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HAIRNET AND METHOD OF MAKING SAME

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Fig. 1.

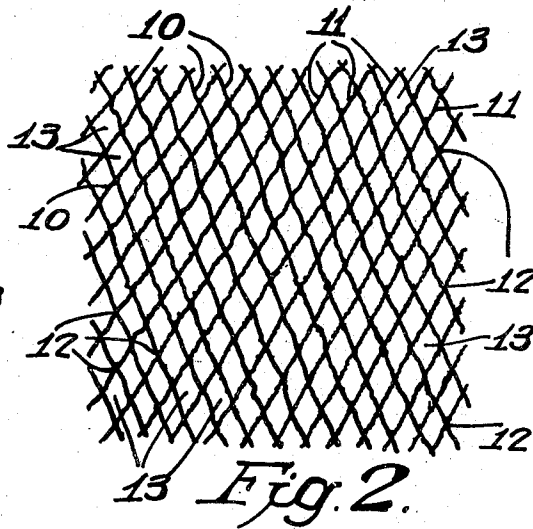
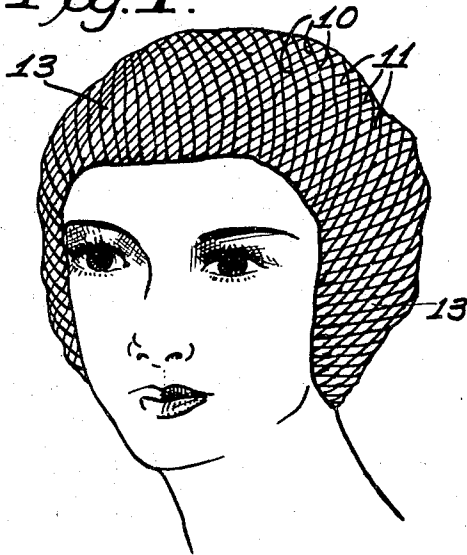
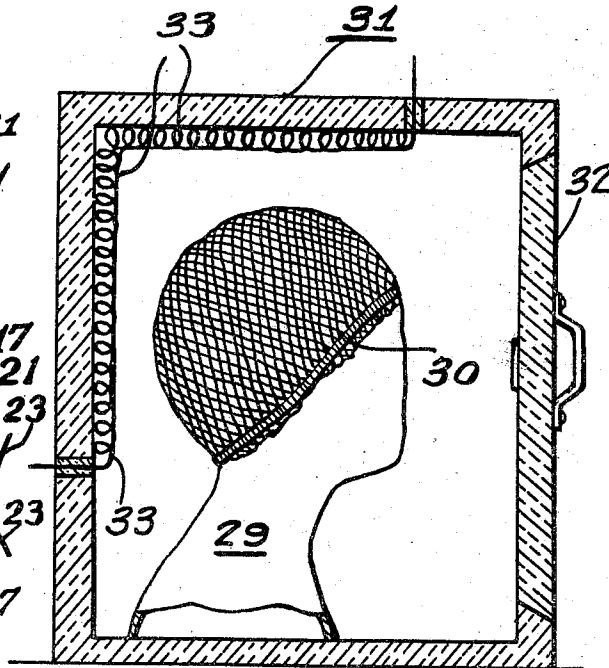
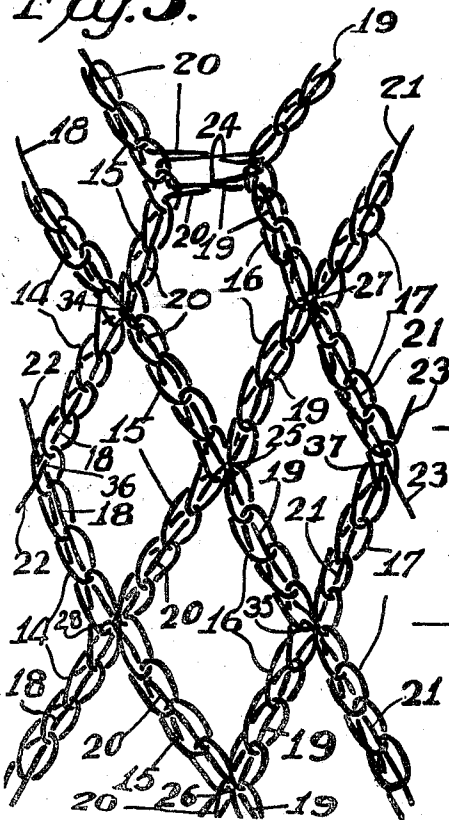


Fig. 3.



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HAIR NET AND METHOD OF MAKING SAME

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5 Claims. (Cl. 28-73)

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The present invention relates to netted materials and it relates more particularly to hairnets or the like.

An object of the present invention is to provide a new and improved construction for netted materials. Another object of the present invention is to provide a new and improved hairnet or the like. Still another object of the present invention is to provide a durable easy-to-produce and inexpensive hairnet or snood or the like of synthetic plastic or similar material.

Other objects and advantages of the present invention are apparent in the following detailed description, appended claims and accompanying drawings.

It has been conventional, in the past, to form hairnets of tedious and time-consuming hand operations. Hairnets produced by these conventional operations have not proven entirely satisfactory due to the fact that they frequently fail during use as a result of improper workmanship or materials.

The present invention, accordingly, contemplates the provision of a new and improved construction for hairnets which can be produced by entirely automatic operations and which can be formed of materials having relatively high strength and in which the individual threads making up the hairnet can be permanently set together in a more or less unitary construction of high durability.

Generally speaking, the present invention comprehends the formation of a hairnet from threads of thermo-setting or thermoplastic synthetic resin yarn or the like employing a conventional lace-making machine or other automatic machine capable of forming netted fabrics, the placing of the fabric on a mold having generally the same contour as that of a hairnet when in use, and clamping its edges onto said mold, the heating of the fabric upon the mold so as to fuse or cohere the synthetic plastic threads together and to fix the material in-situ into generally the same contour as the mold, and the final trimming of the shaped hairnet.

For the purpose of illustrating the invention, there is shown in the accompanying drawings one form thereof which is at present preferred, although it is to be understood that the various instrumentalities of which the invention consists can be variously arranged and organized and that the invention is not limited to the precise arrangements and organizations of the instrumentalities as herein shown and described.

Referring to the accompanying drawings in

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which like reference characters indicate like parts throughout:

Figure 1 represents an elevational view of one embodiment of the present invention as it appears in use.

Figure 2 represents a fragmentary plan view, on an enlarged scale, of the hairnet of Figure 1.

Figure 3 represents a more or less schematic stitch diagram, on a greatly enlarged scale, of the embodiment of Figures 1 and 2 showing the individual thermo-setting threads as they appear before the forming or heat-setting operation.

Figure 4 represents a vertical cross-sectional view of an oven used in heat-setting the hairnet of the embodiment of Figures 1 to 3.

In one embodiment of the present invention shown generally in Figures 1 to 4, I may provide a hairnet or the like which, as shown in Figure 1, is adapted to fit over the head of the wearer and to preserve the hair-dress in conventional manner.

The hairnet of Figures 1 to 4, instead of being completely limp and shapeless when not in use as is the case with conventional hairnets, is generally form-retaining. That is, as will be described hereinbelow, the hairnet of Figures 1 to 4 is pre-formed or pre-shaped so that, while still maintaining a degree of flexibility and resilience, it is more or less permanently molded to the contour which it assumes when in use.

As shown particularly in Figure 2, the hairnet is composed of series of diagonal courses 10 and 11 which are fused or cohered together along their lengths and also at their points of intersection 12, to provide a series of generally diamond-shaped openings 13.

The hairnet of Figures 1 and 2 is formed on a conventional lace-making machine (or other suitable machine capable of forming netted materials) from individual threads of thermo-setting or thermo-plastic synthetic plastic or resin yarn or the like.

In Figure 3 I have shown a Raschel construction which may be employed in forming the netted material, although other types of construction can be used instead.

Thus, in Figure 3, the netted material includes a series of generally side-by-side ropes, of which four, namely ropes 14, 15, 16 and 17 are shown; the ropes being formed from individual chain-stitched or chain-knitted strands of yarn. Adjoining ropes are drawn against one another alternately left and right by floating "inlays," of which inlays 18, 19, 20, 21, 22 and 23 are shown in Figure 3, the inlays crossing over the needles

first on one side and then the other but never being knitted on the needles.

The inlays extend along the ropes and criss-cross alternately with the adjoining left and right inlays to draw the ropes together so as to form a generally diamond-shaped effect. Thus, in Figure 3, the center inlays 19 and 20 criss-cross at vertically spaced points 24, 25 and 26, the point 24 being shown as partially pulled apart better to reveal the construction thereof. The inlay 20 also criss-crosses with the inlay 18 at points 34 and 28. Similarly the inlay 19 criss-crosses with the inlay 21 at points 27 and 35. The inlay 18 criss-crosses with the inlay 22 at point 36 while the inlay 21 criss-crosses with the inlay 23 at point 37.

It is apparent, therefore, that each inlay extends generally along one of the chains and that the inlays criss-cross alternately left and right to pull the adjoining ropes together at these points.

After the material of Figure 3 has been completed, a piece of it is placed over a mold 29 having an outer contour corresponding generally to that of the final hairnet when in use. The material is fastened upon the mold by a peripheral clamping band 30, of any suitable flexible and preferably resilient material.

The mold is then placed within an oven 31 provided with a door 32 and electrical heating coils 33.

The oven 31 is then turned on and maintained at predetermined temperature for a time sufficient to heat-set the threads or fibers of synthetic plastic in a manner well known in the art.

When this occurs, the individual ropes are united into more or less unitary constructions and their points of contact (as formed by the criss-crossing inlays) are more or less permanently united to give the generally integral construction shown in Figure 2.

During this thermo-setting operation, the inlays are more or less permanently bonded to the ropes and the individual ropes themselves are bonded to each other at their points of contact 12. In other words, the material, after having been heat-treated, is considerably stronger than before since the inter-connections between juxtaposed ropes are no longer made by the relatively thin inlays alone, but, instead, are made by a permanent uniting of the ropes themselves.

Not only are the individual ropes bonded together and to one another during the heating process, but also the material is more or less permanently molded to the contour of the mold 29. That is, although the heat-set material still retains a degree of flexibility and resilience, it is more or less form-retaining.

After the heating has been completed, the fastening band 30 is removed and the heat-set material is taken from the mold 29 whereupon it is ready for use after its edges have been trimmed and after it has been dyed to any suitable color.

It is apparent that the present invention provides a strong and durable hairnet or snood or the like which is easy to put on and take off and which can be easily and inexpensively manufactured with a minimum of hand operations.

While I presently prefer to employ thermo-setting synthetic plastic yarn in constructing the novel hairnet of the present invention, my invention is not so limited. Thus, I may, instead, employ reversibly thermo-plastic synthetic resin yarn, as for example yarn or thread made of acrylic resins. That is, it is not essential to the present invention that the yarn be irreversibly hardened or set during the molding opera-

tion. In other words, any synthetic plastic yarn is satisfactory for use in the novel hairnet of the present invention so long as it can be heat-treated to cause the individual yarns to cohere and so long as it can be molded during such heat-treatment, it being immaterial whether the courses of the final molded hairnet can be softened by subsequent heating to an elevated temperature (such elevated temperature never being encountered during normal use).

Instead of employing yarn made up wholly of thermo-setting or thermo-plastic synthetic resin, I may employ ordinary yarns of conventional textile material, as for example, cotton, rayon or the like, which are simply coated with a thin layer of thermo-setting or thermo-plastic synthetic resin; the coating of the individual yarns tending to set and to cohere during the heat-treatment so as to bind the individual threads together and so as to bind the adjoining ropes together at their points of contact thereby to provide a more or less unitary netted form-retaining construction.

The coating of the synthetic resin may be applied to the cotton or rayon yarn by simply passing the yarn through a sizing bath, containing the synthetic plastic in finely dispersed form, as for example in aqueous emulsion or dissolved in an organic solvent. The yarn is then dried whereupon the synthetic plastic is retained in or on the fibers and the yarn is then used to form the netted material which is thereafter heat-treated upon the mold 29 in the manner described hereinabove to set the synthetic plastic coating and to produce a more or less unitary form-retaining hairnet.

Instead of treating the individual threads or yarn of cotton or rayon with synthetic plastic, it is possible first to form the netted material shown in Figure 3 of conventional textile yarn and thereafter to immerse the netted material itself into the sizing bath of synthetic plastic thereby to provide a coating of the synthetic plastic thereon. The coated netted material is then dried and is thereafter positioned upon the mold 29 and heat-treated in the manner previously described.

The novel hairnet construction of the present invention is greatly superior to conventional hairnets heretofore employed which have usually been made of human hairs tediously tied together by hand and which are easily broken during use and which tend to become snarled or tangled when not in use due to the fact that they are limp and utterly formless.

Due to this form-retaining quality and the greater strength and the slight inherent resilience of the novel hairnet construction of the present invention it does not require a peripheral rubber band such as is needed to close the mouth of a conventional knitted hairnet, as heretofore employed.

While, for purposes of illustration, I have shown the mold 29 as being heated externally by the heating coils 33, it is also possible to heat the mold internally in addition to, or in place of, the external heating. Thus, the mold 29 can be made hollow and can be heated internally by inner heating coils or by steam or in any other manner.

Furthermore, other conventional heating and drying means could be employed in place of the heating coils 33. Thus, conventional heat-lamps or steam-heating coils or other conventional heating means could be employed in the oven 31 for external heating of the mold 29 and the netted material being heat-treated.

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The mold 29 may be constructed of metal or the like which will readily take up the heat from the external coils 33 or other heating means and thereby provide a more uniform heat zone for the material being heat-treated.

While, in the drawings, I have shown a mold suitable for forming a conventional hairnet, it is obvious that a different-shaped mold could be employed to produce snoods, bags and other similar articles of netted material.

As used in the appended claims, the term "hairnet" is intended to comprehend hairnets, snoods and other netted structures intended to be worn over the hair.

The present invention may be embodied in other specific forms without departing from the spirit or essential attributes thereof, and it is therefore desired that the present embodiments be considered in all respects as illustrative and not restrictive, reference being had to the appended claims rather than to the foregoing description to indicate the scope of the invention.

Having thus described the invention, what I claim as new and desire to protect by Letters Patent is:

1. A hairnet comprising a concave generally form-retaining envelope formed of a plurality of side-by-side chains of synthetic plastic yarn each drawn alternately to juxtaposed chains by floating inlays of synthetic plastic yarn to provide a generally netted construction, said netted construction being molded-in-situ to give a more or less unitary net wherein the yarn in the individual chains has cohered and wherein adjoining chains have cohered at their points of contact.

2. A method of forming a hairnet which comprises forming a series of side-by-side chains from individual strands of synthetic plastic yarn, drawing said chains together by alternately left and right floating inlays of synthetic plastic yarn thereby to provide a netted construction, positioning said netted construction upon a mold of suitable contour, and applying heat to said netted construction thereby to heat-set said yarns into a more or less unitary form-retaining construction having generally the same contour as said mold.

3. A hairnet comprising a concave generally

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form-retaining envelope formed of a plurality of side-by-side chains of synthetic plastic yarn each drawn alternately left and right to juxtaposed chains so as to provide a generally diamond-shaped netted construction, said netted construction being molded-in-situ to give a more or less unitary net wherein the yarn in the individual chains has cohered and wherein adjoining chains have cohered at their points of contact.

4. A hairnet comprising a concave generally form-retaining envelope formed of a plurality of side-by-side chains of yarn, each chain being drawn alternately to juxtaposed chains by floating inlays of synthetic plastic yarn to provide a generally netted construction, said netted construction being molded-in-situ to give a more or less unitary net wherein the floating inlays have cohered at their points of contact.

5. A hairnet comprising a concave generally form-retaining envelope formed of a plurality of side-by-side chains of synthetic plastic yarn, each connected alternately to juxtaposed chains to provide a generally netted construction, said netted construction being molded-in-situ to give a more or less unitary net wherein adjoining chains have cohered at their points of contact but are otherwise generally maintained in spread-apart relationship.

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