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(71) Applicant(s)
ANISA INTERNATIONAL, INC.

(72) Inventor(s)
Piao, Xianzhen

(74) Agent / Attorney
Griffith Hack, GPO Box 1285, Melbourne, VIC, 3001

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(71) Applicant *(for all designated States except US)*: **ANISA INTERNATIONAL, INC.** [US/US]; 55 Peachtree Park Drive, NE, Atlanta, GA 30309 (US).

(72) Inventor; and
(75) Inventor/Applicant *(for US only)*: **PIAO, Xianzhen** [KR/CN]; 18 Street, Yuangliuqing, Xiqing District, Tianjin 300380 (CN).

(74) Agents: **MONACO, Daniel, A.** et al.; Drinker Biddle & Reath LLP, One Logan Square, 18th And Cherry Streets, Philadelphia, PA 19103-6996 (US).

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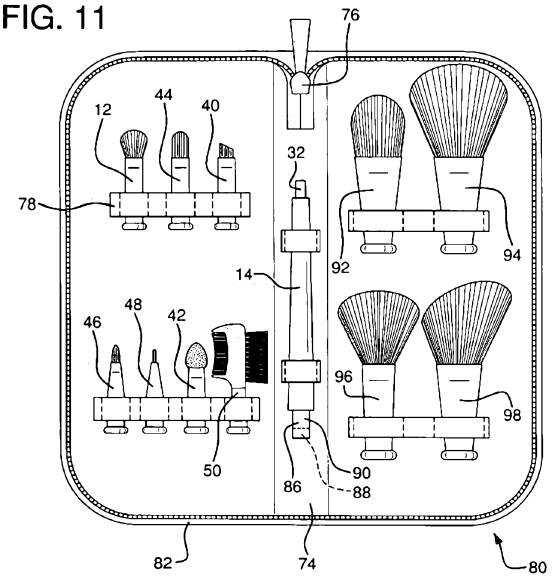
FIG. 11



(57) Abstract: One embodiment of a head-switchable brush, comprises brush heads with ferrules, and a brush handle. The ferrule has the head at one end and the handle at the other end. Heads can be mounted on two different locations on the handle. There is a piece of magnet attached to the brush handle and ferrule respectively where the two parts connect. The brush head can be switched and assembled with the handle easily whenever needed. The ferrule can be kept firmly on the handle by the action of the magnet inside. The head- switchable function of this brush kit can greatly enlarge the scope for use of the brush and also avoid the waste of material since this brush kit has one handle only but with various brush heads.

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BRUSHES WITH INTERCHANGEABLE HEADS

CROSS REFERENCE TO RELATED APPLICATION

[0001] This application claims benefit of United States Patent Application No. 11/975,808, filed October 22, 2007, the entirety of which is incorporated herein by reference.

BACKGROUND

[0002] Cosmetic brushes are the main applicators for people applying makeup. Different sorts of makeup require different brushes such as a lip brush, an eye shadow brush etc. In cosmetic applicators currently commercially available, one brush has only one function, so the user needs to buy a set of brushes to achieve a satisfactory makeup. A brush head on a normal brush can easily be damaged by frequent use, and may need to be replaced. However, it is wasteful to throw the brush handle and ferrule away when only the head of the brush is damaged.

[0003] To solve the above problem, a brush with a separate head and handle is currently available. However, the ferrule and handle are connected by a screw thread, and the brush has the following disadvantages. First, the connection is not very effective in insuring that the head stays firmly on the handle. Second, it takes time to assemble the brush handle into the ferrule when using. As a result, the above brush is not convenient enough for people's use in applying makeup.

SUMMARY

[0004] The present invention provides a head-switchable cosmetic applicator, comprising:

a head assembly including a ferrule having: (a) a first generally planar mating surface formed at least in part by a first magnetic element and (b) one of a recess or a projection; and

a handle including: (a) a second generally planar mating surface formed at least in part by a second magnetic element and (b) the other of the recess or the projection;

wherein the recess is non-magnetic and capable of receiving the projection;

wherein at least one of the first and second magnetic elements is a magnet, and the head assembly is releasably attachable to the handle by magnetic attraction between the first and second magnetic elements creating a pulling force between about 0.4 lbf to about 1.2 lbf when the head assembly and the handle are attached;

wherein the part of the first generally planar mating surface formed by the first magnetic element and the part of the second generally planar mating surface formed by the second magnetic element are in flush alignment when the head assembly and the handle are attached; and

wherein the projection and the recess are both elongate and have longitudinal axes that substantially align with each other when the head assembly and the handle are attached and said recess is receiving said projection,

wherein said projection defines a projection transverse cross section, said projection transverse cross section being taken substantially perpendicular to the longitudinal axis of said projection, and also taken along at least one portion of the length of said projection,

wherein said recess defines a recess transverse cross section, said recess transverse cross section being taken substantially perpendicular to the longitudinal axis of said recess, and also taken along at least one portion of the length of said recess,

wherein said projection transverse cross section and said recess transverse cross sections are both in the same plane when said recess is receiving said projection, and are shaped so as to interfere with each other so as to restrain the head assembly from rotation relative to the handle about the substantially aligned axes.

[0004A] The present invention also provides a head-switchable cosmetic applicator, comprising:

a male component having: (a) a non-magnetic projection on a distal end of the male component and (b) a first magnetic element forming at least part of a distal-most generally planar surface of the male component; and

a female component having: (a) a non-magnetic recess adapted to receive the projection in a forward end of the female component to form a mated configuration with the male component and (b) a second magnetic element positioned to be in flush alignment with the first magnetic element in the mated configuration,

wherein one of the male component or the female component is a head assembly including a ferrule and the other of the male component or the female component is a handle;

wherein at least one of the first and second magnetic elements is a magnet, and the head assembly is releasably attachable to the handle by magnetic attraction between the first and second magnetic elements creating a pulling force between about 0.4 lbf to about 1.2 lbf in the mated configuration;

wherein the projection and the recess are both elongate and have longitudinal axes that substantially align with each other when the head assembly and the handle are attached and said recess is receiving said projection,

wherein said projection defines a projection transverse cross section, said projection transverse cross section being taken substantially perpendicular to the longitudinal axis of said projection, and also taken along at least one portion of the length of said projection,

wherein said recess defines a recess transverse cross section, said recess transverse cross section being taken substantially perpendicular to the longitudinal axis of said recess, and also taken along at least one portion of the length of said recess,

wherein said projection transverse cross section and said recess transverse cross sections are both in the same plane when said recess is receiving said projection, and are shaped so as to interfere with each other so as to restrain the head assembly from rotation relative to the handle about the substantially aligned axes.

[0004B] The present invention further provides a cosmetic applicator assembly comprising a male component and a female component releasably attachable to one another, wherein:

said female component includes a first magnetic element and a recess defining an open end thereof, and the male component includes a second magnetic element and a projection defining a distal end, the projection being insertable into the recess; and

an applicator element positioned on the male component or the female component;

wherein the first and second magnetic elements are positioned so that they hold the female and male components releasably together when the projection is inserted into the recess;

wherein the projection and the recess are both elongate and have longitudinal axes that substantially align with each other when the head assembly and the handle are attached and said recess is receiving said projection,

wherein said projection defines a projection transverse cross section, said projection transverse cross section being taken substantially perpendicular to the longitudinal axis of said projection, and also taken along at least one portion of the length of said projection,

wherein said recess defines a recess transverse cross section, said recess transverse cross section being taken substantially perpendicular to the longitudinal axis of said recess, and also taken along at least one portion of the length of said recess,

wherein said projection transverse cross section and said recess transverse cross sections are both in the same plane when said recess is receiving said projection, and are shaped so as to interfere with each other so as to restrain the head assembly from rotation relative to the handle about the substantially aligned axes, and

wherein the pulling force between said first magnetic element and said second magnetic element when said head assembly and said handle are attached and said recess is receiving said projection is between about 0.4 lbf to about 1.2 lbf.

[0004C] The present invention additionally provides a head-switchable cosmetic applicator, comprising:

a head assembly including a ferrule having: (a) a first generally planar mating surface formed at least in part by a first magnetic element and (b) one of a recess or a projection; and

a handle including: (a) a second generally planar mating surface formed at least in part by a second magnetic element and (b) the other of the recess or the projection;

wherein the recess is non-magnetic and capable of receiving the projection;

wherein at least one of the first and second magnetic elements is a magnet, and the head assembly is releasably attachable to the handle by magnetic attraction between the first and second magnetic elements creating a pulling force between about 0.4 lbf to about 1.2 lbf when the head assembly and the handle are attached;

wherein the part of the first generally planar mating surface formed by the first magnetic element and the part of the second generally planar mating surface formed by the second magnetic element are in flush alignment when the head assembly and the handle are attached; wherein the projection and the recess have longitudinal axes that align when the head assembly and the handle are attached, wherein one of the projection and the recess comprises at least one axially extending groove, and wherein the other of the projection and the recess comprises at least one protuberance positioned to engage in the at least one groove to restrain the head assembly from rotation relative to the handle about the aligned axes.

[0004D] The present invention also provides a head-switchable cosmetic applicator, comprising:

a male component having: (a) a non-magnetic projection on a distal end of the male component and (b) a first magnetic element forming at least part of a distal-most generally planar surface of the male component; and

a female component having: (a) a non-magnetic recess adapted to receive the projection in a forward end of the female component to form a mated configuration with the male component and (b) a second magnetic element positioned to be in flush alignment with the first magnetic element in the mated configuration;

wherein one of the male component and the female component is a head assembly including a ferrule and the other of the male component or the female component is a handle; and

wherein at least one of the first and second magnetic elements is a magnet, and the head assembly is releasably attachable to the handle by magnetic attraction between the first and second magnetic elements creating a pulling force between about 0.4 lbf to about 1.2 lbf in the mated configuration; wherein one of the projection or the recess comprises one or more protuberances positioned circumferentially with respect to a longitudinal axis and spaced inwardly from the distal end of the projection or the open end of the recess, respectively; and

wherein the other of the projection or the recess comprises one or more grooves extending proximally from adjacent the distal end of the projection or from adjacent the open end of the recess, respectively

the projection being insertable into the recess a first distance until the one or more protuberances meet a non-grooved portion of the open end of the recess or a non-grooved portion of the projection if the protuberances and grooves are not aligned, and being insertable farther into the recess upon rotation of one or both of the components until the one or more protuberances align with corresponding one or more grooves, the male and female components being restrained from rotating about the longitudinal axis relative to one another when the one or more protuberances engage the one or more grooves.

[0004E] The present invention further provides a cosmetic applicator assembly comprising a male component and a female component releasably attachable to one another, wherein:

said female component includes a first magnetic element and a recess defining an open end thereof, and the male component includes a second magnetic element and a projection defining a distal end, the projection being insertable into the recess; and

an applicator element positioned on the male component or the female component;

wherein the first and second magnetic elements are positioned so that they hold the female and male components releasably together when the projection is inserted into the recess;

wherein one of the projection or the recess comprises one or more protuberances positioned circumferentially with respect to a longitudinal axis and spaced inwardly from the distal end of the projection or the open end of the recess, respectively; and

wherein the other of the projection or the recess comprises one or more grooves extending proximally from adjacent the distal end of the projection or from adjacent the open end of the recess, respectively,

the projection being insertable into the recess a first distance until the one or more protuberances meet a non-grooved portion of the open end of the recess or a non-grooved portion of the projection if the protuberances and grooves are not aligned, and being insertable farther into the recess upon rotation of one or both of the components until the one or more protuberances align with corresponding one or more grooves, the male and female components being restrained from rotating about the longitudinal axis relative to one another when the one or more protuberances engage the one or more grooves;

wherein the pulling force between said first magnetic element and said second magnetic element when said arrangement of one or more protuberances is engaged by said arrangement of one or more grooves is between about 0.4 lbf to about 1.2 lbf.

[0004F] The present invention additionally provides a method of equipping a first component including a projection with a removable attachment including a recess, comprising the steps of:

inserting the projection into the recess;

after partially inserting the projection into the recess, aligning an arrangement of protuberances positioned circumferentially around a longitudinal axis of and spaced inwardly from an end of the projection or the recess with an arrangement of grooves formed in the recess or on the projection, said protuberances following said grooves to guide said projection to a non-rotational seated position within the recess; and releasably maintaining said seated position by way of a pulling force in the range

of about 0.4 lbf to about 1.2 lbf between a primary magnetic element in the recess and a secondary magnetic element associated with the projection.

[0004G] Some embodiments of the present invention may provide a brush kit having interchangeable heads that can provide a more reliable connection of the ferrule to the handle. In addition, such a brush kit may serve various functions in applying makeup by providing various brush heads that are easily assembled onto the brush handle with a magnet.

[0005] In one embodiment of the invention, a brush kit comprises first and second brush heads, each with a ferrule, and a brush handle. The brush is assembled with the head at one end of the ferrule, and the handle at the other end of the ferrule. There is a piece of magnet attached to at least one of the brush handle and the ferrule where the two parts connect. The first and second heads attach to different ends of the handle.

[0006] The brush head may be inserted into a tubular handle. Alternatively, the brush handle inserted into a tubular ferrule attached to the brush head.

[0007] By providing magnets in both the handle and the ferrule, or a magnet in one and a piece of magnetizable material in the other, when the handle is inserted into the ferrule the handle can stay firmly engaged with the ferrule. This simple structure makes the brush easy to assemble, and thus saves people's time in brush head assembling.

[0008] A single brush handle can be assembled with various brush heads. Once the brush head is damaged, the user can just change the brush head instead of throwing the whole brush away.

[0009] The kit may comprise different handles that can be used with a single head, or different heads that can be used with a single handle. By interchanging different heads or handles, the user can be provided with the functionality of several different brushes without the cost and size of so many brushes. For example, a single handle with various brush heads can be put into a small cosmetic box or pouch to avoid contamination of the brush heads while at the same time providing a brush set that is convenient to take when traveling. Because heads can be attached to both ends of the handle, a wide range of sizes of head can easily be provided, with a larger connection at one end of the handle for larger heads, and a smaller connection at the other end of the handle for smaller heads.

[0010] It is to be understood that both the foregoing general description and the following detailed description are exemplary and explanatory and are intended to provide further explanation of the invention as claimed.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] The accompanying drawings, which are included to provide a further understanding of the invention and are incorporated in and constitute a part of this specification, illustrate embodiments of the invention and together with the description serve to explain the principles of the invention.

[0012] In the drawings:

[0013] FIG. 1 is a front view of an assembled brush.

[0014] FIG. 2 is a cutaway view of the brush shown in FIG. 1.

[0015] FIG. 3 is a cutaway view of a brush head and ferrule forming part of the brush shown in FIG. 1 .

[0016] FIG. 4 is a cutaway view of a brush handle forming part of the brush shown in FIG. 1.

[0017] FIG. 5 to FIG. 10 are views similar to FIG. 3 showing alternative forms of brush heads usable with the handle shown in FIG. 4.

[0018] FIG. 11 is a perspective view of a kit of brushes in a wallet.

DETAILED DESCRIPTION OF THE DRAWINGS

[0019] Reference will now be made in detail to various embodiments of the present invention, examples of which are illustrated in the accompanying drawings. The embodiments are described by way of explanation, and not by way of limitation.

[0020] Referring initially to FIGS. 1 to 4, one embodiment of a head-switchable brush indicated generally by the reference numeral 10 comprises a brush head assembly 12 and a brush handle 14. The brush head assembly 12 comprises a head 16 comprising bristles or the like, a ferrule 18, and an insert sleeve 20. The sleeve 20 is open at the end 22 facing away from the head 16, and a first magnet 24 is mounted inside the sleeve, a short distance from the open end. In the embodiment, the ferrule 18 holds the bristles 16 in a conventional manner, and is bonded to the exterior of the sleeve 20 so that the head 16, ferrule 18, sleeve 20, and second magnet 24 form, from the user's point of view, a permanent assembly 12.

[0021] In the embodiment, the ferrule 18 is formed from anodized aluminum or other material with a decorative appearance. The insert sleeve 20 is formed from ABS or other moldable plastic. The ferrule 18 may cover the entire exterior of the sleeve 20

but in the embodiment shown in FIG. 1, the rim 26 of the sleeve 20 is left visible to form a decorative feature. The rim 26 projects to form a bead against which the ferrule 18 seats, and covers the edge of the ferrule, which may be thin and sharp. The bead 26 may also assist in retaining the brush head assembly 12 in a pouch or other container, reducing damage to the head 16 in transport, and reducing the risk of contamination from contact between heads 16 used for different cosmetics. Different brushes 12 in a set may be made with sleeves 20 of different colors. The visible rims 26 of the sleeves 20 may then assist in distinguishing different brushes in a kit, as well as forming a decorative feature.

[0022] One or more shallow grooves 28 may be molded into the inner surface of the sleeve 20, extending for a short distance starting at the open end 22. In an embodiment, three grooves 28 are provided, evenly spaced around the circumference of the open end 22.

[0023] Referring now especially to FIG. 4, the handle 14 comprises a handle body 30 that is sized and shaped for convenient holding by the user. As shown in the drawings, the handle body, is cylindrical, about 100 mm (4") long and about 8 mm (1/3") in diameter, but other shapes and sizes may be used. At one end, the handle body 30 has a narrower peg 32 projecting. The handle body 30 may be molded in a single piece including the peg 32. The tip of the peg 32 carries a second magnet 34, which is held in place by a cap 36 of aluminum or other non-magnetic material that fits over the peg 32. The cap 36 may have a closed end that conceals the magnet 34, or may have an open end surrounded by a lip that wraps over the end of the magnet 34 sufficiently to retain the magnet.

[0024] The peg 32, including the cap 36, is dimensioned so as to fit snugly into the interior of the sleeve 20, and so that the tip end of the cap 36 bottoms against the first magnet 24 just before the bead 26 bottoms against a shoulder 38 formed between the peg 32 and the handle body 30. The first and second magnets 24, 34 are then close together, separated only by the thickness of the cap 36, which may be as thin as 0.25 mm (0.01") or even less. The magnets are oriented so that they are attracted to each other in that position. For example, the magnets may both be magnetized with their polar directions in the same direction parallel to the axes of the sleeve 20 and the peg 32.

[0025] As will be explained below with reference to FIG. 11, a second peg 86 of a different size may be provided at the other end of the handle 14. The second peg 86 may be of similar construction and function to the peg 32 and, in the interests of conciseness, is not shown in, or described with reference to, FIGS. 1-4.

[0026] One or more projecting dots 38, matching in number and spacing the grooves 28 in the head 12, may be formed in the side wall of the cap 36. The dots 38 and grooves 28 are dimensioned so that when the brush head assembly 12 is mounted on the handle 14 the dots 38 seat in the grooves 28, and restrain the brush head assembly 12 from rotating about the longitudinal axis of the sleeve 20 and the peg 32. This is especially useful with (see FIG. 10) a brush head assembly 50 (see FIG. 10) that is designed to be used with a sideways motion. The mouths of the grooves 28 may be widened to form funnels that guide the dots 38 into the grooves 28, but that is believed not to be necessary. In a practical embodiment, it has been found that either the user rotates the head assembly 12 and the handle 14 until the grooves 28 align with the dots 38, or the user forces the dots 38 onto the lands between the grooves 28. In the latter case, either the dots create an interference fit sufficient to restrain the head assembly 12 against rotation, or the head assembly 12 rotates until the dots 38 snap into the grooves 28.

[0027] Referring to FIGS. 5 to 10, different head assemblies 12, 40, 42, 44, 46, 48, 50, 92, 94, 96, 98 may be provided for different purposes within the overall process of applying make-up. The brushes may have different heads 16, 50, 52, 54, 56, 58, 60, etc., as shown. Suitable heads may include brush heads of various shapes, including those shown at 16 in FIG. 3, 50, 54, 56, and 58 in FIGS. 5 to 10 and on heads, 92, 94, 96, and 98 in FIG. 11, a sponge applicator 52, a brush and comb 60, and other applicators or tools used in the process of applying make-up or otherwise attending to one's personal appearance.

[0028] Alternatively, some or all of the head assemblies 12, etc. may have substantially identical heads, but may be used for applying different cosmetic materials, including cosmetic materials of different colors, to avoid contamination of the materials by using the same brush or other applicator for more than one material. Alternatively, some of the brush head assemblies 12 may be of similar shapes but of different

materials, for example, one brush may be stiffer than another. In these cases, differently colored rims 26 may be particularly helpful to the user.

[0029] Each of the head assemblies 40, 42, 44, 46, 48, 50 has a sleeve 20 and a first magnet 24 identical to those of the head assembly 12.

[0030] Referring now to FIG. 11, an embodiment of a cosmetic application kit comprises a wallet or pouch 82. As shown in FIG. 11, the wallet 82 opens at a central spine 74, and can be closed by a zip-fastener 76 along the edges. However, other configurations, including configurations known in the art, may be used.

[0031] The wallet 82 includes a handle 14 that is tapered from end to end. The handle 14 has a peg 32 with a magnet 34 and cap 36, similar to those shown in FIG. 4, at the narrow end. At the wider end, the handle 14 has a peg 86, with a cap 88 and magnet 90, of similar construction but larger size. As shown in FIG. 11, the handle 14 is positioned along the spine of the wallet 82. On one side of the spine, the wallet 82 contains a set of head assemblies that may be identical to the set of head assemblies 40, 42, 44, 12, 46, 48, 50 shown in FIGS. 3 and 5-10, mounted in two rows. These head assemblies are sized to fit onto the peg 32, as described with reference to FIG. 11. On the other side of the spine, the wallet 82 contains a set of head assemblies 92, 94, 96, 98 that are similar in construction, but are sized to fit onto the larger peg 86.

[0032] The head assemblies 40, etc. are thus well spaced, allowing easy access when the wallet 72 is open, while allowing a very compact arrangement when the wallet is closed, because the head assemblies in each side fit into empty space in the other side.

[0033] As shown in FIG. 11, the handle 14 and the heads 40, etc. are held in place with elastic straps 78. As may be seen in FIG. 11, the beads 36 engage the straps 78, retaining the head assemblies securely and stably in position, and reducing any tendency for adjacent heads 40, etc. to rub against one another and contaminate each other with different cosmetic materials.

[0034] In use, the user takes the handle 14 from the wallet 82. The user selects one of the head assemblies and takes that from the wallet. The user of the kit 80 may choose either a large brush head assembly 92, 94, 96, 98 or a small brush head assembly 40, 42, 44, 12, 46, 48, 50, and mounts the chosen brush head assembly on the appropriate end of the handle 14. The large brush head assemblies are typically used for applying

foundation, blusher, or other cosmetics that cover a comparatively large area, and the small brush head assemblies are typically used for applying cosmetics to smaller areas. The user inserts the peg 32 or 86 of the handle 14 into the open end 22 of the selected head assembly. The thick, rounded bead 26 of the sleeve 20 assists in inserting the peg 32 or 86 into the open end 22. Once the peg 32 or 86 is sufficiently inserted into the sleeve 20, the magnets 24, 34 or 88 attract each other, and pull the head assembly and the handle 14 tightly together. The user then uses the brush 10 with the selected head assembly to apply cosmetics or otherwise tend to his or her personal appearance, including doing so in a known manner. The magnetic connection, unlike a screw connection, does not tend to come loose even if the side of the brush is used in a stroking motion that imposes a turning force on the head.

[0035] When the user has finished using the brush 10, the user can easily remove the head assembly 12, 40, etc. from the handle 14 by a sharp pull, and replace the head assembly in the wallet 82. The user may then select a different head assembly, and use that in the same manner described above, or may replace the handle 14 in the wallet 82 and close the wallet.

[0036] The handle 14 and the heads 12, 40, etc. are held in place with elastic straps 78.

[0037] As an example of suitable dimensions, the peg 32 may be about 5 mm in diameter and 8.5 mm long, measured over the outside of the cap 36. The peg 32 may be tapered so as to be 0.75 mm narrower at the tip than at the base, so as to assist insertion into the ferrule. The dots 38 may be around 0.75 mm high. The recess in the sleeve 20 may be a few tenths of a millimeter wider than the base of the peg 32. The peg 86 may be about 9 mm in diameter and 14 mm long, measured over the outside of the cap 90. The magnetic pulling force between the magnetic elements 24 and 34, when the peg 32 is fully inserted into the head assembly 12, may be around 0.6 lb (2.67 N) in a typical example. Forces within the range of from about 0.4 lbf (1.8 N) to about 1.2 lbf (5.33 N) have been found acceptable. Considerable variation within the acceptable range has been found to be acceptable, both between the brushes of a set and between different sets. For the large brush head assemblies 92, etc., a pulling force in the range of from 0.4 or 0.45 lbf (1.8 or 2 N) to 2 lbf (9N) has been found to be acceptable.

[0038] Various modifications and variations can be made in the present invention without departing from the spirit or scope of the invention. Thus, it is intended that the present invention cover the modifications and variations of this invention provided they come within the scope of the appended claims and their equivalents.

[0039] For example, the head assemblies 12, 40, etc. have been shown as comprising first magnets 24 and the handle has been shown as comprising a second magnet 34. Alternatively, one of the components 24, 34 could be a magnet, and the other of those components could be a piece of magnetizable iron or steel or other magnetizable material. In the embodiment shown in FIG. 11, the single handle 14 may have magnets 34, 88, and the multiple head assemblies 12, 40, etc. may have magnetizable steel disks 24. Alternatively, different configurations may be used for the wide end 88 and 92, etc. from the narrow end 14 and 12, etc., if a stronger magnetic coupling is desired at one end than the other.

[0040] For example, in FIGS. 3 and 5 to 10, the sleeve 20 is shown extending towards the head beyond the first magnet 24. Depending on whether the sleeve 20 is providing reinforcement for the ferrule 18, the sleeve may end at the magnet 24 or may continue towards the head end of the ferrule.

[0041] For example, the kit 80 shown in FIG. 11 has one handle 14 and several head assemblies 12, 40, etc. Alternatively, two or more handles 14, which may be the same or different, may be provided. Alternatively, a single head may be used with different handles, for example, to allow different manners of using the single head.

[0042] The kit 80 has been described primarily as a system to allow interchanging of different heads and handles. Alternatively, or in addition, the brushes described may be used to enable replacement of damaged, worn, or otherwise unsuitable heads without the waste of discarding an entire brush.

[0043] As shown in the drawings, the head 12, etc. has a ferrule 20 with a hollow end 22 that receives a peg 32, 86 on an end of the handle 14. Alternatively, the handle 14 could be provided with a recess that receives a peg on the end of the ferrule 20.

[0044] In the claims which follow and in the preceding description of the invention, except where the context requires otherwise due to express language or necessary implication, the word "comprise" or variations such as "comprises" or "comprising" is used in an inclusive sense, i.e. to specify the presence of the stated features but not to preclude the presence or addition of further features in various embodiments of the invention.

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[0045] It is to be understood that, if any prior art publication is referred to herein, such reference does not constitute an admission that the publication forms a part of the common general knowledge in the art, in Australia or any other country.

What is claimed is:

1. A head-switchable cosmetic applicator, comprising:

a head assembly including a ferrule having: (a) a first generally planar mating surface formed at least in part by a first magnetic element and (b) one of a recess or a projection; and

a handle including: (a) a second generally planar mating surface formed at least in part by a second magnetic element and (b) the other of the recess or the projection;

wherein the recess is non-magnetic and capable of receiving the projection;

wherein at least one of the first and second magnetic elements is a magnet, and the head assembly is releasably attachable to the handle by magnetic attraction between the first and second magnetic elements creating a pulling force between about 0.4 lbf to about 1.2 lbf when the head assembly and the handle are attached;

wherein the part of the first generally planar mating surface formed by the first magnetic element and the part of the second generally planar mating surface formed by the second magnetic element are in flush alignment when the head assembly and the handle are attached; and

wherein the projection and the recess are both elongate and have longitudinal axes that substantially align with each other when the head assembly and the handle are attached and said recess is receiving said projection,

wherein said projection defines a projection transverse cross section, said projection transverse cross section being taken substantially perpendicular to the longitudinal axis of said projection, and also taken along at least one portion of the length of said projection,

wherein said recess defines a recess transverse cross section, said recess transverse cross section being taken substantially perpendicular to the longitudinal axis of said recess, and also taken along at least one portion of the length of said recess,

wherein said projection transverse cross section and said recess transverse cross sections are both in the same plane when said recess is receiving said projection, and are shaped so as to interfere with each other so as to restrain the head assembly from rotation relative to the handle about the substantially aligned axes.

2. A head-switchable cosmetic applicator, comprising:

a male component having: (a) a non-magnetic projection on a distal end of the male component and (b) a first magnetic element forming at least part of a distal-most generally planar surface of the male component; and

a female component having: (a) a non-magnetic recess adapted to receive the projection in a forward end of the female component to form a mated configuration with the male component and (b) a second magnetic element positioned to be in flush alignment with the first magnetic element in the mated configuration,

wherein one of the male component or the female component is a head assembly including a ferrule and the other of the male component or the female component is a handle;

wherein at least one of the first and second magnetic elements is a magnet, and the head assembly is releasably attachable to the handle by magnetic attraction between the first and second magnetic elements creating a pulling force between about 0.4 lbf to about 1.2 lbf in the mated configuration;

wherein the projection and the recess are both elongate and have longitudinal axes that substantially align with each other when the head assembly and the handle are attached and said recess is receiving said projection,

wherein said projection defines a projection transverse cross section, said projection transverse cross section being taken substantially perpendicular to the longitudinal axis of said projection, and also taken along at least one portion of the length of said projection,

wherein said recess defines a recess transverse cross section, said recess transverse cross section being taken substantially perpendicular to the longitudinal axis of said recess, and also taken along at least one portion of the length of said recess,

wherein said projection transverse cross section and said recess transverse cross sections are both in the same plane when said recess is receiving said projection, and are shaped so as to interfere with each other so as to restrain the head assembly from rotation relative to the handle about the substantially aligned axes.

3. A cosmetic applicator assembly comprising a male component and a female component releasably attachable to one another, wherein:

said female component includes a first magnetic element and a recess defining an open end thereof, and the male component includes a second magnetic element and a projection defining a distal end, the projection being insertable into the recess; and

an applicator element positioned on the male component or the female component;

wherein the first and second magnetic elements are positioned so that they hold the female and male components releasably together when the projection is inserted into the recess;

wherein the projection and the recess are both elongate and have longitudinal axes that substantially align with each other when the head assembly and the handle are attached and said recess is receiving said projection,

wherein said projection defines a projection transverse cross section, said projection transverse cross section being taken substantially perpendicular to the longitudinal axis of said projection, and also taken along at least one portion of the length of said projection,

wherein said recess defines a recess transverse cross section, said recess transverse cross section being taken substantially perpendicular to the longitudinal axis of said recess, and also taken along at least one portion of the length of said recess,

wherein said projection transverse cross section and said recess transverse cross sections are both in the same plane when said recess is receiving said projection, and are shaped so as to interfere with each other so as to restrain the head assembly from rotation relative to the handle about the substantially aligned axes, and

wherein the pulling force between said first magnetic element and said second magnetic element when said head assembly and said handle are attached and said recess is receiving said projection is between about 0.4 lbf to about 1.2 lbf.

4. The cosmetic applicator as claimed in any preceding Claim, wherein said periphery of said projection transverse cross section is non-circular.

5. The cosmetic applicator as claimed in any preceding Claim, wherein said periphery of said recess transverse cross section is non-circular.

6. The cosmetic applicator as claimed in any preceding Claim, wherein the outer periphery of said projection transverse cross section includes at least one protuberant

portion which extends further away from said longitudinal axis than at least one other portion of said outer periphery of said projection transverse cross section.

7. The cosmetic applicator as claimed in any preceding Claim, wherein the inner periphery of said recess transverse cross section includes at least one recessed portion which extends closer to said longitudinal axis than at least one other portion of said outer periphery of said projection transverse cross section.

8. The cosmetic applicator as claimed in any preceding Claim, wherein said projection includes a plurality of protuberances.

9. The cosmetic applicator as claimed in any preceding Claim, wherein said recess includes a plurality of grooves.

10. A head-switchable cosmetic applicator, comprising:

a head assembly including a ferrule having: (a) a first generally planar mating surface formed at least in part by a first magnetic element and (b) one of a recess or a projection; and

a handle including: (a) a second generally planar mating surface formed at least in part by a second magnetic element and (b) the other of the recess or the projection;

wherein the recess is non-magnetic and capable of receiving the projection;

wherein at least one of the first and second magnetic elements is a magnet, and the head assembly is releasably attachable to the handle by magnetic attraction between the first and second magnetic elements creating a pulling force between about 0.4 lbf to about 1.2 lbf when the head assembly and the handle are attached;

wherein the part of the first generally planar mating surface formed by the first magnetic element and the part of the second generally planar mating surface formed by the second magnetic element are in flush alignment when the head assembly and the handle are attached; wherein the projection and the recess have longitudinal axes that align when the head assembly and the handle are attached, wherein one of the projection and the recess comprises at least one axially extending groove, and wherein the other of the projection and the recess comprises at least one protuberance positioned to engage in the at least one groove to restrain the head assembly from rotation relative to the handle about the aligned axes.

11. The head-switchable applicator according to Claim 10, wherein one of the first magnetic element or the second magnetic element is on the projection and the other of the first magnetic element or the second magnetic element is in the recess.

12. The head-switchable applicator according to claim 10 or 11, wherein the first and second magnetic elements are both permanent magnets, and are oriented so as to attract one another when the handle and the head assembly are assembled together.

13. A head-switchable cosmetic applicator, comprising:

a male component having: (a) a non-magnetic projection on a distal end of the male component and (b) a first magnetic element forming at least part of a distal-most generally planar surface of the male component; and

a female component having: (a) a non-magnetic recess adapted to receive the projection in a forward end of the female component to form a mated configuration with the male component and (b) a second magnetic element positioned to be in flush alignment with the first magnetic element in the mated configuration;

wherein one of the male component and the female component is a head assembly including a ferrule and the other of the male component or the female component is a handle; and

wherein at least one of the first and second magnetic elements is a magnet, and the head assembly is releasably attachable to the handle by magnetic attraction between the first and second magnetic elements creating a pulling force between about 0.4 lbf to about 1.2 lbf in the mated configuration; wherein one of the projection or the recess comprises one or more protuberances positioned circumferentially with respect to a longitudinal axis and spaced inwardly from the distal end of the projection or the open end of the recess, respectively; and

wherein the other of the projection or the recess comprises one or more grooves extending proximally from adjacent the distal end of the projection or from adjacent the open end of the recess, respectively

the projection being insertable into the recess a first distance until the one or more protuberances meet a non-grooved portion of the open end of the recess or a non-grooved portion of the projection if the protuberances and grooves are not aligned, and being insertable farther into the recess upon rotation of one or both of the components

until the one or more protuberances align with corresponding one or more grooves, the male and female components being restrained from rotating about the longitudinal axis relative to one another when the one or more protuberances engage the one or more grooves.

14. The head-switchable applicator according to claim 13, wherein the distal-most generally planar surface is at the distal end of the projection and the second magnetic element is in the recess.

15. A cosmetic applicator assembly comprising a male component and a female component releasably attachable to one another, wherein:

said female component includes a first magnetic element and a recess defining an open end thereof, and the male component includes a second magnetic element and a projection defining a distal end, the projection being insertable into the recess; and

an applicator element positioned on the male component or the female component;

wherein the first and second magnetic elements are positioned so that they hold the female and male components releasably together when the projection is inserted into the recess;

wherein one of the projection or the recess comprises one or more protuberances positioned circumferentially with respect to a longitudinal axis and spaced inwardly from the distal end of the projection or the open end of the recess, respectively; and

wherein the other of the projection or the recess comprises one or more grooves extending proximally from adjacent the distal end of the projection or from adjacent the open end of the recess, respectively,

the projection being insertable into the recess a first distance until the one or more protuberances meet a non-grooved portion of the open end of the recess or a non-grooved portion of the projection if the protuberances and grooves are not aligned, and being insertable farther into the recess upon rotation of one or both of the components until the one or more protuberances align with corresponding one or more grooves, the male and female components being restrained from rotating about the longitudinal axis relative to one another when the one or more protuberances engage the one or more grooves;

wherein the pulling force between said first magnetic element and said second magnetic element when said arrangement of one or more protuberances is engaged by said arrangement of one or more grooves is between about 0.4 lbf to about 1.2 lbf.

16. The cosmetic applicator assembly according to claim 15, wherein each of the one or more protuberances is a plurality of projecting dots dimensioned to be seated in one of said one or more grooves.

17. The cosmetic applicator assembly according to claim 15 or 16, wherein the male component is one of a brush head and a handle and includes the projection, and the female component is the other of the brush head and handle and includes the recess.

18. A method of equipping a first component including a projection with a removable attachment including a recess, comprising the steps of:

inserting the projection into the recess;

after partially inserting the projection into the recess, aligning an arrangement of protuberances positioned circumferentially around a longitudinal axis of and spaced inwardly from an end of the projection or the recess with an arrangement of grooves formed in the recess or on the projection, said protuberances following said grooves to guide said projection to a non-rotational seated position within the recess; and

releasably maintaining said seated position by way of a pulling force in the range of about 0.4 lbf to about 1.2 lbf between a primary magnetic element in the recess and a secondary magnetic element associated with the projection.

19. The method of claim 18, further comprising:

releasably maintaining said projection within said recess by said pulling force after said the partial insertion and prior to aligning the protuberances with the grooves.

20. A cosmetic applicator, or a method of equipping a first component with a removable attachment including a recess, substantially as herein described with reference to the accompanying drawings.

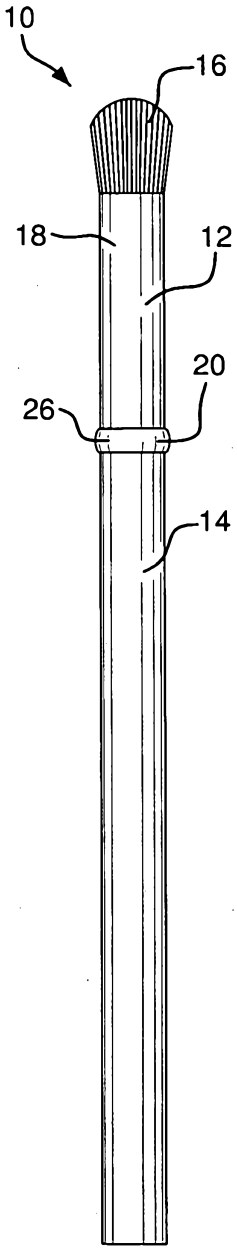

FIG. 1

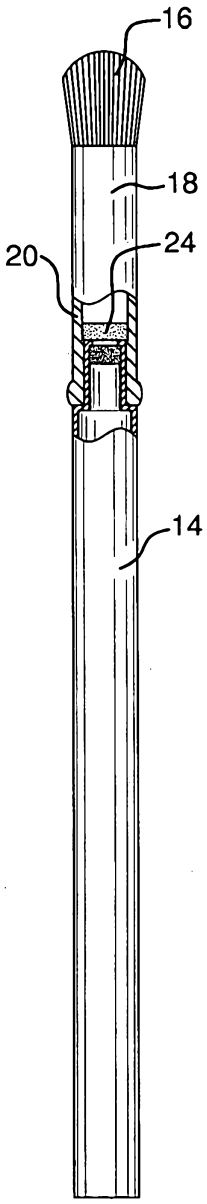

FIG. 2

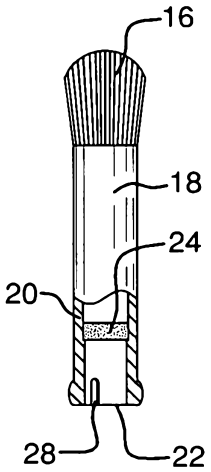

FIG. 3

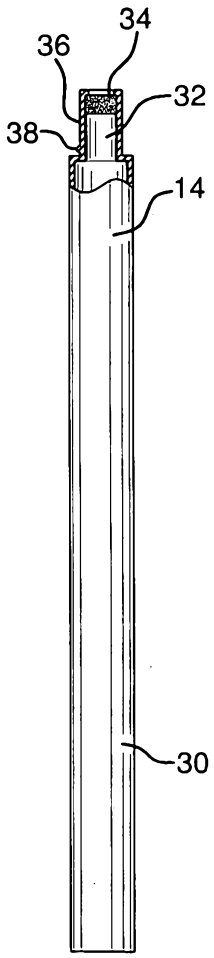

FIG. 4

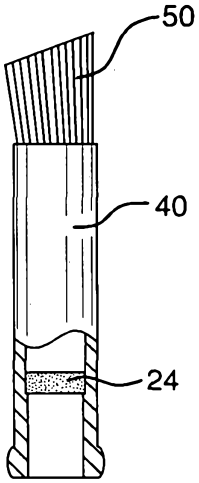

FIG. 5

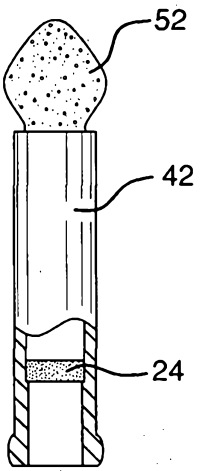

FIG. 6

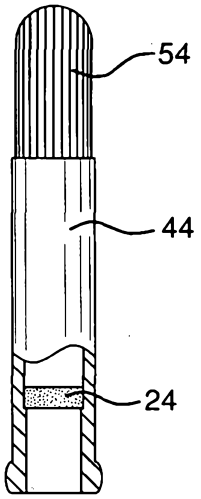

FIG. 7

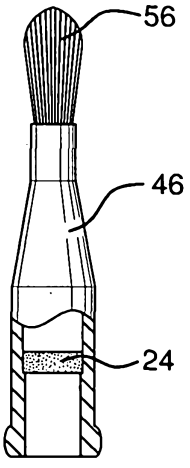

FIG. 8

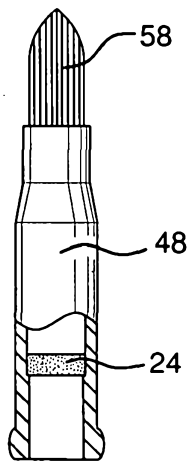

FIG. 9

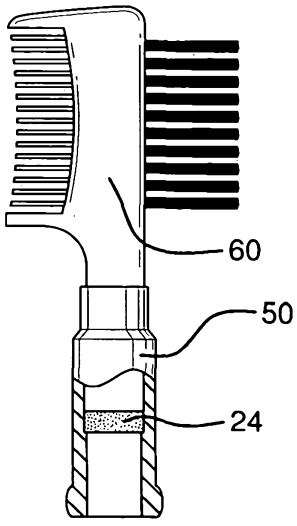

FIG. 10

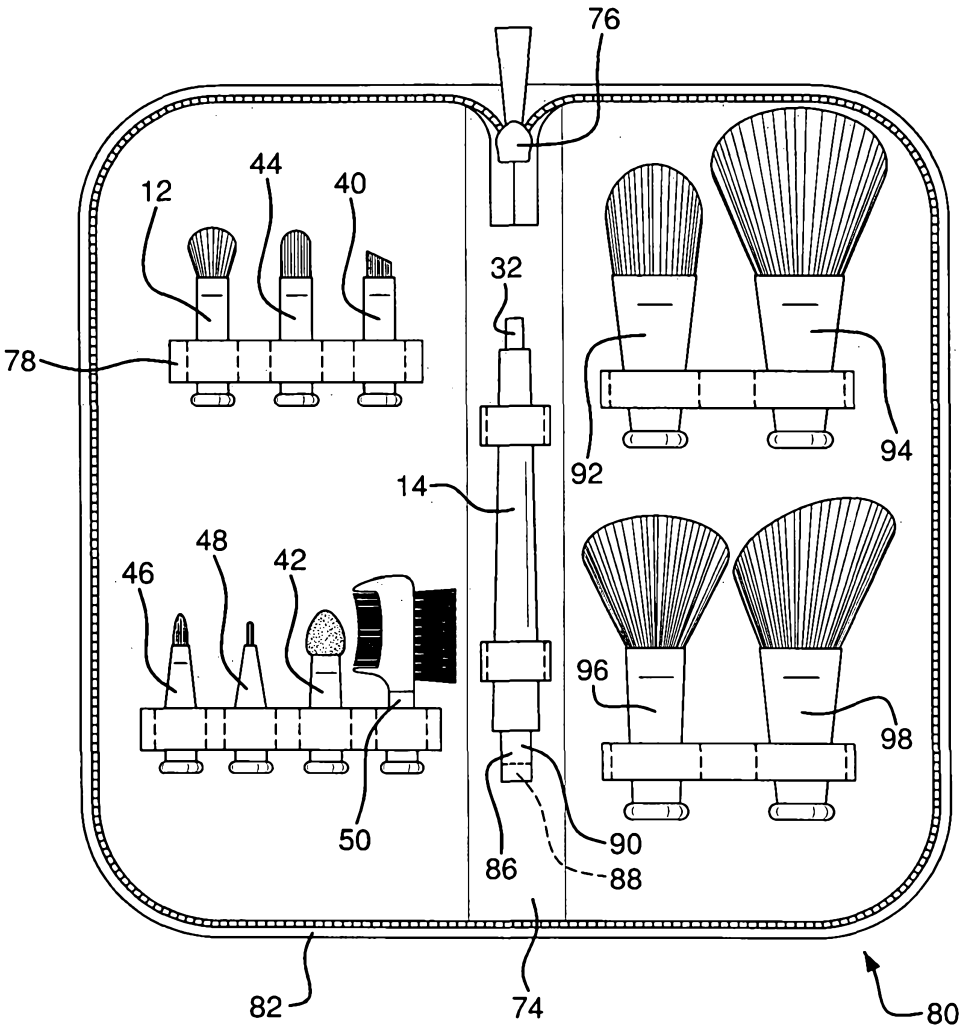

FIG. 11