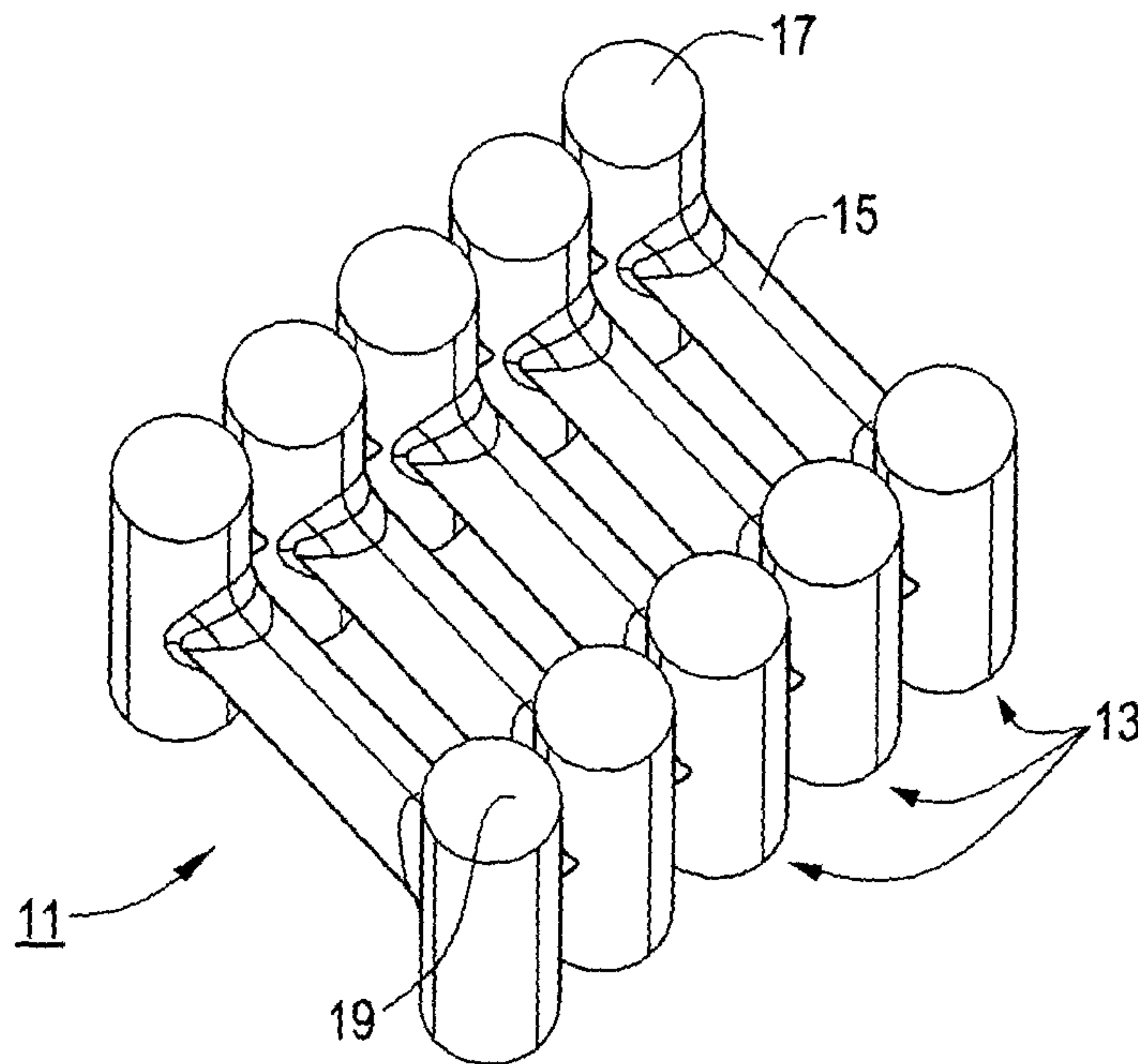




(86) Date de dépôt PCT/PCT Filing Date: 2000/10/13
 (87) Date publication PCT/PCT Publication Date: 2001/04/19
 (85) Entrée phase nationale/National Entry: 2002/04/11
 (86) N° demande PCT/PCT Application No.: US 2000/028506
 (87) N° publication PCT/PCT Publication No.: 2001/026997
 (30) Priorité/Priority: 1999/10/13 (09/416,784) US

(51) Cl.Int.⁷/Int.Cl.⁷ B65D 85/24
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(54) Titre : BRIDE DE FIXATION
 (54) Title: FASTENER CLIP



(57) **Abrégé/Abstract:**

A unitary plastic fastener clip (11) comprising a plurality of individual fasteners (13) which are disposed in a substantially parallel, side-by-side relationship. Each fastener (13) comprises an elongated flexible filament (15) having a first enlarged end (17) and a second enlarged end (19). In another embodiment, the first enlarged end (17) is a transverse bar of non-uniform transverse cross section and the second enlarged end (19) is a generally knob-shaped head. A first connector post (21-1) connects the first enlarged end (17) of the first fastener (13) to the first enlarged end (17) of the second fastener (13) and the second connector post (21-2) connects the second enlarged end (19) of the first fastener (13) to the second enlarged end (19) of the second fastener (13).

ABSTRACT

A unitary plastic fastener clip (11) comprising a plurality of individual fasteners (13) which are disposed in a substantially parallel, side-by-side relationship. Each fastener (13) comprises an elongated flexible filament (15) having a first enlarged end (17) and a second enlarged end (19). In another embodiment, the first enlarged end (17) is a transverse bar of non-uniform transverse cross section and the second enlarged end (19) is a generally knob-shaped head. A first connector post (21-1) connects the first enlarged end (17) of the first fastener (13) to the first enlarged end (17) of the second fastener (13) and the second connector post (21-2) connects the second enlarged end (19) of the first fastener (13) to the second enlarged end (19) of the second fastener (13).

FASTENER CLIP

CROSS-REFERENCE TO RELATED APPLICATIONS

The present application is a continuation-in-part of U.S. Patent Application Serial No. 09/116,008, inventor William J. Cooper, filed July 15, 1998, the disclosure of which is incorporated herein by reference.

BACKGROUND OF THE INVENTION

The present invention relates generally to plastic fasteners and more particularly to clips of plastic fasteners.

Plastic fasteners are well known in the art and are commonly used to couple together two or more objects. For example, plastic fasteners have been used to attach merchandise tags to articles of commerce, to couple or to re-couple a button to an article of clothing, to last together shoe uppers, and the like.

Plastic fasteners typically comprise a flexible filament having a first enlargement at one end thereof and a second enlargement at the opposite end thereof. In one common type of plastic fastener (see, for example, Fig. 1 of U.S. Patent No. 5,321,872, which patent is incorporated herein by reference), the first enlargement has the shape of a transverse bar and the second enlargement has the shape of a paddle or the shape of a second transverse bar, the transverse bar and the paddle (or second transverse bar) extending in planes parallel to one another. In another common type of plastic fastener (see, for example, U.S. Patent No. 3,494,004, which patent is incorporated by reference), the first enlargement has the shape of a transverse bar and the second enlargement has the shape of a knob or pin head. In still another common type of plastic fastener (see, for example, U.S. Patent No. 4,240,183, which patent is incorporated herein by reference), the first enlargement has the shape of a transverse bar or the shape of a plug and the second enlargement has the shape of a socket, said socket being adapted to receive said transverse bar or said plug.

Plastic fasteners of the various types described above are typically molded as parts of a unitary fastener clip. An example of such a fastener clip is disclosed in U.S. Patent No. 3,733,657, which patent is incorporated herein by reference. The

clip of the aforementioned '657 patent includes a plurality of fasteners, each of said fasteners comprising a flexible filament having a transverse bar (or "cross-bar") at one end thereof and a paddle or a second transverse bar (or "cross-bar") at the opposite end thereof, the transverse bar and the paddle (or second transverse bar) of each fastener extending in planes parallel to one another. The fasteners are arranged relative to one another so that the respective transverse bars are spaced apart and oriented side-by-side and parallel to one another and so that the respective paddles (or second transverse bars) are spaced apart and oriented side-by-side and parallel to one another. The clip of the foregoing '657 patent also includes a runner bar, said runner bar extending perpendicularly relative to the respective transverse bars and being connected to each of the transverse bars by a severable connector. The clip of said '657 patent further includes a severable member interconnecting each pair of adjacent paddles (or second transverse bars).

Other examples of fastener clips that comprise one or more runner bars interconnecting plastic fasteners include U.S. Patent No. 5,622,257, U.S. Patent No. 4,901,854, U.S. Patent No. 5,799,375, and U.S. Reissue Patent No. 34,891, all of which are incorporated herein by reference.

Fastener clips which comprise a runner bar suffer from certain disadvantages. For example, because the runner bar of a fastener clip is of no use once the fasteners originally attached thereto have been dispensed therefrom, a used runner bar typically constitutes economically and environmentally undesirable waste material. In addition, severed connectors previously used to connect fasteners to a runner bar and still remaining on the runner bar after the fasteners have been detached therefrom often have an acute end which may undesirably snag on and damage merchandise when fasteners from the fastener clip are dispensed into such merchandise with a conventional fastener dispensing tool. Furthermore, the number of fasteners that can be molded into a clip of the type having a runner bar is typically limited by the molding process used to create the fastener clip.

For at least the above reasons, a number of runner bar-less fastener clips, assemblies or stock have been fashioned. For example, in U.S. Patent No.

4,039,078, inventor Bone, which issued August 2, 1977, and which is incorporated herein by reference, there is disclosed fastener attachment stock to be separated or divided, e.g., by cutting, severing, rupturing or shearing, to provide a plurality of fasteners each preferably having a substantially H shape. The stock in its most preferred form includes two undivided elongated and continuous plastic side members having a plurality of plastic cross links coupled to and between each of said side members, each of the links being preferably spaced equidistantly apart from each other.

Fastener stock related to that disclosed in U.S. Patent No. 4,039,078 is disclosed in U.S. Patent No. 4,456,123, inventor Russell, which issued June 26, 1984, and which is incorporated herein by reference. The fastener stock of U.S. Patent No. 4,456,123 differs from that of U.S. Patent No. 4,039,078 in that, in U.S. Patent No. 4,456,123, the filament has a substantially D-shaped cross-section and provides draft on surfaces extending from the plane to facilitate removal from the mold. Also, the side members are reduced in cross-sectional area between individual fasteners to provide severable connectors to facilitate separation. The connectors join the end-bars of adjacent fasteners end-to-end at a portion of their periphery, preferably having a flat face at said plane extending from said plane on either the same side as the filaments or the opposite side thereof. Preferably, they extend from the same side and the joined end-bars are substantially D-shaped. Where the connectors extend from the opposite side, the section thereof is preferably continued across the joined end-bars to provide a more rounded cross-section for feeding through circular needle bores.

As can be seen, in each of U.S. Patent Nos. 4,039,078 and 4,456,123, the enlargements of adjacent fasteners are oriented in an end-to-end relationship. In contrast, in U.S. Patent No. 4,660,718, inventors Kato et al., which issued April 28, 1987, and which is incorporated herein by reference, there is disclosed a runner bar-less fastener assembly comprising fasteners of the type comprising a flexible filament having a head at one end thereof and a cross-bar at the opposite end thereof, wherein the respective heads and cross-bars of adjacent fasteners are oriented in a

parallel, side-by-side, spaced relationship. More specifically, the two side faces of each head are formed so as to protrude or bulge from edges towards a central portion to provide an apex, and adjacent heads are mutually and directly connected through their facing apices in a manner capable of being easily disconnected by cutting. The sides of adjacent cross-bars are connected by a film or a rod that extends longitudinally along a substantial portion of the length of the cross-bars or by a plurality of connectors posts that extend transversely relative to the sides of adjacent cross-bars. As explained in the foregoing '718 patent, the purpose of the aforementioned film, rod and connector posts is to prevent adjacent cross-bars from moving, i.e., pivoting, relative to one another.

In U.S. Reissue Patent 32,332, inventor Kato, which reissued January 20, 1987, there is disclosed a runner bar-less fastener assembly comprising fasteners of the type comprising a flexible filament having a head at one end thereof and a cross-bar at the opposite end thereof, wherein the respective heads and cross-bars of adjacent fasteners are oriented in a parallel, side-by-side, spaced relationship. More specifically, the two side faces of each head are formed so as to protrude or bulge from edges towards a central portion to provide an apex, and adjacent heads are mutually and directly connected through their facing apices in a manner capable of being easily disconnected by cutting. Likewise, the two side faces of each cross-bar are formed so as to protrude at a central portion, and adjacent cross-bars are directly connected through their respective protruding portions. In another embodiment, the aforementioned directly-conjoined heads are replaced with a second set of cross-bars that are directly conjoined in the same manner as described above. According to the foregoing '332 patent, the direct conjoining of adjacent heads to one another and the direct conjoining of adjacent cross-bars to one another, both in the manner described above, is preferable to the use of connector posts for the reason that, when severed, connector posts are said to leave unwanted whisker-like projections on the heads and/or cross-bars to which they are attached.

SUMMARY OF THE INVENTION

It is an object of the present invention to provide a new fastener clip.

It is another object of the present invention to provide a fastener clip as described above that has a minimal number of parts, that is easy to manufacture and
5 that is easy to use.

According to one aspect of the invention, there is provided a fastener clip comprising (a) a first fastener, said first fastener comprising a flexible filament having a first enlarged end and a second enlarged end; (b) a second fastener, said second fastener comprising a flexible filament having a first enlarged end and a second enlarged end; (c) said first fastener and said second fastener being arranged in a
10 parallel, side-by-side, spaced relationship; (d) a first connector post connecting said first enlarged end of said first fastener to said first enlarged end of said second fastener; and (e) a second connector post connecting said second enlarged end of said first fastener to said second enlarged end of said second fastener.

According to another aspect of the invention, there is provided a runner bar-less fastener clip comprising (a) a first fastener, said first fastener comprising a flexible filament having a first enlarged end and a second enlarged end; (b) a second fastener, said second fastener comprising a flexible filament having a first enlarged end and a second enlarged end; (c) said first fastener and said second fastener being
15 arranged in a parallel, side-by-side, spaced relationship; (d) a first connector post connecting said first enlarged end of said first fastener to said first enlarged end of said second fastener at about the respective midpoints thereof.

Various other features and advantages will appear from the description to follow. In the description, reference is made to the accompanying drawings which
20 form a part thereof, and in which is shown by way of illustration, a specific embodiment for practicing the invention. This embodiment will be described in sufficient detail to enable those skilled in the art to practice the invention, and it is to be understood that other embodiments may be utilized and that structural changes may be made without departing from the scope of the invention. The following
25

detailed description is therefore, not to be taken in a limiting sense, and the scope of the present invention is best defined by the appended claims.

BRIEF DESCRIPTION OF THE DRAWINGS

The accompanying drawings, which are hereby incorporated into and constitute a part of this specification, illustrate preferred embodiments of the invention and, together with the description, serve to explain the principles of the invention. In
5 the drawings wherein like reference numerals represent like parts:

Fig. 1 is a top perspective view of a first embodiment of a runner bar-less clip of fasteners constructed according to the teachings of the present invention;

Fig. 2 is a top view of the runner bar-less clip of fasteners shown in Fig. 1;

10 Fig. 3 is a front view of the runner bar-less clip of fasteners shown in Fig. 2, taken along lines 3-3;

Fig. 4 is an enlarged top view of a second embodiment of a runner bar-less clip of fasteners constructed according to the teachings of the present invention;

15 Figs. 5(a) and 5(b) are perspective views of a third embodiment of a runner bar-less clip of fasteners constructed according to the teachings of the present invention; and

Figs. 6(a) through 6(c) are enlarged fragmentary perspective views of the runner bar-less clip of Figs. 5(a) and 5(b), showing an individual fastener and its associated connector posts.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to the drawings, there is shown a first embodiment of a runner bar-less fastener clip constructed according to the teachings of the present invention, said runner bar-less fastener clip being represented generally by reference numeral
5 11.

Fastener clip 11 is a unitary structure preferably molded from a plastic, such as polyurethane, polypropylene or the like. Fastener clip 11 is shown comprising five identical fasteners 13; however, it is to be understood that the number of fasteners 13 in fastener clip 11 is illustrative only and could be increased or decreased without
10 departing from the scope or spirit of the present invention. (In fact, fastener clip 11 may, if desired, comprise upwards of several hundred or more fasteners 13.)

Each fastener 13 comprises a thin, elongated, flexible filament 15 having a first enlarged end 17 and a second enlarged end 19. In the present embodiment, filament 15 is substantially cylindrical in shape, enlarged end 17 is in the shape of a
15 substantially cylindrical transverse bar, and enlarged end 19 is in the shape of a substantially cylindrical transverse bar, thereby giving fastener 13 a generally H-shaped configuration.

It should be understood that, although each of filament 15 and enlarged ends 17 and 19 is shown in the present embodiment having a generally cylindrical shape,
20 filament 15 and enlarged ends 17 and 19 need not be generally cylindrical in shape. For example, enlarged ends 17 and 19 may be transverse bars having any of a number of different transverse cross-sectional shapes, such as ovaloid or rectangular. In addition, enlarged ends 17 and 19 may be transverse bars having a non-uniform shape, such as that possessed by cross-bars 55 and 57 of commonly-
25 assigned, pending U.S. Patent Application Serial No. 09/151,650, which patent application is incorporated herein by reference, or that possessed by feet 15-1 and 15-2 of commonly-assigned U.S. Patent No. 5,622,257, which patent is incorporated herein by reference. Moreover, as seen below, one or both of enlarged ends 17 and 19 need not be in the form of a transverse bar.

Fasteners 13 are arranged substantially parallel to and spaced apart from one another, with their respective enlarged ends 17 oriented side-by-side and their respective enlarged ends 19 oriented side-by-side. Each pair of adjacent enlarged ends 17 is joined together at the approximate midpoints of mutually-opposing sides thereof by a severable connector post 21-1, and each pair of adjacent enlarged ends 19 is joined together at the approximate midpoints of mutually-opposing sides thereof by a severable connector post 21-2, connector posts 21-1 and 21-2 extending transversely relative to enlarged ends 17 and 19, respectively.

Connector posts 21 are strong enough to maintain the connection between adjacent fasteners 13 in clip 11 prior to the dispensing of individual fasteners 13 from clip 11 and, yet, are weak enough to be severed by the conventional severing action of a fastener dispensing tool. At the same time, posts 21 have a certain degree of flexibility; consequently, because of the arrangement of posts 21 relative to ends 17 and 19, adjacent fasteners 13 in clip 11 are permitted to pivot relative to one another. This freedom to pivot is very useful where clip 11 is dispensed from a fastener dispensing tool having a curved feed track, such as that disclosed in U.S. Provisional Patent Application Serial No. 60/122,557, which is incorporated herein by reference.

Connector posts 21 are shown as having a cross-section which is generally circular in shape; however, it is to be understood that connector posts 21 could have an alternatively-shaped cross-section, such as an ovaloid or rectangular cross-section, without departing from the spirit of the present invention. Also, connector posts 21 may be conical or tapered in cross-section. In fact, where fastener clip 11 is dispensed from a fastener dispensing tool like that disclosed in U.S. Provisional Patent Application Serial No. 60/122,557, it may be highly desirable for connector posts 21 to have a conical or tapering transverse cross-section that decreases in diameter from the fastener about to be dispensed to its adjacent fastener so that very little of the severed connector post 21 that once connected the fastener about to be dispensed to the fastener previously attached to it will remain on the about-to-be-dispensed fastener. In this manner, the fastener about to be dispensed by the tool is able to sit substantially flush on the stage of the feed guide of said tool.

An example of a fastener clip having connector posts that taper in diameter from one fastener to its adjacent fastener is shown in Fig. 4 and is represented generally by reference numeral 51. Clip 51 differs from clip 11 only in that its connector posts 61-1 and 61-2 taper in diameter from one fastener to its adjacent
5 fastener.

The fasteners 13 of fastener clips 11 and 51 may be used in a variety of applications. Where, for example, fasteners 13 are used to maintain an article of clothing, such as a dress shirt, in a folded condition, fasteners 13 preferably have the dimensions and tensile strengths specified in U.S.S.N. 09/151,650.

10 Referring now to Figs. 5(a) and 5(b), there are shown two perspective views of another embodiment of a runner bar-less clip of fasteners, said runner bar-less clip of fasteners being constructed according to the teachings of the present invention and being represented generally by reference numeral 101.

Clip 101 is similar in many respects to clip 11, the principal difference between
15 the two clips being in the shape of their respective fasteners, clip 101 comprising a plurality of fasteners 103, each of fasteners 103 comprising a flexible filament 105 having a knob-shaped enlarged end 107, instead of a first substantially cylindrical transverse bar, and an enlarged end 109 similar to cross-bars 55 and 57 of U.S.S.N. 09/151,650, instead of a second substantially cylindrical transverse bar. Each pair
20 of adjacent enlarged ends 107 is joined together at the approximate midpoints of mutually-opposing sides thereof by a severable connector post 111-1, and each pair of adjacent enlarged ends 109 is joined together at the approximate midpoints of mutually-opposing sides thereof by a severable connector post 111-2, connector posts 111-1 and 111-2 extending transversely relative to enlarged ends 107 and 109,
25 respectively. Connector posts 111, which are shown in the present embodiment as being generally cylindrical, may have the variety of shapes described above in connection with connector posts 21. Connector posts 111 preferably have the strength and flexibility of connector posts 21. (Various enlarged fragmentary perspective views of clip 101 showing an individual fastener 103 and its associated
30 connector posts 111-1 and 111-2 are shown in Figs. 6(a) through 6(c).)

Fasteners 103 of clip 101 may be used, for example, to couple or to re-couple buttons to garments or fabrics; however, it is to be understood that fasteners 103 are not exclusively limited to this use and may be used in various other applications.

5 The embodiments shown in the present invention are intended to be merely exemplary and those skilled in the art shall be able to make numerous variations and modifications to them without departing from the spirit of the present invention. All such variations and modifications are intended to be within the scope of the present invention as defined in the appended claims.

WHAT IS CLAIMED IS:

1. A fastener clip comprising:

(a) a first fastener, said first fastener comprising a flexible filament having a first enlarged end and a second enlarged end;

5 (b) a second fastener, said second fastener comprising a flexible filament having a first enlarged end and a second enlarged end;

(c) said first fastener and said second fastener being arranged in a parallel, side-by-side, spaced relationship;

10 (d) a first connector post connecting said first enlarged end of said first fastener to said first enlarged end of said second fastener; and

(e) a second connector post connecting said second enlarged end of said first fastener to said second enlarged end of said second fastener.

2. The fastener clip as claimed in claim 1 wherein said first enlarged end of said first fastener is a transverse bar.

15 3. The fastener clip as claimed in claim 2 wherein said first enlarged end of said second fastener is a transverse bar.

4. The fastener clip as claimed in claim 2 wherein said second enlarged end of said first fastener is a transverse bar.

20 5. The fastener clip as claimed in claim 4 wherein said second enlarged end of said second fastener is a transverse bar.

6. The fastener clip as claimed in claim 2 wherein said second enlarged end of said first fastener is a generally knob-shaped head.

25 7. The fastener clip as claimed in claim 1 wherein said first fastener and said second fastener are identical in shape and size and wherein each of said first enlarged end of said first fastener and said first enlarged end of said second fastener is a transverse bar.

8. The fastener clip as claimed in claim 7 wherein said transverse bar has a non-uniform transverse cross-section.

9. The fastener clip as claimed in claim 7 wherein each of said second enlarged end of said first fastener and said second enlarged end of said second fastener is a transverse bar.

5 10. The fastener clip as claimed in claim 9 wherein said transverse bar is substantially cylindrical.

11. The fastener clip as claimed in claim 7 wherein each of said second enlarged end of said first fastener and said second enlarged end of said second fastener is a generally knob-shaped head.

10 12. The fastener clip as claimed in claim 1 wherein said first fastener, said second fastener, said first connector post and said second connector post form a unitary structure.

13. The fastener clip as claimed in claim 1 wherein said first fastener and said second fastener are interconnected only by said first connector post and said second connector post.

15 14. The fastener clip as claimed in claim 1 wherein each of said first connector post and said second connector post extends transversely relative to said first and second enlarged ends, respectively.

20 15. The fastener clip as claimed in claim 14 wherein said first connector post is disposed at the approximate midpoints of mutually-opposing sides of said first enlarged end of said first fastener and said first enlarged end of said second fastener.

16. The fastener clip as claimed in claim 15 wherein said second connector post is disposed at the approximate midpoints of mutually-opposing sides of said second enlarged end of said first fastener and said second enlarged end of said second fastener.

25 17. The fastener clip as claimed in claim 14 wherein said first and second connector posts are substantially cylindrical in shape.

18. The fastener clip as claimed in claim 14 wherein each of said first and second connector posts is uniform in transverse cross-sectional diameter along its length.

19. The fastener clip as claimed in claim 14 wherein each of said first and second connector posts tapers in transverse cross-sectional diameter along its length.

5 20. The fastener clip as claimed in claim 1 wherein said first connector post is sufficiently flexible to permit said first enlarged ends of said first and second fasteners to pivot relative to one another.

21. The fastener clip as claimed in claim 20 wherein said second connector post is sufficiently flexible to permit said second enlarged ends of said first and second fasteners to pivot relative to one another.

10 22. A runner bar-less fastener clip comprising:

(a) a first fastener, said first fastener comprising a flexible filament having a first enlarged end and a second enlarged end;

(b) a second fastener, said second fastener comprising a flexible filament having a first enlarged end and a second enlarged end;

15 (c) said first fastener and said second fastener being arranged in a parallel, side-by-side, spaced relationship; and

(d) a first connector post connecting said first enlarged end of said first fastener to said first enlarged end of said second fastener at about the respective midpoints thereof.

20 23. The runner bar-less fastener clip as claimed in claim 22 wherein said first enlarged end of said first fastener is a transverse bar.

24. The runner bar-less fastener clip as claimed in claim 23 wherein said first enlarged end of said second fastener is a transverse bar.

25 25. The runner bar-less fastener clip as claimed in claim 23 wherein said second enlarged end of said first fastener is a transverse bar.

26. The runner bar-less fastener clip as claimed in claim 25 wherein said second enlarged end of said second fastener is a transverse bar.

27. The runner bar-less fastener clip as claimed in claim 23 wherein said second enlarged end of said first fastener is a generally knob-shaped head.

28. The runner bar-less fastener clip as claimed in claim 22 wherein said first fastener and said second fastener are identical in shape and size and wherein each of said first enlarged end of said first fastener and said first enlarged end of said second fastener is a transverse bar.

5 29. The runner bar-less fastener clip as claimed in claim 28 wherein said transverse bar has a non-uniform transverse cross-section.

30. The runner bar-less fastener clip as claimed in claim 28 wherein each of said second enlarged end of said first fastener and said second enlarged end of said second fastener is a transverse bar.

10 31. The runner bar-less fastener clip as claimed in claim 30 wherein said transverse bar is substantially cylindrical.

32. The runner bar-less fastener clip as claimed in claim 28 wherein each of said second enlarged end of said first fastener and said second enlarged end of said second fastener is a generally knob-shaped head.

15 33. The runner bar-less fastener clip as claimed in claim 22 wherein said first fastener, said second fastener, and said first connector post form a unitary structure.

34. The runner bar-less fastener clip as claimed in claim 22 wherein said first connector post extends transversely relative to said first enlarged ends of said first and second fasteners.

20 35. The runner bar-less fastener clip as claimed in claim 34 wherein said first connector post is disposed at the approximate midpoints of mutually-opposing sides of said first enlarged ends of said first fastener and said second fastener.

36. The runner bar-less fastener clip as claimed in claim 22 wherein said first connector post is substantially cylindrical in shape.

25 37. The runner bar-less fastener clip as claimed in claim 22 wherein said first connector post is uniform in transverse cross-sectional diameter along its length.

38. The runner bar-less fastener clip as claimed in claim 22 wherein said first connector post tapers in transverse cross-sectional diameter along its length.

39. The runner bar-less fastener clip as claimed in claim 22 wherein said first connector post is sufficiently flexible to permit said first enlarged ends of said first and second fasteners to pivot relative to one another.

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FIG. 1

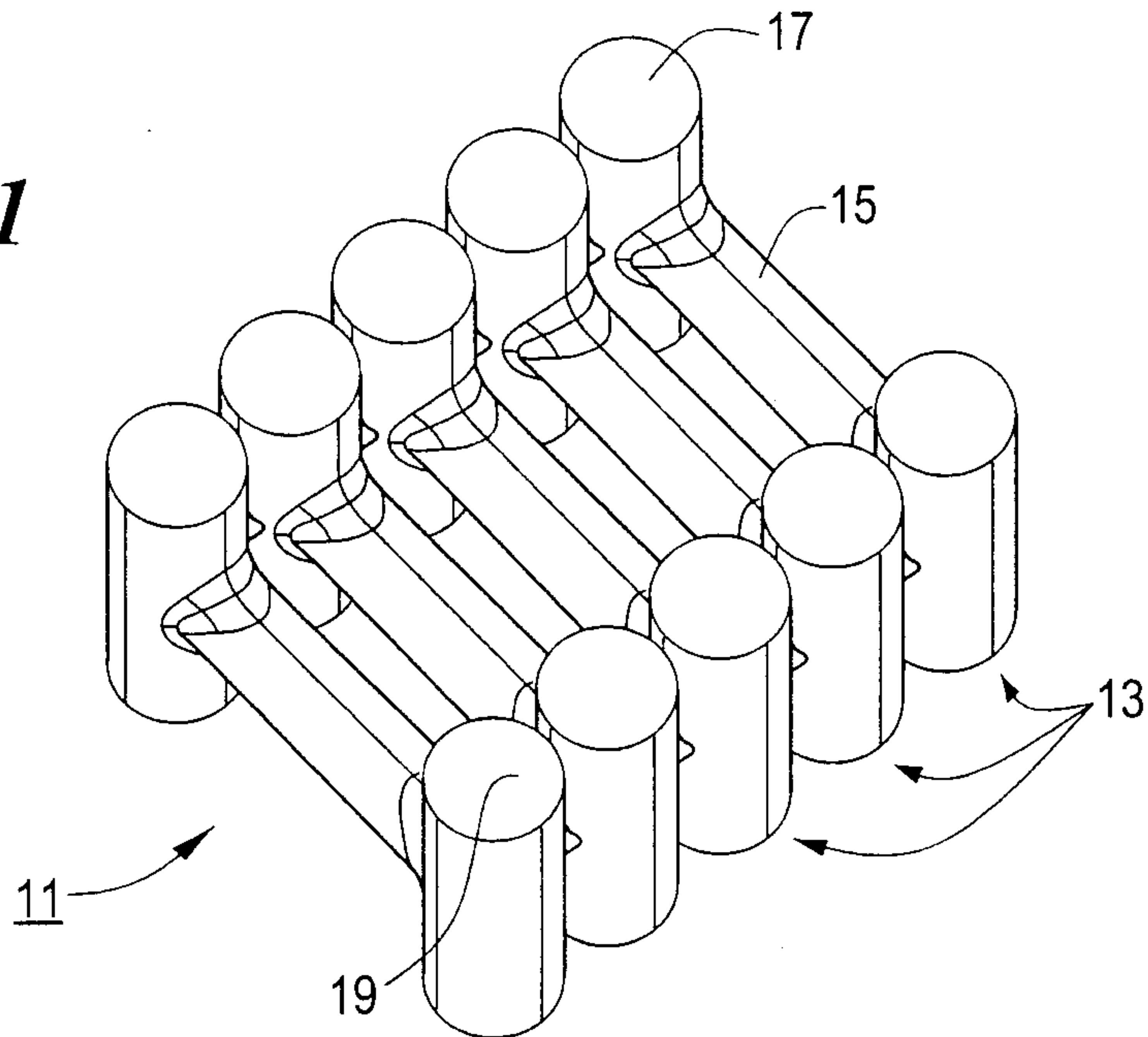
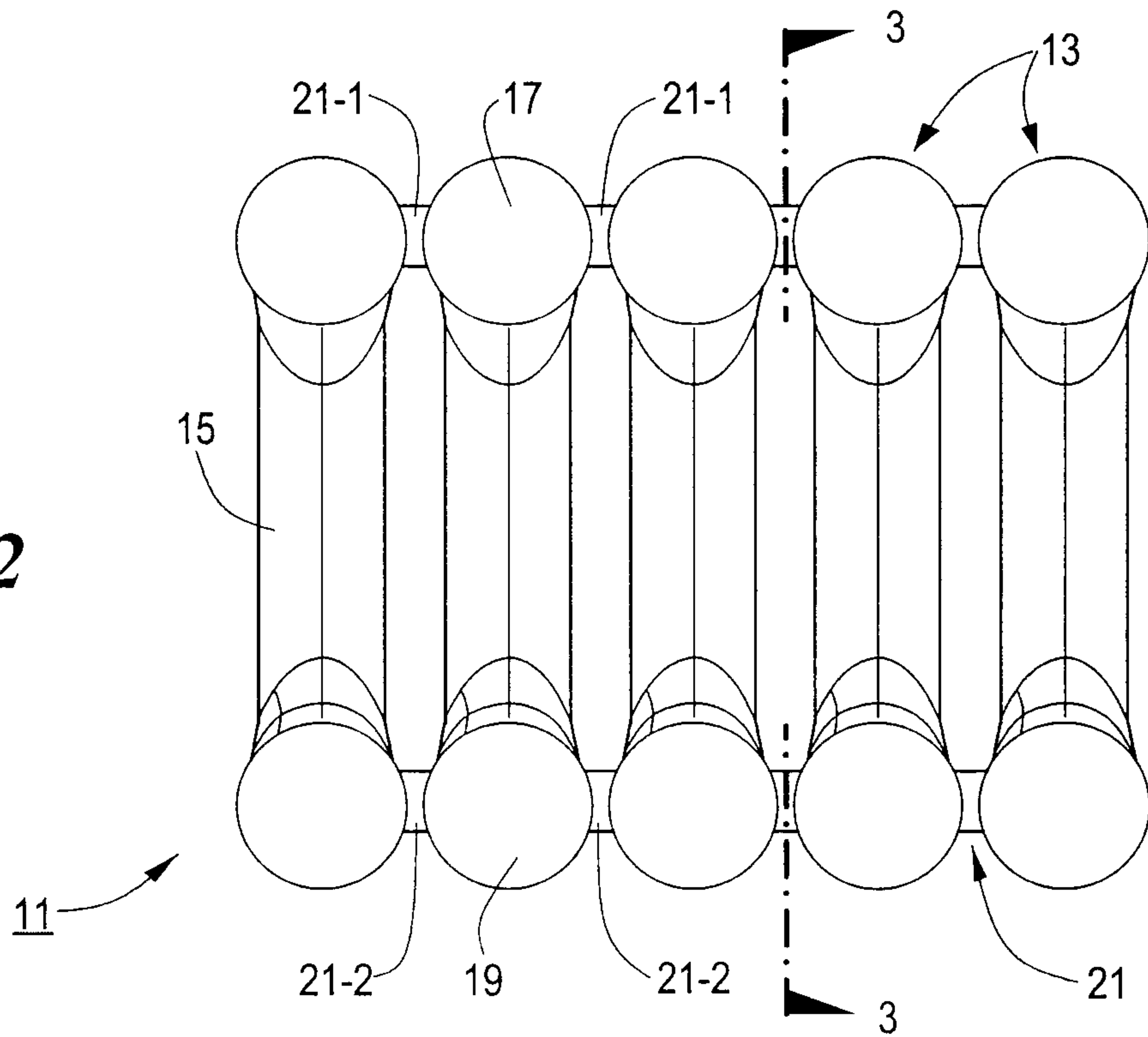


FIG. 2



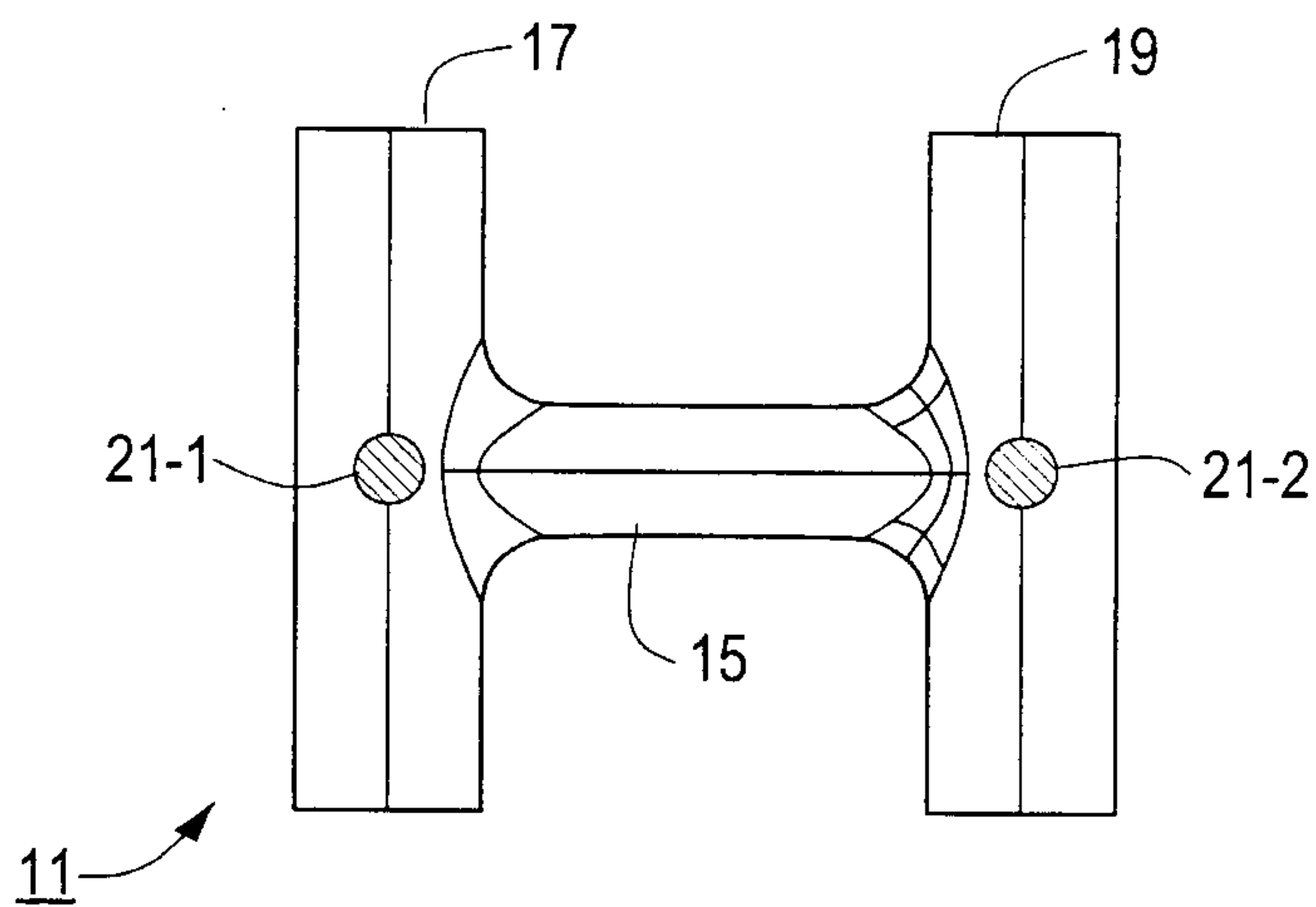


FIG. 3

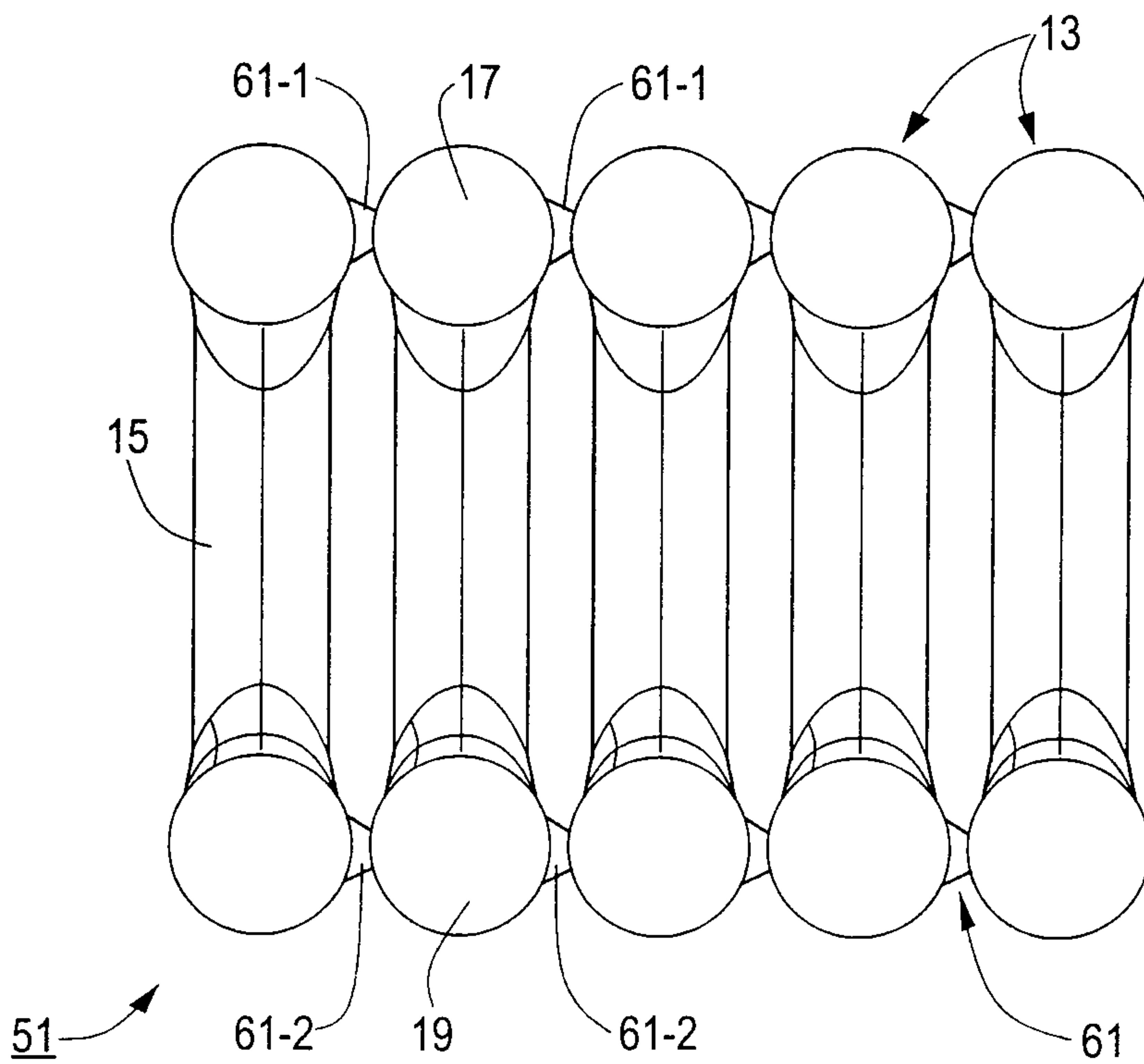


FIG. 4

3/4

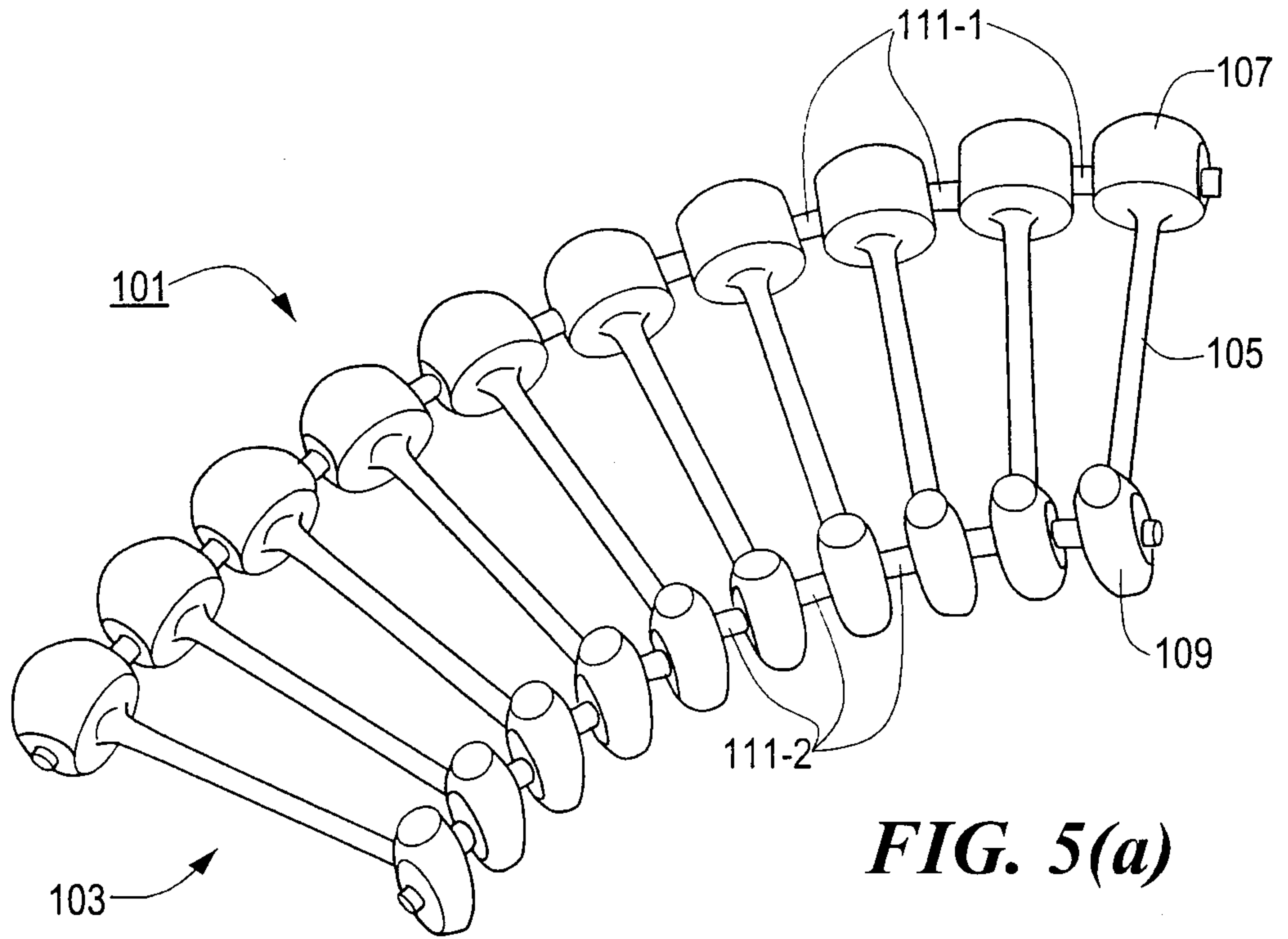


FIG. 5(a)

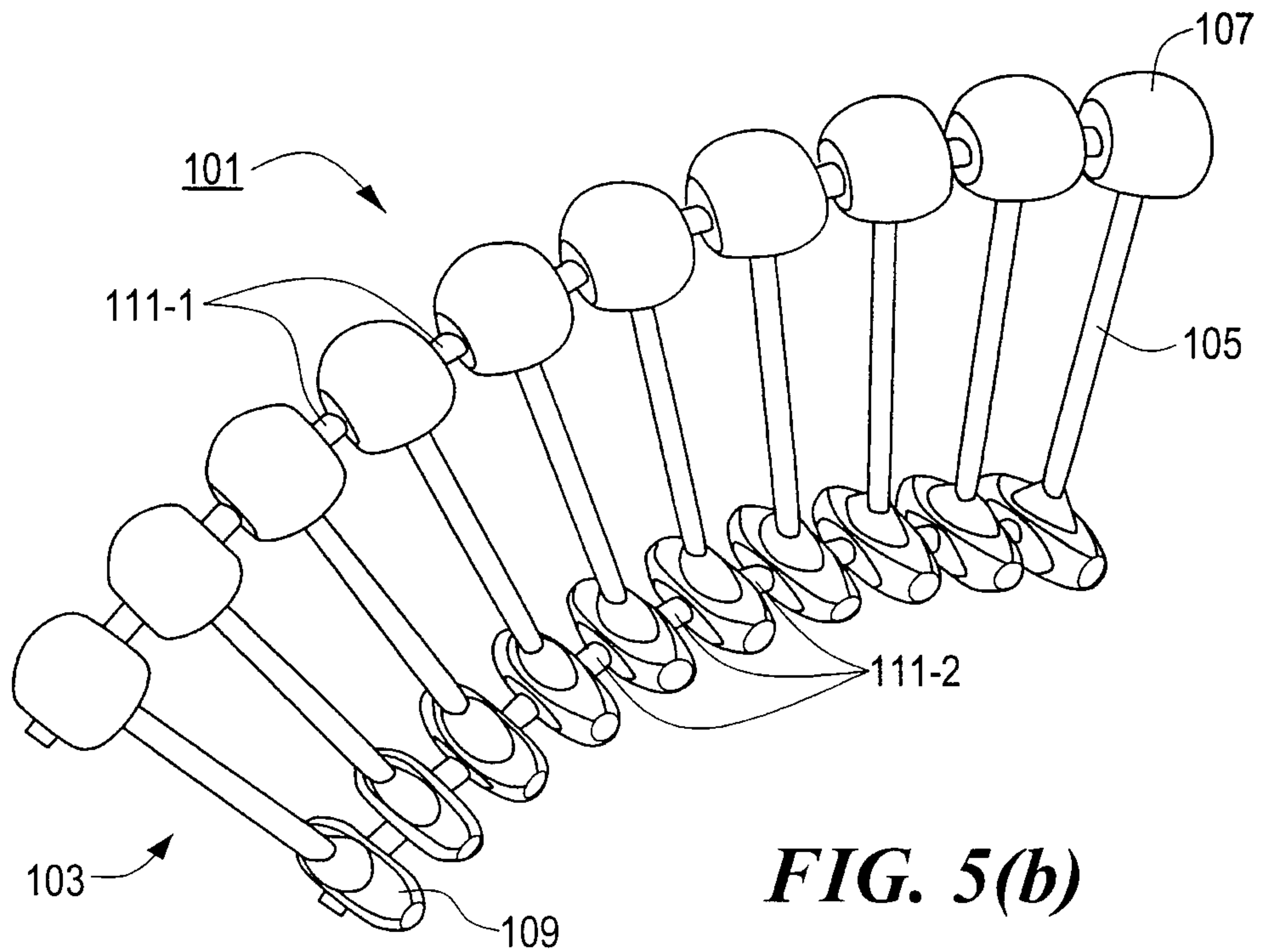


FIG. 5(b)

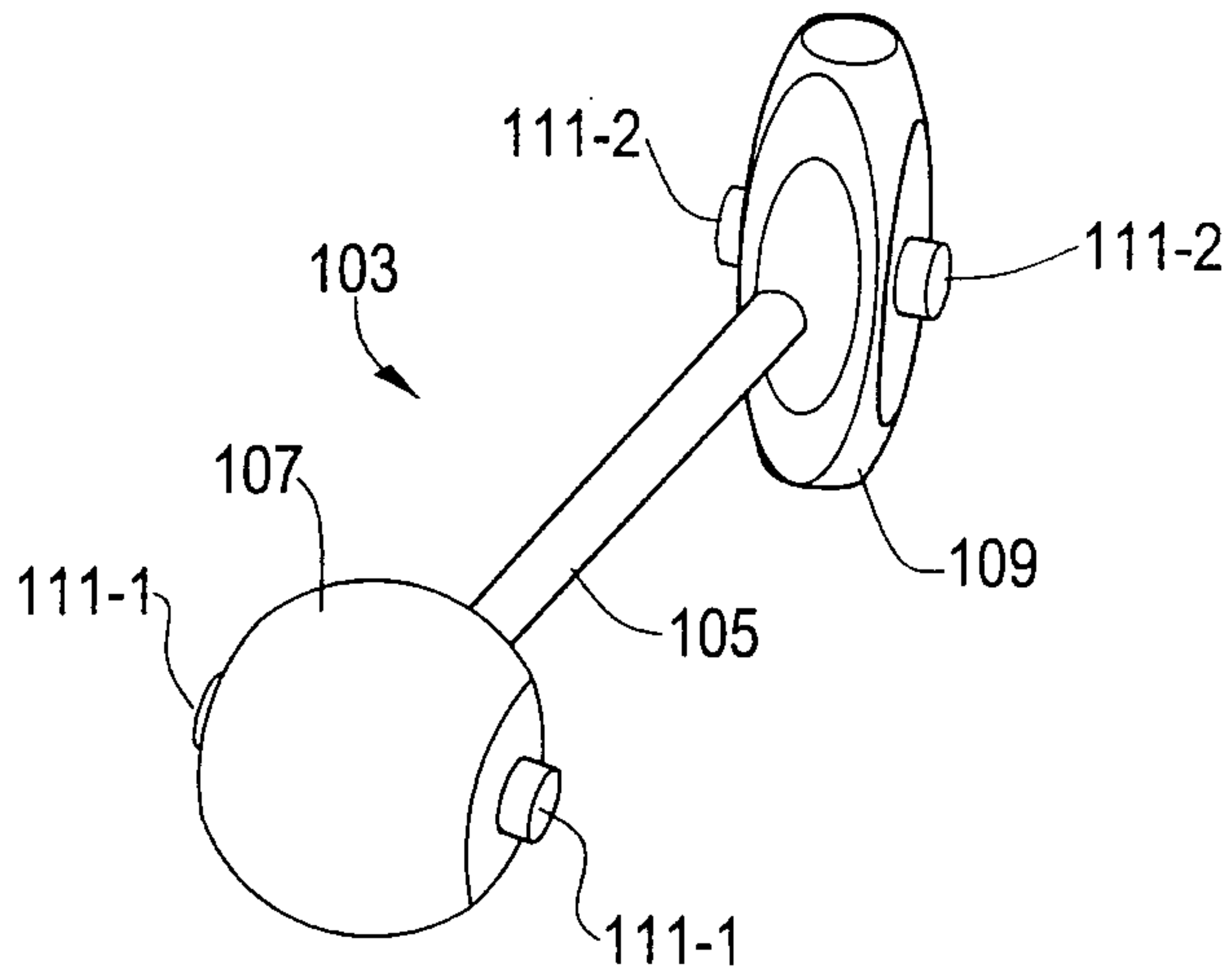


FIG. 6(a)

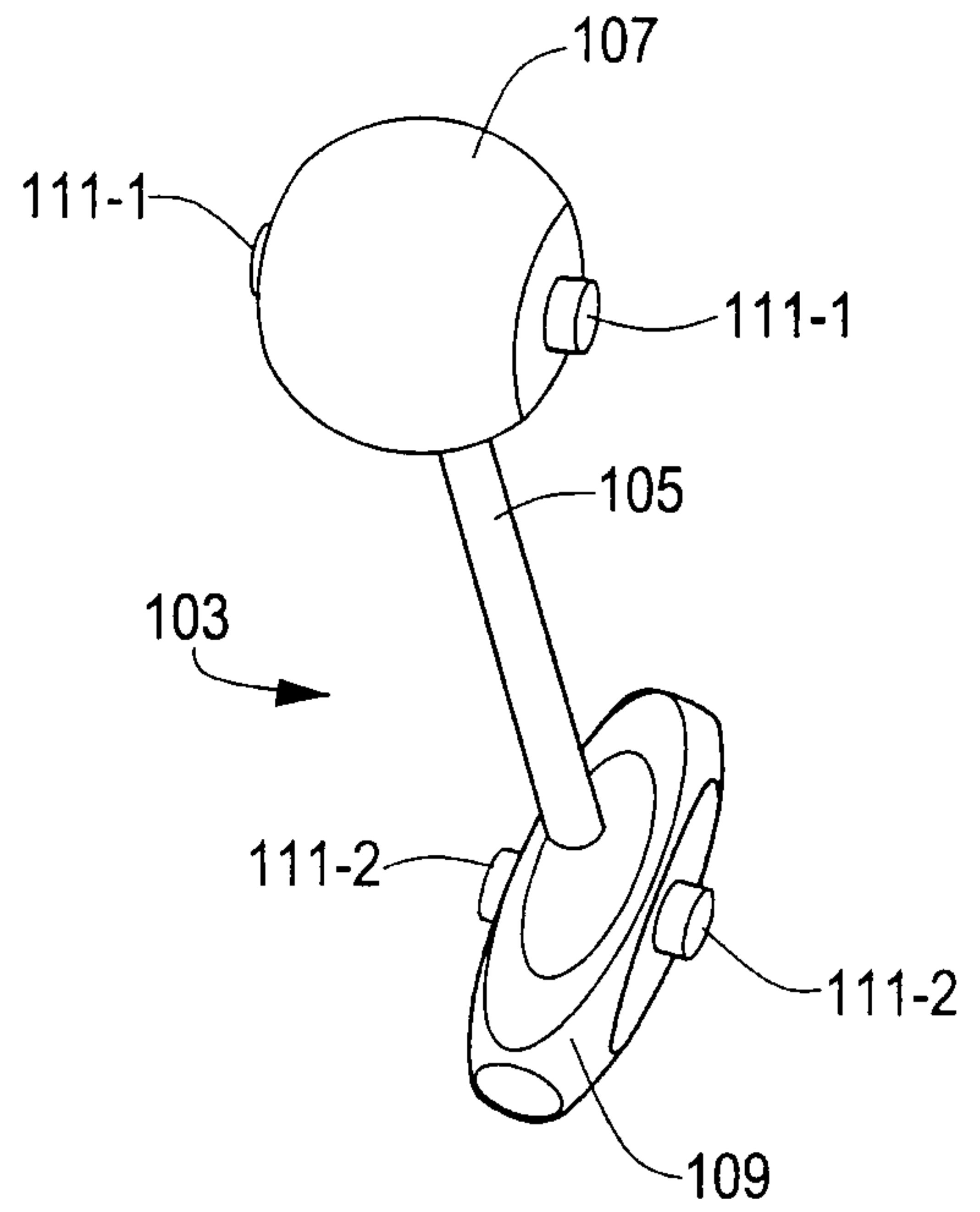


FIG. 6(b)

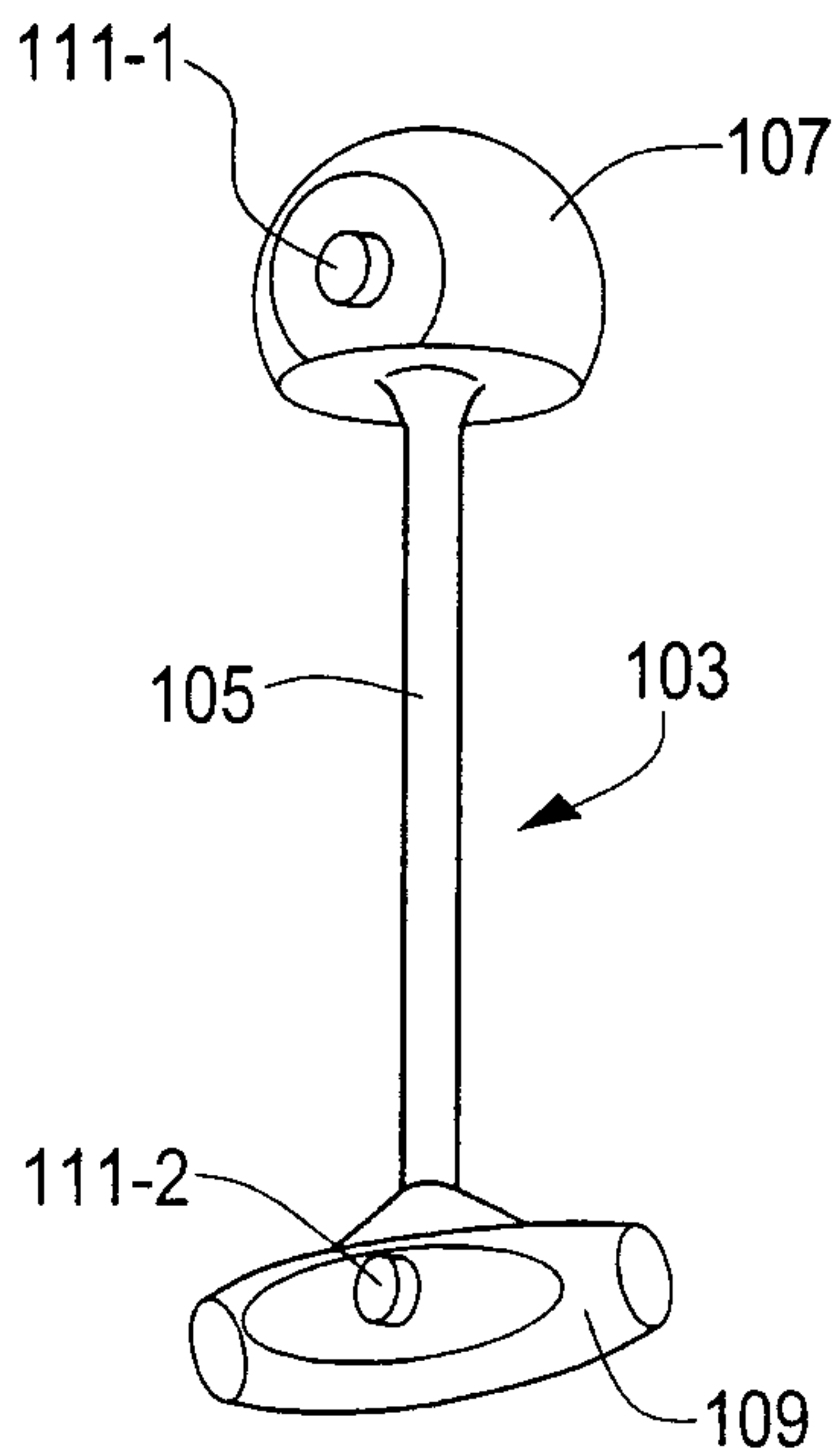


FIG. 6(c)

