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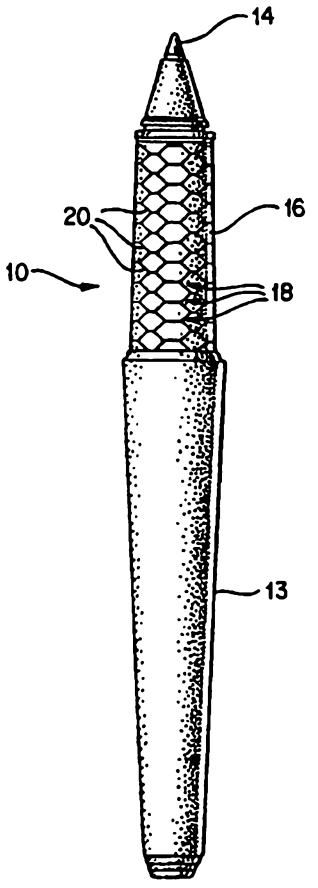
(54) Title: WRITING INSTRUMENT WITH FINGER GRIPPING DEVICE

(57) Abstract

A writing instrument (10) includes a cartridge (12) carrying a writing medium and a writing tip (14) exposed at one end. The cartridge (12) includes a reduced cross section which forms an annular recessed and tapered cavity (15). A gripping member (16) is received in the cavity (15), is tubular in shape and is tapered to follow the tapered contour of the cartridge (12). The gripping member (16) includes a smooth surface (18) having a slightly elevated pattern (20). The elevated pattern (20) comprises a plurality of interconnected parts disposed to form a continuous lattice (20). The pattern (20) is continuous over the entire smooth surface (18). The elevated pattern (20) is resiliently compressible with respect to the smooth surface (18) so that a user's fingers may deform the elevated pattern (20) to provide additional traction during use. The writing instrument (10) also includes a vented cap (24).



WRITING INSTRUMENT WITH FINGER GRIPPING DEVICE

Technical Field

The present invention relates generally to writing instruments such as ink pens, pencils, felt tip markers and the like. More specifically, this invention relates to a writing instrument having a gripping device thereon.

Background of the Invention

Handwriting remains an important and useful skill and manual writing instruments remain important tools. Most writing instruments include an elongated tube containing a writing medium, such as ink or pencil lead, or highlighting medium, such as yellow, green and pink highlighters or the likes, and having an end at which the writing or highlighting medium is exposed for contact with the writing surface, such as paper. The elongated tube section of the writing instrument, which is grasped and held by the user when writing, is characterised typically by a smooth, exterior surface. The smooth surface may be attractive and pleasant to the touch, but it can become slippery during use resulting in writer discomfort and impaired legibility of the handwritten text produced.

Some devices can assist a user in manually gripping a writing instrument. Pen or pencil attachment devices may be attached to the writing instrument in an attempt to reduce writer discomfort, cramp and fatigue. These writing aids can be structures designed to fit over the exterior of a writing instrument. These independent structures which are slid onto the exterior of the instrument tend to be bulky and thick, and create a non-uniform surface constraining the user to hold the writing instrument in a fixed position.

Other structures can be contoured grip surfaces constituting complex molded surfaces aimed at approximating the anatomical contours of a writer's fingertips during grasping of the writing instrument. However, the grip surfaces are not able to match the differing anatomical shapes and pen grasping techniques of different individuals and does not provide comfort and ease to the user of the instrument when writing.

A writing instrument can incorporate a deformable gripping portion, which deforms in response to manual pressure during manual grasping of the

instrument to permit reshaping of the gripping portion from an initial shape to a custom fit shape generally conforming to the writer's fingertips. The gripping portion retains the custom fit shape for a short period after release and returns substantially to its initial shape. During operation, the gripping portion requires pressure to be applied at the onset to conform the gripping portion to the shape desired by the user.

Thus, there remains a need to provide a gripping surface for a writing instrument which is consistent and uniform with the surface of the writing instrument, is comfortable and easy to use, provides a firm grip and does not require excessive pressure to conform the shape desired by the user.

The above discussion of documents, acts, materials, devices, articles and the like is included in this specification solely for the purpose of providing a context for the present invention. It is not suggested or represented that any of these matters formed part of the prior art base or were common general knowledge in the field relevant to the present invention as it existed in Australia before the priority date of each claim of this application.

Summary of the Invention

According to one aspect of the invention there is provided a writing instrument including

an elongated body; and

a gripping member fabricated of a thermoplastic elastomer, the gripping member having a smooth interior surface adhered to a portion of said elongated body normally used for gripping by a user.

According to another aspect of the invention there is provided a writing instrument including an elongated body having first and second ends with an elastomeric gripping member permanently adhered therebetween, wherein:

a writing tip is exposed at said first end of said elongated body;

said elongated body is releasably attached to a barrel member of a writing instrument; and

said gripping member has a smooth interior surface.

According to another aspect of the invention there is provided a writing instrument including:

an elongated body with a writing tip at one end; and

an elastomeric gripping member adhered to said elongated body by one of welding, solvent bonding, or a co-injection molding or a two-step or two-component injection molding process.

According to another aspect of the invention there is provided a writing instrument including:

an elongated body;

a writing tip at a first end of said writing instrument body;

a gripping section adhered to a portion of said elongated body normally used for gripping by a user said gripping section having a recessed cavity with a first end wall adjacent said writing tip and a second end wall axially spaced therefrom a stepped member adjacent said first end of said recessed cavity, and a raised section adjacent said second end of said recessed cavity;

a solid resiliently deformable tubular gripping member made from a soft anti-slip material having a Shore A hardness of less than 40 durometer, said gripping member being situated in said recessed cavity of said gripping section between said first and second end walls, said tubular gripping member having an outer surface flush with said stepped member and positioned to be gripped by a user and a smooth inner surface such that said gripping member fits smoothly within said recessed cavity of said gripping section; and

a cap dimensioned to fit over and to cover said gripping member and to be releasably attached to said elongated body.

According to another aspect of the invention there is provided writing instrument including:

an elongated body; and

a solid, resiliently deformable gripping member made from a soft material having a Shore A hardness of less than 40 durometer and adhered over a portion of said elongated body normally used for gripping by a user, said gripping member having a thickness in the range of less than 2.0 mm.

These desirabilities and advantages as well as other desirabilities and advantages are accomplished or at least partially accomplished, in a writing instrument including an elongated cylindrical body preferably in the form of a cartridge element carrying a writing or highlighting medium therein and having a writing tip exposed at one end. The cartridge element is insertable into a barrel member and may be permanently bonded to the barrel or releasably attached so that a replacement cartridge may be inserted into the barrel member when the writing or highlighting medium therein is depleted.

In a preferred embodiment of the invention the cartridge element includes a reduced cross-section thereon which forms an annular recessed tapered cavity. A gripping member is received by the cavity. The gripping member is preferably tubular in shape and is tapered to follow the tapered contour of the cartridge element. Gripping member may be permanently attached to the annular recessed cavity by means of co-extrusion, two-component injection molding, or by chemical or mechanical bonding.

The gripping member has a smooth surface which may include a slightly elevated or raised pattern thereon. Preferably, the elevated pattern may be constructed in the form of hexagons having sides which are contiguous with neighbouring hexagonal sections and are

interconnected so as to form a continuous lattice or pattern of hexagons on the smooth surface. The pattern is preferably continuous over the entire smooth surface. Moreover, the pattern may be formed from shapes which are not connected, but which are disposed throughout the smooth surface.

The elevated pattern formed on the smooth surface provides friction between the gripping section and a user's fingers, and is resiliently compressible by the user's fingers for an improved grip. When in use, the writing instrument is grasped by a user at the gripping section. The gripping section provides a soft, textured and compressible surface which is comfortable to the touch and is not prone to slippage between the user's thumb and fingers. Since the gripping surface is permanently attached to the body of the pen, the possibility of having the gripping member becoming loose during use is greatly reduced. In another aspect of the invention, a cap may be provided on the cartridge element and fitted over the gripping member and the writing tip to cover same.

Brief Description of the Drawings

Features of the present invention are disclosed in the accompanying drawings, wherein similar reference characters denote similar elements throughout the several views, and wherein:

Fig. 1 is a front view of the writing instrument of the present invention showing the gripping section thereon;

Fig. 2 is a partial sectional view of the writing instrument shown in Fig. 1 illustrating the features of the gripping section;

Fig. 3 is a sectional view of the writing instrument of Fig. 1 shown with a cap member thereon;

Fig. 4 is a front view of the writing instrument shown in Fig. 1 with the cap member;

Fig. 5 is a cross-sectional view of the cap member; and

Fig. 6 is a top view of the cap member.

Detailed Description of the Invention

Turning to Figs. 1 through 3, an embodiment of a writing instrument 10 constructed in accordance with the present invention is shown with the understanding that those of

ordinary skill in the art will recognize many modifications and substitutions which may be made to various elements.

Writing instrument 10 generally includes an elongated cylindrical body 12 preferably in the form of a cartridge element carrying a writing or highlighting medium therein and having a writing tip 14 exposed at one end of the cartridge element. Cartridge element 12 is insertable into a barrel member 13 and may be permanently bonded thereto or releasably attached so that a replacement may be inserted into barrel member 13 when the writing highlighting medium therein is depleted. Methods of attachment include but not limited to press fitting, snap fitting, chemical bonding and ultrasonic bonding. Additionally, it is preferred that cartridge element 12 comprises threads 21, as shown in Fig. 2, configured and dimensioned to be received by corresponding internal threads 22 defined on the inside of barrel 13, as shown in Fig. 3, so that barrel 13 and cartridge element 12 can be releasably attached to each other. Writing instrument 10 may also include a writing or highlighting medium that is retractable with respect to cartridge element 12, so that the writing or highlighting medium may be selectively positioned outside cartridge 12 when writing is desired and be retracted into cartridge 12 for storage and transport.

In a preferred embodiment of the invention and as depicted in Fig.2, cartridge element 12 includes a reduced cross-section, which forms an annular recessed tapered cavity 15. Gripping member 16 is received in cavity 15 and flush with a stepped member 17 on body 12. As shown stepped member 17 has a diameter that is slightly less than the diameter of section 19 of body 12, such that section 19 can facilitate the insertion of a cap member, as discussed below. Preferably, gripping member 16 is suitably dimensioned and shaped to fit smoothly within recess 15 of cartridge element 12. Gripping member 16 is also preferably tubular in shape and is tapered to follow the tapered contour of cartridge element 12. Preferably, gripping member 16 is fabricated of a thermoplastic elastomer, including but not limited to polypropylene, rubber, polyurethane, polyisobutylene, polybutadiene. Moreover, in order to provide comfort and ease during operation of the writing instrument, it is important that gripping member 16 be of a suitable softness. Preferably, the hardness of the material of gripping member 16 is in the range of Shore A hardness of 3 to 40 durometer, and more preferably in the range of 3 to 25 durometer, and most preferably in the range of 3 to 15 durometers. However, the gripping member may also have a hardness of less than 3 durometer.

Gripping member 16 is adhered to cartridge element 12 by kinetic, ultrasonic or laser welding. Alternative methods of adhering gripping member 16 to cartridge element 12 include but are not limited to solvent bonding and co-injection molding. The gripping member and the cartridge element may also be manufactured by a two-component injection molding process, which produces a chemical bond between these two members.

Gripping member 16 has a smooth surface 18 which may include a slightly elevated or raised pattern thereon. Preferably, the pattern comprises a plurality of slightly elevated sections 20. As shown in Fig. 1, elevated sections 20 are in the form of hexagons having sides which are contiguous with neighboring hexagonal sections and interconnected so as to form a continuous lattice or pattern of hexagons on smooth surface 18. The pattern is preferably continuous over the entire smooth surface 18. The elevated pattern 20, which preferably has less surface area than the smooth surface 18, is resiliently deformable by the user's fingers, so that additional traction between the gripping member and the user's fingers is provided in addition to the friction between the gripping member and the user's fingers. Moreover, the pattern may be formed of shapes which are not connected, but which are disposed continuously throughout smooth surface 18.

When in use, the writing instrument is grasped by a user at the gripping section. The gripping section provides a soft, textured surface which is resiliently deformable and is therefore not prone to slippage between the user's thumb and fingers. Since the gripping surface is permanently attached to the body of the pen the possibility of having the gripping member becoming loose during use is greatly reduced. The thickness of gripping member 16 is preferably in the range of 0.50 to 2.0 mm as measured from smooth surface 18 to elevated sections 20. The elevated pattern 20 is preferably the range of 0.1 to 0.5 mm as measured from smooth surface 18.

As shown in Fig. 3, another aspect of the invention includes a cap 24 provided on cartridge element 12, which is dimensioned to fit over at least a portion of gripping member 16 and writing tip 14 to cover same. Preferably, cap 24 cooperates with raised section 19 to ensure a tight connection between cap 24 and cartridge 12. Gripping member 16 is of sufficient size, shape and thickness to provide a comfortable, flexible surface having anti-slip properties. It is not bulky to grip, is able to fit neatly on cartridge 12 and can be easily covered by cap 22.

Referring to Figs. 4-6, writing instrument 10 is shown with cap member 24. Cap 24 is configured and dimensioned to be releasably attached to cartridge element 12. Cap 24 protects writing tip 14 when the writing instrument 10 is not in use, and it also isolates the ink from writing tip 14 from contaminating the surrounding areas. Cap 24 comprises a hollow body 26 defining an open end, clip member 28, vented plug 30 and well 32. When not in used writing tip 14 is inserted into well 32, which is preferably attached to vented plug 30 by snap fitting, threading, chemical bonding or ultrasonic bonding. Well 32 can also be formed integrally with vented plug 30. Plug 30 defines a plurality of apertures 34 therein such that air communication is established the interior of cap 24 and the outside environment through plug 30.

The writing instrument of the present invention may be manufactured by providing a cartridge element having a writing or highlighting medium therein and a writing tip thereon. A tubular shaped gripping member is provided and is adhered to the cartridge element by a two-step injection molding process to chemically bond the gripping member to the cartridge element. Alternatively, the gripping member may be mechanically bonded to the cartridge element by laser or ultrasonically welding or solvent bonding the member to the cartridge element.

While various descriptions of the present invention are described above, it should be understood that the various features can be used singly or in any combination thereof. Therefore, this invention is not to be limited to only the specifically preferred embodiments depicted herein.

Further, it should be understood that variations and modifications within the spirit and scope of the invention may occur to those skilled in the art to which the invention pertains. Accordingly, all expedient modifications readily attainable by one versed in the art from the disclosure set forth herein that are within the scope and spirit of the present invention are to be included as further embodiments of the present invention. The scope of the present invention is accordingly defined as set forth in the appended claims.

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A writing instrument including

an elongated body; and

a gripping member fabricated of a thermoplastic elastomer, the gripping member having a smooth interior surface adhered to a portion of said elongated body normally used for gripping by a user.

2. The writing instrument according to claim 1, wherein said gripping member is fabricated of a material which is softer than the material of said elongated body.

3. The writing instrument according to claim 1 or 2, wherein:

said elongated body has a recessed cavity with a first end wall adjacent said writing tip and a second end wall axially spaced therefrom, a stepped member adjacent said first end of said recessed cavity, and a raised section adjacent said second end of said recessed cavity; and

said gripping member is situated in said recessed cavity between said first and second end walls, said gripping member fitting smoothly within said recessed cavity.

4. The writing instrument according to claim 3, further including a cap dimensioned to fit over and to cover said gripping member and to be releasably attached to said writing instrument, wherein said gripping member, said stepped member, and said raised section are shaped and configured to fit within said cap upon insertion of said elongated body into said cap.

5. The writing instrument according to claim 1 to 4, wherein:

said gripping member fits within a recess in said elongated body; said elongated body has first and second ends;

said recess has first and second ends positioned between said first and second ends of said elongated body and is positioned closer to said first end of said elongated body than to said second end of said elongated body.

6 A writing instrument including an elongated body having first and second ends with an elastomeric gripping member permanently adhered therebetween, wherein:

a writing tip is exposed at said first end of said elongated body;

said elongated body is releasably attached to a barrel member of a writing instrument; and

said gripping member has a smooth interior surface.

7. The writing instrument according to claim 6, wherein said elongated body is configured for releasable attachment to a barrel member of a writing instrument by one of press fitting, snap fitting, and threaded engagement.

8. The writing instrument according to claim 6 or 7, wherein said gripping member has a Shore A hardness of less than 40 durometer.

9. The writing instrument according to claim 6, 7 or 8, wherein said elongated body is configured such that a writing or highlighting medium is selectively positionable between a position outside said elongated body when writing is desired and a portion inside said elongated body for storage and transport.

10. A writing instrument including:

an elongated body with a writing tip at one end; and

an elastomeric gripping member adhered to said elongated body by one of welding, solvent bonding, or a co-injection molding or a two-step or two-component injection molding process.

11. The writing instrument according to claim 10 further including a barrel member, wherein:

said elongated body is releasably attached to said barrel member;

a writing or highlighting medium is carried within said elongated body; and said gripping member remains with said elongated body upon detaching said elongated body from said barrel member.

12. The writing instrument according to claim 10 or 11, wherein said gripping member is adhered to said elongated body by the co-injection or two-step or two-component injection molding process such that the possibility of having the gripping member become loose during use is greatly reduced.

13. The writing instrument according to any one of claims 10 to 12, wherein said gripping member has a thickness in the range of less than about 2.0 mm.

14. The writing instrument according to any one of claims 10 to 13, wherein said gripping member has a smooth outer surface and a plurality of elevated sections raised above said smooth outer surface and formed to be resiliently deformable to provide additional traction between said gripping member and a user's fingers.

15. The writing instrument according to any one of claims 10 to 14, further including a cap wherein said cap is dimensioned to fit over said writing tip and at least a portion of said gripping member and to be releasably attached to said writing instrument.

16. The writing instrument according to any one of claims 10 to 15, wherein said elastomeric gripping member is fabricated of a thermoplastic elastomer.

17. The writing instrument according to any one of claims 10 to 16, wherein said gripping member is positioned on a portion of said elongated body normally used for gripping by a user.

18. The writing instrument according to any one of claims 10 to 17, wherein said gripping member has a shore A durometer of less than 40.

19. The writing instrument according to any one of claims 10 to 18, wherein said gripping member is fabricated of a material which is softer than the material of said writing instrument body.

20. The writing instrument according to any one of claims 10 to 19, wherein:

said elongated body further includes a recessed cavity having a first end wall adjacent said writing tip and a second end wall axially spaced therefrom; and

said gripping member further includes a first end and a second end positioned between said first and second end walls of said recessed cavity.

21. The writing instrument according to claim 20 further including a stepped member at said first end wall of said recessed cavity and a raised section at said second end wall of said recessed cavity, wherein:

said gripping member is positioned between said stepped member and said raised section,

said gripping member is flush with said stepped member; and

said raised section is elevated above said gripping member.

22. A writing instrument including:

an elongated body;

a writing tip at a first end of said elongated body;

a gripping section adhered to a portion of said elongated body normally used for gripping by a user said gripping section having a recessed cavity with a first end wall adjacent said writing tip and a second end wall axially spaced therefrom a stepped member adjacent said first end of said recessed cavity, and a raised section adjacent said second end of said recessed cavity;

a solid resiliently deformable tubular gripping member made from a soft anti-slip material having a Shore A hardness of less than 40 durometer, said gripping member being situated in said recessed cavity of said gripping section between said first and second end walls, said tubular gripping member having an outer surface flush with said stepped member and positioned to be gripped by a user and a smooth inner surface such that said gripping member fits smoothly within said recessed cavity of said gripping section; and

a cap dimensioned to fit over and to cover said gripping member and to be releasably attached to said elongated body.

23. A writing instrument including:

an elongated body; and

a solid, resiliently deformable gripping member made from a soft material having a Shore A hardness of less than 40 durometer and adhered over a portion of said elongated body normally used for gripping by a user, said gripping member having a thickness in the range of less than 2.0 mm.

24. A writing instrument substantially as herein before described with reference to any one of the embodiments illustrated in the accompanying drawings.

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Attorneys for:
BIC CORPORATION

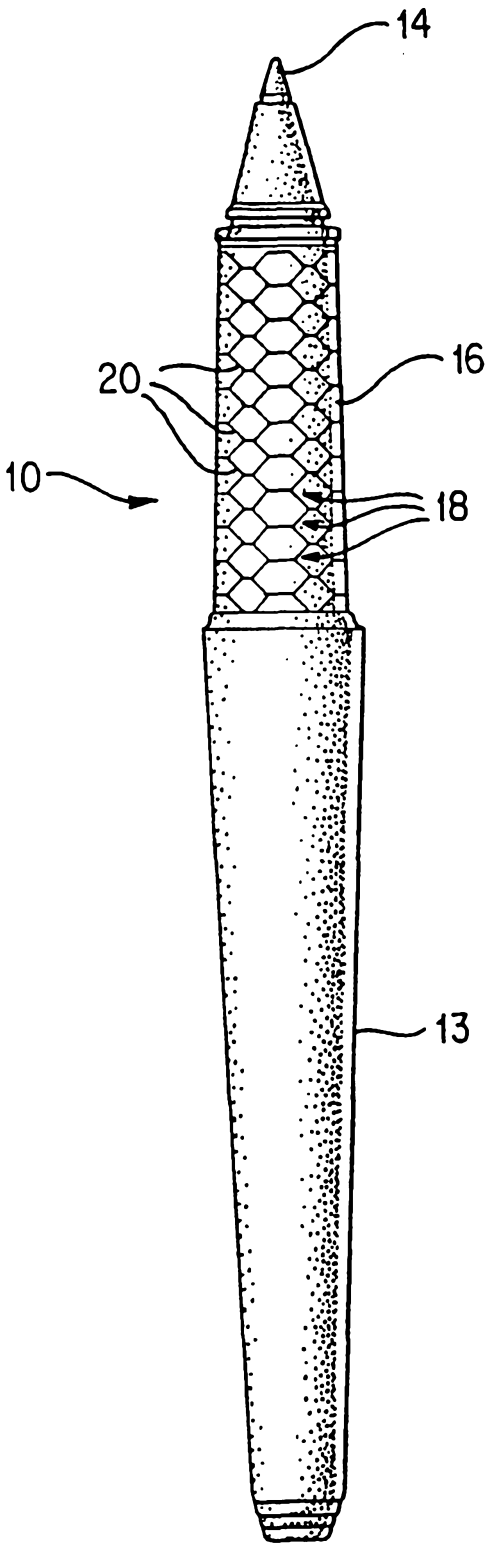

FIG. 1

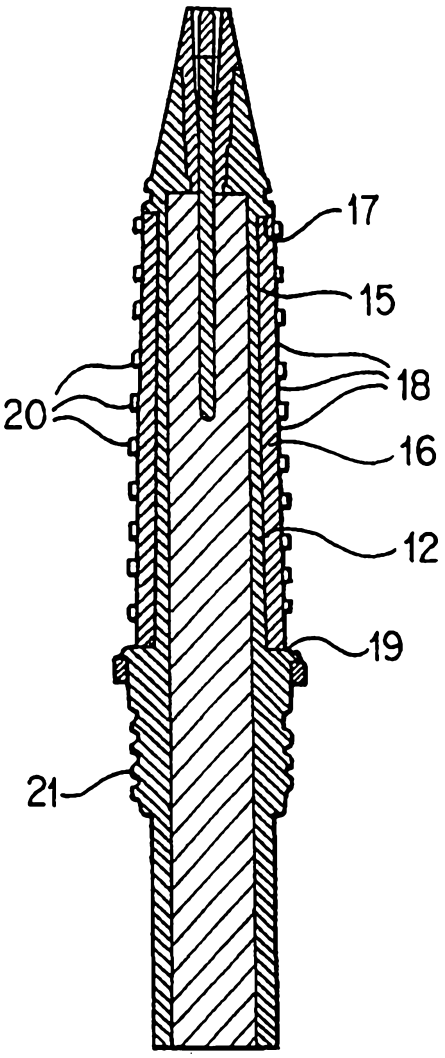

FIG. 2

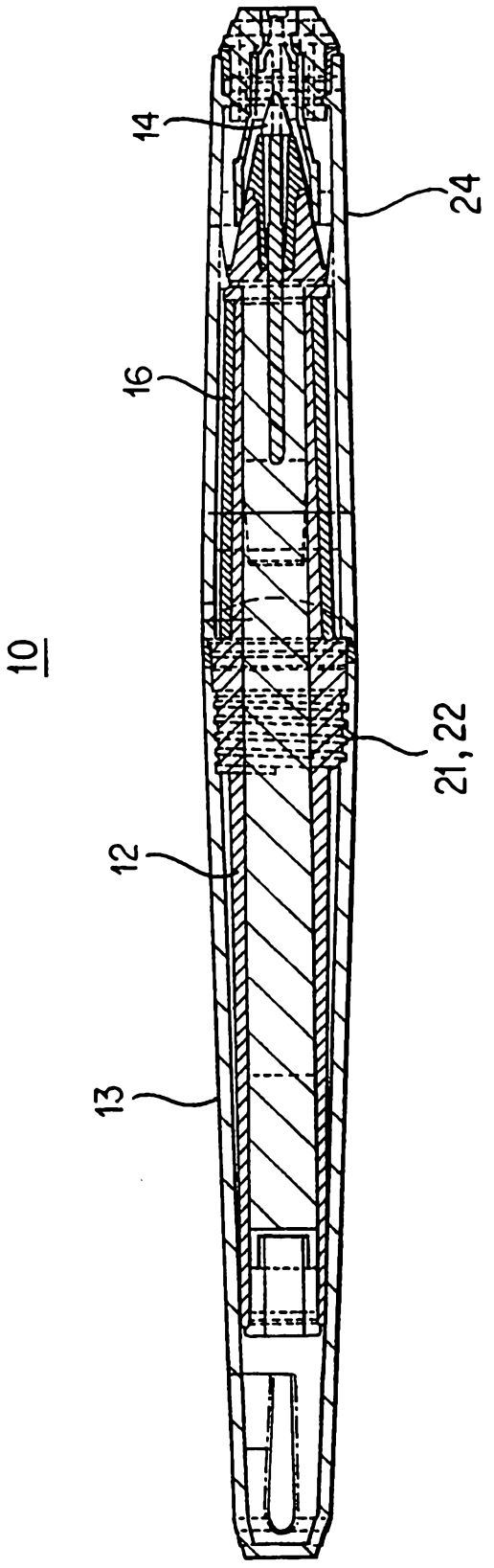

FIG. 3

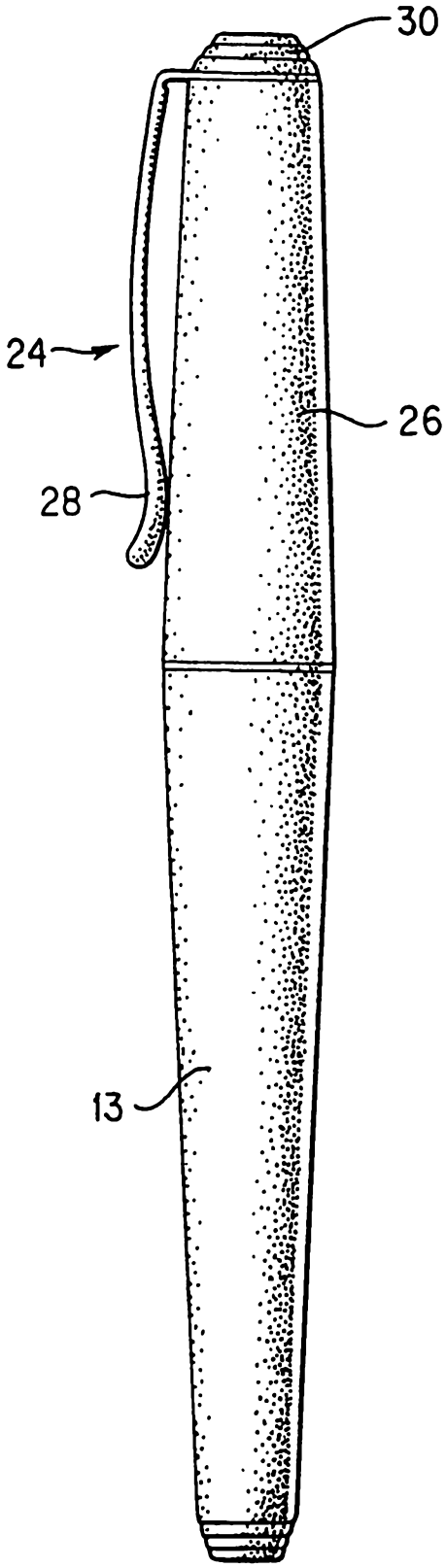

FIG. 4

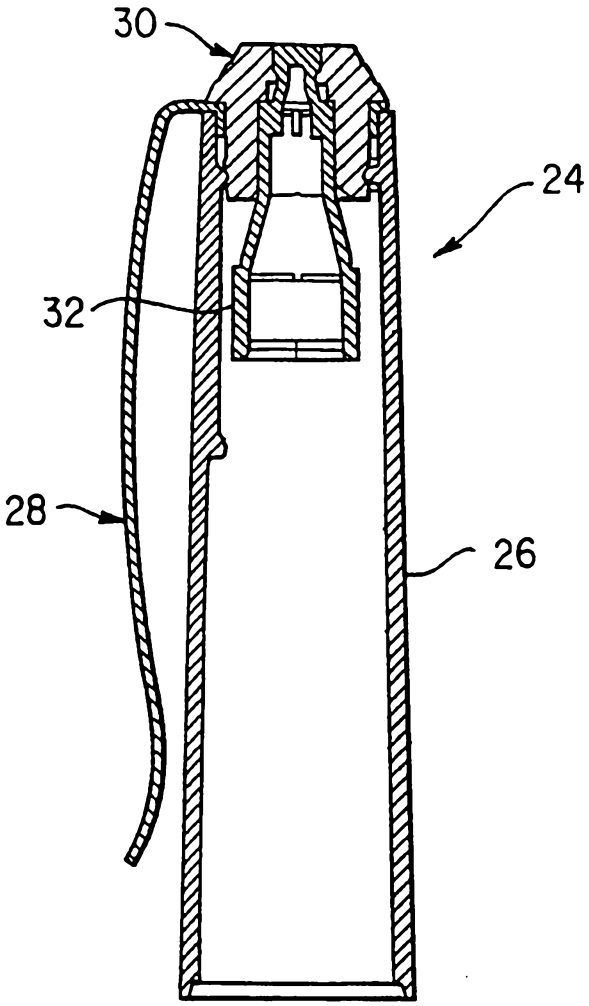

FIG. 5

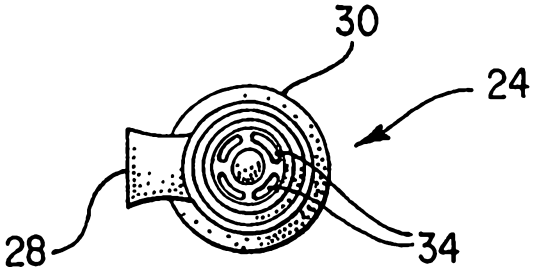

FIG. 6