

Feb. 20, 1923.

A. A. C. MALCOLM.
GIRDLE.
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1,445,840.

Fig. 1.

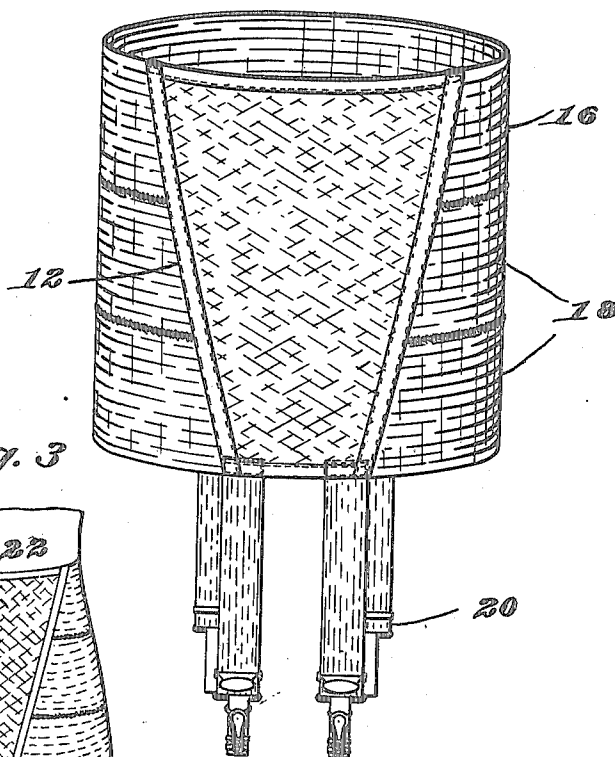


Fig. 3

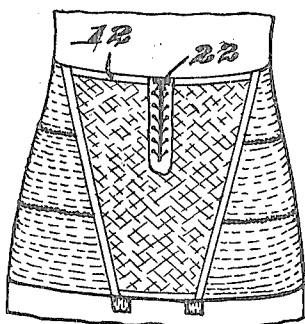
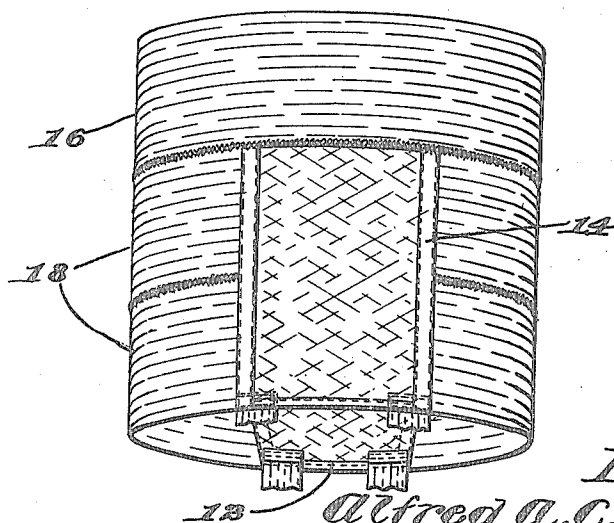


Fig. 2



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UNITED STATES PATENT OFFICE.

ALFRED A. C. MALCOLM, OF BROOKLINE, MASSACHUSETTS.

GIRDLE.

Application filed February 17, 1921. Serial No. 445,810.

To all whom it may concern:

Be it known that I, ALFRED A. C. MALCOLM, citizen of the United States, residing at Brookline, in the county of Norfolk and State of Massachusetts, have invented certain new and useful Improvements in Girdles, of which the following is a specification.

This invention relates to improvements in abdominal and back supports for women. More particularly it relates to garments adapted for use during athletic exercise, or in swimming, climbing, dancing or walking. To this end it is an aim to provide flexibility and elasticity in the garment to accommodate all movements of the body and freedom from all stiffness. It is therefore an object of the invention to provide proper and necessary support while avoiding the bones and stiff pads that have characterized abdominal supports previously proposed.

The objects of the invention are accomplished by providing a composite band, made of sections of flexible material, both elastic and non-elastic, arranged in combination as hereinafter set forth. Specifically, the invention provides a broad band extending upward to the waist but, in the form here illustrated, not extending higher; leaving all parts of the body above the waist line free and unconfined. The top zone of the band is elastic over the sides and back, but not the front. Below this is a zone elastic over the sides, but not over the back or front. Each zone is composite, having component material which is elastic and other component material which is inelastic. The elastic material is stretchable in the direction around the wearer's body, but is unstretchable up and down. The inelastic material is stretchable up and down, but not in the direction around the body. The combination of both in each zone, and the distribution thereof so that they interact, makes a garment for the abdomen and back which gives adequate support at all points when the wearer is in action, yet has plenty of flexibility, and is without any actually stiff parts. At the same time this combination of fabrics having stretchability in diverse directions within each zone gives a notable closeness, and comfort of fit to the peculiar shape of this part of the human body, without it being necessary to tailor the garment especially to fit the individual. This makes

garments of the invention possible as a commercial proposition, so that they can be made in quantity in stock sizes and sold at reasonable prices. Moreover, the inelastic stretchable material may be of a porous kind of fabric woven or knitted with meshes according to methods already known. This permits free ventilation, and a breathing of the skin which relieves those parts of the skin which are covered by the more or less impervious elastic webbing. Other features will appear hereinafter.

In the drawings:

Figure 1 is a perspective as viewed from the front, of one form of a supporter embodying the invention;

Figure 2 is a rear perspective of the same; and

Figure 3 is a perspective showing a modification.

Referring to the drawings, the supporter is illustrated as being a continuous girdle adapted to encompass the abdominal portion of a woman's torso, having front and back sections 12 and 14 of non-elastic material, connected by elastic ribbons or bands 16 and 18 extending around the sides or hips of the wearer. The front section is of keystone shape so disposed that the longer of its parallel sides forms a part of the upper edge of the supporter and the other of its parallel sides is a part of the lower edge. The back section, which may be of similar outline to the front but inverted, but happens to be shown with parallel vertical sides, extends from the bottom edge of the supporter part way up the garment to the top band 16 which runs entirely around the two sides and back of the upper part of the garment.

In the application of the invention herewith illustrated only three bands or ribbons are shown, but this number of bands is not essential, and might be replaced by a larger number of bands or by a single piece of material as wide as the girdle. It is to be noted, however, that the upper part of the garment where it fits the waist line, is for the most part composed of elastic material, the front section only being non-elastic, while the lower part of the girdle is made up of two elastic and two non-elastic sections, the former being the bands around the sides where the greatest variation in contour of the body occurs, and the latter being

the front and back sections where it is desired to keep the lines comparatively straight.

The front and back sections are made of any suitable non-elastic material, such as mesh cloth, which has in one direction no stretchability but which can yield in a direction transverse thereto, there being a simultaneous shrinking or contracting of the material in the first mentioned direction, perpendicular to the direction of yield. This yieldability permits some vertical stretching of the girdle in front or rear, but this stretching is merely temporary and continues only while the vertical or transverse forces overcome the normal horizontal or longitudinal pull of the bands. Upon the latter overcoming the former the front and back portions return to their respective original lengths thus "unshrinking" the material, as it were, and recouping the transverse distortion. Inasmuch as the hose supporters 20 held by the girdle are usually elastic and take care of most of the up and down stretching in action, it is not essential that the girdle provide for any great amount of flexibility in this direction and it is therefore possible and preferable to depend entirely upon the slight give in the texture of the non-elastic material in the front and back sections for whatever vertical stretching is required. This makes possible the use of material for the side bands which is unstretchable up and down, but which has great strength and elasticity sidewise. The ends of the bands are fastened to the sides of the front and back sections, and to each other, thereby forming a continuous girdle.

Owing to the great amount of elasticity in the bands the opening through the supporter may be readily enlarged so as to permit the girdle to be passed easily over the head and shoulders to position below the waist line, where the retractive power of the elastic material causes the garment to fit snugly around the body and generally to adjust itself to the configuration of the wearer. It may be preferred, however, that the garment be put on by pulling it up over the hips. As an aid to this latter mode of investiture, I may provide additional means for permitting enlargement of the girdle at its top, and have illustrated such means in Figure 3, wherein the front section there shown is divided vertically downward a short distance from its upper edge. When in wearing position the edges of this vertical opening are brought together by any suitable fastening means such as a lacing 22 passed through a series of eyelets in the reinforced sides of the opening. By this the garment may be loosened and its top diameter enlarged either to put it on more easily, or to remove it, or to adjust the fit to the

needs or feeling of the person without departing seriously from the merits of the general principle of the combined fabrics with stretchable characteristics in diverse directions.

The general enclosure of the abdominal part of the body, thus accomplished affords a support which may be said in a fundamental sense to be unstretchable, except as the rather stout elastic webbing yields in the horizontal direction, but which is nevertheless possessed of a power of accommodation to the movements of the body which prevents the restriction from being anywhere too severe. This may be understood upon reflecting that upon the bending of the body the elastic webbing may often stick to the skin without slipping, especially if it be somewhat moist, resulting in a frictional engagement, or if its tightness causes it to cut in a little where the restriction is the greatest; but the freedom of the band from bones and stiffness in any direction and the yielding by bulging of the vertically extensible portions connecting the ends of the strips of elastic webbing permits sufficient accommodation so that although this part of the body as a whole is fundamentally completely supported, nevertheless individual parts can adjust themselves by a yielding of the bandage with the bending of the body.

It will be understood that the embodiments of the invention herein specifically shown are merely illustrative, and that the specific design may be varied. It is intended that the patent shall cover by suitable expression in the appended claims whatever features of patentable novelty exist in the invention disclosed.

I claim:

1. An abdominal support comprising an endless band adapted to engirdle the body between hips and waist having in combination front and back portions of inelastic material flexible in all directions and side portions of elastic material flexible in all directions, the said portions coacting to support the body yieldingly at all parts of the band; the said front and back portions being each of material in which a longitudinal pull recoups a transverse extension.

2. An abdominal support comprising a composite band adapted to encircle the hips and abdomen up to the waist, having in combination portions which are inelastic but extensible transversely, and retractible by longitudinal pull, and other portions which are elastically extensible longitudinally but are inextensible transversely, the circuit around the body at every level comprising part of each said portion; every part of the garment being flexible in all directions.

3. An abdominal support comprising a composite band adapted to encircle the hips

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and abdomen up to the waist, having in combination portions which are inelastic but extensible transversely and retractible by longitudinal pull, and other portions which are 5 elastically extensible longitudinally but are inextensible transversely, the circuit around the body at every level comprising part of each said portion; every part of the garment being flexible in all directions; the inelastic 10 portions being arranged in front and back sections; and the waist portion being elastic all the way around except in front.

4. An abdominal support comprising a composite band adapted to encircle the hips

and abdomen up to the waist, having in combination 15 portions of cloth set in front and back which are inelastic but extensible transversely, retractible by longitudinal pull, and easily pervious interstitially to air and moisture, and elastic portions at the 20 side, the circuit around the body at every level comprising part of each portion; every part of the garment being flexible in all directions.

Signed at Boston, Massachusetts, this 12th 25 day of February, 1921.

ALFRED A. C. MALCOLM.