamb nut 37 is also mounted on the upper portion of this plug for holding the latter in the desired position of adjustment. The spring 33 seats against the lower end of the plug 34 and against a pin 38 (Fig. 3) mounted on the plunger rod. This pin is reciprocable vertically in a slot formed by the mating flanges 39 extending outwardly from the chamber 32. These flanges are held in properly spaced relation by means of screws 41 (Fig. 2).

The plunger 27 is adapted to be moved upwardly by a lever 42 (Fig. 1) which is pivoted intermediate its ends upon a pin 43 which extends between the spaced ears 44 mounted upon the upper side of the arm 12. One end of this lever is pivotally connected to the upper end of the plunger rod 29 by means of a pin and slot connection, as indicated at 46. The other end of the lever may be pivotally connected to a rod 47 which extends to a treadle (not shown), or other approved means may be provided for operating this lever. A rod 48 extends upwardly from the arm 12 into the path of movement of the lever 42, the vertical height of the rod 48 being adjustable by means of a lock nut 49 so that the upper end of this rod may constitute a stop or abutment means for limiting movement of the lever 42, as will be apparent. The condition of a collar point of the class described as it is to be received by this apparatus is indicated generally at 51 in Fig. 5, from which it will be observed that the opposite surfaces of the point as well as the edges thereof have considerable curvature or convexity.

In practicing the invention with the apparatus described, the current is first supplied through the conductor 18 to the heating unit 17 so that the latter may heat the base plate 22 of the forming die, the matrix plate 23 being heated by conduction from the plate 22. As the head of the plunger 27 is normally held in heat transfer relation with the plate 22 and preferably in contact therewith by the spring 33, it will be seen that this head 28 is also heated from the plate 22. The head 28 preferably is of relatively heavy construction, so that it will retain its heat during the operations of forming or shaping the collar points. When these parts have been properly heated the lever 42 is moved to raise the plunger 27, the abutment rod 48 being adjusted so that the plunger will not be moved completely out of the notch 26 of the plate 23. The point 51 of the collar 52, as shown in Fig. 5, is then inserted into the notch 26 of the forming die and may be softened by moistening or otherwise previous to insertion if desired. In practice it is sometimes desirable to moisten the point in order to make the constituents thereof, such as the cloth, starch and the like, plastic for molding. Due to the action of the spring 33 it is necessary to hold the lever 42 against the abutment 48 during the insertion of the collar point. As soon as this point has been inserted, however, the lever 42 may be released and the spring will then become effective to force the head 28 into the die and to cause the interposed collar point 51 to be compressed between the head of the plunger and the base plate 2. This compression acts to force the edge portions of the point 51 into abutment with the side walls of the notch 26 so that these edges, being compressed against the vertical side walls, are squared and are held in this shape during the time that the plunger 27 is allowed to rest thereon.

Due to the fact that both the plunger and

the die are heated, it will be clear that heat is applied to the interposed collar point from the opposite sides thereof as well as to the edge portions thereof. Furthermore, the action of the spring 33 in forcing the plunger 27 downwardly is controlled in a measure by the position of the stop 48. Since this stop limits the upward movement of the plunger, it also determines the portion of the down stroke thereof through which the spring 33 may act, and therefore it is assured that this spring will always impart the same acceleration to the plunger and cause the latter to deliver the same impact and the same total force or pressure to the collar point in the die. In this way it is possible to eliminate the human element in the manufacture of articles of the class described and to rely entirely upon the apparatus disclosed for exerting the requisite amount of pressure to shape the point. Articles manufactured in this manner therefore exhibit greater precision and uniformity of workmanship than could be attained by any manual or pedal procedure. The finished collar 52 is shown in Fig. 6 from which it will be seen that the turned edges of the point have been laterally molded and condensed to substantially the same thickness as the other portions of the collar. These turned edges are caused to assume and permanently to retain this shape by the application of heat and pressure in the manner just described, the pressure being effective for shaping the point, while the heat fixes the shape so that it will remain that of the mold or matrix.

I claim:

1. Method of shaping the points of a taxtile product such as a collar or cuff which comprises compressively molding and condensing the excess material in the point by molding the transverse edges of the point into planes approximately normal to the plane of the product, and fixing the point in its condensed and shaped condition by heat.

2. The method of shaping the points of a textile product such as a collar or cuff, comprising cloth plies edge-turned, said method comprising compressing the point between substantially parallel surfaces, and holding the turned edges firmly against surfaces disposed transversely of said parallel surfaces to form the desired edge contour during the compression.

3. The method of shaping the points of a textile product, such as a collar or cuff, comprising cloth plies edge-turned, said method comprising compressing the point between substantially parallel surfaces, applying heat to the point during the compression, and holding the turned edges to the desired contour during the compression.

4. The method of shaping the points of a textile product such as a collar or cuff comprising cloth plies edge-turned, said method comprising compressing the point between substantially parallel surfaces, applying heat to both sides of the point during compression, and holding the turned edges to the desired contour during compression.

5. The method of shaping the points of a textile product such as a collar or cuff comprising cloth plies edge-turned which method comprises compressing the point between substantially parallel surfaces to condense the point and forcing the edges thereof against surfaces substantially normal to the parallel surfaces and delineating the contour the point is to assume.

6. The method of shaping the points of a textile product such as a collar or cuff comprising cloth plies edge-turned, which method comprises impacting and compressing the point between substantially parallel surfaces to condense the edge-turned portions of the point, restraining the turned edges to a well defined contour during impacting and compression thereof for shaping these edges, and applying heat during these operations to cause the edges permanently to assume the desired contour.

7. The improvement in the manufacture of textile articles such as collars or cuffs havhaving turned edges which comprises impacting and compressing the turned edges adjacent the point of each article with the same ultimate total pressure for condensing the point, holding the turned edges to a well defined contour during this impacting and compression, and heating the point during these operations to cause the edges thereof permanently to assume the desired shape substantially free from edge convexity.

8. The improvement in the manufacture of textile articles such as collars or cuffs having turned edges which comprises impacting and compressing the turned edges adjacent the point of each article with the same ultimate total pressure for condensing the point, holding the turned edges to a well defined contour during this impacting and compression, and applying heat to the point from the opposite sides thereof during the impacting and compression stage to cause the edges permanently to assume the desired shape substantially free from edge convexity.

9. In the manufacture of soft collars of the type having a multiple ply fold-over top, the improvement which consists in superimposing the several plies forming the top, stitching the same together along one longitudinal and the transverse edges while leaving open the other longitudinal edge which is to be secured to the band, turning the top inside out, thereby inturning the stitched edges and concealing the stitching, and externally shaping the points and while

the latter are being shaped applying heat and pressure, the pressure being applied against the surfaces and edges of the collar.

10. Method of shaping the points of a textile product such as a collar or cuff which comprises compressively molding and condensing and fixing the excess material in the point by molding the transverse edges thereof into planes approximately normal to the plane of the product.

11. In the manufacture of soft collars of the type having a multiple ply fold-over top, the improvement which consists in superimposing the several plies forming the top, stitching the same together along one longitudinal and the transverse edges while leaving open the other longitudinal edge which is to be secured to the band, turning the top inside out, thereby inturning the stitched edges and concealing the stitching, externally shaping the points by exerting a rigid confining pressure along the edges at the points and while the latter are confined to desired shape applying heat and external pressure to said points.

12. In the manufacture of soft collars of the type having a multiple ply fold-over top, the improvement which consists in superimposing the several plies forming the top, stitching the same together along one longitudinal and the transverse edges while leaving open the other longitudinal edge which is to be secured to the band, turning the top inside out, thereby inturning the stitched edges and concealing the stitching, shaping the points by externally confining the edges of the collar at the points, and while the latter are confined to shape applying heat and external pressure to said points.

13. In the manufacture of soft collars of the type having a multiple ply fold-over top, the improvement which consists in superimposing the several plies forming the top, stitching the same together along one longitudinal and the transverse edges while leaving open the other longitudinal edge which is to be secured to the band, turning the top inside out, thereby inturning the stitched edges and concealing the stitching, shaping the points by externally confining the edges and while the latter are confined to shape applying heat and pressure, the pressure being applied against the surfaces.

14. In the manufacture of soft collars of the fold-over type, the improvement which consists in stitching together the several plies forming the top, turning the top inside out and thereafter shaping the points by externally confining the edges and while the latter are being shaped applying heat and external pressure.

15. In the manufacture of soft collars of the type having a fold-over top, the improved method which consists in externally confining the edges at the points to a predetermined shape, and while confined applying heat and pressure to the surface of the collar point within the confined area.

16. In the manufacture of soft collars of the type having a fold-over top, the improved method which consists in externally applying pressure against and confining to a predetermined shape the edges at the point of a preformed collar, and while so confined applying heat and pressure to the collar point within the confined area.

17. Method of shaping the points of a turned collar which comprises softening the collar point as by moistening and compressively molding and condensing the excess material in the collar point by applying pressure against the thicker areas of the surfaces forming the opposite sides of the point until these surfaces are substantially flat and free from convexity and retaining the transverse edges of the point from bulging outwardly beyond the desired contour by molding these transverse edges until they are substantially straight in a direction transversely of the collar and free from transverse convexity, and fixing the collar point in its condensed and shaped condition by heat.

18. A textile product such as a collar having the top portion comprised of cloth plies edge-turned, and having the excess material in the points condensed to a substantially uniform thickness substantially the same as that of other edge portions of the collar top so that the opposite surfaces of each point lie in substantially parallel planes, the edges of the points extending from the surface forming the outer face side of the collar point toward the under side thereof along lines which are straight in a direction transversely of these edges so that the latter are substantially free from edge convexity and meet the outer face side of the collar point along lines which are relatively sharp and well defined.

19. A textile product such as a collar having the top portion comprised of cloth plies edge-turned, and having the excess textile material in the points condensed and providing a preformed surface on the face side of the collar between the points, said surface lying substantially in a single plane, the edges of the points extending from the face side of the collar toward the under side thereof along lines which are straight in a direction transversely of these edges so that the latter are substantially free from edge convexity and meet the face side of the collar point long lines which are relatively sharp and well defined.

20. A textile product such as a collar having the top portion comprised of cloth plies edge-turned, and having the excess textile material in the points condensed to a substantially uniform thickness substan-

tially the same as that of other edge portions of the collar top so that the opposite surfaces of each point lie in substantial parallel planes, the edges of the points being straight in a direction transversely thereof so as to meet the surfaces forming the points along lines which are relatively sharp and well defined.

Signed by me at Troy, N. Y. this 18th day of June 1930.

SAMUEL J. McAULEY.