June 21, 1938. G. E. RUTLEDGE ET AL 2,121,489

KNIT BREAST POCKET FOR GARMENTS AND METHOD OF PRODUCING SAME

Filed May 13, 1937

Fig. 1.

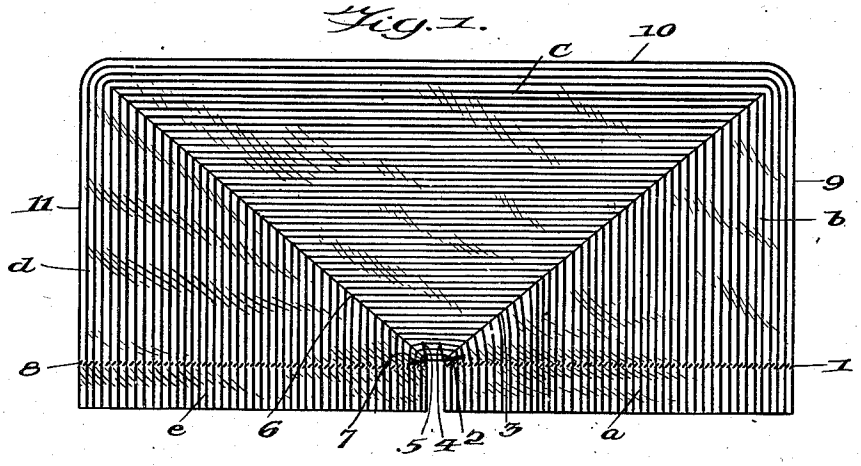



Fig. 3.

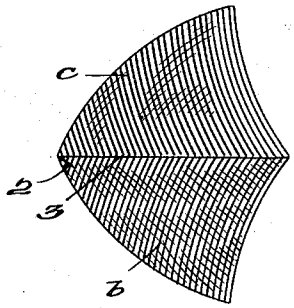



Fig. 2.

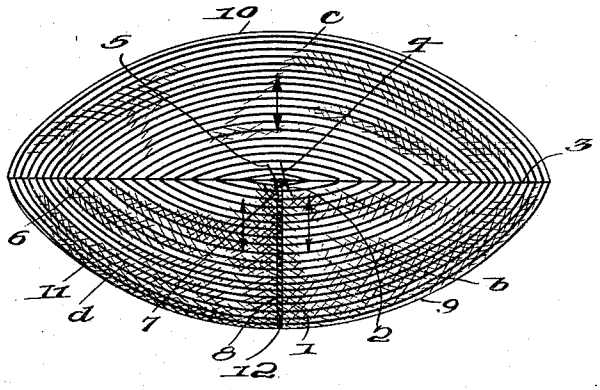



Fig. 5.

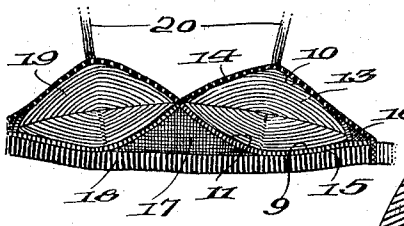
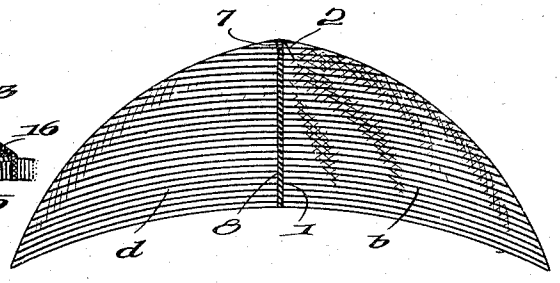



Fig. 4.




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## KNIT BREAST POCKET FOR GARMENTS AND METHOD OF PRODUCING SAME

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22 Claims. (Cl. 66—176)

This invention relates to knitted breast pockets adapted to be incorporated in brassières and other garments for women and produced each from a single strip of seamless knit fabric which is so formed and fashioned during the knitting process as to give a predetermined cup-shaped contour to the finished pocket.

One of the main objects of the invention is to provide a one-piece knitted breast pocket so constituted as to vary in curvature and diameter in different circumferential areas in such manner as to give a breast a neat molded appearance.

Another object of the invention is to form a one-piece knitted breast pocket so as to have an elongated, generally oval cross-section, and to attain such shape through suitable fashioning of the breast pocket fabric during the course of knitting the same.

Still another object of the invention is to form a breast pocket of a seamless knitted fabric strip constituted of a group of fashioned sections knit one after the other which sections are so formed and arranged that in the completed pocket the distance between the center and the edge of the pocket will vary in different circumferential areas.

Another object of the invention is to form a fashioned breast pocket as a plurality of integral successively knit triangular sections, the form of different sections being varied so that the pocket has different diameters in vertical and horizontal directions.

A further object of the invention involves the production of a fashioned one-piece knitted breast pocket wherein the knitted wales in both the upper and lower portions thereof run in the same general direction, preferably horizontally, the direction of stretch of the knitted fabric being more or less the same in the several portions.

It is further proposed to vary the degree of stretch in the upper and lower portions of the pocket so that, entirely aside from the direction of stretch in different areas, the pocket will be less yielding and exert a firmer molding effect on the breast in the area which requires the greatest support.

It is a still further object of the invention to provide a process of forming a fashioned breast pocket blank as a single strip of seamless knit fabric according to which the desired shaping of the pocket is obtained, and which, furthermore, is so simple as to readily lend itself to mass production of fashioned knitted breast pockets. The proposed knitting process may be carried out on a conventional type of knitting machine and may be continuous in the sense that fashioned blanks for a series of breast pockets may be knit without interruption as a single long strip of fabric from which the individual blanks can be subsequently severed.

The above and other objects and features of the invention will become more apparent from the accompanying drawing and specification taken in connection with the appended claims.

In the drawing:

Fig. 1 is a diagrammatic plan view of a fashioned knitted blank for the breast pocket involving a preferred adaptation of the invention, the lining indicating the direction of the knitted wales;

Fig. 2 is a front elevation of the completed breast pocket as made from the blank of Fig. 1;

Fig. 3 is a side elevation corresponding to Fig. 2;

Fig. 4 is a bottom plan view; and

Fig. 5 illustrates breast pockets according to the invention embodied in a brassière.

The invention involves the knitting of a fabric blank as a succession of knitted courses and the fashioning of such blank by narrowing and widening in various courses in such manner that the breast pocket formed from the blank will suitably mold the breast. The blank is formed as a series of successively knit fashioned sections of substantially triangular form, each section being knit integrally with a preceding section and joined thereto along a fashioning line. One section must be made relatively long in a walewise direction to give the desired oval shape to the pocket. The remainder of the blank may be made of smaller sections of shorter length.

Referring to Figs. 1 and 2, the pocket is here shown in a simple form comprising three triangular sections *b*, *c* and *d*, the same being so proportioned and shaped that the long triangular section *c* will constitute approximately one entire half of the pocket, while the other two sections *b* and *d* together constitute the other half of the pocket. The manner of forming such article will now be described.

The knitted blank is preferably made on a circular latch needle machine of the type using a single set of needles and sinkers. The machine will be filled with the number of needles necessary to give the desired width of fabric and will be operated with a reciprocal movement so as to knit a course during movement in each direction. Suitable cams will be provided to gradually remove needles from operation for narrowing the fabric, to simultaneously restore to operation

needles removed for completing certain fashioning operations, and to gradually restore to operation needles removed for widening the fabric.

A straight short section of loopers' waste *a* is first formed by knitting a number of courses. The last course **1** of section *a* will preferably be a loose course. The triangular section *b* is next formed by knitting a plurality of courses until the desired length has been attained. A small fashioning is made in the apex area of section *a* by gradually removing needles at the left edge of the section as progressive courses are knit. Thus, one needle may be removed every time the machine moves in one direction following the knitting of course **1** until, say, three needles have been removed from operation. The length of the courses is thus gradually reduced. When the desired number of needles have been withdrawn they are then all simultaneously returned to operation, still retaining the end loops of the various preliminary courses. The knitting then proceeds, and the result of this fashioning is designated by the fashioning line **2**.

Immediately after the completion of the fashioning in the apex area, a further fashioning is commenced which continues throughout the knitting of the entire length of section *b*, resulting in the sloping edge as defined by fashioning line **3** which forms the border between section *b* and section *c*, and giving section *b* its triangular form. This main fashioning is carried out in the same manner as the preliminary narrowing by gradually removing needles one at a time at the left edge of the section during movement of the machine in one direction. All of the knitted loops at the ends of the different courses are retained on the needles when they are removed preparatory to the knitting of the subsequent section *c*, which is to be formed integrally with section *b*. As will be noted from Fig. 1 the narrowing of section *b*, as defined by line **3**, need not be carried across the entire width of the section, although to avoid undue distortion of the fabric in the completed breast pocket it is preferred to leave only a relatively small number of knitted wales along the right margin of section *b*.

When section *b* has been completed by removing the last needle and knitting the last narrow course thereof, the knitting of the next section *c* is commenced. Such section is started with a narrow course, and as progressive courses are knit the needles previously removed during the formation of section *b* are gradually brought back into operation at the left side of section *c* so that the courses of section *c* become wider as knitting progresses. The needles are preferably returned two at a time. The removal of the needles during the knitting of section *b* takes place during movement of the machine in one direction and the return of the needles in the knitting of section *c* will occur during movement of the machine in the opposite direction.

When all of the needles have been returned the full width of section *c* will have been attained and the fashioning line **3** completed. A further short fashioning **4**, similar to fashioning **2**, may be introduced in the apex area of *c* by gradually removing the needles one at a time as the knitting progresses, to a total, say, of three. When the last needle has been removed all those removed are then simultaneously brought back into operation. A small number of straight courses may then be knit to complete the apex area of *c*, and then an additional short fashioning designated by line **5** may be introduced by removing one needle at a time, say to a total of three, and then simultaneously reintroducing such needles and continuing the knitting. The last half of section *c* is narrowed as the knitting progresses by again gradually removing needles, one at a time, until the full length of section *c* has been attained. Fashioning line **6** and fashioning line **3** converge together, substantially to a point, and give section *c* the form of an equilateral triangle, of substantial length in a walewise direction at its base, which will cause the pocket to have an elongated shape.

After knitting of the last short course of section *c*, the knitting of section *d* is commenced and as progressive courses are knit the needles removed during the knitting of the last half of section *c* are gradually restored to operation, say two at a time, until the full width of section *d* has been attained. As soon as the last needle has been brought in at the left edge of section *d* a further short fashioning may be introduced in the apex area thereof by gradually removing the needles one at a time and then simultaneously bringing such needles back into operation. This results in the short fashioning line **7**. A loose course **8** is knit, this being done preferably at the same time the needles removed in making the last shortening are brought back into operation. Thereafter a short section *e* of loopers' waste is knit with a plurality of straight courses.

The breast pocket blank, as constituted of the successively knit triangular sections *b*, *c* and *d*, together with the loopers' waste sections *a* and *e* at the opposite ends of the blank, is now complete. The blank may be cast off the machine. On the other hand, it will ordinarily be found desirable for large scale production to continue to knit additional blanks for other pockets by repeating the processes here described any number of times. The individual blanks may be then cut apart by severing through the loopers' waste fabric which will be formed between section *d* of a preceding blank and section *b* of a following blank.

The breast pocket, as shown in Fig. 2, is formed from the blank of Fig. 1 by bringing together the ends of sections *b* and *d* and looping them together on a looping machine along the loose sources **1** and **8**. The loopers' waste sections *a* and *e* can be removed at the time of formation of the looping stitching **12**.

As will be evident from a comparison of Figs. 1 and 2, the long isosceles triangular section *c* defines one entire half of the breast pocket, while the two smaller right angle triangular sections *b* and *d* together form the remainder half of the pocket. The knitted wales in each of the sections *b*, *c* and *d*, as indicated by the lining of the figures, run lengthwise of their respective marginal edges **9**, **10** and **11**. The wales in sections *b* and *d* run perpendicular to their ends and form continuations of one another when the terminal courses **1** and **8** are joined together by the stitching **12**. The wales of both adjoining sections *b* and *c* meet fashioning line **3** at an acute angle, and similarly the wales of both sections *c* and *d* meet fashioning line **6** at a corresponding angle. The fashioning lines **3** and **6** divide the pocket into upper and lower halves, the corresponding wales of which run generally horizontally and merge with each other at their ends along such lines.

The pocket will have the intended elongated generally oval cross-section by reason of the

wide angle formed at the apex between fashioning lines 3 and 6, and the length walewise of section c, and also because of the sharp angles formed between the meeting ends of the wales of adjoining sections by reason of the combination of narrowing and widening operations at the fashioning lines.

Since the stretch of knitted fabric is in the direction of the courses and crosswise of the wales, it will be appreciated that as shown by the arrows in Fig. 2 the direction of stretch in the pocket in all of the various sections will be vertical in the middle area of the pocket and change only slightly in direction as the wales of the upper and lower sections come together gradually to meet along the fashioning lines 3 and 6.

Inasmuch as the lower half of the pocket is intended to lend support to the underpart of the breast, it is found desirable to knit the same with a tighter stitch, using greater tension, than in the formation of the upper half of the pocket. This practice will not change the direction of stretch but will cause the lower half to be firmer and have a less degree of stretch than the upper half. This feature of the invention is obtained by knitting sections *b* and *d* with a relatively tight stitch, and employing a looser stitch in the formation of section *c*, when the latter, as shown, constitutes the upper half of the pocket. In the event sections *b* and *d* are to constitute the upper half of the pocket and section *c* the lower half, section *c* will be knit with a tight stitch and the other sections with a looser stitch.

The blank for the pocket may be knit of any suitable kind of thread such as cotton, rayon or covered rubber yarn, and various stitch formations may be utilized in making the same.

The short fashionings 2, 4, 5 and 7 are desirable refinements of the invention adapted to give a nice curved effect and avoid buckling in the apex area of the pocket, but may be omitted. The invention is not to be construed as limited to the use in connection with the long section c of the particular sections *b* and *d*. The number and form of additional sections, and also the order in which the sections are knit, may be varied within the scope of the invention. However, the particular embodiment of the invention shown, comprising segments *b*, *c* and *d*, is very desirable since it can be made under a very simple knitting technique, and the shape of the pocket is well suited to mold the breast and give the same a generally oval appearance.

Inasmuch as the breast pocket is completely shaped by reason of the manner of knitting and fashioning the same, it will be evident from a consideration of Figs. 2, 3 and 4 that it is all ready to be set into a breast opening in a woman's garment by merely stitching around its periphery as defined by the wale-wise extending marginal edges 9, 10 and 11 of the successive triangular sections.

In Figure 5 we have indicated breast pockets according to the invention set in a brassière. The pocket 13, corresponding to Fig. 2 and certain parts thereof being similarly identified, may be provided with an edging 14, preferably elastic, extending around edge 10 of the upper half of the pocket. A line of stitching 15 can be formed around the edges 9 and 11 of the sections constituting the lower half of the pocket to secure the same to the adjoining parts of the brassière. As will be noted from the drawing, the pocket 13 may be tilted slightly so as to bring the lower edge 9 to a generally horizontal position and such edge may be relatively straight and parallel to the lower adjoining portion of the brassière. Adjacent the right end of the pocket 13 a small triangular section 16 of Swiss rib or other knitted fabric may be provided so that the upper elastic edging 14 may extend in a more or less straight line to join the lower portion of the brassière beyond the end of the marginal edge 10 of the upper section of the breast pocket. A large triangular Swiss rib or other knitted fabric section 17 may be provided in the center of the brassière and secured to the marginal edge 11 of the lower left half of the breast pocket through the stitching 15. An elastic securing band 18 will be provided at the lower extremity of the brassière to anchor the same to the body.

The left breast pocket 19 is similar to the pocket 13 and is secured in the brassière in a similar manner. Shoulder straps 20 will be anchored at the margins of the pockets 13 and 19 in their upper central areas.

From the use of the breast pocket in a brassière as just explained, it will be appreciated that the breast pocket of the invention is completely formed during the knitting process and that it may be set into any type of garment without destroying its finished marginal edge or further fashioning the same by removing excess marginal fabric.

We claim:

1. A fashioned one-piece knit fabric breast pocket of oval cross-section having fashioning lines running outwardly in opposite directions from the center and dividing the pocket into upper and lower portions, the knit fabric wales of the upper and lower portions running in the same general direction and at their ends meeting at said fashioning lines.

2. A fashioned one-piece knit fabric breast pocket having a long diameter and a short diameter and composed of a plurality of integrally knit triangular sections, the knit wales of the various triangular sections running generally lengthwise of the long diameter of the pocket.

3. A fashioned one-piece knit fabric breast pocket having a long diameter and a short diameter and fashioned along lines which meet at the center of the pocket and extend outward in opposite directions along the long diameter of the pocket, the knitted fabric wales on the opposite sides of said long diameter running from one to the other of said fashioning lines and meeting each other along said fashioning lines at a sharp angle.

4. A fashioned one-piece knit fabric breast pocket blank of oval cross-section comprising a triangular knit section defined by oppositely inclined fashioned side edges and forming substantially one-half of the pocket, and additional fabric of triangular form constituting the remainder of the pocket knit integrally with the first section.

5. A fashioned one-piece knit fabric breast pocket comprising a wide triangular knit segment defined by opposite sides which are oppositely inclined to the knitted wales of the segment in the areas adjacent the sides and a plurality of narrower additional triangular segments in an integral piece with the first section.

6. A fashioned one-piece knit fabric breast pocket comprising an integral strip of knit fabric united at its ends and divided intermediate

its ends into a plurality of triangular sections by fashioning lines which meet in an apex at the center of the pocket and extend in angular relation to the knit courses of the sections at the opposite sides of the lines.

7. A knit breast pocket comprising a series of triangular fabric sections comprising successive groups of knit courses and joined together along their side edges, certain of said triangular sections having one coursewise extending side edge and a second side edge inclined to the knit courses thereof, another of said triangular sections being larger than the other sections and having both its side edges inclined to its courses.

8. A knitted oval breast pocket comprising complementary triangular sections seamed together at their ends and respectively terminating at their other ends in fashioning lines which meet at the center of the pocket, and a wide triangular section constituting the remaining part of the pocket having oppositely sloping side edges inclined to the knitted wales thereof which are joined to the complementary sections along said fashioning lines.

9. A knitted breast pocket comprising a triangular section having one side edge perpendicular to the knitted wales of the section and a second side edge inclined to the wales of the section, a second triangular section wherein the wales run parallel to the outer edge and having oppositely sloping side edges inclined to the wales therein and integrally joined through one of its side edges to the sloping side edge of the first section, and a third triangular section wherein the wales run parallel to the outer edge having one side edge inclined to the wales of said section and a second side edge perpendicular to the wales, said third section being integrally formed at its sloping edge with the second sloping edge of the second section, and being united along its perpendicular edge to the perpendicular edge of the first triangular section.

10. A fashioned one-piece knit fabric breast pocket comprising integrally knit upper and lower halves having horizontally extending fashioning lines running therebetween along which the knit wales of the upper and lower halves meet each other at a sharp angle.

11. A knitted fabric breast pocket comprising integral upper and lower triangular knitted portions, each having a base defining the periphery of the pocket and having opposite fashioned side edges, the knit wales of each portion extending lengthwise of the base thereof and meeting the opposite side edges at an angle, the corresponding side edges of the upper and lower triangular portions being joined together.

12. A one-piece knit breast pocket comprising an integral fabric unit divided into a series of triangular segments by fashioning lines which extend outwardly from a common apex at the center of the pocket and constitute boundaries at which the side edges of adjoining sections are interknit, and short additional fashioning lines in the apex area of at least certain of the segments giving the central region of the pocket a greater degree of fashioning than the area of the pocket beyond the central region.

13. A one-piece knit fabric breast pocket comprising integral upper and lower triangular fabric portions each having opposite sides which are oppositely inclined to the knitted wales of the segments in the areas adjacent the sides, the corresponding side edges of the upper and lower portions being joined together at fashioning lines which extend horizontally in opposite directions from the center of the pocket, the fabric of the lower portion of the pocket being knit with a tighter stitch and having less elasticity than the fabric of the upper portion.

14. A one-piece knit flat blank for an oval breast pocket fashioned along a plurality of fashioning lines which converge to an apex at one side of the blank, said fashioning lines dividing the blank into a plurality of triangular sections constituted of successive angularly related groups of knitted courses, the groups of courses constituting adjoining triangular sections meeting the fashioning lines at an angle and being interknit with each other along said lines.

15. A one-piece knit blank for a breast pocket constituted of an integrally knit series of triangular sections comprising successive groups of courses of gradually changing width and having fashioning lines which meet in an apex at one side of the blank extending between adjoining sections at an incline to the courses of the respective sections.

16. A one-piece knit blank for a breast pocket comprising a triangular fabric section of knit courses gradually widened and gradually narrowed along one side in progressive portions of its length and bounded at said side by oppositely inclined fashioned edges, and additional fabric constituting the remainder of the blank composed of further knit triangular sections integrally joined with the fashioned edges of the courses of said first triangular section.

17. A fashioned blank for a breast pocket in the form of a substantially rectangular fabric strip composed of an integral series of triangular knit sections made up of successive groups of knit courses and fashioning lines which extend from the region of the opposite corners at one side edge of the strip to an apex at the middle of the other side edge of the strip.

18. A one-piece knit flat blank for a breast pocket having fashioning lines radiating from an apex at one side of the blank and dividing the blank into a plurality of triangular segments, and shorter additional fashioning lines in the apex area located between the first fashioning lines.

19. The method of forming a breast pocket blank which includes knitting a plurality of courses to form a triangular section by gradually reducing the width of courses as the knitting of the section progresses and thereby forming an inclined edge, forming a second triangular section of different shape from the first section by knitting a plurality of courses of progressively increasing width onto the inclined edge of the first section, and thereafter as the knitting proceeds progressively reducing the width of the further knit courses of the second section to form an oppositely inclined further edge which meets the first edge at the apex of the second section, and forming a third triangular section by knitting further courses of progressively increasing width onto the last inclined edge of the second section.

20. The method of forming a breast pocket blank which includes knitting a series of triangular segments by gradually varying the width of the knit courses as each segment is formed and interknitting such sections together along a series of fashioning lines which meet in a common apex at one side of the blank, and forming further short fashionings at the apex area of the blank in at least certain of the segments during the knitting of the courses thereof.

21. The method of forming a breast pocket

blank which includes knitting a plurality of courses, reducing the width of the fabric by diminishing the loops at one end of progressive courses until a triangular fabric section has been formed, continuing the knitting to form a second triangular section by knitting a further series of courses integral at their ends with the courses of the first section, beginning with a narrow course and increasing the number of loops at the edge as progressive courses are knit, and thereafter knitting a further group of courses to complete the second section, omitting loops at the same edge as before as successive courses are knit until the second triangular section has been completed, then forming a third and last triangular section by knitting a further group of courses of gradually diminishing width onto the last mentioned edge of the second triangular section.

22. The method of forming a breast pocket blank which includes forming a triangular fabric section by knitting a plurality of courses of gradually diminishing width at one end to provide an inclined edge, and, during the formation of the section fashioning the same after a portion of the courses of diminishing width have been knit by abruptly widening at the same end in the next formed course and then continuing the knitting of courses of gradually diminishing width and completing the section, forming a second triangular section by knitting a first group of courses of gradually increasing width at one end to provide an inclined edge, said group of courses at such inclined edge being knit integral with the inclined edge of the first triangular section, and then knitting a second group of courses of gradually diminishing width at the same end to provide a second oppositely inclined edge, and, during the knitting of the second triangular section fashioning the same by the procedure employed in fashioning the first triangular section, and forming a third triangular section by knitting a plurality of courses of progressively diminishing width at one end to provide an inclined edge, the courses at such inclined edge being knit integral with the second inclined edge of the second section.

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