

United States Patent

Chaihyung Cho

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[45] Feb. 29, 1972

[54] METHOD OF MANUFACTURING WIGS
AND RESULTING PRODUCTS

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[57] ABSTRACT

To avoid stressing synthetic fibers after they are incorporated into a wig, the fibers are thermally treated before incorporation into the wig and are then tied by a special knot to the wig cap in such a manner that the major portion of each fiber is not passed through the knot nor otherwise subjected to any stress which might harmfully alter the characteristics thereof.

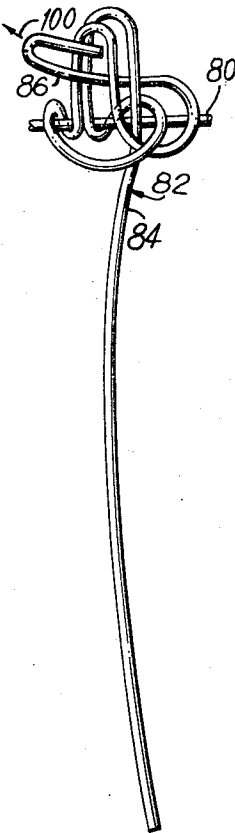
[52] U.S. Cl. 132/5, 289/1.2
[51] Int. Cl. A41g 3/00
[58] Field of Search 132/5, 53, 54, 56; 289/1.2

[56] References Cited

UNITED STATES PATENTS

3,189,035 6/1965 Heck 132/5
3,561,457 2/1971 Duesel 132/53

3 Claims, 22 Drawing Figures



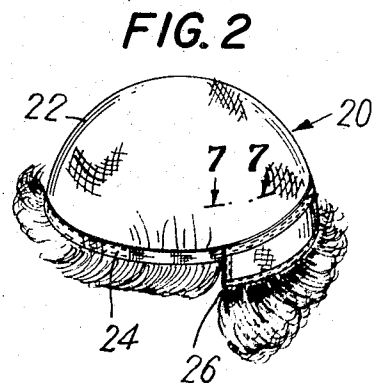
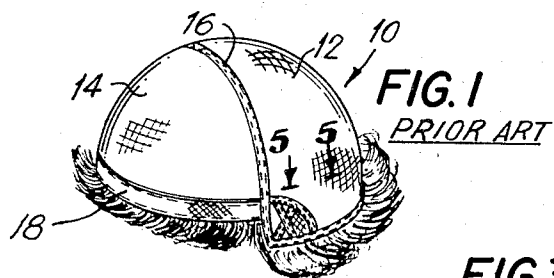


FIG. 3(a)

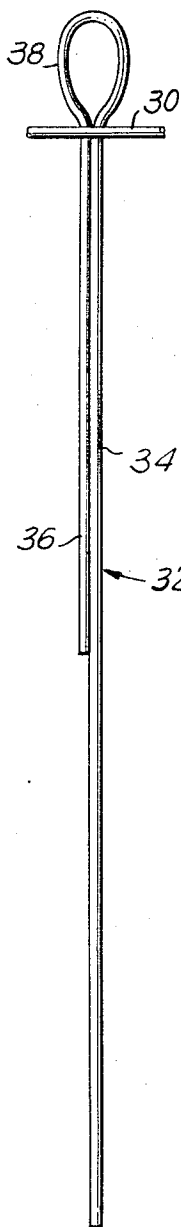


FIG. 3(b)

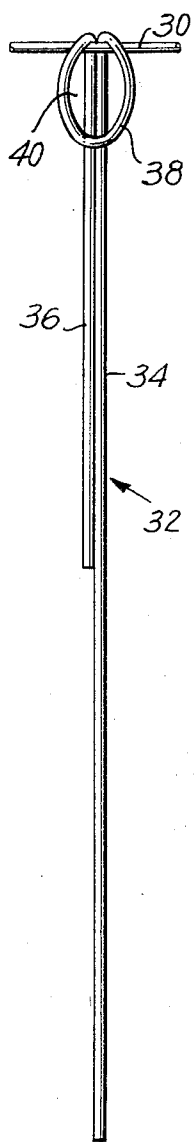


FIG. 3(c)

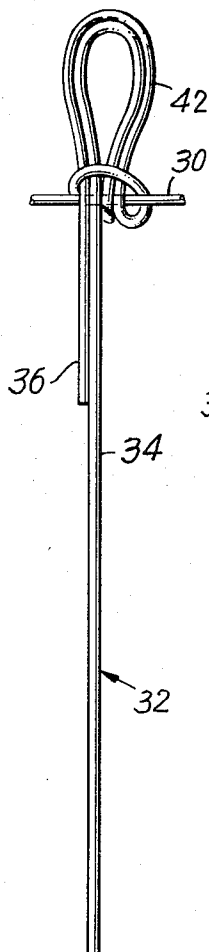
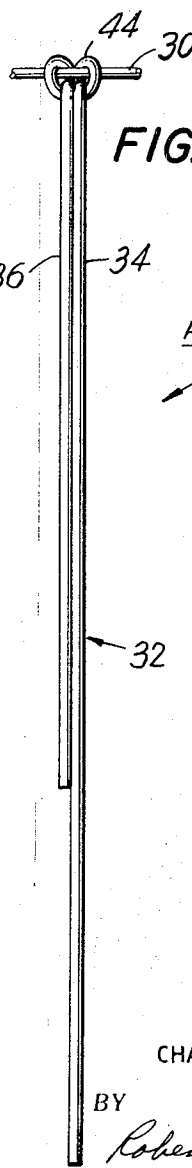


FIG. 3(d)

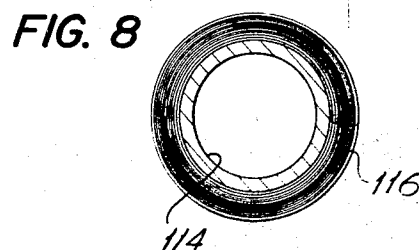
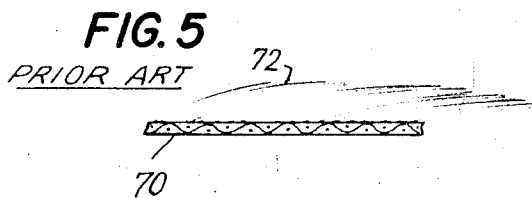
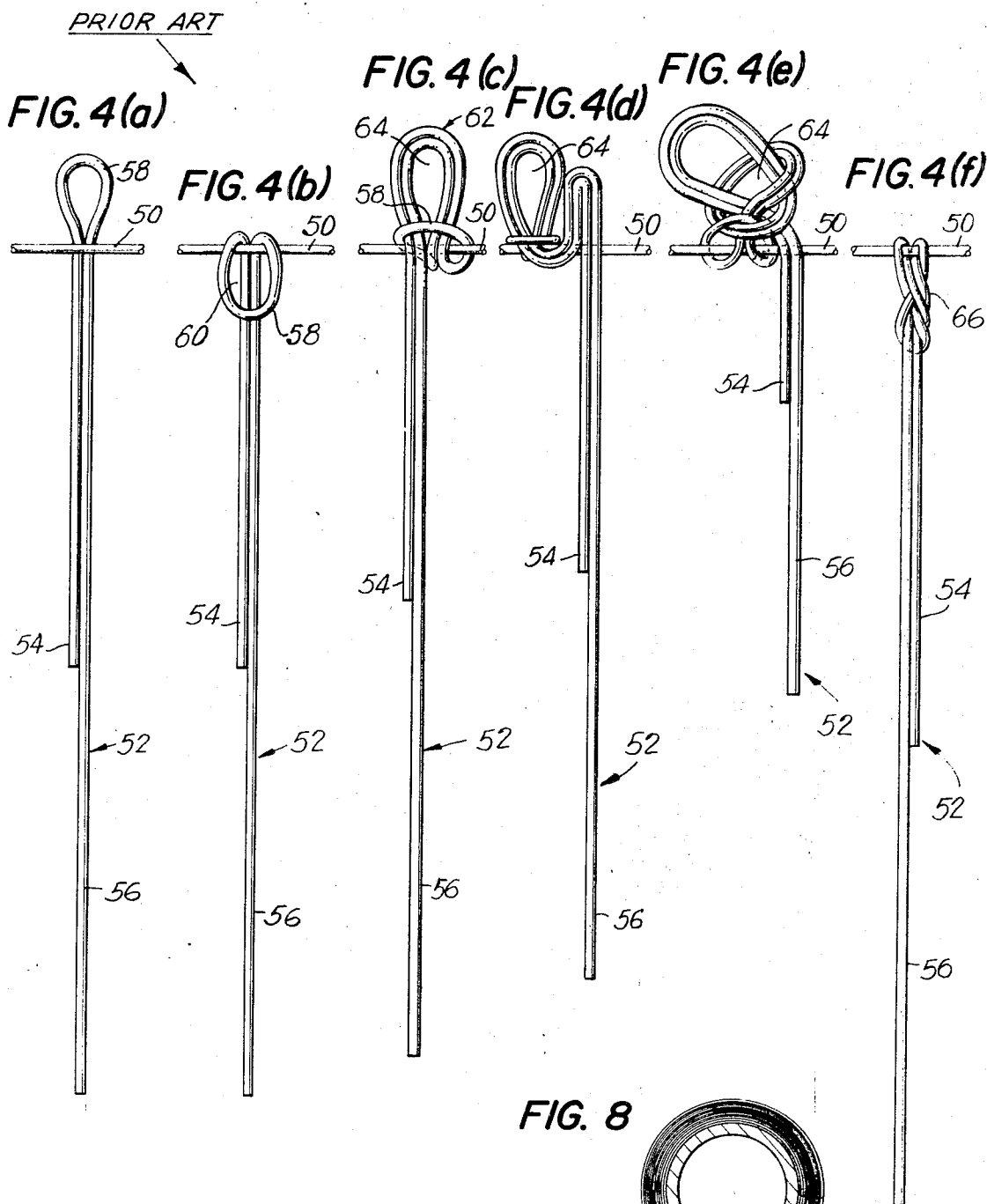


PRIOR ART

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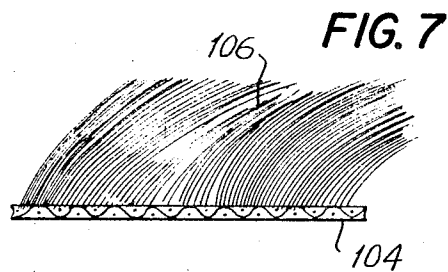
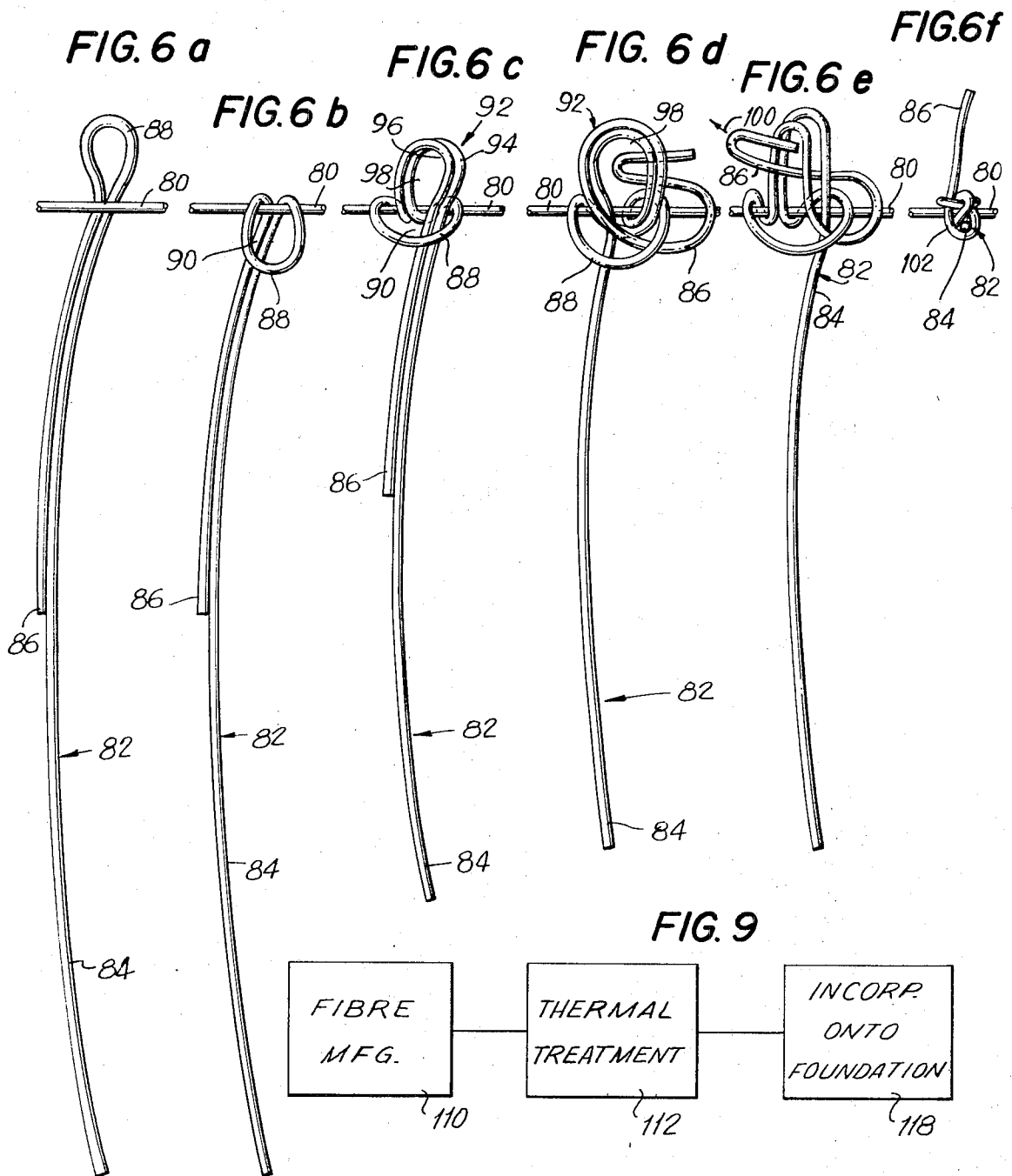
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METHOD OF MANUFACTURING WIGS AND RESULTING PRODUCTS

FIELD OF INVENTION

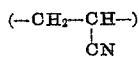
This invention relates to methods of manufacturing wigs or other postiches as well as to resulting products and more particularly to the making of wigs of synthetic fibers adapted to simulate hair.

BACKGROUND

The art of manufacturing wigs is a comparatively old art which has been attended by various developments. One of these developments has been the substitution of synthetic fibers for natural hair which although satisfactory in most respects is attended by a variety of problems.

Natural hair comes in a number of colors and in a number of qualities and textures. It must be gathered from various sources throughout the world and must be mixed and matched with an appreciation of color, quality and texture. The gathering of natural hair from the various sources and the techniques involved in making good quality wigs from natural hair are material factors in the cost of manufacture. Hence, there have been numerous efforts to substitute synthetic fibers for natural hair so that quality texture and color can be readily controlled and so that sources are more readily available.

Three types of fibers which are currently being used for wigs with substantial success are modacrylics, polyvinyl chlorides and polychal or copolymers of vinyl chloride with vinyl alcohol. These are all flame resistant and have preferred characteristics with respect to hand, combing, brushing and teasing. Dynel which is a modacrylic produced by Union Carbide Corporation has especially good characteristics with respect to curling and forms curls which are very durable. Other suitable modacrylics include, by way of example, Kanekalon (made by Kanegafuchi Chem. Co.), Teklan (made by Courtaulds Ltd.) and Verel (made by Eastman Kodak). Venicelon (made by Chatillon) is a polyvinyl chloride fiber as are Seflore, Airfull and Cordelon (made by Kohjin Chemical Co.). Modacrylics are synthetic fibers in which the fiber forming substance is any long chain synthetic polymer composed of less than 85 percent but at least 35 percent by weight of acrylonitrile units



with certain exceptions. These fibers soften at low temperatures and are resilient, easy to dye, abrasion resistant, resistant to acids and alkalis, and shape retentive.

Synthetic fibers may require a certain type of handling when used in the making of wigs. For example, modacrylics must be baked or thermally processed at about 90-100° Centigrade when incorporated into a wig in order to take on and maintain the particular curl which is desired. Moreover, such fibers, after being thermally processed, may not be subjected to certain kinds of stresses or else they will exhibit a marked tendency to frizz and otherwise take on undesirable characteristics.

Because, in hand-tied wigs, synthetic fibers should not be subjected to stresses after having been thermally processed, they have invariably been thermally processed after having been previously tied to the associated foundation. The reason for this is that the hitherto employed knot tying process involves drawing each fiber in entirety through a knot loop which subjects the fiber to the precise type of stress which results in frizzing and should be avoided. As a result, manufacturing techniques are used which lead to a product in which fiber portions adjacent the associated cap may be inadequately processed.

The book "Manual of Wigmaking," by M. Botham and L. Sharrad, Funk & Wagnalls 1964, New York, is a good source of information relating to wig when the hair or fiber is of insufficient length to be put on rollers alone, the fibers describes

the single and double knotting by which natural and synthetic hair is implanted in a net foundation. In these knotting techniques, substantially the entire natural or synthetic hair length is drawn through a bight or through a loop passed through the bight in order to form a knot. This required technique is what causes frizzing and necessitates that the thermal process follow subsequently.

Another problem resulting from the above technique is that the caps must be made from a plurality of pieces which are subsequently bound together. The reason for this is that, when alone, the fibers together with their foundations must be wound on the rollers for thermal processing and this is possible only when the foundation is formed in sections. As a result, unsightly and possibly uncomfortable seams are formed which are preferably to be avoided.

U.S. Pat. No. 3,139,093 and No. 3,199,516 (D. Fishman) typically disclose a use of Dynel in which fibers are first attached to a foundation and then thermally treated. The technique otherwise disclosed in these patents differs from the present invention, as will be shown, in that a circular knitting machine is employed.

U.S. Pat. No. 1,740,764 (E. Bong), No. 2,233,100 (J. Jevnikar), No. 3,189,035 (W. Heck), No. 3,307,563 (R. Regina) and No. 3,435,831 (Nakayama) all show knotting techniques in which the natural hair or synthetic fiber is subjected to undesirable stresses of the aforementioned type.

Still further, note must be taken of the fact that improvement of the angle of the hair or synthetic fibers relative to the supporting net foundation is something which is always sought in the wig industry.

SUMMARY OF INVENTION

It is a general object of the invention to provide improved handmade wigs or postiches and manufacturing techniques therefor.

It is a more particular object of the invention to provide improved techniques which allow, with respect to synthetic fibers, a preferred thermal processing thereof and which result, with respect to natural hair or synthetic fiber, in a superior geometrical relationship of the same on the associated foundations.

Yet another object of the invention is to provide an improved technique whereby it is possible to process fibers such that a curl may be imparted to the same throughout their entire lengths including immediately adjacent the associated foundation.

Still another object of the invention is to provide a wig making technique whereby wigs can be made of synthetic fibers with a cap which may be in major portion of a single unitary piece.

Yet a further object is to avoid the tying of fibers in such a manner that they lie flatly against their foundations and so that the fibers allow flexibility and versatility of style because they stand out from their foundations in the same manner that hair grows from a scalp.

To achieve the above and other objects of the invention, there is proposed a method of manufacturing a postiche such as a wig formed, for example, of a cap or net foundation and synthetic fibers, the method generally comprising thermally processing the fibers to impart thereto curl retaining characteristics and thereafter binding the fibers to the cap or net foundation with knots which are of a type which avoids imparting stress to a major portion of each of the fibers whereby this major portion is enabled to retain the aforesaid characteristics.

More specifically, the above method is practiced and the aforesaid objects are achieved by employing a special knot which can be tied with conventional wig manufacturing equipment while enabling a hair simulating, major portion of each fiber to go unstressed, since it neither is passed through the knot or net foundation nor need it be pulled in order to tighten the associated knot.

With specific reference to formation of the knot, an end portion of each fiber is formed into a bight such that relatively long and short portions extend from the bight at preferably right angles to each other, the short portion being formed into a knot in conjunction with the bight through the intermediary of a loop formed by passing a portion of the long and short portions through the bight.

With a loop formed as indicated above, an enclosure is formed by cooperation of the loop and bight and through this enclosure the short portion mentioned hereinabove is inserted whereafter a tensile force applied to the short portion locks the short portion in the enclosure to complete the operation.

As has been noted hereinabove, the fibers may be thermally processed before incorporation into the cap or foundation since the long portion of each fiber is not subjected to the deteriorating action of undesirable stresses. Accordingly, the fibers may, for example, be wound on a cylinder and baked at a suitable temperature whereafter the thusly processed fibers are taken from the cylinder and individually or in groups knotted to the net foundation in the manner indicated hereinabove.

In addition to providing an improved method for the manufacture of postiches or wigs, the invention also provides improved products. By virtue of the techniques generally indicated hereinabove, a knot is formed causing the associated fiber to protrude from the foundation at approximately a right angle thereto. For this reason the simulated hair stands up from the associated foundation in very much the same manner as natural hair grows from a scalp.

The invention provides a number of advantages as will become more apparent hereinafter. It will especially be noted hereinafter that since the synthetic fibers are thermally processed on a cylinder and before being tied to a net foundation or cap, these fibers may be given favorable characteristics such as a wave or curl along their entire lengths and do not have straight lengths immediately adjacent the associated foundations. It is a further advantage of the invention, as well as feature thereof, that the synthetic fibers extend in upright manner from their foundation.

Other objects, features and advantages of the invention will be found in the detailed description which follows hereinafter as illustrated in the accompanying drawings.

BRIEF DESCRIPTION OF DRAWING

FIG. 1 is a perspective view of a wig of the prior art turned inside out to illustrate the construction thereof;

FIG. 2 is a view similar to that of FIG. 1 of a wig or postiche prepared in accordance with the invention;

FIGS. 3(a)-(d) illustrate the "single knotting" technique of the prior art employed for connecting natural hair or synthetic fibers to a net foundation;

FIGS. 4(a)-(f) show the "double knotting" techniques of the prior art for connecting natural hair or synthetic fibers to a net foundation;

FIG. 5 illustrates a section through a small portion of a net foundation having hair or fibers connected thereto in accordance with the prior art;

FIGS. 6(a)-(f) illustrate a semidouble knotting technique provided in accordance with the invention for connecting synthetic fibers to a net foundation in accordance with the invention;

FIG. 7 is a view corresponding to that of FIG. 5, illustrating the fiber-to-foundation relationship provided in accordance with the invention;

FIG. 8 is a diagrammatic view through a section of cylinder showing the disposition of fibers for thermal processing in accordance with the invention; and

FIG. 9 is a block diagram generally illustrating the steps of manufacturing a wig or postiche in accordance with the invention.

DETAILED DESCRIPTION

A wig or postiche 10 is generally indicated in FIG. 1 and this wig has been prepared in accordance with the prior art. Its cap consists of sections 12 and 14 connected along a seam 16 and a number of tapes are connected to the cap as indicated for example at 18. Synthetic fibers are connected to the cap sections as well as to the tapes and are intended to simulate natural hair. One of the reasons why the cap or net foundation is employed in sections is to facilitate the thermal processing of synthetic fibers which are connected thereto.

It has been found that subjecting synthetic fibers to the normal stresses of connecting these fibers to net foundations according to conventional techniques makes these fibers frizzy and otherwise possessed of undesirable characteristics. It is therefore necessary in accordance with conventional techniques to tie the synthetic fibers to the net foundation and thereafter subject the synthetic fibers to thermal processing in order to cure the undesirable characteristics imparted to the synthetic fibers during the knotting or tying process. Since therefore the synthetic fibers are connected to the net foundation at the time of thermal processing, it is essential that the net foundation be made of relatively small sections which can be wound on the curling cylinders for purposes of the thermal process.

FIG. 2 illustrates a wig or postiche 20 which has been prepared in accordance with the techniques of the invention. Herein it is seen that the cap is essentially a one-piece net foundation 22 to which may be affixed, for example, tapes 24 and 26, to the latter of which the fringe areas of synthetic fibers are attached to simulate hair, these synthetic fibers being moreover attached to the one-piece net foundation 22 according to the technique of the invention.

As will become apparent hereinafter, the fibers are attached to the net foundation by a new technique which avoids imparting stress to the major portion of each fiber and the invention capitalizes upon this improved result by employing a thermal processing of the synthetic fibers before these fibers are knotted to the net foundation. This provides numerous advantages. First of all, the synthetic fibers can be processed along the entire lengths thereof so that straight sections will not occur adjacent the net foundation as is characteristic of the handmade postiches manufactured in accordance with previously known techniques. Further, as will also become more apparent hereinafter, the knotting technique of the invention leads to a superior geometrical relationship between the synthetic fibers which simulate hair and the supporting net foundation, the synthetic fibers standing approximately perpendicular with respect to the net foundation and not lying flatly thereagainst as was characteristic of previously known techniques. This geometrical relationship more nearly approaches that of the natural hair relative to the scalp from which it grows and is therefore a very desirable feature of the invention.

In order to understand the improvement of the invention as regards the knotting of synthetic fibers to a net foundation, it is helpful to consider the knotting techniques of the prior art. One such technique is illustrated in FIGS. 3(a)-(d) wherein appear generally the four steps of the single knotting technique employed previously.

In FIG. 3 appears a thread 30 of a net foundation. A fiber 32 is generally indicated as including a long portion 34 and a short portion 36 which are formed by doubling a part of the fiber back on itself to form a bight 38. The bight 38 is inserted through the net and behind thread 30 by means of a small metal instrument or pick which is generally employed in the wigmaking art. This pick is then employed to double the bight around the thread 30 to form an enclosure 40. The pick is then employed to pull the long and short portions 34 and 36 together through the enclosure as indicated at 42. Portions 34 and 36 are pulled entirely through the enclosure and then further pulled until the formation of a knot occurs as indicated at 44 in FIG. 3(d).

Two things happen in the single knotting technique which are harmful to the characteristics of the fiber. First of all, the portions 34 and 36 are drawn in entirety through the enclosure 40 thereby applying a frictional drag along the entire lengths of these portions. Secondly, a tensile force is applied to portions 34 and 36 which is also harmful to the characteristics of the synthetic fiber. In fact, the application of these stresses to the fiber causes it to become frizzy and to lose the desirable characteristics by means of which a hair-simulating quality is provided to the fiber. As a consequence thereof, it is essential that fibers knotted in this way thermally processed or baked after they have been tied to a wig cap or net foundation.

Another prior art technique is illustrated in FIG. 4 wherein appears a thread 50 of a net foundation. In this double knotting techniques a synthetic fiber 52 is doubled back on itself to form a short portion 54 and a long portion 56 and a bight 58 is, as in the previously described technique, drawn through the net foundation and in back of thread 50. Bight 58 is then drawn to the front of thread 50 to form an enclosure 60 and, as shown in FIG. 4(c), a loop 62 is drawn through enclosure 60 and is formed of parts of portions 54 and 56 which are next adjacent the bight 58. The bight 58 forms with the loop 62 an enclosure 64 and as appears in FIGS. 4(d) and 4(e), the portions 54 and 56 are together drawn through the closure 64 and subjected to a tensile force in order to form the knot 66 which appears in FIG. 4(f).

The same objections which were raised before relative to the single knotting technique apply as well to the double knotting technique, since the synthetic fiber 52 is in entirety subjected to both a frictional drag and a tensile force as a result of which the synthetic fiber will become frizzy and thus require a subsequent thermal processing.

Another objection to the single and double knotting techniques of FIGS. 3 and 4 appears in FIG. 5 wherein is seen the net foundation 70 with synthetic fibers 72 connected thereto. As is apparent from the illustration, the fibers tend to lie flatly along the net foundation in a manner which is unlike the natural condition of the scalp from which the natural hair grows perpendicularly or approximately so.

An improved knotting technique of the invention is illustrated in FIGS. 6(a)-(f) wherein appears a thread 80 from the improved net foundation which may be employed in accordance with the invention. In this figure appears a fiber 82 doubled back on itself to have a long portion 84 and a short portion 86. As in the previously known knotting techniques a bight 88 is formed and passed behind thread 80 and looped around to form an enclosure 90. Through this enclosure 90 is drawn a loop 92 consisting of fiber sections 94 and 96 which connect the portions 84 and 86 to the bight 88. This loop defines an enclosure 98.

Contrary to the technique heretofore employed, long portion 84 is not drawn through enclosure 98, nor is it drawn through the net foundation or through any other loop or enclosure whatsoever. Instead, the short portion 86 is separated therefrom, looped around the bight 88 and drawn through the enclosure 98 which is in part formed by the loop 92 and in part by the bight 88, the short portion being at approximately a right angle to long portion 84.

As illustrated in FIG. 6(e), a tensile force is applied to the short portion 86 alone, this tensile force being, for example, in the direction shown by arrow 100. During this time no tensile force is applied to long portion 84, nor is it subjected to stress in any other manner whatsoever. Short portion 86 is pulled until a knot 102 is formed as indicated in FIG. 6(f). The formation of this knot and the application to force to short portion 86 is such that the long portion 84 is caused to stand at a right angle to the thread 80 and short portion 86 as appears more clearly in the diagrammatic showing of FIG. 6(f).

In FIG. 7 appears a portion of a net foundation 104 having

fibers 106 standing approximately upright therefrom in a disposition which more nearly simulates that of natural hair.

Reference has been made hereinabove to the utilization of net foundations. For example, a commercially available stretchable net material is available under the designation "Spandex." It comprises 40 percent of polyurethane yarn of 420 denier and 60 percent of nylon filaments of 70 denier and is made with elastic warp knitting with the well-known German Karl Mayer machine. Other net foundation materials may be employed but will preferably be such as to take advantage of the improvements of the invention.

The fibers employed in accordance with the invention will preferably be modacrylics such as, for example, Dynel. Other synthetic fibers such as have been mentioned hereinabove and others may also be employed. These synthetic fibers have been used before in the manufacture of postiches, but have not heretofore been employed in accordance with the improved knotting technique disclosed herein.

FIG. 9 indicates generally the steps of preparing a wig employing the knotting technique of the invention. The first step indicated at 110 is the fiber manufacturing step which is commercially known and the details of which are not a part of the present invention. Thereafter occurs the thermal treatment of the synthetic fibers as indicated at 112 and as is indicated generally in FIG. 8 wherein appears a metal cylinder 114 on which are wound the synthetic fibers 116. The synthetic fibers are thereafter incorporated into the postiche as indicated at 118.

It will be apparent from what has been stated above that the nonrectilinear shapes shown for the fiber portions in FIG. 6 are indications that at this phase of the operation the fiber will already have imparted thereto waves or curls which occupy the entire length of the fiber. Thus the long portion 84 in FIGS. 6(a)-(f) will be waved or curled all the way up to the thread 80 with the exception of a negligible portion involved in the knot 102. The short portion 86, having been subjected to frictional drag and stress in the manner indicated hereinabove, may be frizzy. However, since this portion will not be exposed to view, its condition is relatively unimportant.

From what has been stated above, it will be clear that the invention contemplates the thermal treatment of fibers before the incorporation of the same into a wig or the like, this preliminary thermal treatment being made possible by the use of a special knot which enables synthetic fibers to be bound to net foundations without subjecting the major portions of such fibers to stresses or frictional drags which might harm the characteristics thereof. Moreover, as has been shown, the long and short portions are so related that the long portions stand generally upright adjacent the foundation.

What is claimed is:

1. A postiche comprising a net foundation and synthetic fibers connected to said foundation, said fibers each including a long portion for simulating natural hair, a short portion and knot means connecting said portions, said knot means being of a construction adapted for being tightened by a force applied to the short portion alone and being moreover adapted to hold the long portion at least in part upright relative to said foundation and, at least generally, at a right angle with respect to said short portion, said knot means including a bight and a loop extending through said bight, said loop connecting said portions to said bight with the short portion extending through and the long portion lying outside of said loop.

2. A postiche as claimed in claim 1 wherein said knot means is moreover of a construction adapted for being formed without drawing the long portion through the foundation and knot means.

3. A postiche as claimed in claim 1 wherein said fibers are thermally processed before connection to said foundation.

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