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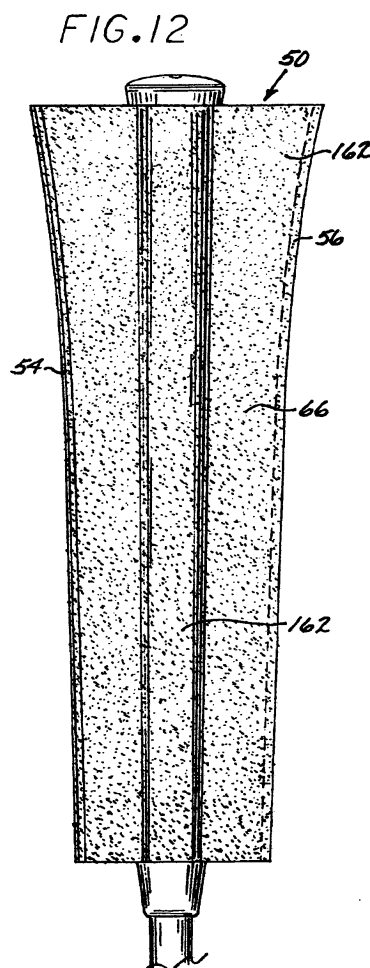
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(54) **Ultralight grip for use with golf clubs and the like**

(57) Disclosed are grips and methods of making grips for use with the handle of an article, and in particular for use with golf clubs. The grip is preferably light weight and includes an ethylene vinyl acetate sleeve member and a gripping member attached thereto.



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Description

PRIORITY CLAIM

[0001] The present application claims the benefit of U.S. Provisional Patent Application No. 61/173,565, filed April 28, 2009 (entitled "ULTRALIGHT GRIP FOR USE WITH GOLF CLUBS AND THE LIKE") and U.S. Provisional Patent Application No. 61/183,479, filed June 2, 2009 (entitled "ULTRALIGHT GRIP FOR USE WITH GOLF CLUBS AND THE LIKE"), the disclosures of each being hereby incorporated by reference in their entireties.

BACKGROUND OF THE INVENTION

Field of the Invention

[0002] Embodiments of the invention relate to an improved grip for use with the handle portion of articles, in particular, the handle portion of golf clubs.

Description of the Related Art

[0003] Though grips have been developed, there remains a need for an improved grip.

SUMMARY OF THE INVENTION

[0004] Some embodiments provide a grip configured for use with at least a portion of the handle portion of an article wherein the grip includes an ethylene vinyl acetate sleeve including a first end, a second end, and a mounting surface extending generally therebetween and a gripping member adhered to the mounting surface of the sleeve. In some embodiments, the article is a golf club.

[0005] Some embodiments provide a method of manufacturing a sleeve for use with a grip including the steps of injection molding a primary form of the sleeve in a first mold, the primary form of the sleeve comprising ethylene vinyl acetate. In some embodiments, the injection molded primary form of the sleeve is removed from the first mold. In some embodiments, a core bar is inserted into the inner cavity of the primary form of the sleeve. In some embodiments, the core bar and the primary form of the sleeve are inserted into additional tooling machinery to allow for control of the temperature and time spent at the one or more temperatures to control the coagulation of the ethylene vinyl acetate.

[0006] Embodiments of the present invention include one or more advantages including offering great feel by absorbing shock and vibrations caused by the article impacting other objects and being light in weight and of low density. In the context of golf club grips, lighter grips allow for the manipulation of the club swing weight. Current common grips weigh approximately 52 grams. Embodiments of the present invention can reduce the weight of the grip by approximately 32 grams. Generally, decreasing the weight of a grip by approximately 4.5 grams will

increase one unit of the club's swing weight. Thus, a 32 gram savings in grip weight can increase a club's swing weight by approximately 7 units. Increased swing weight allows a golfer to hit the ball further with a similar stroke. Further, decreasing the weight of a grip will decrease the total weight of a club, a feature that can be beneficial to older golfers and golfers having less strength. In particular, it enables golfers to create higher head speed and provides easier maneuverability. Furthermore, light weight grips are important for longer shafted clubs which may be preferred by longer distance and taller golfers. In addition, a golfer generally carries approximately 14 clubs in their bag. When that golfer is walking the course or carrying the bag any appreciable distance, it is advantageous to reduce the weight of the bag as much as possible. This can be accomplished by using embodiments of the present grip that are much lighter than standard grips.

BRIEF DESCRIPTION OF THE DRAWINGS

[0007] Further objects, features and advantages of the inventions will become apparent from the following detailed description taken in conjunction with the accompanying figures showing illustrative embodiments of the invention, in which:

[0008] FIG. 1 is a perspective view of an exemplary golf club incorporating a grip according to some embodiments;

[0009] FIG. 2 is a front view of a grip component according to some embodiments;

[0010] FIG. 3 is a perspective view of a block of material for use in making the component shown in FIG. 2 according to some embodiments;

[0011] FIG. 4 is a perspective view of the block shown in FIG. 3 on a mount for use during the manufacturing process of a grip component according to some embodiments;

[0012] FIG. 5 is a perspective view of the mounted block shown in FIG. 4 with a grinding wheel for use during the manufacturing process of a grip component according to some embodiments;

[0013] FIG. 6 is a perspective view of a partially shaped grip component according to some embodiments;

[0014] FIG. 7 is a perspective view of a shaped grip component according to some embodiments;

[0015] FIG. 8 is a perspective view of an end of the grip component shown in FIG. 7 after the mount is removed and before an end filler is applied according to some embodiments;

[0016] FIG. 9 is a perspective view of the end shown in FIG. 8 after the end filler is applied according to some embodiments;

[0017] FIG. 10 is a perspective view of a gripping member configured for use with the grip component shown in FIG. 2 according to some embodiments;

[0018] FIG. 11 is a section view of the gripping member shown in FIG. 10 taken along the line 11-11 in FIG. 10;

[0019] FIG. 11A is an enlarged view of a portion of the gripping member designated by the circle 11A in FIG. 11;

[0020] FIG. 11B is an alternative view of the portion shown in FIG. 11A according to some embodiments;

[0021] FIG. 12 is a front view of a grip component and a gripping member during the manufacturing process according to some embodiments;

[0022] FIG. 13 is a completed grip according to some embodiments;

[0023] FIG. 14 is a section view of the grip shown in FIG. 13 taken along the line 14-14 in FIG. 13;

[0024] FIG. 15 is an enlarged view of a portion of the grip shown in FIG. 13 designated by the circle 15 in FIG. 14 according to some embodiments; and

[0025] FIG. 15A is an enlarged view of an alternative configuration of the portion of the grip designated by the circle 15 in FIG. 14 according to some embodiments.

[0026] While the invention will now be described in detail with reference to the figures, it is done so in connection with the illustrative embodiments. It is intended that changes and modifications can be made to the described embodiments without departing from the true scope and spirit of the invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0027] FIG. 1 is a perspective view of a golf club GC incorporating a grip G according to some embodiments.

[0028] FIG. 2 is a front view of an underlisting sleeve member 2 or sleeve according to some embodiments. The sleeve 2 includes a cavity 4 configured to receive at least a portion of the handle portion of a golf club shaft S or other article. In the illustrated embodiment, the sleeve 2 further includes a first end 6 with an opening 10 adapted to receive the handle portion and a second end 8 including a substantially enclosed closed end. A mounting surface 12 or body extends between the first and second ends 6, 8.

[0029] As shown, in some embodiments the nipple 14 may be tapered to provide a smooth transition from the smaller diameter exposed handle, rod, or shaft S near the nipple 14 to the main gripping portion of the grip G. The nipple 14 may be integrally formed with the mounting surface 12 or may be separately formed and later joined to the mounting surface 12. As shown, in some embodiments, the nipple 14 may define a circumferential nipple ledge 16 extending around the sleeve member 2 and extending radially outward from the mounting surface 12 of the sleeve member 2 adjacent the mounting surface 12. The nipple ledge 16 may comprise a nipple contact surface 18 and a nipple outer surface 20. The nipple outer surface 20 may transition into the tapered upper portion of the nipple.

[0030] As shown, in some embodiments the second end 8 may include a cap structure 22. The cap 22 may include an opening 24 to facilitate the escape of air as a handle is inserted into the sleeve. The cap 22 may define

a generally convex shape on its end. In some embodiments, the cap 22 defines a circumferential cap ledge 26 extending around the sleeve member 2 and extending radially outward from the mounting surface 12 of the sleeve member 2 adjacent the mounting surface 12. The cap ledge 26 comprises a cap contact surface 28 and a cap outer surface 30.

[0031] In the illustrated embodiment, the cap 22 and nipple 14 are integrally formed with the body 12 of the sleeve 2. The nipple contact surface 18 extends radially from the mounting surface 12 at approximately 90 degrees. In some embodiments, the nipple contact surface 18 extends from the mounting surface 12 between approximately 45 and approximately 90 degrees. In some embodiments, the nipple contact surface 18 extends from the mounting surface 12 between approximately 90 and approximately 135 degrees. The cap contact surface 28 extends radially from the mounting surface 12 at approximately 90 degrees. In some embodiments, the cap contact surface 28 extends from the mounting surface 12 between approximately 45 and approximately 90 degrees. In some embodiments, the cap contact surface 28 extends from the mounting surface 12 between approximately 90 and approximately 135 degrees.

[0032] FIGS. 3-9 illustrate a method of manufacturing a sleeve 2 according to some embodiments. In some embodiments, a block 32 of ethylene-vinyl-acetate (EVA) (FIG. 3) is mounted on a support rod 34 (FIG. 4) to facilitate a grinding process. As shown in FIG. 5, a grinder 36 desirably shaped to impart a desired configuration is brought into contact with the block 32 of EVA. As the block 32 makes contact with the grinder 36, the general shape of the grip component is formed. The same grinder that forms the mounting surface 12 or body of the sleeve 2 may also shape the nipple 14 and/or cap 22 if so included. Alternatively, these portions of the grip G may be formed by one or more additional grinders of appropriate shape.

[0033] In some embodiments, once the shape of the sleeve 2 is completed, the mounting rod 34 is preferably removed. In some embodiments, the mounting rod 32 has an external diameter generally equal to the external diameter of the handle portion of an article intended to be inserted into the sleeve 2. The hole 38 left at the second end 8 can be filled with an appropriately shaped plug 40. In some embodiments, the plug 40 is made from the same material as the sleeve 2 so as to seamlessly or virtually seamlessly blend in with the sleeve 2. Alternatively, the plug 40 may be a different material to facilitate the placement of aesthetically pleasing designs, or contrasting colors or textures at the second end of the sleeve 2. Preferably, in some embodiments, the plug 40 includes a small 24 hole or opening to permit the release of air or other fluid as described above.

[0034] FIGS. 10-11B illustrate a gripping member 50 according to some embodiments. The gripping member is shaped to generally correspond with the mounting surface 12 of the sleeve 2 when applied thereto. Shown as

a panel P, the illustrated embodiment is folded or wrapped around the mounting surface 12 to form a substantially vertical seam 52 (**FIG. 13**) that joins the side edges 54, 56 of the panel P as described in greater detail below. Alternatively, the gripping member 50 could be formed as a strip that would in turn be spirally wrapped around the mounting surface 12. In some embodiments, multiple panels and/or strips may be incorporated.

[0035] **FIG. 11** is a section view of the gripping member 50 taken along the line 11-11 in **FIG. 10**. In some embodiments, the gripping member 50 preferably includes an outer layer 58 adhered, bonded, glued or otherwise attached to a base or inner layer 60. The outer layer 58 defines an inner surface 62 and an outer surface 64 and is preferably polyurethane, though suitable other materials may be used. Similarly, the inner layer 60 defines an inner surface 66 and an outer surface 68 and is preferably a non-woven fabric. In some embodiments, a spray on adhesive (not shown) is applied to one or both of the inner surface 62 of the outer layer 58 and/or the outer surface 68 of the inner layer 60. In some embodiments, the outer layer 58 of polyurethane is deposited onto and coagulated directly onto and into a portion of the inner layer 60 of felt as shown in **FIG. 11A**. Such a wet coagulation process is known in the art. See, for example, U.S. Patent No. 6,857,971.

[0036] **FIG. 11A** is an enlarged view of a portion of the gripping member 50 designated by the circle 11A in **FIG. 11**. As mentioned above, the outer layer 58 preferably includes polyurethane. The polyurethane is preferably coagulated to form one or more closed cells (not shown). The non-woven fabric layer 60 may be fabricated of suitable materials such as nylon, cotton, polyester, or the like and may be felt.

[0037] Many embodiments of the present invention provide a lightweight grip with sufficient torsion resistance and shock absorption for use with a variety of articles including golf clubs. In some embodiments, a finished grip G including a polyurethane/felt gripping member 50 adhered to an EVA sleeve 2 weighs between approximately 15 and 25 grams. In a preferred embodiment, the finished grip G weighs approximately 20 grams while still providing the desired shock absorption, tackiness and torsion resistance required of a grip for an article such as a golf club.

[0038] **FIG. 11B** is an alternative view of the portion shown in **FIG. 11A** according to some embodiments. In this embodiment, an additional woven fabric mesh 82 is included in the polyurethane layer 58 during the manufacturing process. In some embodiments, the fabric mesh 82 is attached to the non-woven fabric layer 60 prior to depositing the polyurethane onto the fabric layer 60. Such a process is known in the art. See, for example, U.S. Patent No. 6,695,713.

[0039] In some embodiments, the fabric mesh 82 includes longitudinally extending fibers (fibers that extend generally along the length of the long axis of a grip for a grip formed by a panel (**FIG. 12**) or along the long axis

of a strip where the finished grip is formed from a spirally wrapped strip) and transversely extending fibers. In some embodiments, the longitudinally extending fibers will preferably be of a larger diameter than the transversely extending fibers. For example, the longitudinal fibers may have a diameter between approximately 0.4 and 0.75 millimeters and the transverse fibers may have a diameter between approximately 0.25 and 0.5 millimeters. In some embodiments, the longitudinal and transverse fibers may be of substantially equal diameters. The woven fabric mesh may be fabricated of suitable materials such as nylon, cotton, polyester, or the like.

[0040] **FIGS. 12-15A** show the application of a gripping member 50 or panel onto a sleeve 2 according to some embodiments. An adhesive 162 is sprayed onto the mounting surface 12 of the sleeve 2, the inner surface 66 of the gripping member 50 or both as shown and the panel P is wrapped around the mounting surface 12. In some embodiments, the side edges 54, 56 of the panel P can be skived so as to overlap along the seam 52 with like layers generally contacting and adhered to like layers as shown in **FIGS. 14** and **15**. Alternatively, the side edges 54, 56 can be skived such that the outer surface 64 of the panel P at or near the side edges 54, 56 contact each other along the seam 52. In some embodiments, such a seam 52 is stitched closed with the stitches 170 preferably extending through at least a portion of the polyurethane outer layer 58 and at least a portion of the felt inner layer 60 as shown in **FIG. 15A**. In some embodiments, the panel P is stitched inside out with the polyurethane surface 64 facing inwards and, after stitching the seam 52, the panel P is reversed as it is applied to the sleeve 2 such that, on the finished grip G, the polyurethane surface 64 is outward facing.

[0041] In some embodiments, the thickness 180 (**FIG. 11A**) of the panel P corresponds generally to the distance 190 the nipple contact surface 18 (**FIG. 2**) extends from the mounting surface 12 to facilitate the creation of a smooth transition from the gripping member 50 to the nipple 14. In some embodiments, the thickness 180 of the panel P corresponds generally to the distance 192 the cap contact surface 28 extends from the mounting surface 12 to facilitate the creation of a smooth transition from the gripping member 50 to the cap 22.

[0042] In some embodiments, the EVA sleeve 2 is injection molded rather than ground down from a block 32 of EVA foam. Ethylene vinyl acetate copolymers possess many excellent characteristics such as low weight, low density, flexibility, transparency, non-toxicity and good resistance to environmental stress cracking, etc. Some embodiments of the present invention overcome the difficulties of working with injection molded EVA. For example, EVA coagulation is a relatively slow process. After injection molding a rough EVA sleeve, a core bar can be inserted inside the sleeve and the sleeve can be transferred to an appropriate mold to control the shape of the finished product. Controlling temperature and time facilitates effective control of the EVA coagulation. In some

embodiments, the density of the EVA injected to form the sleeve 2 is less than approximately 1 g/cm³. In some embodiments, the density is between approximately 0.9 and 1 g/cm³. In a preferred embodiment, the density is between approximately 0.930 and 0.943 g/cm³. Controlling the degree of coagulation of the EVA allows embodiments of the invention to include an EVA sleeve 2 whose volume is, for example, approximately doubled or tripled from the original volume. Therefore, in some embodiments, the density of the finished sleeve 2 can be approximately one half or one third of the original density. In some embodiments, the density of the finished sleeve 2 can be between approximately 0.25 and 0.75 g/cm³. In some embodiments, the density of the finished sleeve 2 can be between approximately 0.3 and 0.6 g/cm³. In some embodiments, the weight of the finished sleeve 2 can be between approximately 5 and 15 g. In some embodiments, the weight of the finished sleeve 2 can be between approximately 7 and 12 g. In a preferred embodiment, the finished sleeve 2 weighs approximately 10 g.

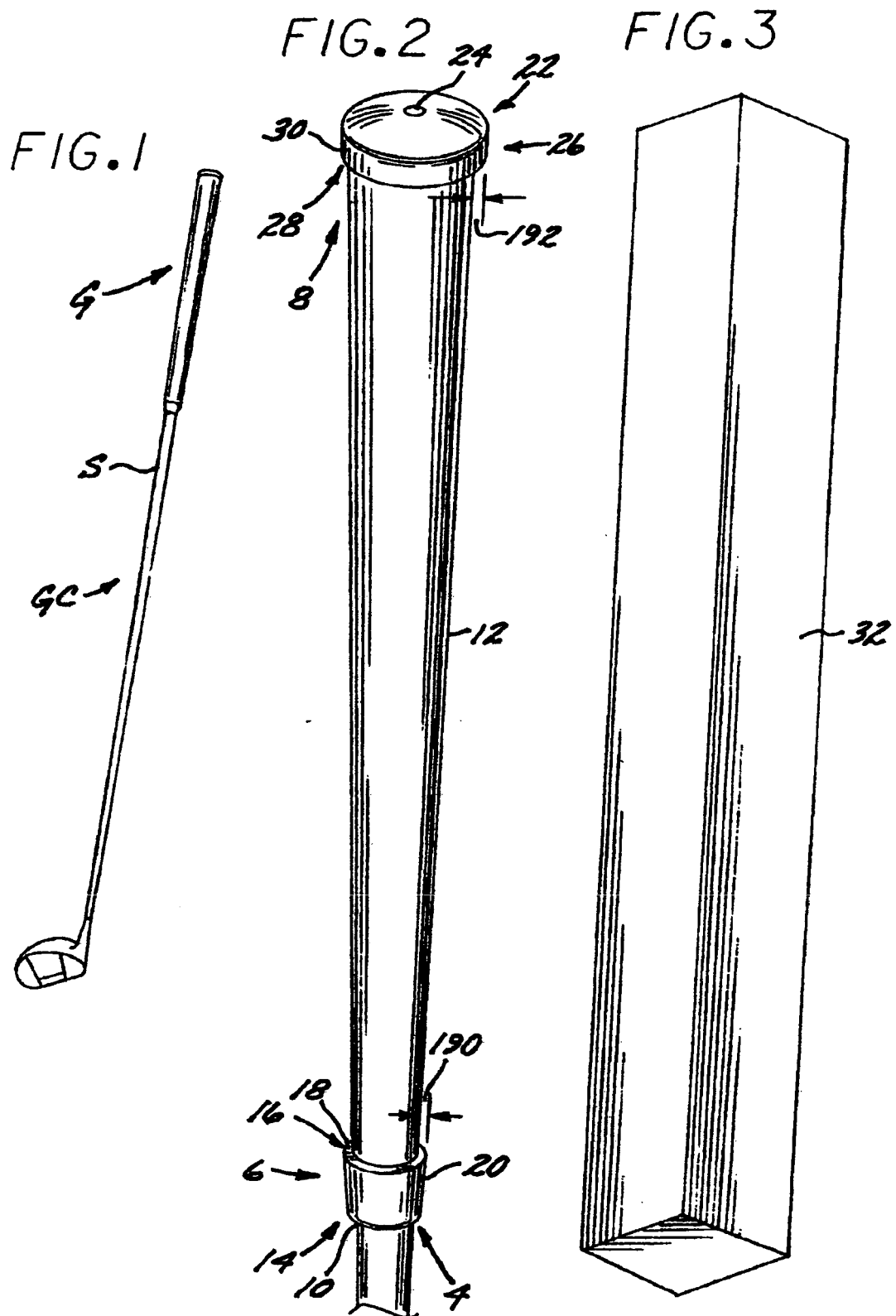
[0043] The invention has been described in terms of certain preferred embodiments. One or more aspects of each of the embodiments can be combined with one or more aspects of other embodiments and such combinations are specifically contemplated herein. Further, general modifications of the disclosure are also contemplated.

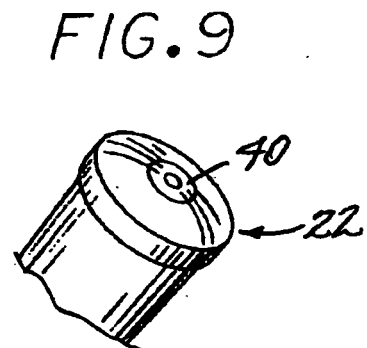
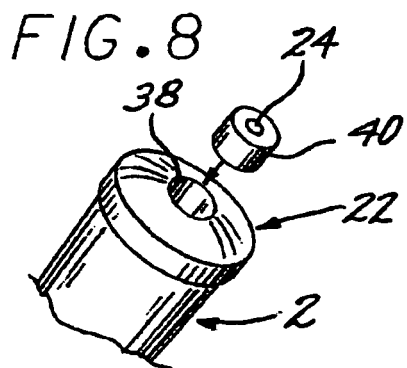
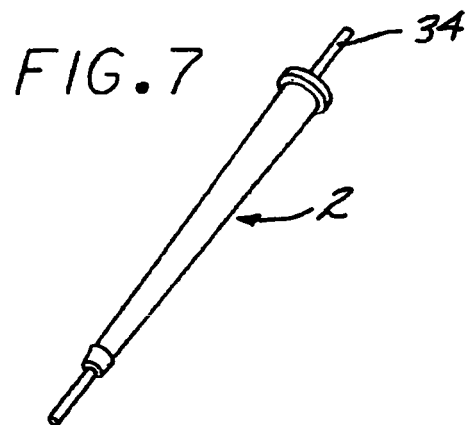
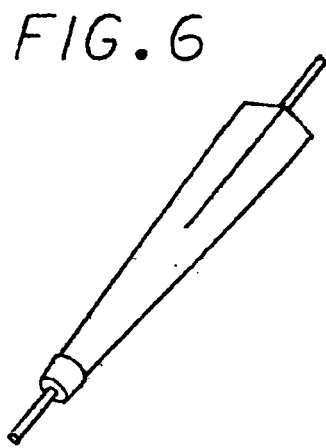
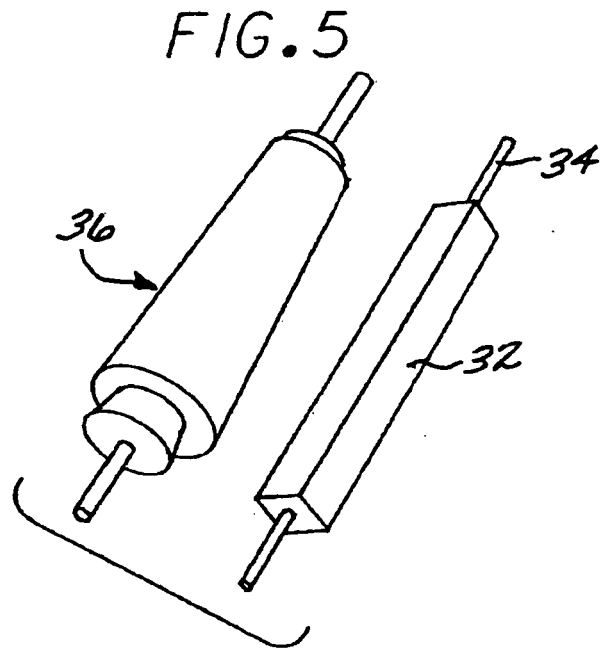
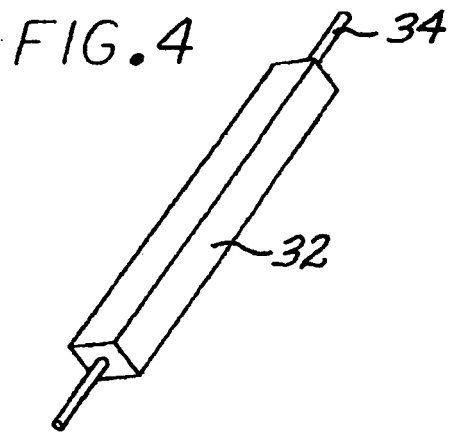
Claims

1. A grip configured for use with at least a portion of the handle portion of a golf club, the grip comprising:
 - an ethylene vinyl acetate sleeve including a first end, a second end, and a mounting surface extending generally therebetween;
 - a gripping member adhered to the mounting surface of the sleeve.
2. A grip according to Claim 1, wherein the sleeve has a density between approximately 0.25 and 0.75 g/cm³.
3. A grip according to Claim 2, wherein the density of the sleeve is between approximately 0.3 and 0.6 g/cm³.
4. A grip according to Claim 1, wherein the sleeve has a weight between approximately 10 and 25 g.
5. A grip according to Claim 1, wherein the weight of the sleeve is between approximately 15 and 20 g.
6. A grip according to Claim 1, wherein the ethylene vinyl acetate sleeve is injection molded.

7. A grip according to Claim 1, wherein the ethylene vinyl acetate sleeve is ground down to shape from a block of ethylene vinyl acetate foam.
8. A grip according Claim 1, wherein the gripping member is shaped as a panel, the panel being wrapped around the mounting surface and adhered to the mounting surface.
9. A grip according Claim 8, wherein the panel includes side edges forming a generally longitudinal seam, the side edges being skived.
10. A grip according Claim 9, wherein the skived side edges are skived such that they overlap along the seam with like layers of the panel being in contact with and adhered to like layers along the seam.
11. A grip according Claim 9, wherein the skived side edges are stitched together along the seam with an outer surface of the polyurethane layer adjacent the first side edge is in contact with the outer surface of the polyurethane layer adjacent the second side edge along the stitched seam.
12. A method of manufacturing a sleeve for use with a grip, the method comprising the steps of:

injection molding a primary form of the sleeve in a first mold, the primary form of the sleeve comprising ethylene vinyl acetate;
 removing the injection molded primary form of the sleeve from the first mold;
 inserting a core bar into the inner cavity of the primary form of the sleeve; and
 inserting the core bar and the primary form of the sleeve into additional tooling machinery to allow for the control of the temperature and the time spent at the one or more temperatures to control the coagulation of the ethylene vinyl acetate.





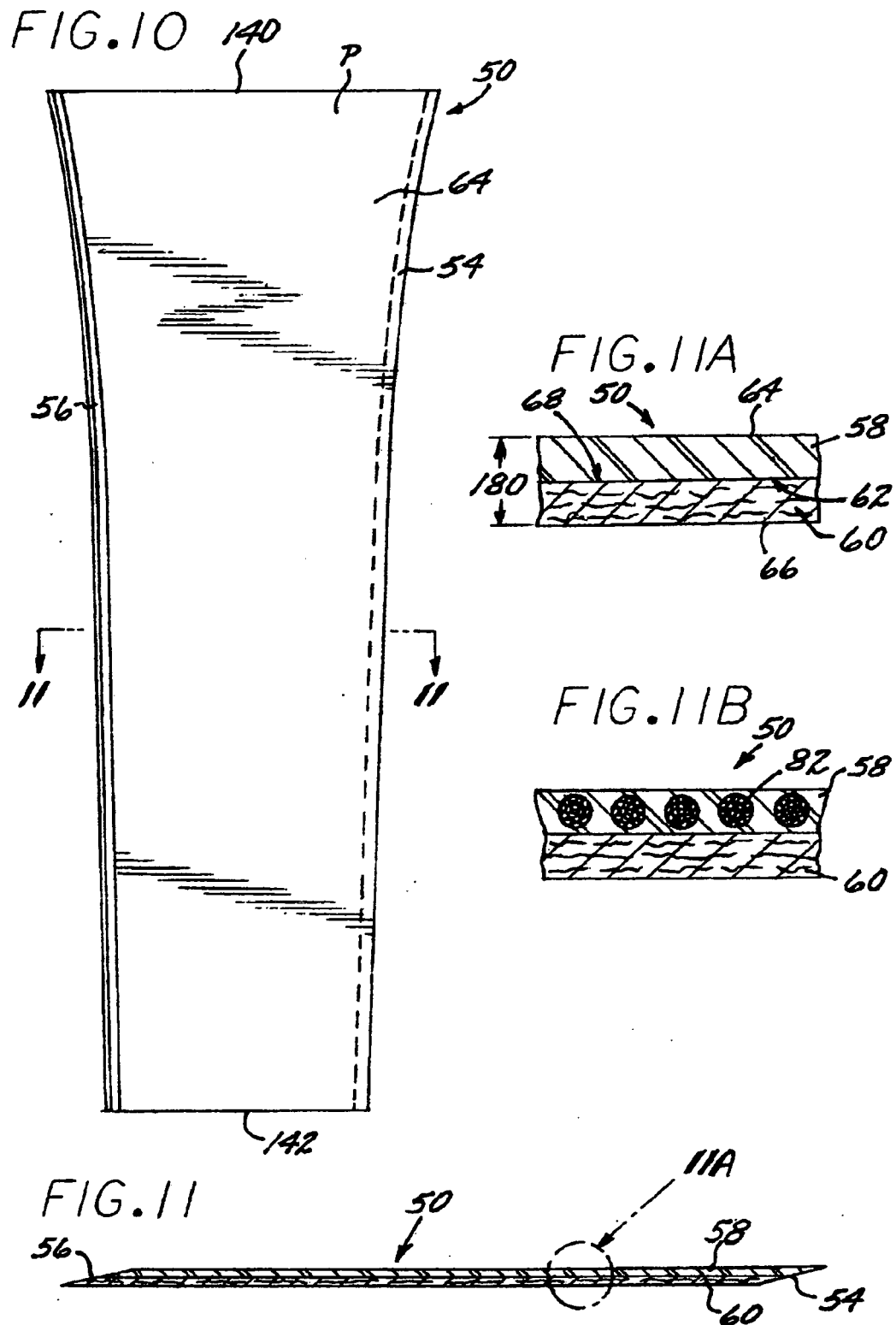


FIG.12

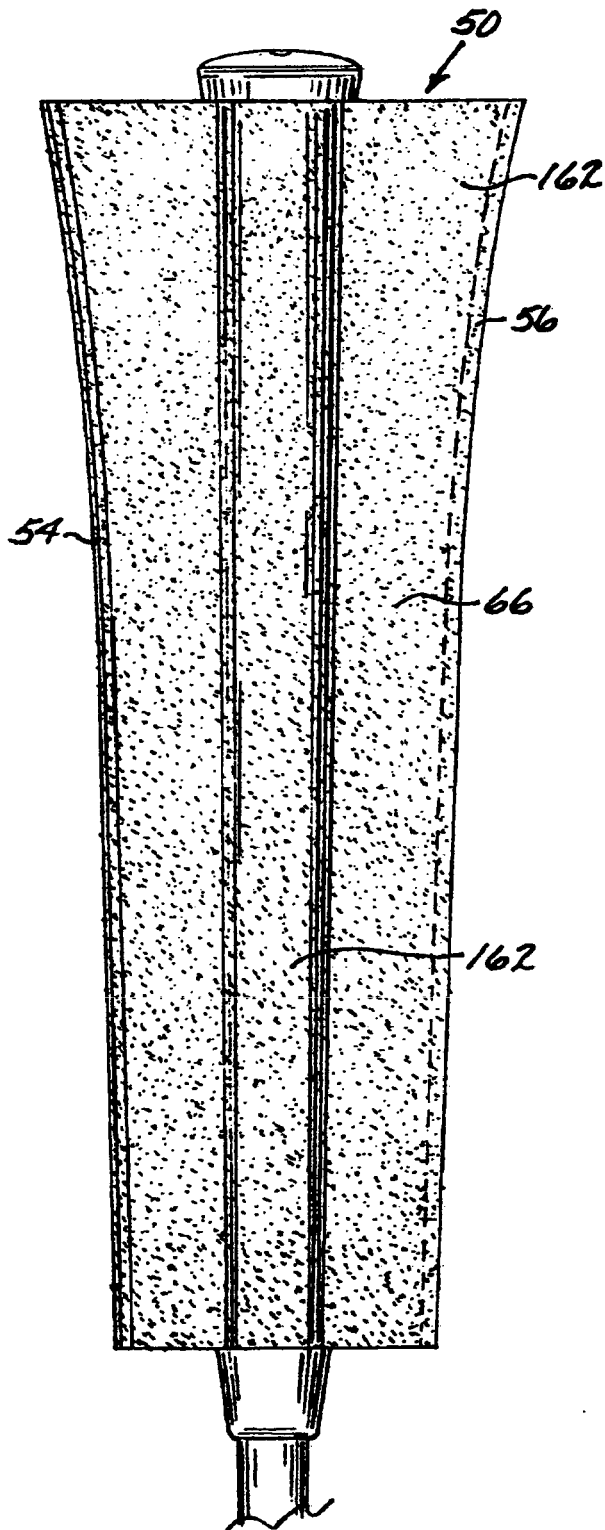
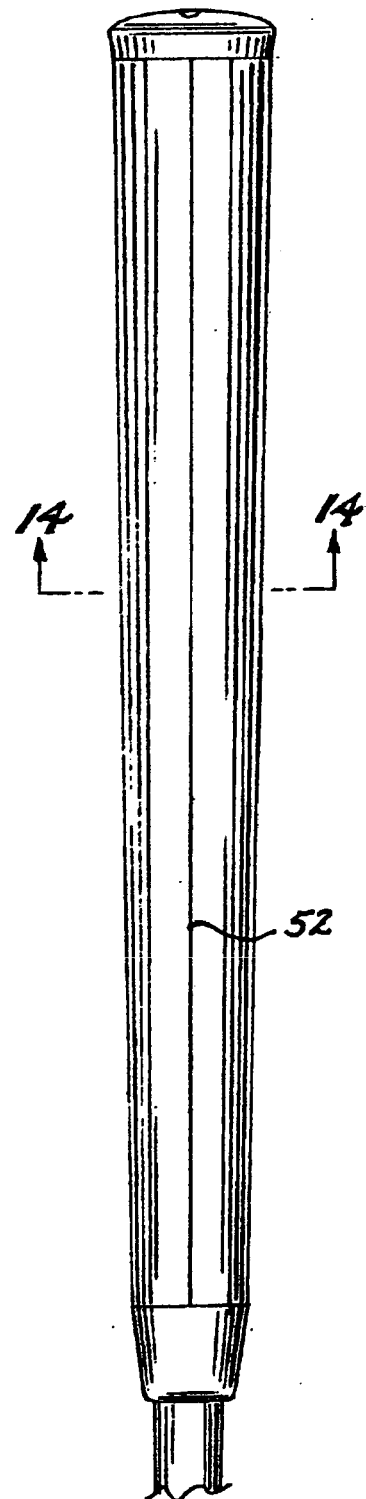
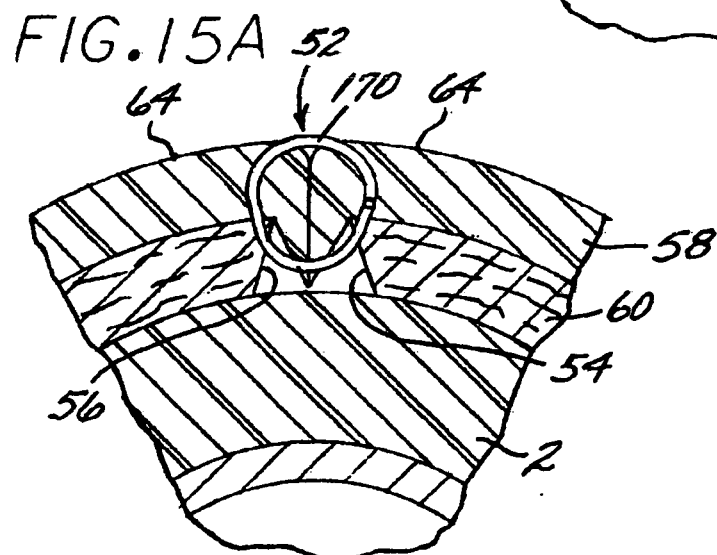
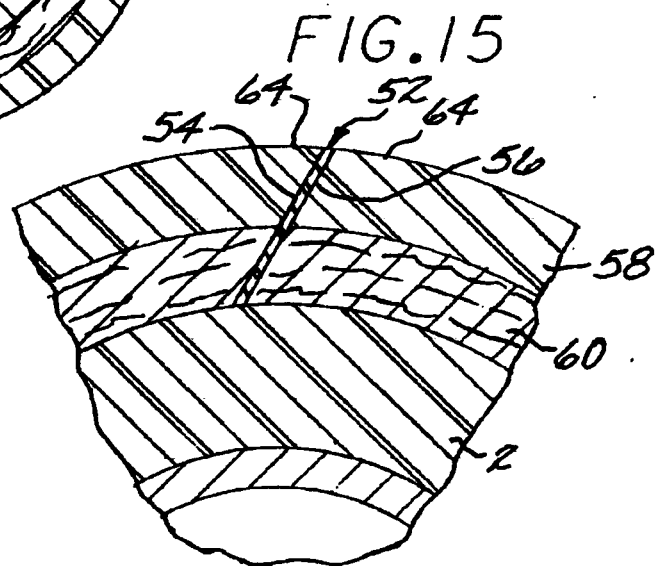
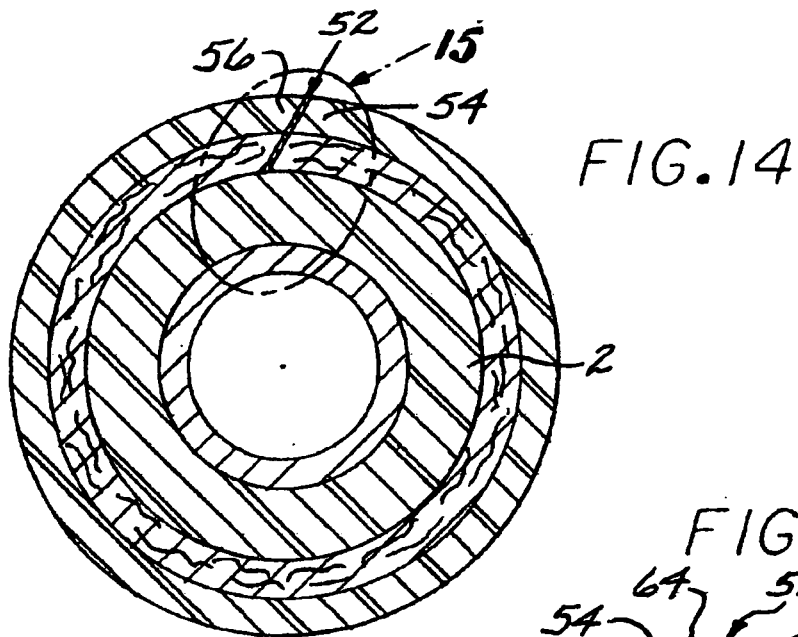


FIG.13







EUROPEAN SEARCH REPORT

Application Number
EP 10 25 0735

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**ANNEX TO THE EUROPEAN SEARCH REPORT
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