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HAIR INSERTION DEVICE AND METHOD OF IMPLANTING HAIR IN HAIRPIECES

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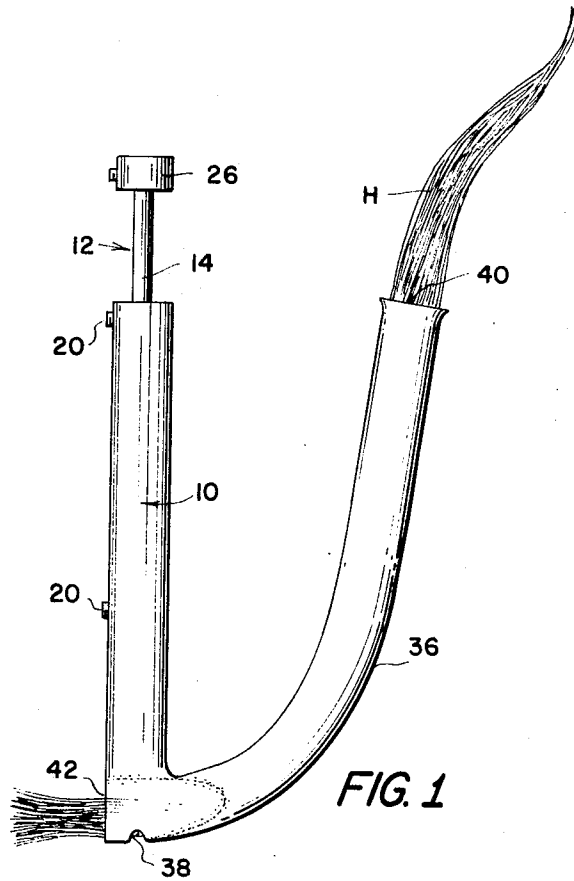


FIG. 1

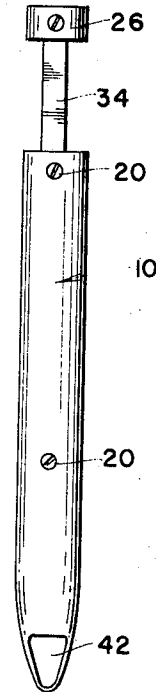


FIG. 2

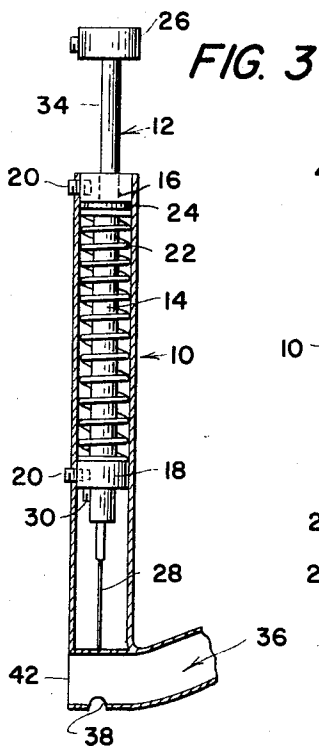


FIG. 3

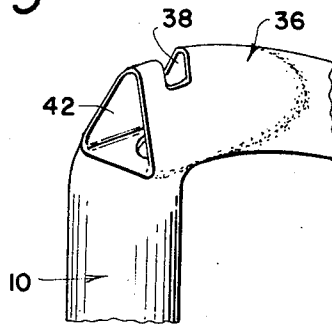


FIG. 4

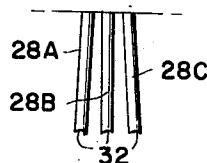


FIG. 5

FIG. 6

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HAIR INSERTION DEVICE AND METHOD OF IMPLANTING HAIR IN HAIRPIECES

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9 Claims

ABSTRACT OF THE DISCLOSURE

The disclosed hair insertion device and method employ a curved hopper in conjunction with a reciprocating plunger having one or more needles which engage hairs in the hopper and form hair loops which are pressed into a base.

BACKGROUND OF THE INVENTION

This invention relates to the art of making hairpieces and the like and is more particularly concerned with a device and method for inserting hair into the base of a toupee, wig, or the like. Although the invention is especially useful in the making of such hairpieces, it may also be employed for inserting hair in the head of a doll or for inserting other types of filaments into appropriate base members.

In the making of mass-produced hairpieces prior to the present invention, complex machinery, which may include one or more reciprocating needles, has been employed for inserting hair in base members. In the making of custom hairpieces a simple hand-held needle must be carefully manipulated by a skilled operator, the individual hairs being inserted into a base and looped or knotted by manipulations which require considerable manual dexterity.

SUMMARY OF THE INVENTION

It is an object of the present invention to provide a device and method for inserting hair or other filaments into the base of a hairpiece or the like and which may be utilized by unskilled operators to produce improved results easily, rapidly, and with considerable saving of labor, time and money.

A further object of the invention is to provide such a device and method which may be employed for inserting short hair, that has heretofore been extremely difficult to handle.

Still another object of the invention is to provide such a device and method which make possible the handling of root-turned hair in a manner which avoids matting and tangling of hair in the finished hairpiece.

Yet another object of the invention is to provide a device and method which permit the insertion of hair at critical points of a hairpiece, such as at the edges and at cowlicks, and which preserve a desired direction of hair lie to achieve a natural looking appearance.

A still further object of the invention is to provide a device of the foregoing type that is small enough and light enough to be held in the hand, thus facilitating hair insertion while avoiding the use of costly and heavy machines.

Yet another object of the invention is to provide a device and method which permit visual observation during performance of the work, thereby to facilitate the production of artistic hairpieces.

Briefly stated, a device constructed in accordance with the invention has a frame which supports a reciprocating plunger having a needle for engaging hair held in an associated hopper and for forming a loop in the hair as the hair is pressed from the hopper by the needle and

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forced into a suitable base. By virtue of the configuration of the hopper, the natural resiliency of the hair assists in maintaining the hair oriented and aligned and in feeding the hair transversely of the hopper.

BRIEF DESCRIPTION OF THE DRAWING

The foregoing and other objects, features, and advantages of the invention will become more apparent upon consideration of the following detailed description of the invention taken in conjunction with the accompanying drawing, which illustrates a preferred and exemplary embodiment, and wherein:

FIG. 1 is a side elevation view of a device of the invention illustrating the manner in which hair is held in the hopper;

FIG. 2 is an end elevation view of the device;

FIG. 3 is a fragmentary vertical sectional view illustrating the plunger and needle mechanism;

FIG. 4 is an inverted fragmentary perspective view illustrating the lower end of the hopper, including the outlet opening;

FIG. 5 is an enlarged vertical sectional view illustrating the manner in which hairs are formed into loops and inserted into a base; and

FIG. 6 is an enlarged fragmentary elevation view illustrating a multiple needle construction.

DETAILED DESCRIPTION OF INVENTION

Referring to the drawings, a hair insertion device of the invention comprises a frame 10, preferably a sleeve, for supporting a reciprocating plunger 12. As shown in FIG. 3, the plunger may comprise a shaft 14 which reciprocates in bearings 16 and 18 supported upon the frame 10 by means of screws 20. A coil compression spring 22 surrounds shaft 14 within sleeve 10 and is compressed between bearing 18 and a disc 24 fixed to shaft 14, so as to return the plunger to the position illustrated in FIG. 3 when an exposed finger-actuated knob 26 at one end of shaft 14 is released.

A needle 28 is supported upon the opposite end of shaft 14, the shaft being bored to receive the shank of the needle and provided with a set screw 30 for retaining the needle. The needle may have one or more points, each constituting in effect a separate needle 28A, 28B, 28C (FIG. 6), each point being provided with a notch 32. Shaft 14 of the plunger is provided with a flat 34 at its upper end cooperating with a corresponding flat in the bore of bearing 16 to maintain a predetermined orientation of the needle notch, as will be seen hereinafter.

Extending from the end of sleeve 10 adjacent to needle 28 is a hopper 36, which in the preferred form shown is an elongated tube. The round cross-section of the tube, which prevails over most of its length, merges into a V-shaped cross-section at the junction with the sleeve 10, as shown in FIGS. 2 and 4. The hopper is bowed away from the sleeve 10. At the vertex of the V-shaped cross-section of the hopper, in alignment with the needle 28, the hopper is provided with an outlet opening 38, preferably a notch which extends along a portion of the side walls of the hopper as shown in FIG. 4. The rest position of the tip of the needle 28 is preferably just above the junction of sleeve 10 and hopper 36, as shown in FIG. 3.

To load the hopper, a tress or bundle of hair H or other filaments is inserted through the circular opening 40 at one end of the hopper until the hair protrudes from the V-shaped opening 42 at the other end of the hopper as shown in FIG. 1. In the making of hairpieces in accordance with the invention it is preferred that the hairs of the bundle be oriented in the same way, that is, with the roots at the same end. When the hopper is filled, an inch or so of the root end may protrude from opening 42 as shown in FIG. 1.

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The device of the invention may be readily held in the hand of the operator, as with the fingers and thumbs surrounding the hopper 36 and the sleeve 10 and with the forefinger placed upon the knob 26. With outlet opening 38 positioned against a suitable base (as will be described hereinafter), and with sleeve 10 perpendicular to the base or at another appropriate angle, when the plunger 12 is depressed, the needle 28 will pass through the hopper, and the notch 32, which is oriented so as to embrace a hair, will engage a hair from the bundle in the hopper and will press the same out of the opening 38, forming the hair into a loop L and pressing the loop into the base 44 as shown in FIG. 5. When the plunger is released, the needle will withdraw from the loop, and when the device is moved away from the base, the hair will remain inserted in the base. Because of the natural resiliency of the hair and the curvature imparted by the hopper 36, the hairs are urged toward the vertex of the hopper, assisted by the V-shaped cross-section, in a smooth feeding action which avoids tangling.

The notch 32 is preferably dimensioned to permit engagement of only one hair at a time, but larger notches may be employed to engage several hairs at a time. When multiple needles are utilized, as shown in FIG. 6, each needle may engage one or more hairs and press the same into the base, whereby several hairs may be inserted for each stroke of the plunger.

The device of the invention may be moved from place to place along the base and the plunger reciprocated repetitively to insert hair over the entire area of the base. The density of the hair depends upon the number of strokes of the plunger allocated to each region of the base. The extension of notch 38 along the sides of the V-shaped cross-section of the hopper not only permits adequate clearance for multiple needles, but also provides sufficient space for repetitive insertion of hair at substantially the same location of the base without jamming of the device and without lifting the device away from the base.

The invention permits easy insertion of hair at critical points of the hairpiece, as at the edges or at cowlicks, and maintains a desired direction of hair lie to achieve a natural appearance. It is possible to insert hairs closer to the root end than has been practical before. Short hair is readily handled, a task which has been particularly difficult. Hair inserted in accordance with the invention will not mat or tangle when the hairpiece is complete.

The base per se does not constitute the present invention. Any conventional base capable of retaining inserted hairs, such as the type widely employed in the wig making art may be utilized. The base may be formed of single or multiple layers of plastic material, such as PVC and/or silicone rubber and may incorporate mesh layers. The conventional plastic or rubber bases are thin enough to be readily pierced by the hair-inserting needle and are resilient enough so that the hole formed by the needle tends to close around the hair loop when the needle is withdrawn. Permanent locking of the hair in the base may be accomplished by the application of adhesive to the loops or by curing of the base materials. Lace or edging may be attached to the margins of the base in accordance with the usual techniques.

While a preferred embodiment of the invention has been shown and described, it will be apparent to those skilled in the art that changes can be made in this embodiment with-

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out departing from the principles and spirit of the invention, the scope of which is defined in the appended claims. For example, the plunger may be driven electrically or pneumatically.

The invention claimed is:

1. A device for implanting filaments such as human hair in a base, comprising a frame having a plunger supported for reciprocation thereon, said plunger having a needle at one end thereof provided with means for engaging and moving a filament, and a hopper extending from said frame for receiving a bundle of filaments therein with the filaments lying in the path of said needle, said hopper having an opening for passing said needle and a filament engaged thereby, said hopper comprising an elongated tube, said needle being arranged to enter such tube at one side thereof, engage a filament, and move the filament through said opening at the opposite side of said tube to form a loop in said filament.

2. The device of claim 1, said frame comprising a sleeve joined to one end of said tube, said tube being bowed away from said sleeve to form a corresponding bowed filament configuration.

3. The device of claim 2, said tube having a substantially V-shaped cross-section in the vicinity of said opening for funneling bowed filaments towards said opening.

4. The device of claim 3, said opening comprising a notch at the vertex of said V-shaped cross-section extending partially along the sides thereof.

5. The device of claim 1, said plunger having a bias spring for urging said needle away from said hopper and having a portion exposed for finger actuation to move said needle through said hopper.

6. The device of claim 1, said needle having a notch oriented to embrace a filament in said hopper.

7. The device of claim 1, said plunger having a plurality of said needles for engaging a plurality of filaments simultaneously, said opening being wide enough to pass all of said needles.

8. A method of implanting human hair and the like in a base member, which comprises supporting a bundle of said hair in a hopper curved to urge the hair toward one side thereof, and passing a notched needle transversely through the hopper from the opposite side thereof to engage a hair and then to press the engaged hair from said one side of the hopper and into said base member while forming the engaged hair into a loop.

9. A method as set forth in claim 8, wherein said bundle of hair is supported in a hopper shaped to funnel the hair toward said one side and wherein said needle is engaged with the hair adjacent to one end of the hair.

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