May 22, 1962 K. MENKEL 3,035,584

BRASSIERE FRAME

Filed June 10, 1960

FIG. 1

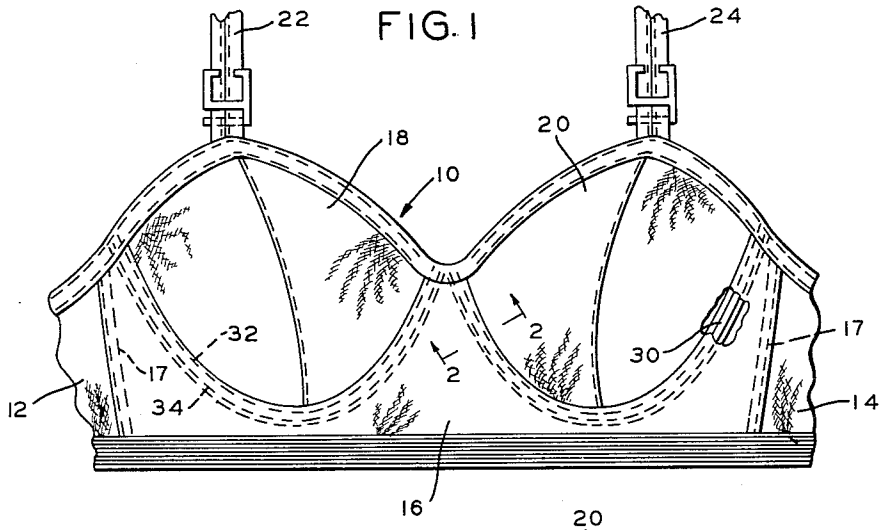


FIG. 2

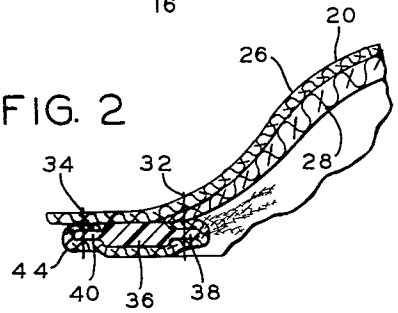


FIG. 4

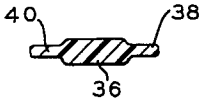


FIG. 3

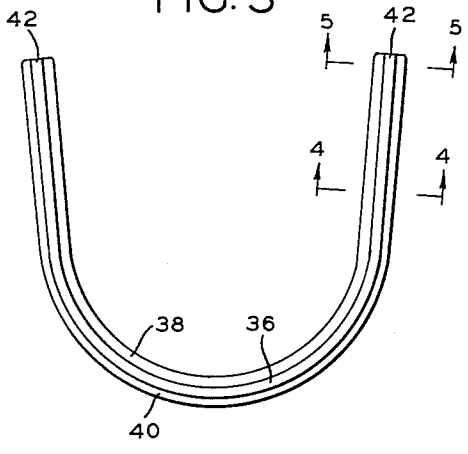
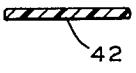


FIG. 5



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BRASSIERE FRAME

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This invention relates to brassieres, and more particularly, to a supporting frame for use in a brassiere.

Heretofore, it has been conventional in the art to provide supporting frames for brassieres and the like which frames are generally U-shaped and are customarily made from flexible steel wire. The rigidity of the upwardly extending arms in the supporting frames used heretofore caused discomfort and excessive pressure against the body of the person wearing the same. Recent attempts to modify such wires have suggested the encasement of such wires in a plastic sheath.

The disadvantage of providing a plastic sheath for the wires does not eliminate the problem involved since the wires are highly resistant to the forces applied by the tension of the side portions when the brassiere is fastened tightly around the body. The provision of a plastic sheath for the wires requires an extra assembly step wherein the wires are inserted within the sheath, and quite frequently the wires cause breakage of needles when the supporting frame is sewed to a body panel of the brassiere. The provision of a channel in the sheath requires special equipment thereby increasing the cost of same, and special tips are required on the ends of the wire so as to guard against cutting the layers of fabric.

Attempts, heretofore, to provide a supporting frame made entirely from plastic have not proved to be entirely satisfactory. The frames used heretofore were made from a plastic which did not have sufficient rigidity and became distorted very quickly due to a set in the plastic.

It is an object of the present invention to overcome the above and other defects of supporting frames used heretofore.

It is another object of the present invention to provide a brassiere frame adapted to be integrally incorporated into a brassiere by sewing.

It is another object of the present invention to provide a brassiere frame wherein lines of stitching for sewing said frame to a brassiere extend through the material of the frame.

It is still another object of the present invention to provide a brassiere frame made from a synthetic resin such as polypropylene.

It is a further object of the present invention to provide a brassiere frame comprising a solid integral plastic member.

It is a further object of the present invention to provide a brassiere frame adapted to adequately support small breasts without distortion due to wear and capable of having sufficient resiliency in a longitudinal, transverse and vertical plane.

It is a still further object of the present invention to provide a brassiere frame which is simple to manufacture and capable of being readily incorporated into a brassiere by sewing.

Other objects will appear hereinafter.

For the purpose of illustrating the invention there is shown in the drawings a form which is presently preferred; it being understood, however, that this invention is not limited to the precise arrangements and instrumentalities shown.

FIGURE 1 is a front elevational view of a brassiere incorporating the supporting frame of the present invention.

FIGURE 2 is a cross-sectional view taken along the lines 2—2 in FIGURE 1.

FIGURE 3 is a plan view of a supporting frame according to the present invention.

FIGURE 4 is a cross-sectional view taken along the lines 4—4 of FIGURE 3.

FIGURE 5 is a cross-sectional view taken along the lines 5—5 of FIGURE 3.

Referring to the drawing in detail, wherein like numerals indicate like elements, there is shown in FIGURE 1 a brassiere designated generally as **10**.

The brassiers **10** comprises body encircling bands **12** and **14** connected to a central panel **16** by lines of stitching **17**. The body encircling bands **12** and **14** extend from the sides of the central panel **16** to the rear of a person wearing the same where they are fastened in a conventional manner. The central panel **16** is provided with a pair of laterally spaced bust cups **18** and **20**. Adjustable shoulder straps **22** and **24** extend upwardly from the bust cups **18** and **20** and are attached to the body encircling bands **12** and **14** adjacent the free ends of the body encircling bands **12** and **14**.

A layer of fabric **26** forms the central panel **16** and extends over the bust cups **18** and **20**. As seen more clearly in FIGURE 2, the bust cup **20** is defined by the layer of padded fabric **28** having the layer of fabric **26** extending thereover. The layer of padded fabric **28** is cup-shaped as is well known in the art.

The bust cups **18** and **20** are supported by a supporting frame **30**. As shown more clearly in FIGURES 1 and 2, the supporting frame **30** is secured to the layer of fabric **26** by lines of stitching **32** and **34**. The supporting frame **30** is U-shaped and extends around the lower half of the periphery of the bust cups **18** and **20**.

As seen more clearly in FIGURES 2–4, the supporting frame **30** comprises essentially a U-shaped member **36** formed from a synthetic resin. The member **36** may be made from any one of a plurality of polyethylene resins. Preferably, the synthetic resin is polypropylene. Polypropylene has the desired characteristics of rigdity while maintaining sufficient flexibility and does not form a permanent set as readily as polyethylene. Polypropylene has a high crystalline structure which gives it a high softenng temperature (160° C.), a high tensile strength (greater than nylon), high resistance to solvents, and none of the waxy feel of polyethylene. Molded products of polypropylene are stiffer, harder and have better scratch resistance than polyethylene.

The solid member **36** is provided with outwardly extending integral flanges **38** and **40** extending for substantially the full length of the member **36**. The flanges **38** and **40** have a thickness which is substantially less than the thickness of the member **36**. As seen more clearly in FIGURE 4, the thickness of the flanges **38** and **40** are approximately one-half, or less, than the thickness of the member **36**. The thickness of the flanges **38** and **40** are critical since the needle which sews the stitching **32** and **34** must penetrate the material of the flanges **38** and **40**. The greater thickness of the member **36** provides the necessary support for the bust cups **18** and **20**.

As seen more clearly in FIGURE 5, the ends **42** of the member **36** and the flanges **38** and **40** taper to a thickness which is less than the thickness of the member **36** and the flanges **38** and **40**. A plush fabric **44** extends across one surface of the member **36** and around the flanges **38** and **40**. The lines of stitching **32** and **34** extend through the fabric **44** as well as the flanges **38** and **40**.

While the supporting frame **30** and the layer of padded fabric **28** have been disclosed as being positioned on the same side of the layer of fabric **26**, it will be obvious to those skilled in the art that the supporting frame **30** may be on the opposite side of the layer of fabric **26** from the layer of padded fabric **28**.

As seen more clearly in FIGURES 2 and 4, the mem-

ber **36** is preferably rectangular in shape thereby providing a smooth flat surface adapted to be juxtaposed to the body of a person wearing the brassiere **10**. However, it is within the scope of the present invention to provide the member **36** with an oval or other cross-sectional configuration.

Since the supporting frame **30** is made from an integral solid plastic member, the supporting frame **30** provides the sufficient rigidity necessary to support the bust cups **18** and **20** and also provides for flexibility in a vertical, longitudinal and transverse plane. Thus, if pressure were applied to push down on the brassiere **10** from the top thereof, the supporting frame **30** would give sufficiently to assure wearing comfort. Thus, the brassiere **10** of the present invention provides a greater versatility than brassieres used heretofore. The plastic supporting frame of the present invention does not have the strength characteristics of a metallic supporting frame, and therefore is more particularly adapted for women having small breasts.

It will be obvious to those skilled in the art that the body encircling bands **12** and **14**, the central panel **16** and the layer of fabric **26** may comprise any one of a plurality of suitable materials including elastic materials, rayon, net-like fabrics, etc. Also, it will be obvious to those skilled in the art that the supporting frame of the present inventon may be utilized on brassieres of the type wherein the fastening means is positioned between the bust cups as compared with the positioning of fastening means on the free ends of the body encircling panels.

While the supporting frame **30** has been disclosed as extending around the periphery of the lower half of the bust cups **18** and **20**, it will be obvious to those skilled in the art that the supporting frame may extend around the periphery of the upper half of the bust cups.

The present invention may be embodied in other specific forms without departing from the spirit or essential attributes thereof and, accordingly, reference should be made to the appended claims, rather than to the foregoing specification as indicating the scope of the invention.

I claim:

1. In a brassiere comprising a central panel having spaced bust cups, body encircling panels extending from said central panel, a U-shaped supporting frame of synthetic resin material for each cup, each frame being juxtaposed to substantially the entire bottom half of a separate one of said cups, said frame being a solid member having a pair of outwardly directed imperforate flanges extending along substantially the entire length of said member, said flanges being thinner than said member, and a line of stitching penetrating through the material of said flanges joining substantially the entire length of each frame to said central panel adjacent a separate one of said cups.

2. A supporting frame in accordance with claim 1 wherein said plastic material is polypropylene.

3. A supporting frame in accordance with claim 1 wherein the ends of said member and said flanges are thinner than any other portion of said member and said flanges, said member having flat sides substantially parallel to said flanges.

4. In a brassiere comprising a central panel having spaced bust cups and body encircling panels, a U-shaped supporting frame of synthetic resin material for each of said cups, each frame being juxtaposed to a bottom half of one of said cups, said frame being a solid member having a pair of outwardly directed imperforate flanges extending along substantially the entire length of said member on opposite side edges thereof, said flanges being thinner than said member, and a line of stitching extending through said flanges joining each frame to said central panel adjacent one of said cups, each of said frames being sufficiently rigid to support its respective bust cup, and each frame being sufficiently flexible in a vertical, longitudinal and transverse plane so as to assure wearing comfort.

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