June 14, 1938. M. SIMON 2,120,817

FOUNDATION GARMENT

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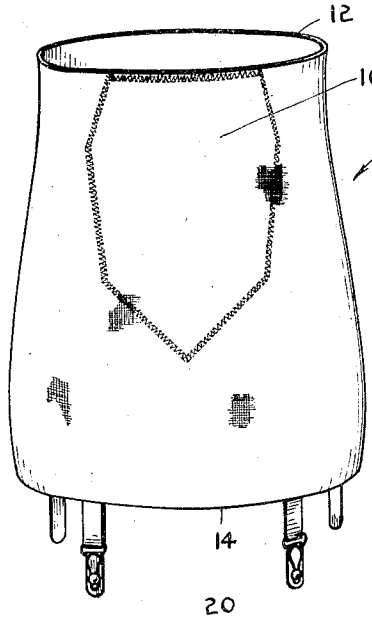

Fig. 1.

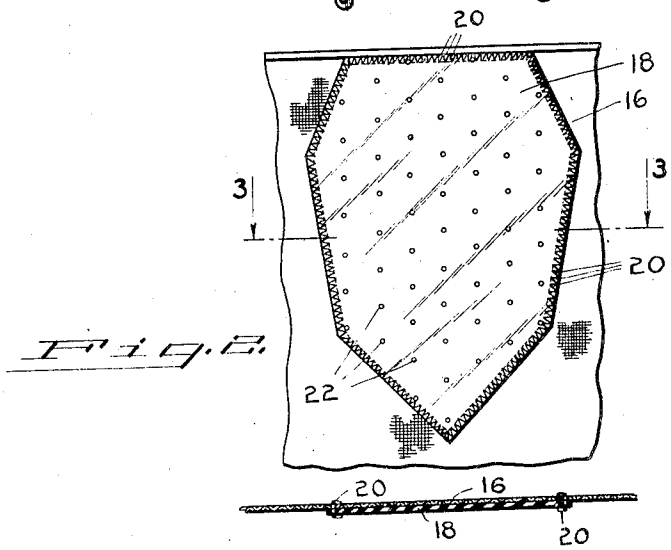

Fig. 2.

Fig. 3.

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FOUNDATION GARMENT

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2 Claims. (Cl. 2—37)

The present invention relates to foundation garments and, more particularly, to elastic girdles, corsets, and similar articles of wearing apparel. While useful for other purposes, the present invention is concerned primarily with girdles which are made in whole or in part from knit textile threads and which have textile-covered rubber threads extending circumferentially thereof. Girdles of this well known construction are characterized by substantial circumferential elasticity and limited elasticity or stretch in a longitudinal direction, that is, in a direction between the top and bottom portions of the girdle. Due to the comparatively high circumferential elasticity of girdles of this type, they do not properly confine certain portions of the wearer's body but, on the contrary, are ineffective to prevent bulging of such body portions. It is therefore an object of the present invention to limit the circumferential elasticity of certain portions of the girdle and especially the front portion thereof which normally is engaged by the wearer's abdomen, whereby to prevent said portion from bulging.

Another object of the invention is to provide an elastic girdle with stretch-limiting means of such character that it will not detract from the comfortable quality of girdles of this type.

The above objects of the invention and other objects which might hereinafter appear will best be understood from the following description considered in connection with the accompanying drawing.

In the drawing:

Fig. 1 is a perspective view of a girdle embodying the present invention;

Fig. 2 is a rear view, on a larger scale, of the front portion of the girdle.

Fig. 3 is a sectional view on the line 3—3 of Fig. 2.

In the preferred form of the invention, as here shown, the girdle 10 is made of the knit elastic material hereinbefore mentioned and is characterized by substantial circumferential elasticity and relatively limited elasticity or stretch in a longitudinal direction between the top edge 12 and the bottom edge 14. As here shown, said girdle is made of an endless band of such material suitably fashioned to fit about the wearer's body at the waist and hips. The upper and front central portion 16 of the girdle which overlies the abdomen of the wearer is frequently caused to bulge because of its high elasticity characteristic. The elimination of the tendency of the girdle to bulge at this portion is accomplished by attaching to said portion a thin, flat layer 18 of compounded sheet rubber material having certain characteristics which, as will presently appear, make such material suitable for this purpose.

The compounded sheet rubber material of which the layer 18 is made is rubber having finely divided textile flock, particularly cotton or silk flock, incorporated therein. Said flock is incorporated into the rubber, and the mixture thus produced is subsequently subjected to the action of calender rolls and vulcanized, as in the ordinary method of producing sheet rubber. After vulcanization, the rubber sheet thus produced is found to possess reduced elasticity, and is less elastic in the direction in which the sheet left the calender rolls than in a transverse direction. The flexibility of the rubber sheet is, however, substantially the same as that of ordinary sheet rubber.

For producing the sheet rubber having such properties, the following method is preferred: Any suitable commercial rubber as for instance "washed and dried rubber" may be used. The rubber may be introduced into the processing either in the relatively unmanufactured condition in which it arrives from the plantation or other native source, or may have been advanced through the manufacturing stages to become batched or broken down rubber. For instance, the rubber may have been advanced, from the stage of the crepe type of plantation rubber, through one or more stages of a batching process, to prepare it for efficient processing in accordance with the invention. The batch is worked upon apparatus such as a mixing mill, or a rubber masticator of like effect. The manner of this processing may follow substantially the usual course of manipulation used on mixing mills, especially in the first period where the rubber is broken up and softened for the subsequent processing. While the rubber is feeding through the masticator or mill, and after an interval of about twenty minutes, depending upon the particular batch of rubber, customarily devoted to breaking down the rubber, there is introduced into the mass of rubber, for incorporation thereinto, a quantity of flock. The proportions of flock may be varied in accordance with certain factors in the product desired, as, for instance, the thickness of the sheet intended to be produced, and other factors of commercial importance.

The mixture thus produced is subjected to a sufficient mastication to effect, at this stage, substantially complete incorporation of all the flock into, and uniform distribution of such flock throughout, the rubber. In this masticating operation, other compounds such as coloring matter may be introduced. It was found that, on the mixing mill, fine grinding of the batched rubber and flock assisted in securing substantially uniform distribution, the end point of the mastication being reached by setting the rolls closely up toward each other, in one case so that they were but about one-sixteenth inch apart.

After mastication, while the resultant rubber preferably is given the usual rest, it may immediately, or after such a rest, be removed to the calender rolls. While ordinary temperatures of calendering may suffice for the manufacture of a product within certain of the elements of this invention, it has been found that a slight rise in the neighborhood of 10° F. to 20° F. resulted in an appreciable development of the desired properties of the product.

The mass of incorporated rubber and flock is calendered without any material change from the method practiced by skilled calender crews who determine the condition of the rubber in the customary manner, considering the amount of flock and other introduced compounds. When the calendered mass finally has reached the desired condition, the sheet is removed from the rolls in the usual manner, and made up in readiness for vulcanization.

Even after the mixing operation, the rubber is found to have attained a degree of non-elasticity in the line in which it is removed from the rolls. This characteristic is found to be even more enhanced when the material passes in its unvulcanized state, from the calender rolls.

The substance introduced at the mixing mill for the manufacture of this type of rubber may be described as extremely fine fibres, such, for instance, as are found in textile fibres. Such fine fibres may be reduced to an even finer state than the normal condition in commerce, as, for instance, by grinding or by some similar operation. The particular fibres used in preparing certain embodiments in accordance with the invention include fibres of the animal type, such as silk flock, and fibres of the cellulosic type, such as cotton flock, that is, fibres of silk and cotton which had been reduced to a very fine, powdery condition. In fact, this flock is as fine as flour, so fine that the individual fibres are barely, if at all, visible to the naked eye. It has been found that the finer the flock used, the more accentuated are the results secured. Such fineness makes possible the production of very thin sheets without pin holes. Also, the amount of flock introduced was found to be most effective when, into the masticator, there were introduced between eight to twenty-five parts of flock for each ninety-two to seventy-five parts of rubber and other compounds. Rubber processed in this manner could be calendered into sheets between five one-thousandths and twenty-five one-thousandths of an inch, although only gauges between twelve one-thousandths and twenty one-thousandths were necessary for commercial use. All of these factors can be arrived at without the introduction of any brittleness into the sheet.

After calendering and preferably a suitable rest period, the sheet is subjected to vulcanization. In this stage of processing, substantially any suitable method may be followed. However, the acid cure or vapor cure has been found most effective in delivering a rubber having the desired characteristics.

The layer **18** composed of this rubber composition is stitched at its peripheral edge to the knit material of the girdle by a line of zig-zag stitching **20** and is free to stretch with said material both circumferentially and longitudinally. Said layer is so positioned that its direction of maximum elasticity extends in the direction of circumferential stretch of the girdle while the direction in which said layer is least elastic extends longitudinally of the girdle between the top edge **12** and the bottom edge **14**. Said layer **18** is provided with a plurality of perforations **22** to provide for the circulation of air through the laminated portion of the girdle, thereby increasing the comfort of the girdle when worn. It will, of course, be understood that said layer **18**, while relatively thin, is substantially less elastic than ordinary sheet rubber of the same gauge or thickness and is also considerably less elastic than the portion **16** of the girdle to which said layer is attached. Thus, said layer **18** limits the stretch of said girdle portion **16** to an extent sufficient to prevent bulging of said portion and thereby produces a substantial flattening effect on the abdomen of the wearer.

While I have shown and described my invention in connection with a girdle, it will be understood that said invention may be used with other foundation garments such as corsets, combined girdles and brassières, etc. It will be understood also that the material of which the girdle is made is not limited to that specifically herein described but may be otherwise knit or woven, and arranged in the garment to impart circumferential elasticity thereto. Other changes in the construction of the girdle and the material thereof will occur to those skilled in the art in view of the present disclosure. Therefore, I do not wish to be limited precisely to the present disclosure except as may be required by the prior art and the appended claims.

Having thus described my invention, what I desire to claim and secure by Letters Patent of the United States is:

1. A girdle or similar article of wearing apparel having a body encircling part which is circumferentially and longitudinally elastic, and a thin and smooth panel consisting of flexible and elastic material of substantial width and length disposed at the front of said body encircling part over a substantial surface portion thereof in position overlying the wearer's abdomen, said panel being inherently less elastic than the overlying portion of said body encircling part and substantially less elastic longitudinally than circumferentially whereby to restrict the stretch of the overlying part of the girdle to prevent excessive bulging of the girdle at the part overlying the wearer's abdomen while permitting substantial stretching of said part in a circumferential direction.

2. A girdle or similar article of wearing apparel having a body encircling part which is circumferentially and longitudinally elastic, and a thin and smooth panel consisting of flexible and elastic compounded sheet rubber material having textile flock incorporated therein, said layer being of substantial width and length and disposed at the front of said body encircling part over a substantial surface portion thereof in position overlying the wearer's abdomen, said panel being inherently less elastic than the overlying portion of said body encircling part and substantially less elastic longitudinally than circumferentially whereby to restrict the stretch of the overlying part of the girdle to prevent excessive bulging of the girdle at the part overlying the wearer's abdomen while permitting substantial stretching of said part in a circumferential direction.

MAX SIMON.