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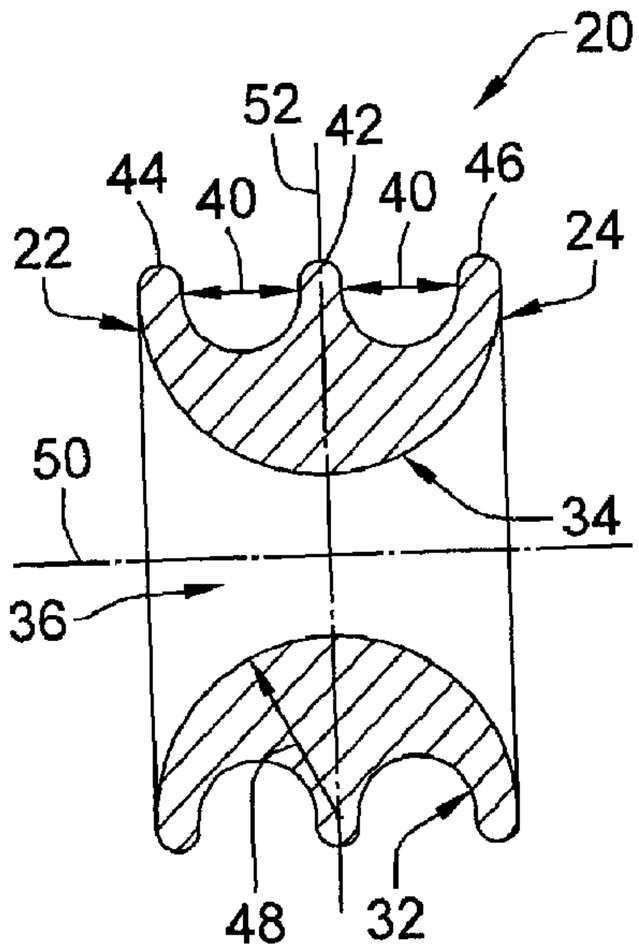
(54) Titre : BAGUE DE MAN'UVRE
(54) Title: RIGGING RING



(57) Abrégé/Abstract:
An apparatus for supporting and redirecting a rigging rope comprising a ring having an outer annular surface and a central passage extending between first and second side edges defining an inner surface, wherein the outer surface includes at least two

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(57) Abrégé(suite)/Abstract(continued):
circumferential grooves therearound and wherein the inner surface has a curved cross-sectional profile extending between the first and second side edges.

ABSTRACT

An apparatus for supporting and redirecting a rigging rope comprising a ring having an outer annular surface and a central passage extending between first and second side edges defining an inner surface, wherein the outer surface includes at least two circumferential grooves therearound and wherein the inner surface has a curved cross-sectional profile extending between the first and second side edges.

RIGGING RING

BACKGROUND OF THE INVENTION

1. Field of Invention

The present invention relates generally to rope rigging systems and specifically to a low friction rigging ring to support and redirect the rope therethrough.

2. Description of Related Art

Rope rigging systems can be used for a variety of purposes, including rock climbing, sailing and the arboriculture or forestry trade. When using rope rigging systems, the rope direction can be redirected in a number of ways, including with pulleys, blocks or low friction rings. Low friction rings are a low-cost alternative to pulleys and blocks, and are beneficial when loads are not too great. Rings weigh less than pulleys or blocks, which is advantageous when all rigging gear must be carried on the user to the desired site (such as rock climbing or arboriculture).

When supporting large loads, or redirecting a rigging rope over a greater deflection, multiple rings may be used to better support the load and to provide a greater bend radius, as illustrated in Figures **1** and **2** at **10**. Each low friction ring **12** is supported by one spliced support rope **8** in a groove **14** around the outer circumference of the ring, with the rigging rope **6** passing through the centre of each ring **12**. In this configuration, the rigging rope **6** is supported by a plurality of rings **12** therefore increasing the number of locations where the rigging rope **6** contacts the ring material and increasing rigging rope **6** wear as it passes therethrough. With multiple narrow rings, the rope must make a sharp turn to enter the first ring, then flattens out to pass through the remaining rings, then makes another sharp turn to exit the final ring. The sharp turns can cause the rope to wear quickly.

SUMMARY OF THE INVENTION

According to a first embodiment of the present invention there is disclosed an apparatus for supporting and redirecting a rigging rope comprising a ring having

an outer annular surface and a central passage extending between first and second side edges defining an inner surface, wherein the outer surface includes at least two circumferential grooves therearound and wherein the inner surface has a curved cross-sectional profile extending between the first and second side edges.

The curved cross-sectional profile may have an arcuate shape. The curved cross-sectional profile may have a constant curvature. The central passage may be round. The central passage may be elliptical.

Each of the at least two circumferential grooves may have a circular cross-sectional profile. The at least two circumferential grooves may be separated by a radial wall therebetween.

The ring may be formed of a material selected from a group consisting of aluminum, aluminum alloys, titanium and steel. The inner surface may be treated to provide a low friction surface. The inner surface may be anodized. The outer surface may be treated to provide a low friction surface. The outer surface may be anodized.

Other aspects and features of the present invention will become apparent to those ordinarily skilled in the art upon review of the following description of specific embodiments of the invention in conjunction with the accompanying figures.

BRIEF DESCRIPTION OF THE DRAWINGS

In drawings which illustrate embodiments of the invention wherein similar characters of reference denote corresponding parts in each view,

Figure **1** is a perspective view of prior art low friction rings in use.

Figure **2** is a font view of prior art low friction rings in use.

Figure **3**A is a front view of a low friction ring according to a first embodiment of the present invention.

Figure **3**B is a side view of the low friction ring of Figure **3**A.

Figure **3**C is a cross-sectional view of the low friction ring of Figure **3**A along the line **3**C-**3**C.

Figure **4** is a side view of a further embodiment of a low friction ring.

DETAILED DESCRIPTION

Referring to Figures **3**A-**3**C, a low friction ring for supporting and redirecting a rigging rope according to a first embodiment of the invention is shown generally at **20**. The low friction ring **20** includes a central passage **36** therethrough and two parallel circumferential rope paths **38** therearound. The rope paths **38** each receive a support rope **8**, as illustrated in the prior art Figures **1** and **2**, and the central passage **36** receives a rigging rope **6** therethrough.

The low friction ring **20** extends along a central axis **50** between first and second edges, **22** and **24** respectively, and has a thickness **26**, with a mid-point **52**. The low friction ring **20** has an outer diameter **28** and an inner diameter **30** at the md-point **52** and includes outside and inside surfaces, **32** and **34**, respectively, with a central passage **36** therethrough along the central axis **50**.

The rope paths **38** are formed therearound in the outside surface **32**. Each rope path **38** has a circular profile adapted to receive a rope therein as is commonly known, with a diameter **40**. A circumferential radial wall **42** with outer diameter **28** may separate the two rope paths **38** at the mid-point **52**. First and second outer circumferential radial walls **44** and **46**, respectively, with outer diameter **28** form the outside edges of the paths **38** at the first and second edges, **22** and **24**, respectively. Each path **38** is sized to receive a support rope **8** therein.

The inside surface **34** is formed in an arcuate profile and may have a constant curvature radius **48**. As illustrated, the radius **48** may be half of the thickness **26**, although it will be appreciated that a larger radius may be used, as well. The inside diameter **30** is sized to receive a rigging rope **6** therethrough, allowing a clearance fit therebetween. It will be appreciated that other non-constant radiuses may be utilized for the inside surface **34** such as providing a decreasing or segmented radius. By way of non-limiting example, the profile of

the inside surface may have a greater radius closer to each edge or may include one or more non-radiused regions therealong.

As illustrated in Figure **3**B, the central passage **36** may have a round opening shape. It will be appreciated that the central passage **36** may have a non-round opening shape, as well, such as, by way of non-limiting example, an elliptical profile, as illustrated in Figure **4**, a teardrop shape, a semi-circular shape, or any other suitable opening shape.

To use the low friction ring **20**, two support ropes **8** are secured around the outer surface **32** within the path **38**, and each support rope **8** is spliced and secured to a support location, as is commonly known. A rigging rope **6** is fed through the central passage **36** of the low friction ring **20** and secured to a load, as is commonly known. The radius **48** of the inside surface **34** allows for a smoother transition than prior art rings, thereby reducing the stress and wear on the rigging rope **6** as it passes therethrough.

The low friction ring **20** may be formed of any suitable material such as metals, including aluminum, aluminum alloys, titanium, steel or the like. The low friction ring **20** may also be formed by any commonly known method such as casting, machining or the like. One or both of the inside and outside surfaces, **32** and **34**, may be treated to provide a low friction surface, such as, by way of non-limiting example, by anodizing, coating or the like as is commonly known.

While specific embodiments of the invention have been described and illustrated, such embodiments should be considered illustrative of the invention only and not as limiting the invention as construed in accordance with the accompanying claims.

What is claimed is:

1. An apparatus for supporting and redirecting a rigging rope comprising:

a ring having an outer annular surface and a central passage extending between first and second side edges defining an inner surface;

wherein said outer surface includes at least two circumferential grooves therearound; and

wherein said inner surface has a curved cross-sectional profile extending between said first and second side edges.

2. The apparatus of claim 1 wherein said curved cross-sectional profile has an arcuate shape.

3. The apparatus of claim 1 wherein said curved cross-sectional profile has a constant curvature.

4. The apparatus of claim 1 wherein said central passage is round.

5. The apparatus of claim 1 wherein said central passage is elliptical.

6. The apparatus of claim 1 wherein each of said at least two circumferential grooves has a circular cross-sectional profile.

7. The apparatus of claim 1 wherein said at least two circumferential grooves are separated by a radial wall therebetween.

8. The apparatus of claim 1 wherein said ring is formed of a material selected from a group consisting of aluminum, aluminum alloys, titanium and steel.

8. The apparatus of claim 1 wherein said inner surface is treated to provide a low friction surface.

9. The apparatus of claim 8 wherein said inner surface is anodized.

10. The apparatus of claim 1 wherein said outer surface is treated to provide a low friction surface.

11. The apparatus of claim 10 wherein said outer surface is anodized.

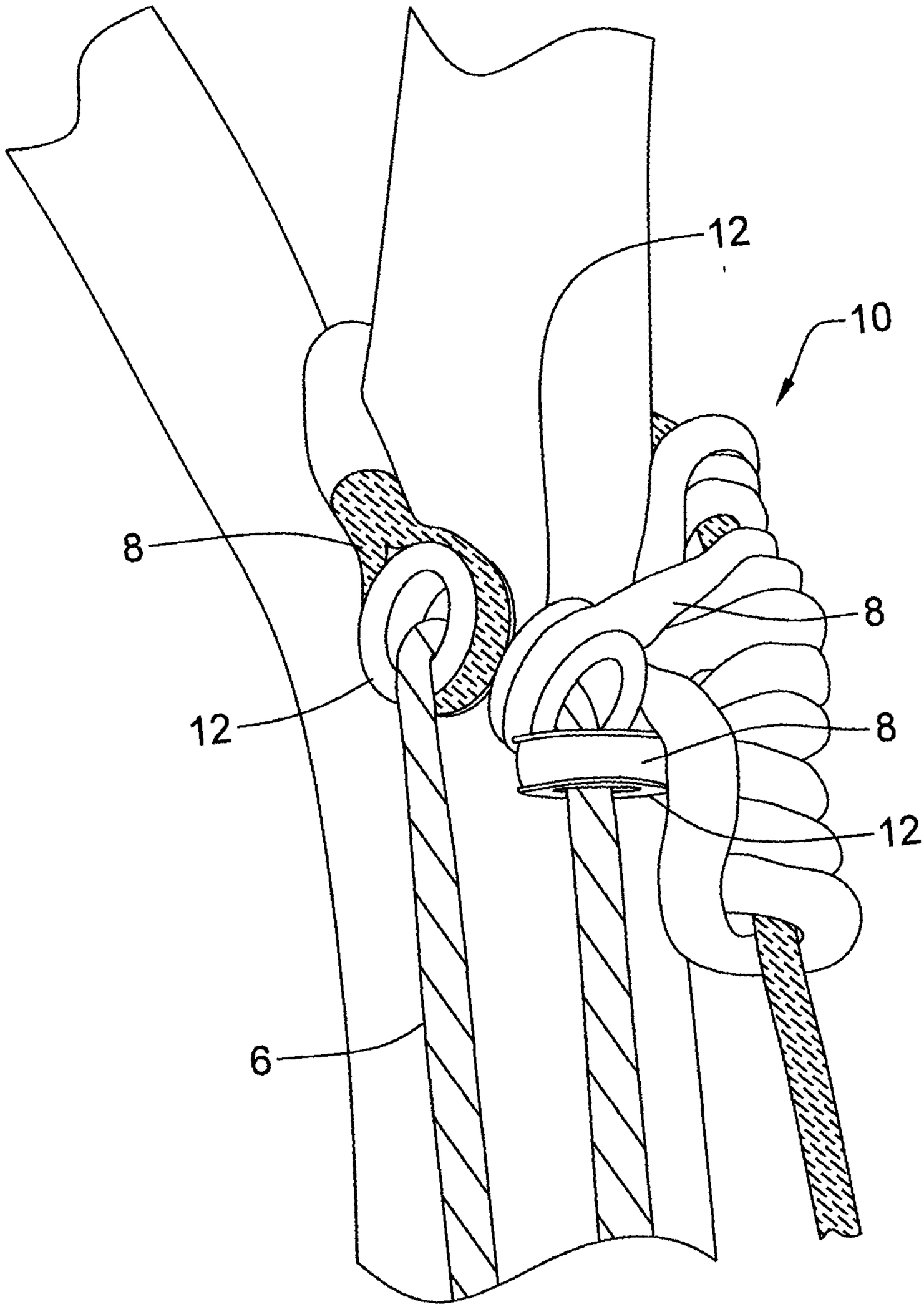


Figure 1
Prior Art

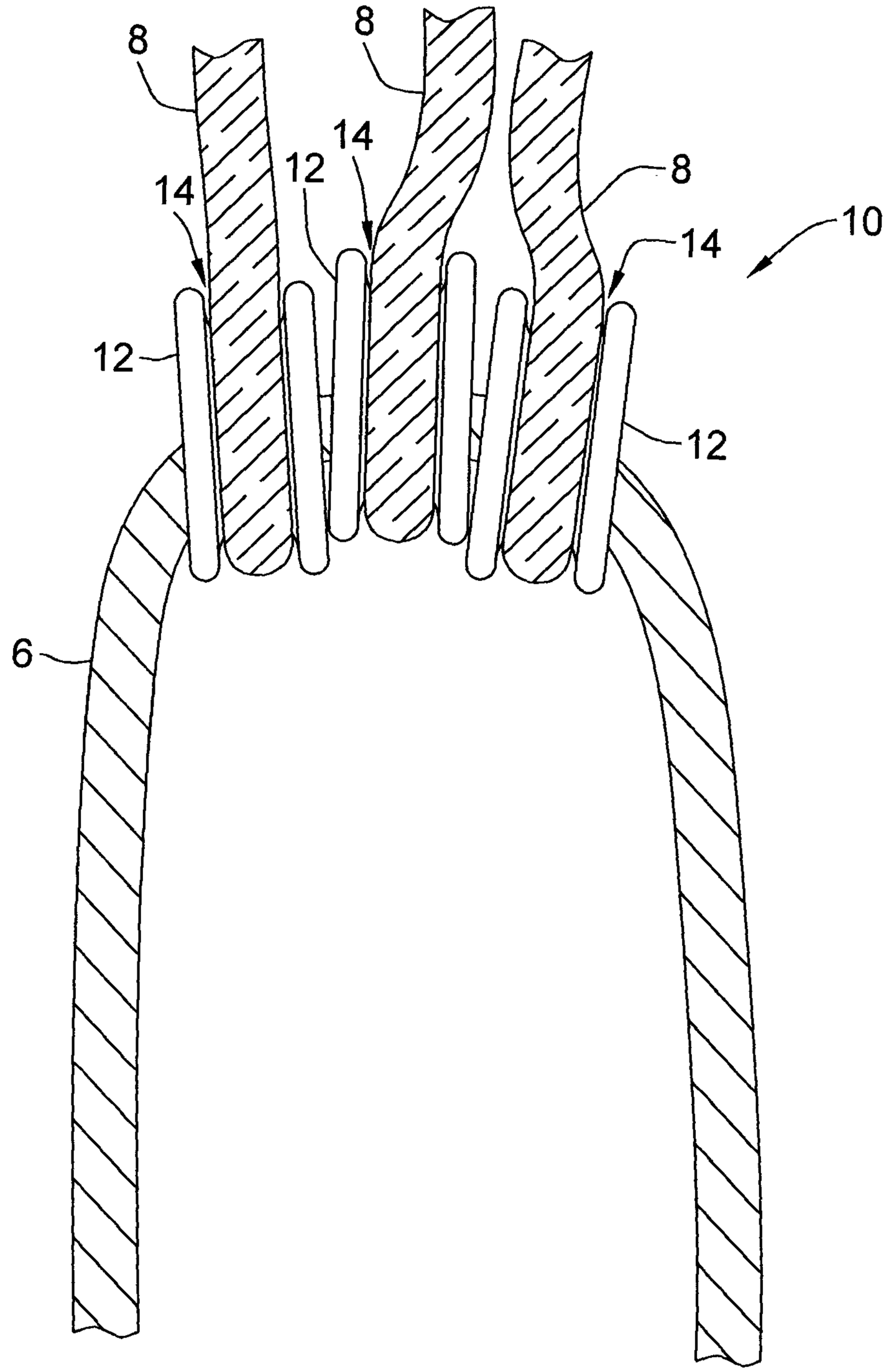


Figure 2
Prior Art

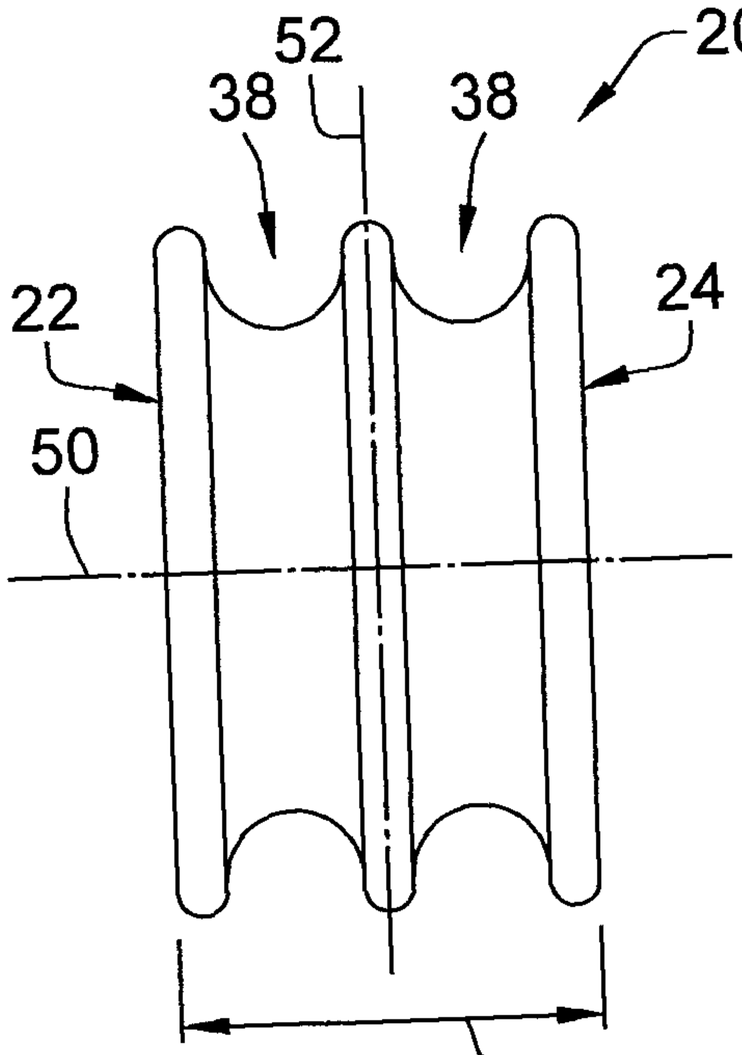


Figure 3A

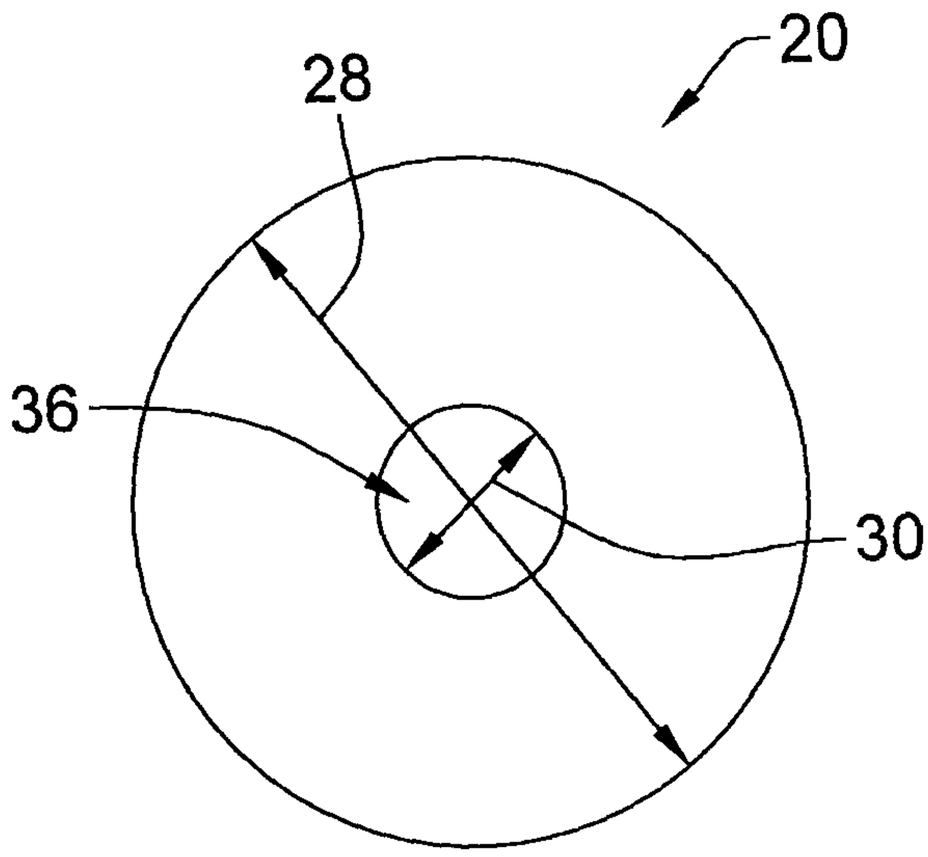


Figure 3B

Figure 3C

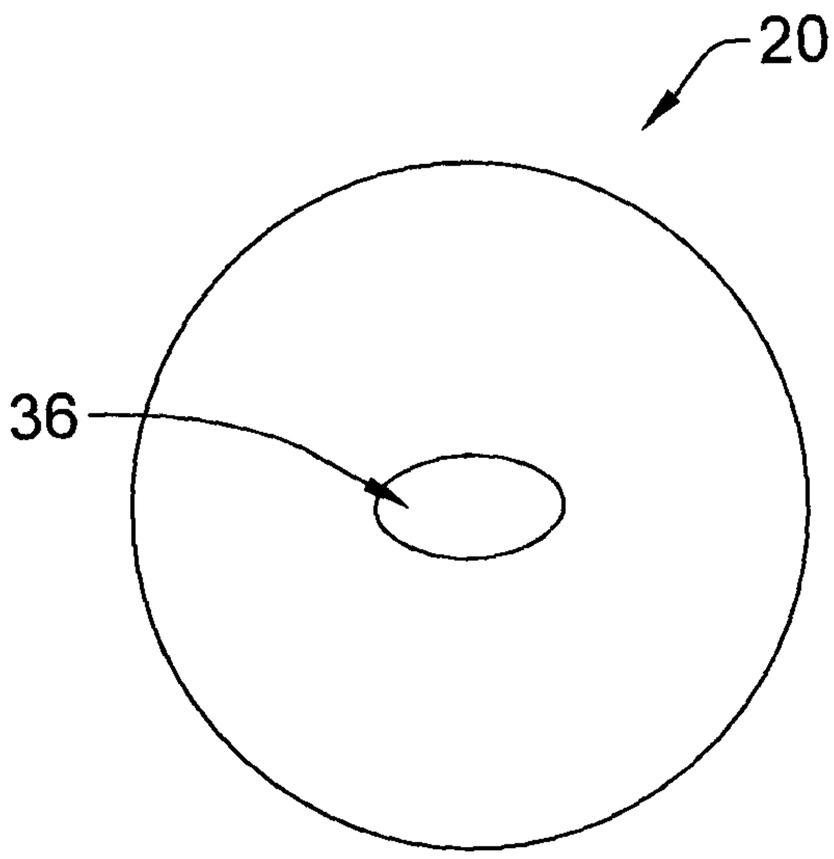
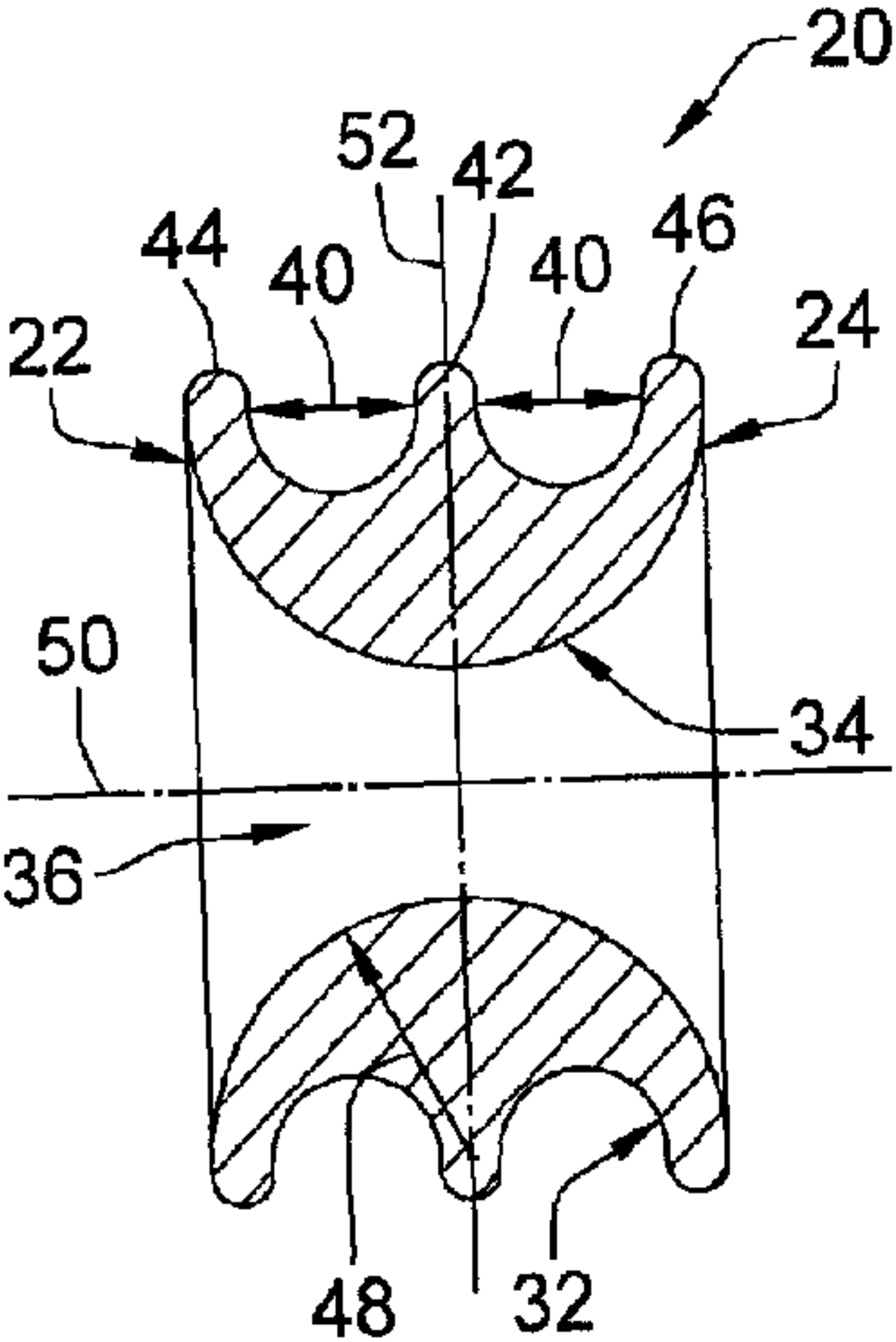


Figure 4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