

[54] STERILE COSMETIC SUTURE FOR ATTACHING HAIR PIECES TO SCALP AND METHOD OF PACKAGING AND UTILIZING

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[52] U.S. Cl. .... 206/63.3; 128/339; 206/229

[51] Int. Cl. .... A611 17/02; A61b 17/06

[58] Field of Search..... 128/334, 335.5, 339; 206/63.3, 229, 230

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[57] ABSTRACT

A cosmetic suture for use in attaching hair pieces to the human scalp consists of a suitably shaped needle having a hollow trailing shank which encompasses a short length of teflon tubing. A short length of stainless steel wire or ribbon is inserted through the teflon tubing to complete the suture unit. A porous plastic tip may be utilized to protect the needle point. The entire suture unit, together with a short bushing and wire sub-assembly, is placed in a thin transparent plastic sheath and heat sealed, after which the sheath may be placed in an outer envelope which is also sealed. The entire package thus completed is processed by a certified sterilizing system. During a single penetration of the scalp with the short suture assembly, the needle point is forced through the sterile plastic sheath and gradually the sheath is stripped from the suture assembly as the needle and teflon tubing pass through the scalp. Maximum protection against infection is thus afforded.

2 Claims, 14 Drawing Figures

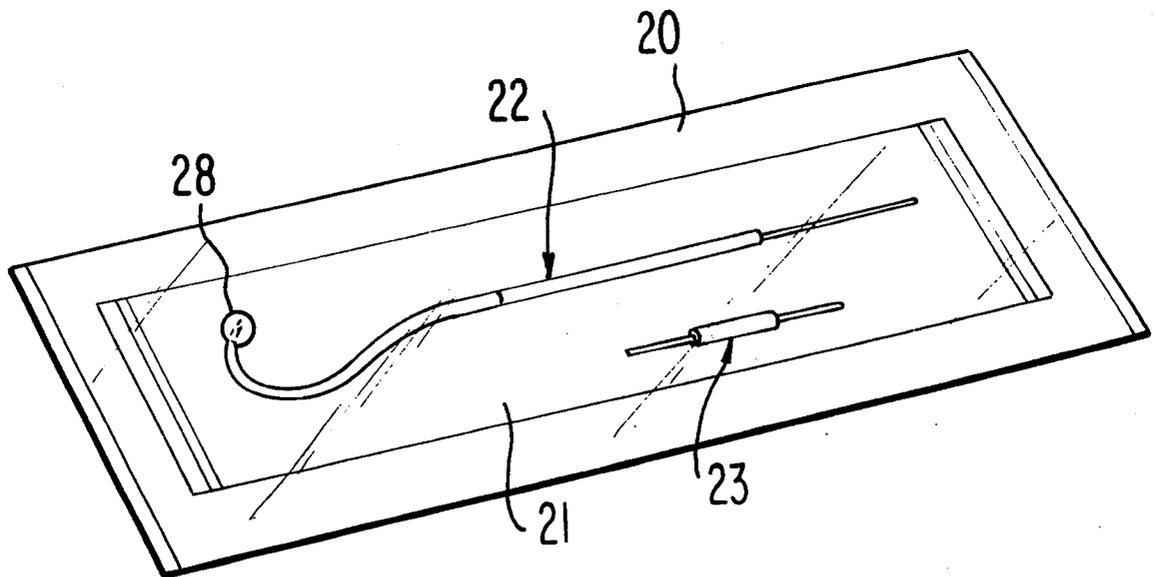


FIG. 1

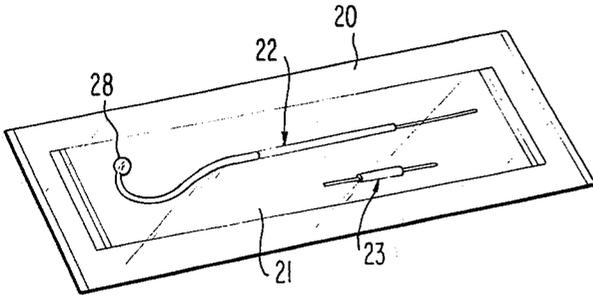


FIG. 2

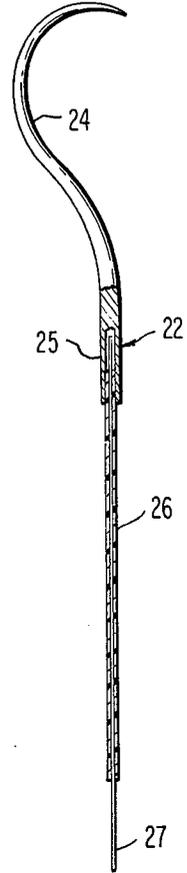


FIG. 3

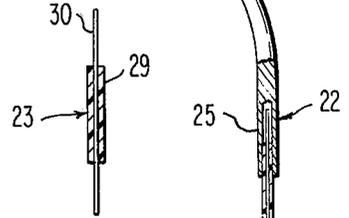


FIG. 4

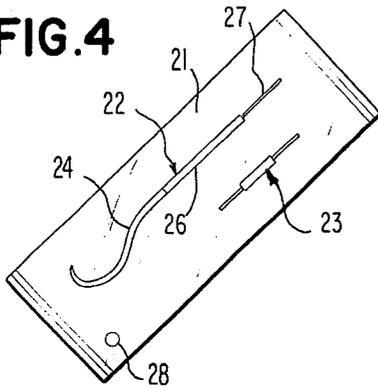


FIG. 5

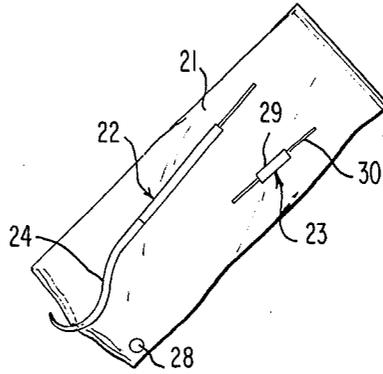


FIG. 6

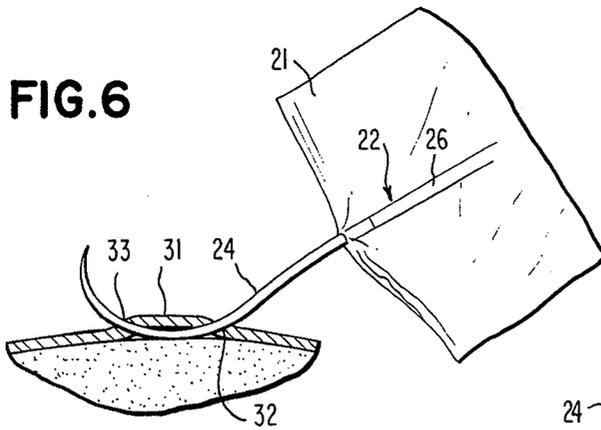
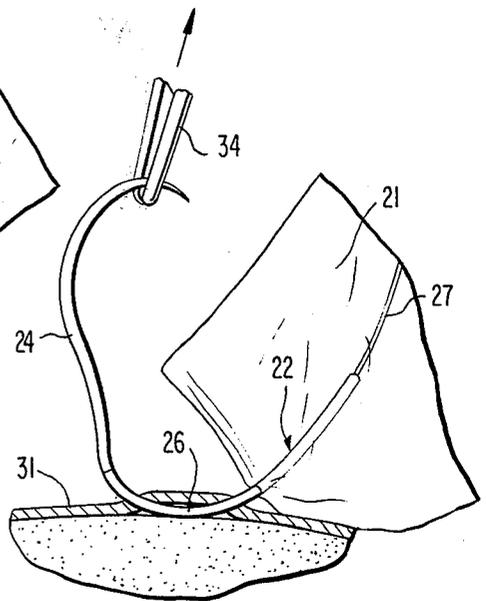


FIG. 7



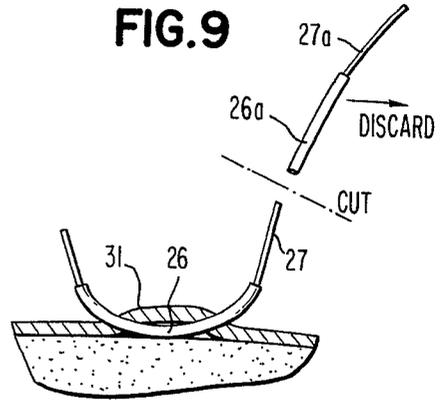
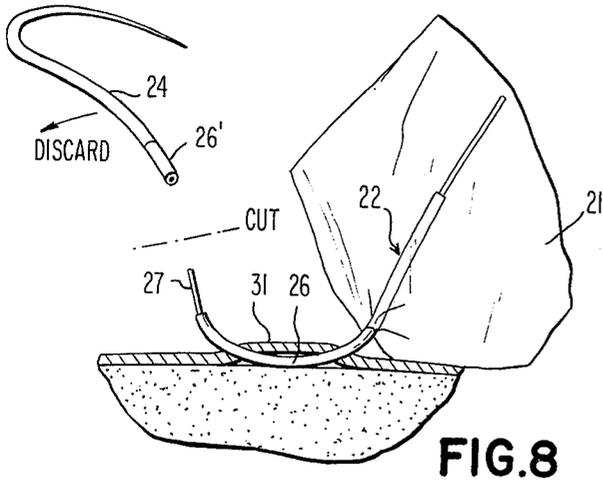


FIG. 10

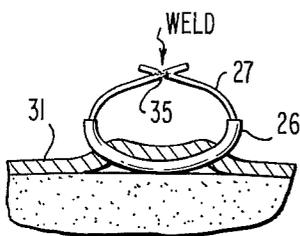


FIG. 11

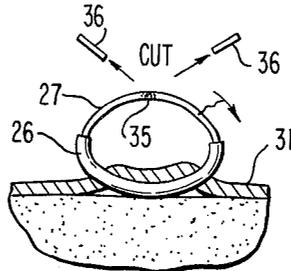


FIG. 12

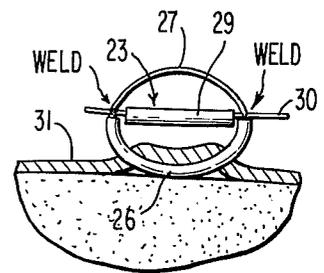


FIG. 13

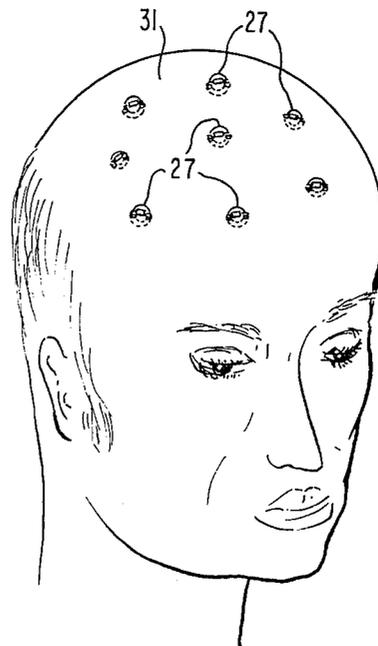
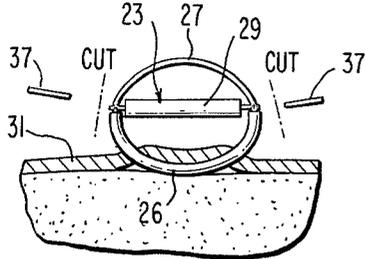


FIG. 14

# STERILE COSMETIC SUTURE FOR ATTACHING HAIR PIECES TO SCALP AND METHOD OF PACKAGING AND UTILIZING

## BACKGROUND OF THE INVENTION

Prior U.S. Pat. No. 3,608,095 issued Sept. 28, 1971 to Robert J. Barry discloses a method of fixing hair pieces to scalps. The patented method involves penetrating the scalp with a needle having a trailing tube formed of teflon or like inert material. Subsequently, a wire is passed through the teflon tube after the latter is placed in the scalp and formed into a closed loop and welded. The wire does not make direct contact with the scalp.

The present invention has for its objective to improve upon the above patented method by utilizing a sterile suture assembly in such a way that the subject is given maximum protection against the danger of infection. Additionally, a means has been devised in the nature of a short crossbar unit to guard against subsequent drift or movement of the attached loop in the scalp.

The present invention also resides in a sterile transparent flexible package for the suture unit and crossbar and in the method of penetrating the scalp with the suture so as to avoid infection or contamination. In this latter connection, an important aspect of the invention resides in forcing the needle point through the sterile plastic sheath as the needle enters the scalp and gradually stripping the sheath rearwardly from the needle and the trailing suture during the placement of the suture in the scalp. There is no need to reciprocate the needle and suture in the scalp after initial penetration and only a single penetration by the short needle and suture assembly is required during the placement of each hair piece attaching loop in the scalp. The sterile sheath is allowed to remain on the trailing part of the suture until the welding step is performed on the wire or ribbon to complete the loop. The sheath can be left in place until a number of suture penetrations are completed, and then can be removed in sequence as the welding is done, after which the sheath will still serve as a sterile container for the crossbar subassembly until such time as the crossbar is welded to the wire loop at a point spaced from the scalp.

By virtue of the invention, the cosmetic suture will remain sterile up to the very instant when scalp penetration is begun. Because the hollow needle and teflon tubing need only be attached for an initial penetration, the relative cost compared to a permanent suture and needle assembly is such that should any doubt exist in the mind of the doctor or technician, it will involve no significant loss to discard the suture and start with a fresh one. The small maneuverable suture can be located in the scalp in an advantageous direction to accommodate hair combing. When the crossbar subassembly is welded to the eyelet or loop, circular motion or drifting of the loop in the scalp is restrained, and the loop will receive any hair attachment without the same touching the skin.

Since only a single penetration of the scalp without reciprocation is required per suture installation, a larger number of eyelets or loops may be placed in the scalp, giving more strength to the hair attachments. Repair or replacement of the eyelets can be safely and easily made.

The above are some of the features and advantages of the invention and others will become apparent as the

description proceeds. The invention is a significant advance in the method of attaching hair pieces to scalps as disclosed in the prior Barry patent, particularly in the area of minimizing the danger of infection and therefore rendering the procedure safe.

## BRIEF DESCRIPTION OF DRAWING FIGURES

FIG. 1 is a perspective view of a sterile suture package embodying the invention.

FIG. 2 is an enlarged cross sectional view, partly in section, through a suture assembly.

FIG. 3 is a similar view of a crossbar sub-assembly contained with the suture in the sterile package.

FIG. 4 is a perspective view of the suture and crossbar units in a sterile sheath after removal of the exterior envelope and separation of the needle point protecting element.

FIG. 5 is a further perspective view showing the penetration of the sterile sheath by the needle point when the same is to be inserted in the scalp.

FIG. 6 is an enlarged fragmentary perspective view showing the needle passing into and through the scalp and emerging therefrom with the gradual stripping off from the needle of the sterile sheath.

FIG. 7 is a further perspective view showing the needle pulled beyond the scalp and with the teflon tubing in its final position in the scalp and with the sterile sheath still protecting the trailing end of the suture assembly.

FIG. 8 is a further view, similar to FIG. 7, showing the cutting off and discarding of the needle with a leading portion of the teflon tubing.

FIG. 9 is a similar view showing the cutting off and discarding of trailing teflon tubing and suture wire prior to welding.

FIG. 10 is a similar view showing a welding operation to complete the formation of a scalp anchored loop or eyelet.

FIG. 11 is a similar view showing trimming of the loop following the welding step.

FIG. 12 is a similar view illustrating the welding of a crossbar sub-assembly across the loop.

FIG. 13 is a similar view showing trimming of the ends of the crossbar sub-assembly.

FIG. 14 is a view showing a plurality of the loops or eyelets placed in the scalp.

## DETAILED DESCRIPTION

Referring to the drawings in detail wherein like numerals designate like parts, FIG. 1 shows a sterilized package consisting preferably of an outer sterilizable envelope 20 which is suitably hermetically sealed. Within this outer envelope 20 is an inner transparent envelope or sheath 21 formed of thin sterilizable plastic and also being hermetically sealed. Suitable materials are available and well known for the envelope and sheath 20 and 21 which will allow the latter and their contents to be processed by a certified sterilizing system.

Within the sealed sterilized flexible sheath 21 and protected thereby is a suture assembly 22 and a crossbar subassembly 23 whose uses will be fully described. Referring to FIG. 2, a suitably shaped and pointed needle 24 having at least a hollow shank 25 is provided, and the hollow shank receives preferably snugly and telescopically one end portion of a length of teflon tubing 26 or a tubing formed of similar inert material. The

tubing 26 may be approximately one and one-half inches long. The method of securing the tubing in the hollow needle shank may vary and is not critical. It may involve crimping of the shank 25 or the use of a self-locking lancing in the bore of the hollow shank 25, plasticizers or the like. In any case, during use, the needle 24 will be pulling no load except the negligible friction of the teflon tubing 26 in the scalp.

The suture assembly 22 further comprises a length of solid stainless steel wire 27 or, in some cases, a steel ribbon. Preferably, it will be a soft stainless wire, approximately 0.010 inch in diameter and, if a ribbon, approximately 0.004 x 0.012 inch with rolled edges. The insertion of the wire 27 into the tubing 26 may be done before or after the needle 24 is attached to the tubing. Referring to FIG. 1, a small porous plastic ball tip 28 is applied to the needle point primarily to protect the sheath 21 against cutting or puncturing prior to use, which would result in loss of sterility.

The crossbar sub-assembly 23 comprises a short teflon bushing 29 having a short stainless steel wire 30 extending through its bore and somewhat beyond its opposite ends. The engagement is preferably snug to prevent relative movement of the bushing on the wire. The two assemblies 22 and 23 are placed in the transparent plastic sheath 21 which may then be heat-sealed and placed within the outer envelope 20 which is also sealed. Then, as stated, the entire package as shown in FIG. 1 is sterilized by known techniques and is ready to be used for implanting the hair piece attachment loops permanently in the scalp generally as disclosed in prior U.S. Pat. No. 3,608,095.

Referring to FIGS. 4 through 13 in order, the precise method of utilizing the cosmetic suture is shown. Referring to FIG. 4, the needle 24 is gripped along with the plastic sheath 21 by a needle holder, and while holding the ball tip 28 firmly with a tweezer, the needle point is separated from the protective tip 28 without puncturing the sheath 21.

Following this, FIG. 5, the point of the needle 24 is forced through one end of the plastic sheath 21.

Proceeding to FIG. 6, without any delay in the process, the needle 24 is forced into the scalp 31 at 32 and advanced until the point emerges from the scalp at 33 and is exposed. At this time, the plastic sheath 21 is slid back gradually along the shank of the needle while still protecting the teflon tubing 26 and the remainder of the suture assembly 22, as well as the crossbar sub-assembly 23. The puncture opening produced by the needle in the sheath 21 can be a snug or friction opening due to the stretchability of the plastic and this will further exclude contamination.

Proceeding to FIG. 7, the point of the needle 24 is suitably gripped with a sterile instrument 34 and is drawn with the teflon tubing 26 through the scalp 31 to the final position in the scalp where opposite end portions of the tubing 26 are extending outside of the scalp. The sterile plastic sheath 21 is still intact and still protecting the trailing end of the suture assembly.

In FIG. 8, the next step of the method as shown, involves severing the needle 24 and discarding it with an excess leading end portion 26' of the teflon tubing 26. The plastic sheath 21 is still in place on the suture assembly.

In FIG. 9, the trailing end 26a of teflon tubing with excess wire 27a is severed and discarded utilizing a special cutter. This leaves only the desirable length of tef-

lon tubing 26 and wire 27 within the scalp 31 with end portions of the inert tubing projecting well outside of the scalp.

In FIG. 10, the welding together of the wire ends takes place utilizing a condenser discharge welding tweezer, substantially as described in the prior Barry patent. This is completely harmless to the subject as the voltage employed is less than one-half volt and approximately five watt seconds, or 0.003 second in time with no measurable residual heat. The weld is indicated by the numeral 35 in FIG. 10.

FIG. 11 shows the step of trimming off the excess wire 36 beyond the weld to complete the formation of the desired loop or eyelet. As shown by the arrow in FIG. 11, the wire 27 may now be rotated in the tubing 26 to place the weld 35 inside of the tubing as shown in FIG. 12.

In FIG. 12, the crossbar sub-assembly 23 is positioned across the loop close to the ends of the tubing or bushing 26. The wire extremities 30 are now welded to the eyelet 27 and the end portions 37 of wire are cut off as illustrated in FIG. 13 to complete the placement of the crossbar on the eyelet or loop. This crossbar sub-assembly will not prevent the wire 27 from turning within the tubing or bushing 26 and will also prevent the loop including the tubing 26 from drifting or creeping to any appreciable extent in the scalp 31.

With the structure attached to the scalp completely as in FIGS. 13 and 14, the hair piece attachment may be applied safely to a plurality of the eyelets generally as explained and illustrated in the Barry patent. With the crossbar present on each eyelet above the scalp, the hair piece attachment will not contact the skin adjacent to the emerging ends of the tubing 26.

In light of the above description and also in light of the prior Barry patent, it should now be clear that the present invention materially advances the practicality and safety of attaching the eyelets and hair pieces to the human scalp. Maximum protection against infection is afforded by the provision of the sterile sheath 21 and its careful usage as depicted in FIGS. 4 through 9.

As a further precaution, the scalp 31 may be prepared for the acceptance of the eyelets by accepted disinfectant procedures known to a dermatologist or trained nurse. When the eyelets are completely installed according to the invention, disinfectant powder, spray or ointment may be applied for added safety.

As used in the specification, the term "weld" includes cross wire welding, lap or butt welding.

An added advantage of the crossbar 23, FIG. 13, is that any pull on the hair piece will not tend to close the loop 27 exerting heavy pressure on the edges of the skin where the tubing 26 emerges. Instead, the loop or eyelet will remain firm and will provide a full arc or segment through the scalp to resist such pulling.

It is to be understood that the form of the invention herewith shown and described is to be taken as a preferred example of the same, and that various changes in the shape, size and arrangement of parts may be resorted to, without departing from the spirit of the invention or scope of the subjoined claims.

What is claimed is:

1. A cosmetic suture device comprising a suture assembly including a needle, a trailing length of human tissue compatible tubing secured to the needle and a weldable metal element extending through the tubing and being formable therewith into a closed loop after

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detachment of the needle from the assembly, a sterile enclosure for the suture assembly comprising a flexible transparent sterilizable sheath and being hermetically sealed, the suture assembly adapted to be sterilized with the sheath while inside of the sheath, and a cross bar sub-assembly consisting of a bushing and a metallic weldable element extending through the bushing and

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beyond the ends thereof and contained in said sheath with the suture assembly and being sterilizable.

2. The structure of claim 1, and an outer hermetically sealed envelope enclosing said device including the crossbar sub-assembly and being sterilizable with said device as a unit.

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