

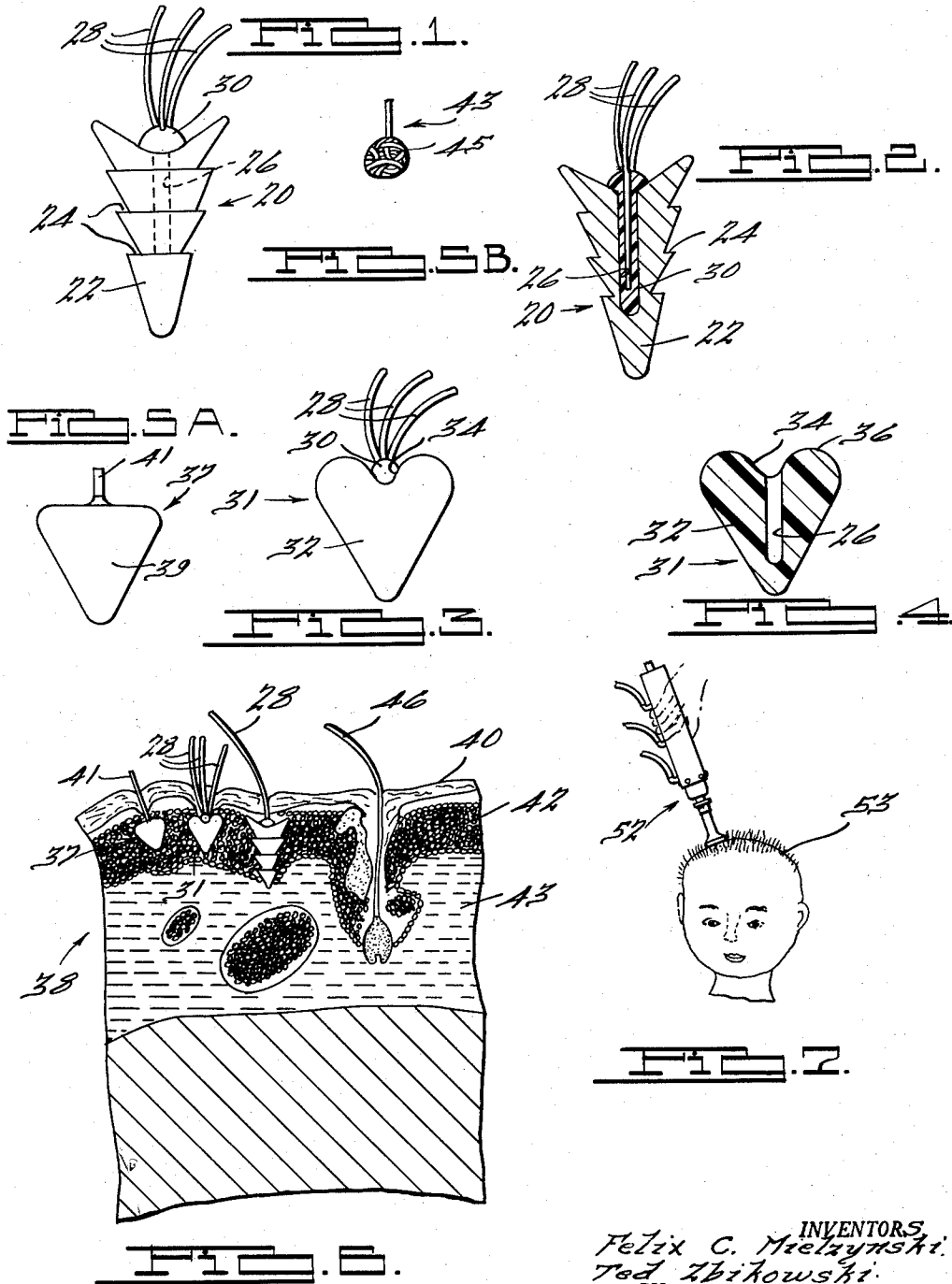
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F. C. MIELZYNSKI ET AL

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HAIR DARTS FOR IMPLANTING IN LIVE OR ARTIFICIAL MEDIA

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INVENTORS
Felix C. Mielzynski
Ted Zbikowski

BY

Harnes, Dickel & Perce.
ATTORNEYS.

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HAIR DARTS FOR IMPLANTING IN LIVE
OR ARTIFICIAL MEDIA

Felix C. Mielzynski, 78 W. Ferry, Apt. 28, Detroit, Mich.,
and Ted Zbikowski, 12084 Lumpkin St., Hamtramck,
Mich.

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1 Claim. (Cl. 3—1)

This invention pertains to improved hair darts which may be implanted in an embedding medium such as a bald pate or a doll's head, and to improved methods of and apparatus for implanting such darts.

Large sums are spent on the purchase and fitting of wigs, transformations and the like in an effort to avoid the effects of baldness. Hair pieces are often uncomfortable and troublesome, and frequently cause embarrassment to their wearers, especially if they are not meticulously made and carefully fitted. The present invention pertains to a method of permanently securing individual hairs, which may be either natural human hair or synthetic, in a person's scalp in such a manner that both from the standpoint of external appearance and comfort, the hair is substantially indistinguishable from naturally growing hair. The practice of the invention is also applicable to implanting hair in other mediums such as upon dolls and manikins to provide a permanent, realistic and natural appearing hair mass.

One important object of the present invention is to improve methods of implanting hair.

Another object is to provide improved methods of implanting hair in an embedding medium such as a human scalp or a doll's skin.

Another object is to provide improved means to secure or to anchor hair implanted in an embedding medium.

Another object is to provide an improved hair dart including an anchor portion in which individual hairs are secured and which is highly compatible with living body tissue.

These and other objects are accomplished according to the present invention by the provision of a hair dart having a filamentary portion, which may be of either natural or artificial hair, and which is secured to a relatively large, bulbous anchor portion made of a body tissue compatible material. One or more filaments are securely attached to the anchor portion, being either formed integrally therewith or bonded thereto. The dart may be implanted in an embedding medium such as a human scalp with the filament, or filaments protruding through the scalp similarly to naturally growing hair. Due to its tissue compatibility, the dart may be left in the scalp permanently without ill effect. The darts may be implanted in profusion over an area as desired to produce a complete head of hair of natural appearance.

The method of the present invention pertaining to the implantation of such hair darts comprises first opening a dart-receiving cavity in a resilient embedding medium, and then while maintaining the cavity in an open condition, floating the dart into the cavity upon a stream of air. After the dart is seated, the walls of the cavity are released without disturbing the dart to permit the cavity to close and the embedding medium to contract and to grasp the anchor portion of the dart. Preferred apparatus for accomplishing the method of the present invention includes a triple action pneumatic gun having a split needle which is first pneumatically driven, while closed, into an embedding medium, and then wedged open to form a cavity in the medium. After the split needle is opened and the cavity formed, a hair dart

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according to the invention is floated upon a stream of air into the cavity, and the needle is then withdrawn in its open position without disturbing the dart, allowing the embedding medium to close about the dart to hold it firmly in place.

The invention will be described in greater detail in connection with the accompanying drawings of which: FIGURE 1 is an elevational view of a hair dart according to one embodiment of the instant invention;

FIG. 2 is a vertical, cross-sectional view of the hair dart shown in FIG. 1;

FIG. 3 is an elevational view of a hair dart according to a second embodiment of the invention;

FIG. 4 is a vertical, cross-sectional view of the anchor portion of the hair dart shown in FIG. 3;

FIG. 5a is an elevational view of a hair dart according to a third embodiment of the invention;

FIG. 5b is an elevational view of a hair dart according to still another embodiment of the invention;

FIG. 6 is a fragmentary, schematic, cross-sectional representation of a human scalp, showing both a natural hair growing therefrom, and several hair darts according to the invention implanted therein; and

FIG. 7 is a perspective view of a doll's head during that portion of its manufacture in which hair is being implanted by a pneumatic gun according to the present invention.

FIGS. 1 and 2 illustrate one type of hair dart according to the present invention. This dart, generally designated 20, includes an anchor portion 22 of generally conical shape and having a series of axially spaced, annular shoulder portions, or ribs 24 which act as barbs when the dart is implanted in an embedding medium, and resist withdrawal of the dart from the medium.

When intended for use in live human or animal skin, this anchor 22 is made of a tissue compatible material such as Vitallium, a metallic alloy of cobalt, chromium, and molybdenum. Alternatively, the anchor 22 may be of a synthetic resin, preferably polyethylene, or a low molecular weight polymer of methylmethacrylate having a low residual monomer content. These materials, Vitallium, polyethylene and polymethylmethacrylate, are known for their advantageous body tissue compatibility. If the dart 20 is to be used in inanimate matter, then, of course, the selection of the anchor material is not critical and may be based on considerations such as cost and shaping characteristics.

The anchor 22 is provided with a central, axial bore 26, extending partially therethrough and opening at the wide end thereof. This bore 26 is of a size to receive one or more human hairs 28 together with a small quantity of cement 30 or other binding material. To produce a natural appearance it is preferred to use darts having single hairs cemented therein in the areas of greatest exposure and visibility such as the margins of the hair, i.e., along the line of a part, and along the "hair line" at the top of the forehead. A few millimeters back from the margins, however, the scalp is hidden by the hair itself so that the hairs may be planted in small clumps, or clusters, each dart holding a group of as many as three or even ten individual hairs.

Any desired cementitious material may be used to secure the hairs 28 in the anchor portions 22. Preferably, however, because some of the cement may contact the scalp tissue, it is preferred to use a tissue compatible cement such as a solution of polymethylmethacrylate in a suitable volatile solvent. The ends of the hair or hairs 28 may be first dipped into a mass of the cementing material and withdrawn therefrom with a small portion of the cement adhering to them. They may then be inserted into the bores 26 of the darts and permanently secured therein by setting of the cement.

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A hair dart 31 according to a second embodiment of the present invention is illustrated in FIGS. 3 and 4 and comprises an anchor portion 32 of conical shape, in the base of which there is formed a generally conical, throat-like cavity 34. This throat-like cavity 34 is encircled by an annular shoulder portion 36 which extends around the base of the anchor portion 32, and which functions to retain the hair dart 31 in an embedding medium in much the same manner as the annular shoulders 24 function to retain the hair dart 20 as heretofore described in connection with FIGS. 1 and 2. As shown, the anchor portion 32 is made of a tissue compatible plastic material, preferably polymethylmethacrylate, and includes a central bore 26 adapted to receive one or more hairs 28 which may be secured therein by a cement 30 in like manner to the securing of the hairs 28 in the anchor portion 22.

A hair dart 37 according to a third embodiment of the invention is shown in FIG. 5a and comprises a single, unitary, molded structure of a synthetic resin such as nylon or polymethylmethacrylate. It includes a bulbous anchor portion 39, and a filamentary, artificial hair portion 41 formed integrally therewith and extending therefrom. Hair darts of this type are particularly preferred for use upon dolls' heads, manikins, and the like, because of their relatively low cost.

Another type of hair dart 43 embodying the invention is shown in FIG. 5b. This hair dart 43 is formed of a single filament, knotted at one end to form a bulbous, relatively large anchor portion 45, which functions to retain the dart in place in an elastic embedding medium. When this dart 43 is intended for implantation in a human scalp, it is preferably made of natural human hair for maximum tissue compatibility. The hair dart 43 may, alternatively, comprise several filaments, or hairs, all knotted together at one end and forming a "clump" type hair dart.

FIG. 6 illustrates the appearance of the hair darts 20, 31 and 37 when embedded in a human scalp 4. The anchors 22, 32, and 39 may vary from about 1/2 up to about 1 1/2 or so millimeters in length, and preferably are less than about 1 millimeter in diameter. They are planted below the epidermis 40 of the scalp, preferably in the corium 42, and may, if desired, penetrate into the subcutaneous fatty tissue 43. The hairs 28 extend from the epidermis 40 and project above the scalp, and in external appearance are indistinguishable from natural hairs such as the hair 46, illustratively shown.

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The practice of the invention is also advantageous for implanting hair on dolls' heads and the like, and is not limited to use in connection with living tissue. Hair darts according to the invention provide improved anchoring means for securing hair in any resilient embedding medium, and they may be secured in such a medium simply and readily without the subsequent application of adhesives or the use of difficult weaving techniques.

Hair darts according to the invention may be inserted into an embedding medium by any desired means, but preferably are floated into preformed cavities in the medium upon an air stream. This method not only facilitates control of the force with which the darts impinge upon the medium, but also facilitates handling of the darts and insures that they may all be implanted at a relatively uniform depth.

A preferred apparatus for implanting hair darts according to the present invention as shown in FIGURE 7 comprises a pneumatic gun 52 used for implanting hair in a doll's scalp 53.

What is claimed is:

A hair dart for implantation in an embedding medium comprising a bulbous anchor portion and a hair secured to said anchor portion and extending therefrom, said anchor portion consisting essentially of a body tissue compatible metallic alloy and including axially spaced circumferential serrations to facilitate retention of said dart by said embedding medium.

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