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(54) **LACROSSE STICK**

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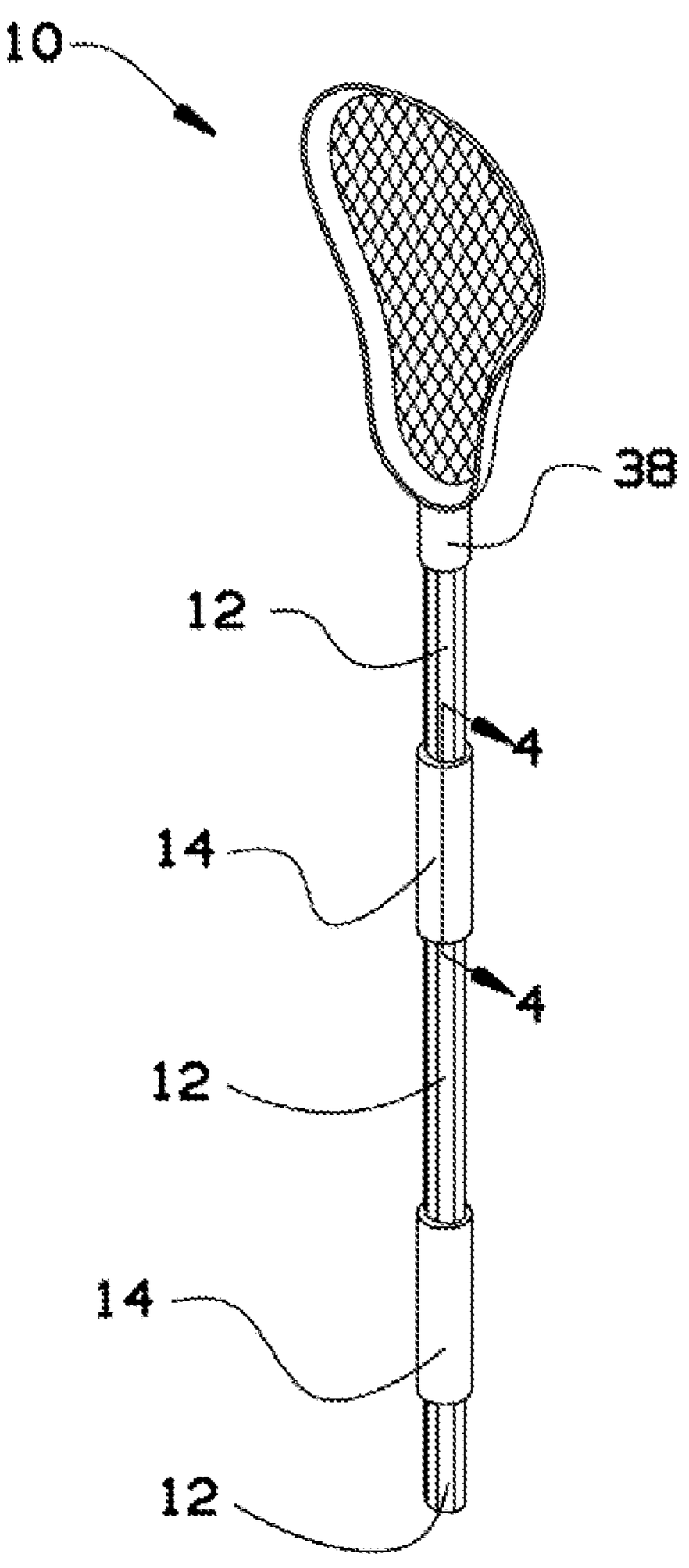
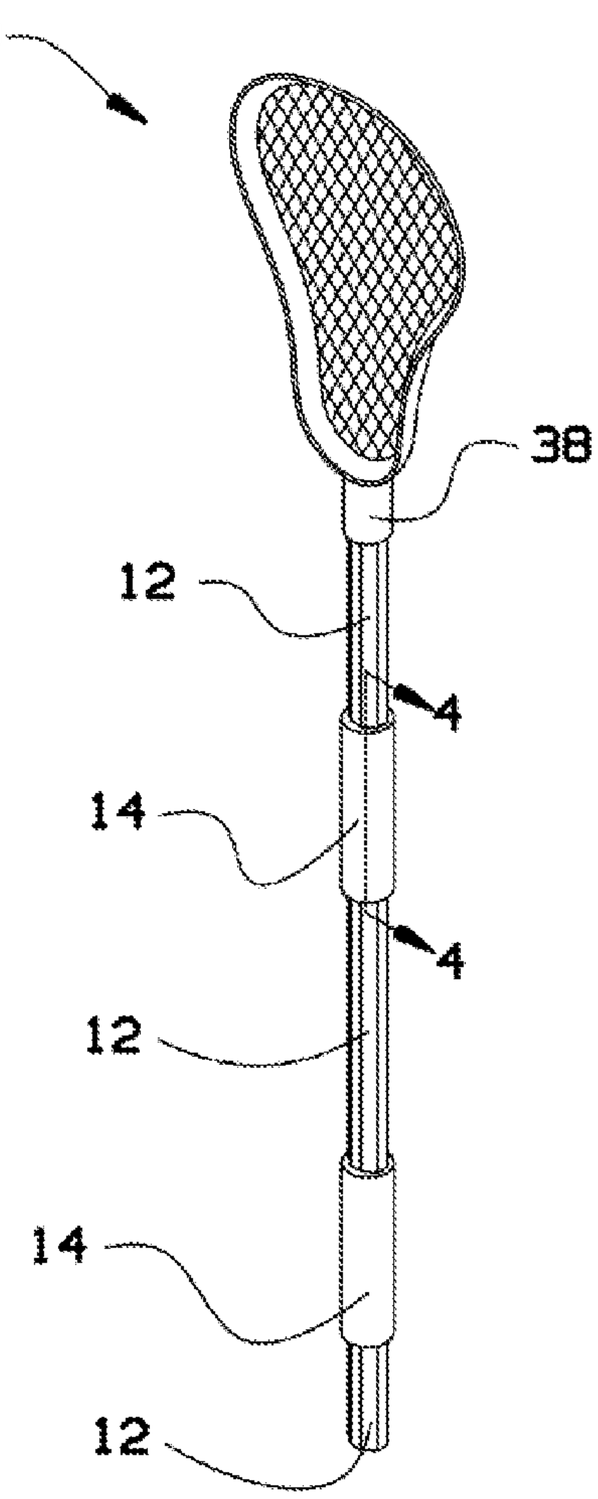
(57) **ABSTRACT**

A lacrosse stick has one or more handle features, such as one or more rotating sleeves and/or one or more angular bends. The rotating sleeves may be passive (powered by the user's articulation) or powered to assist in motion. The rotating sleeves may be freely rotating and/or ratcheted and may permit full rotation or may limit rotation to a particular degree. The angular bends may include one or more bends, offering the user the ability to manipulate and rotate the lacrosse stick handle in multiple directions using a cranking type motion.




10
38
12
4
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4
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14
12

FIG. 1

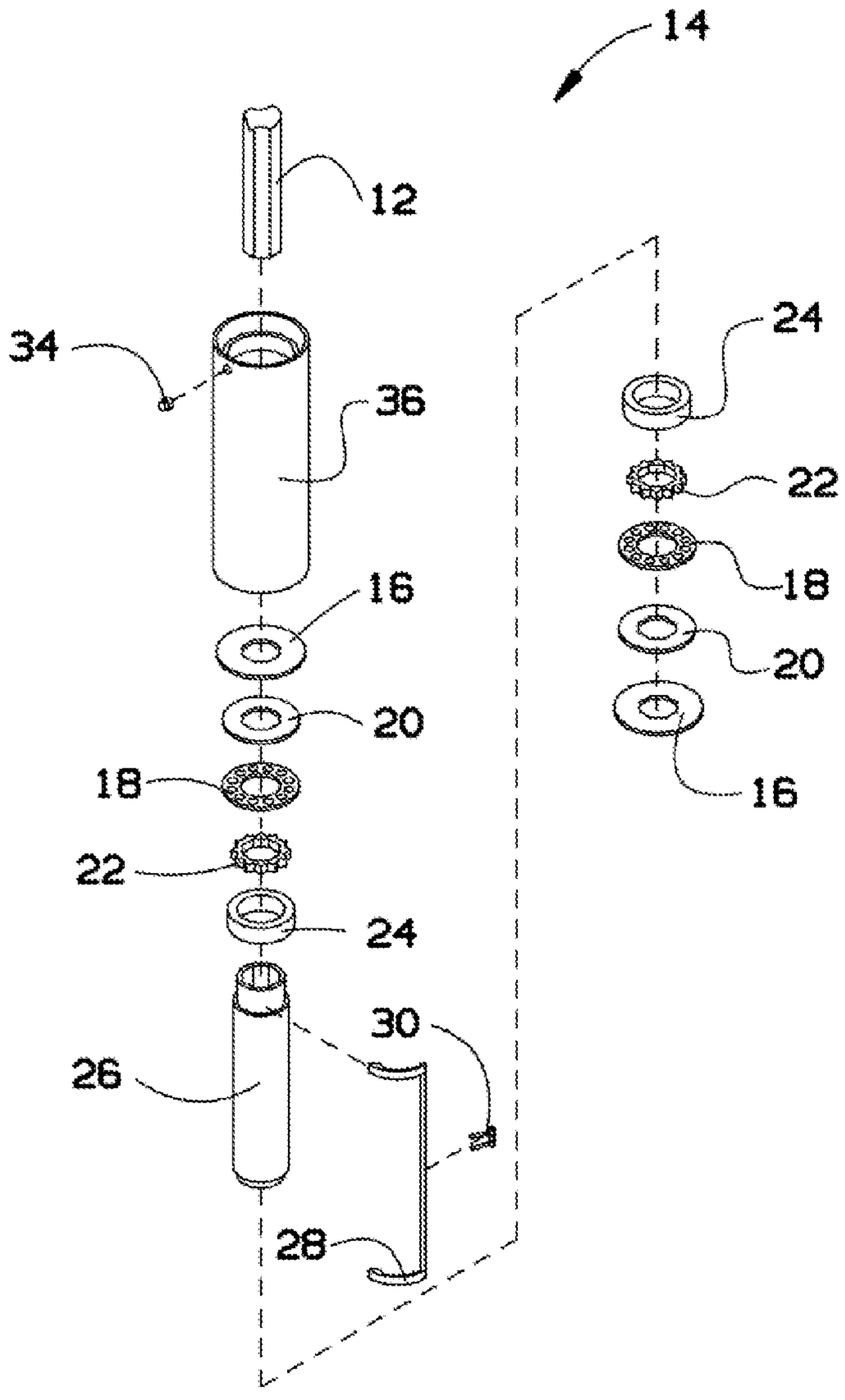
14
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FIG. 2

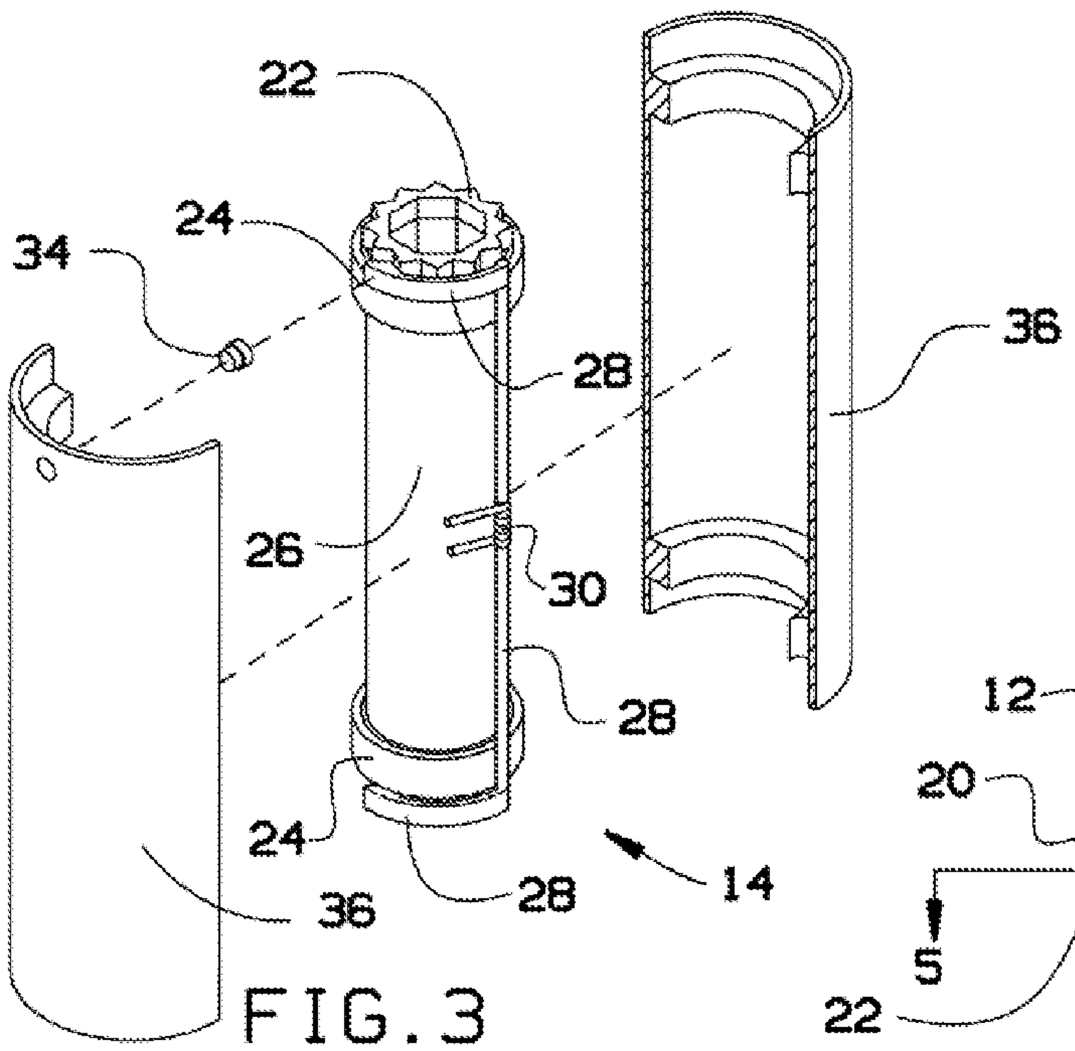

FIG. 3

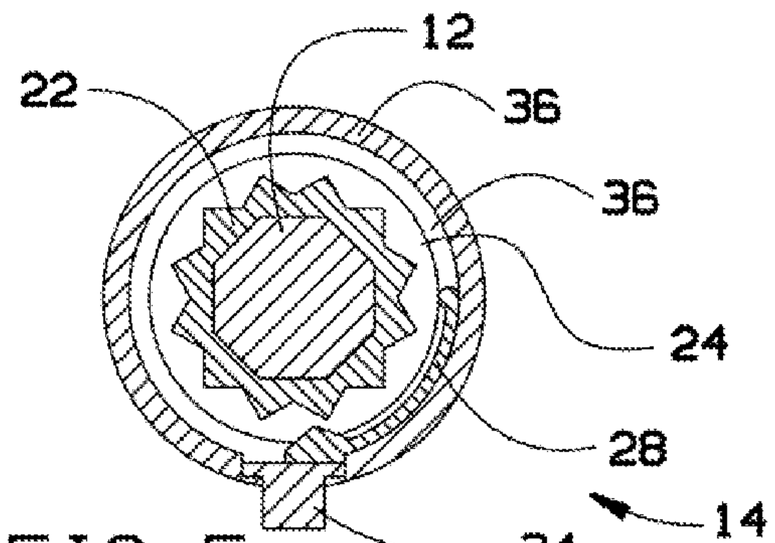

FIG. 5

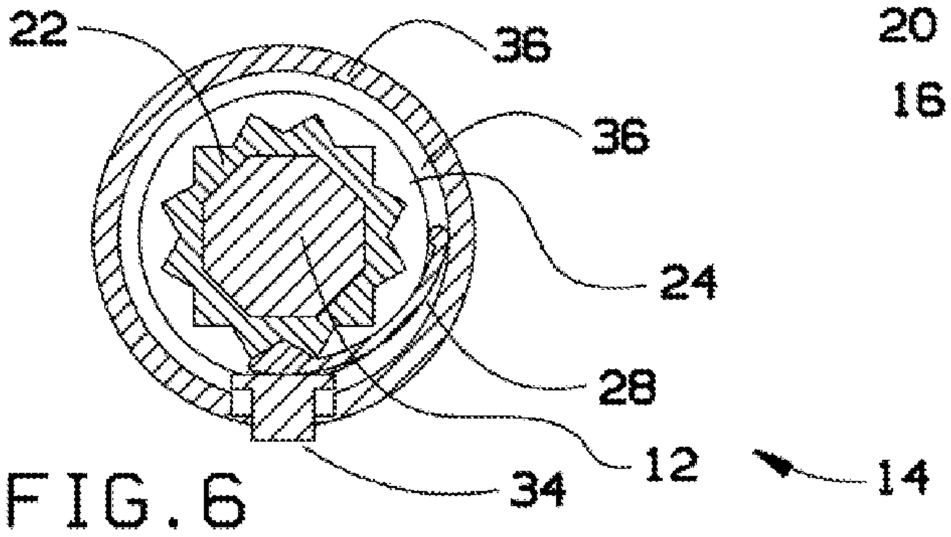

FIG. 6

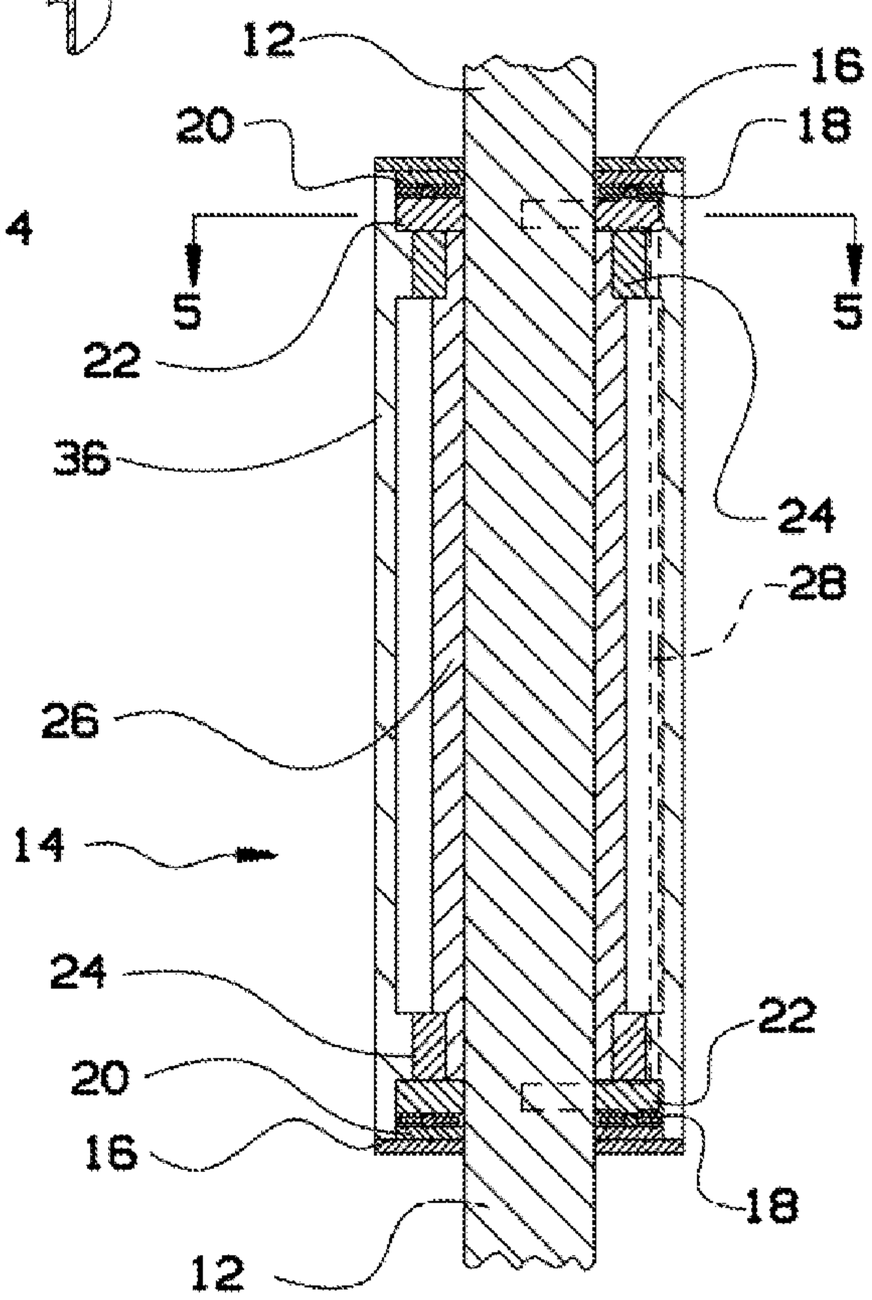

FIG. 4

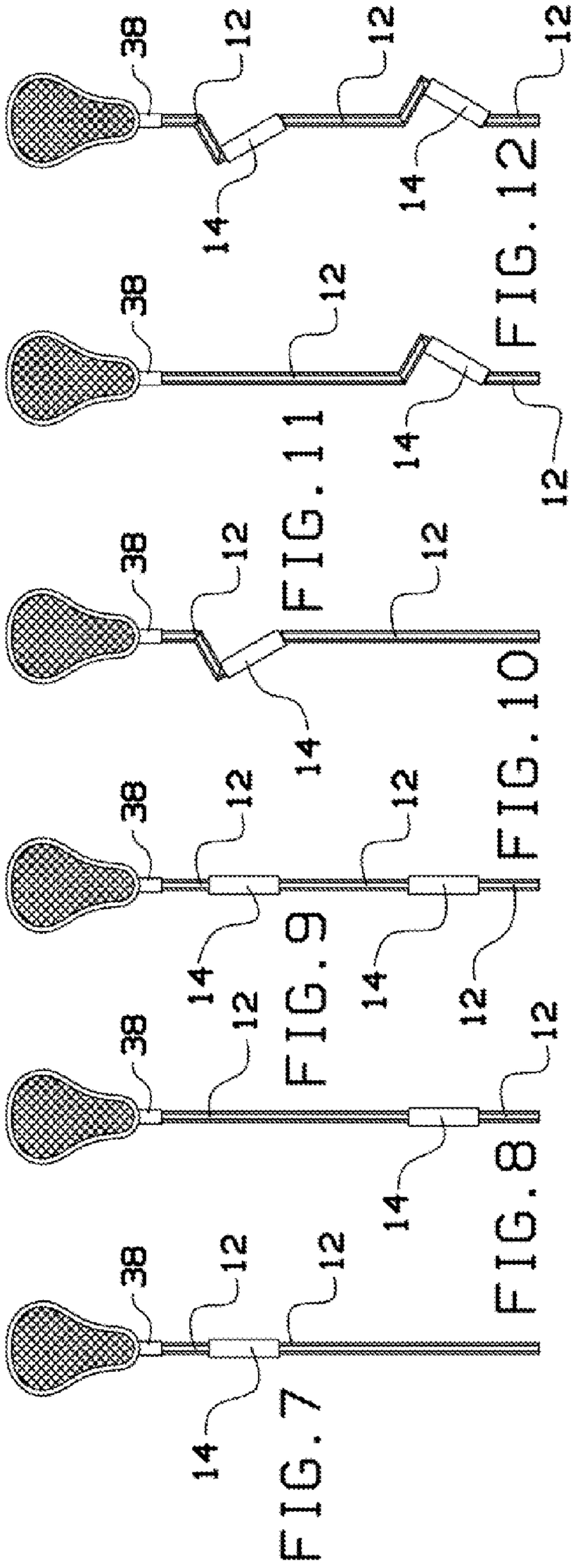

FIG. 12

FIG. 11

FIG. 10

FIG. 9

FIG. 8

FIG. 7

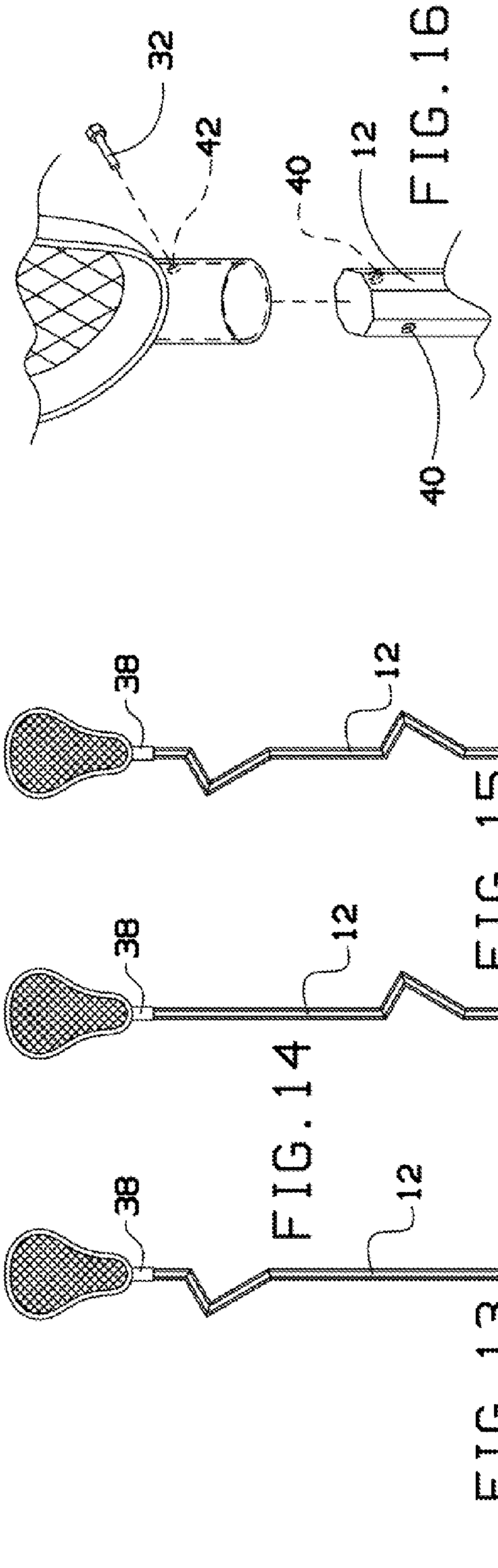

FIG. 16

FIG. 15

FIG. 14

FIG. 13

LACROSSE STICK

BACKGROUND OF THE INVENTION

[0001] The present invention relates to lacrosse sticks and, more particularly, to a lacrosse stick having one or more handle features, including a pivoting collar or sleeve and/or one or more angular bends.

[0002] Cradling is a basic lacrosse technique for maintaining a lacrosse ball in the pocket of a lacrosse stick. Cradling the ball is where a player twists his wrists and flexes his forearm back & forth as a way to cause the ball to stay in the pocket by the addition of centrifugal force. This is one of the most fundamental and important skills a player will need to master. When cradling with two hands, one hand typically rotates the stick while the other hand allows the stick to rotate with a loose grip. The friction of the second hand may reduce cradling effectiveness or may cause a player to resort to a two-handed cradle.

[0003] Typical lacrosse sticks have straight shafts and, therefore, limit a player's motions for cradling a lacrosse ball. Ball handling and cradling techniques may be limited with such conventional lacrosse sticks.

[0004] As can be seen, there is a need for a lacrosse stick that may include one or more handle features, such as pivoting collars or sleeves and/or one or more angular bends.

SUMMARY OF THE INVENTION

[0005] In one aspect of the present invention, a lacrosse stick comprises a stick portion having one or more handle features, wherein the one or more handle features includes one or more angular bends, one or more sleeves, or a combination thereof, wherein the one or more sleeves permit rotation of the stick portion relative to the one or more sleeves.

[0006] In another aspect of the present invention, a lacrosse stick comprises a stick portion having one or more angular bends, wherein the stick portions distal and proximal to the angular bends are aligned; and a lacrosse head attached to one end of the stick portion.

[0007] In a further aspect of the present invention, a lacrosse stick comprises a stick portion having one or more sleeves, wherein the one or more sleeves permit rotation of the stick portion relative to the one or more sleeves; and a lacrosse head attached to one end of the stick portion.

[0008] These and other features, aspects and advantages of the present invention will become better understood with reference to the following drawings, description and claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] FIG. **1** is a perspective view of a lacrosse stick according to an exemplary embodiment of the present invention;

[0010] FIG. **2** is an exploded view of a portion of the lacrosse stick of FIG. **1**;

[0011] FIG. **3** is a partially exploded view of the portion of FIG. **2**;

[0012] FIG. **4** is a cross-sectional view taken along line **4-4** of FIG. **1**;

[0013] FIG. **5** is a cross-sectional view taken along line **5-5** of FIG. **2**, showing an unlocked configuration;

[0014] FIG. **6** is a cross-sectional view taken along line **5-5** of FIG. **2**, showing a locked configuration;

[0015] FIGS. **7** through **15** show various configurations of a lacrosse stick using one or more rotating sleeve assemblies and/or having one or more angular bends, according to exemplary embodiments of the present invention; and

[0016] FIG. **16** shows an exploded view of a head portion of the lacrosse stick of FIG. **1**.

DETAILED DESCRIPTION OF THE INVENTION

[0017] The following detailed description is of the best currently contemplated modes of carrying out exemplary embodiments of the invention. The description is not to be taken in a limiting sense, but is made merely for the purpose of illustrating the general principles of the invention, since the scope of the invention is best defined by the appended claims.

[0018] Various inventive features are described below that can each be used independently of one another or in combination with other features.

[0019] Broadly, an embodiment of the present invention provides a lacrosse stick having one or more handle features. The handle features may include one or more rotating sleeves and/or one or more angular bends. The rotating sleeves may be passive (powered by the user's articulation) or powered to assist in motion. The rotating sleeves may be freely rotating and/or ratcheted and may permit full rotation or may limit rotation to a particular degree. The angular bends may include one or more bends, offering the user the ability to manipulate and rotate the lacrosse stick handle in multiple directions using a cranking type motion.

[0020] Referring to FIG. **1**, a lacrosse stick **10** may include a lacrosse stick **12**, typically as a solid body, and a lacrosse stick head **38**. In some embodiments, the lacrosse stick **12** may include one or more rotating sleeves **14**.

[0021] Referring now to FIGS. **2** through **6**, the sleeve **14** may include a sleeve housing **36** designed to rotate relative to the stick **12**. The stick **12** may fit through the sleeve **36**. The sleeve **14** may include one or more gear assemblies. The gear assemblies may include a ratchet gear **22** disposed adjacent to a ring ball bearing **18**. The ring ball bearing **18** may be disposed adjacent to a sleeve side bearing plate **20** and a solid-body side bearing plate **16**. A metal ring **24** may fit around one end of a bearing spacer **26** and may support the ratchet gear **22** opposite of the ball bearing **18**. The ratchet gear **22** may have a geometric inside shape that may match an exterior geometric shape of the stick **12**. Typically, one gear assembly may be disposed at one end of the bearing spacer **26** and a second gear assembly may be disposed at the other end of the bearing spacer **26**. The sleeve **14** may permit the stick **12** to turn while the sleeve housing **36** is maintained in a fixed position.

[0022] A locking arm **28** may be disposed in the sleeve **14** and a locking arm button **34** may extend through a hole in the sleeve housing **36**. A user may depress the locking arm button **34** to cause the locking arm **28** to engage with the ratchet gear **22**, thereby fixing the stick **12** with the sleeve housing **36**. A locking arm spring **30** may be disposed on the locking arm **28** to keep the locking arm **28** in an unlocked configuration, as shown in FIG. **5**, until the user depresses the locking arm button **34**, causing the locking arm **28** to move into a locked configuration, as shown in FIG. **6**.

[0023] The configuration shown in FIGS. **2** through **6** may permit full rotation of the stick **12** while the sleeve housing **36** remains fixed. In other embodiments, the sleeve **14** may limit rotation to a specific angle of rotation. For example, the sleeve **14** may limit rotation to ⅛, ¼, ½, or ¾ of full rotation. This limit may be accomplished in any number of manners. For example, the ratchet gear **22** may include a catch (not shown)

that may engage the locking arm **28** once the stick **12** is turned to its rotation limit. The sleeve **14** may be configured to provide clockwise rotation, counterclockwise rotation, or both.

[0024] While the above describes one configuration for the sleeve **14**, other configurations may be used to provide a sleeve that may permit rotation of the stick **12** while the users hand is fixed on the sleeve. For example, the sleeve **14** may freely rotate without using the ratchet gear **22**.

[0025] As shown in FIGS. **7**, **8** and **9**, the sleeve **14** may appear in an upper position on the stick **12**, a lower position on the stick **12** or in both the upper and lower positions on the stick **12**.

[0026] As shown in FIGS. **13**, **14** and **16**, the stick **12** may include one or more handle features including angular bends. Angular bends may be provided in an upper position on the stick **12**, a lower position on the stick **12** or in both the upper and lower positions on the stick **12**. In some embodiments, the portions of the stick **12** without angular bends may be aligned in a straight line. Typically, regardless of angular bends, the lower end of the stick **12** will align with the head end of the stick **12**.

[0027] As shown in FIGS. **10**, **11**, and **12**, the handle feature may include both angular bends and sleeves. The angular bends and sleeves may be disposed in an upper position on the stick **12**, a lower position on the stick **12** or in both the upper and lower positions on the stick **12**. In still other embodiments, the lacrosse stick **12** may include both handle features (the angular bend and the sleeve), but in different locations on the stick **12**. For example, an upper portion may include an angular bend and a lower portion may include a sleeve.

[0028] Referring now to FIG. **16**, the lacrosse head **16** may be attached to the stick **12** with a bolt **32** fitting into a lacrosse-neck hole **42** and through a lacrosse-neck hole **40** in the stick **12**.

[0029] It should be understood, of course, that the foregoing relates to exemplary embodiments of the invention and that modifications may be made without departing from the spirit and scope of the invention as set forth in the following claims.

What is claimed is:

1. A lacrosse stick comprising:

a stick portion having one or more handle features, wherein the one or more handle features includes one or more angular bends, one or more sleeves, or a combination thereof, wherein the one or more sleeves permit rotation of the stick portion relative to the one or more sleeves.

2. The lacrosse stick of claim **1**, wherein the handle feature includes one or more sleeves positioned at an upper portion of the stick portion, a lower portion of the stick portion, or both the upper portion and the lower portion of the stick portion.

3. The lacrosse stick of claim **2**, wherein the sleeve includes a ratchet gear affixed to the stick portion and a locking arm adapted to fix rotation of the sleeve with rotation of the stick portion.

4. The lacrosse stick of claim **3**, further comprising at least one locking arm button extending from the sleeve, the locking arm button adapted to deform the locking arm from an unlocked position to a locked position.

5. The lacrosse stick of claim **1**, wherein the handle feature includes one of more angular bends positioned at an upper portion of the stick portion, a lower portion of the stick portion, or both the upper portion and the lower portion of the stick portion.

6. The lacrosse stick of claim **5**, wherein the stick portions, distal and proximal of each angular bend, are aligned.

7. The lacrosse stick of claim **1**, wherein at least one sleeve is disposed in a portion of the angular bend.

8. The lacrosse stick of claim **1**, further comprising a lacrosse head attached to one end of the stick portion.

9. A lacrosse stick comprising:

a stick portion having one or more angular bends, wherein the stick portions distal and proximal to the angular bends are aligned; and

a lacrosse head attached to one end of the stick portion.

10. A lacrosse stick comprising:

a stick portion having one or more sleeves, wherein the one or more sleeves permit rotation of the stick portion relative to the one or more sleeves; and

a lacrosse head attached to one end of the stick portion.

* * * * *