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(12) (19) (CA) **Demande-Application**

(21) (A1) **2,270,861**
(22) 1999/05/05
(43) 1999/11/22

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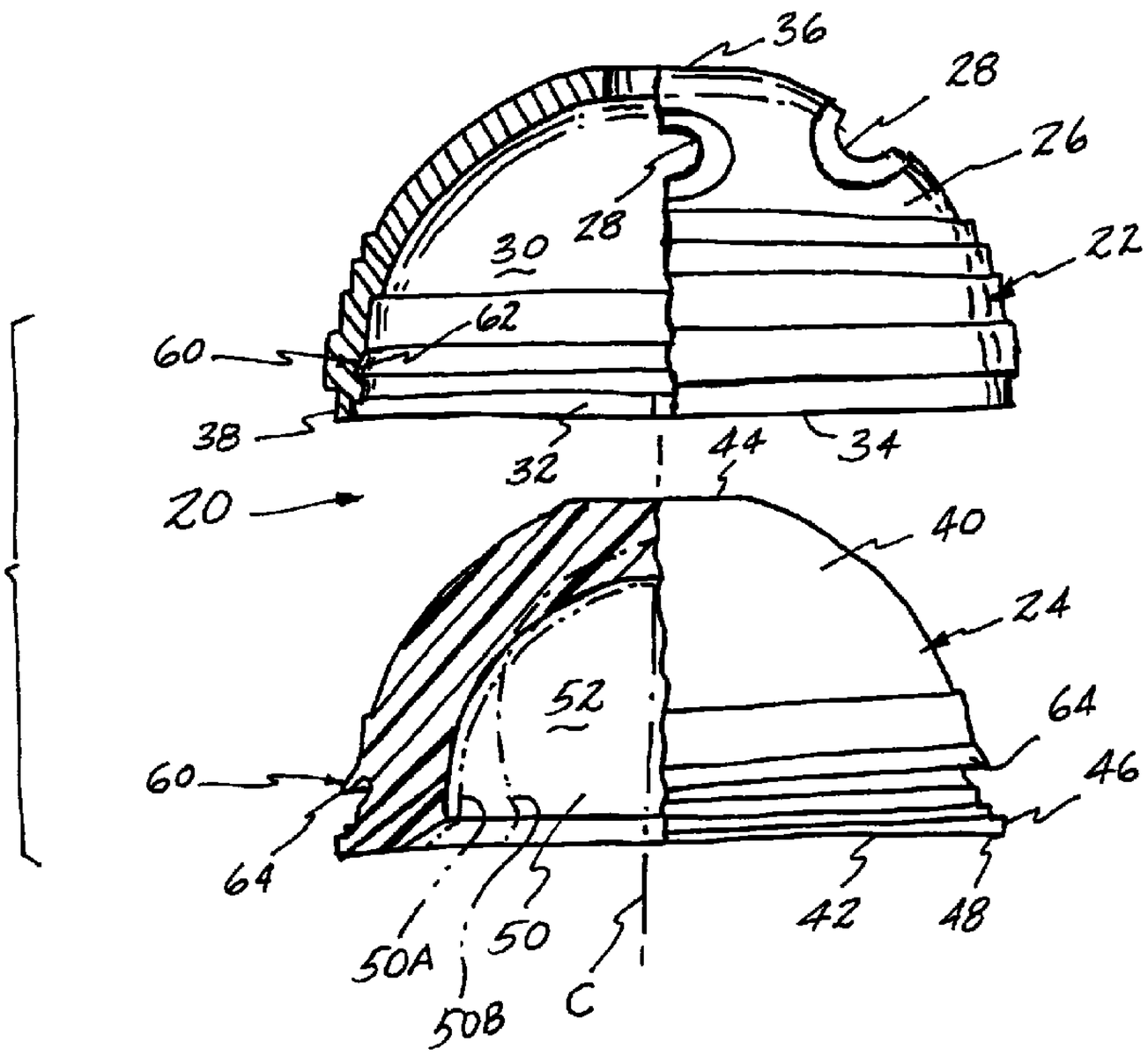
(51) Int.Cl.[6] A61F 2/34
(30) 1998/05/22 (09/083,406) US

(54) **ASSEMBLAGE D'UN COTYLE ACETABULAIRE AVEC SUPPORT CHOISI**

(54) **ACETABULAR CUP ASSEMBLY WITH SELECTED BEARING**



(57) An acetabular cup assembly allows pre-operative or interoperative selection and securement of a bearing member within a shell member of the acetabular cup assembly, the bearing member being selected from a plurality of bearing members having different characteristics, including bearing characteristics, securement characteristics, position characteristics and orientation characteristics, so as to enable a surgeon to select those characteristics most appropriate to a particular patient, as determined by a pre-operative assessment or by an evaluation of conditions encountered at an implant site during the implant procedure, and to incorporate the desired characteristics into the acetabular cup assembly with ease and economy.

ACETABULAR CUP ASSEMBLY WITH SELECTED BEARING

Abstract of the Disclosure

An acetabular cup assembly allows pre-operative or interoperative selection and securement of a bearing member within a shell member of the acetabular cup assembly, the bearing member being selected from a plurality of bearing members having different characteristics, including bearing characteristics, securement characteristics, position characteristics and orientation characteristics, so as to enable a surgeon to select those characteristics most appropriate to a particular patient, as determined by a pre-operative assessment or by an evaluation of conditions encountered at an implant site during the implant procedure, and to incorporate the desired characteristics into the acetabular cup assembly with ease and economy.

ACETABULAR CUP ASSEMBLY WITH SELECTED BEARING

The present invention relates generally to prosthetic implants and pertains, more specifically, to the implant of acetabular cup assemblies which secure a prosthetic bearing member in the acetabulum for the reception of a femoral head of a hip joint.

The replacement of members of a natural hip joint with prosthetic implants has become widespread and is being accomplished with ever-increasing frequency. The variety of conditions encountered when effecting such implants has led to the use of various bearing materials placed at an optimum position and orientation, as determined by conditions encountered at the site of the implant. The choice of a particular material for the bearing, as well as the size, positioning and orientation of the bearing member, is determined by the surgeon performing the procedure. Usually such choices are made on the basis of a pre-operative assessment of the needs of a particular patient; however, at times the choices are not completed until the implant site actually is being prepared and conditions encountered at the site can be evaluated during the implant procedure itself. Accordingly, it would be advantageous to have available a greater range of interoperative choice, as well as pre-operative choice, so as to enable a surgeon to accommodate the needs of a particular patient as determined by either or both a pre-operative assessment and an evaluation of conditions encountered at a particular implant site, and to do so in a practical manner.

The present invention provides the surgeon with the ability to choose, either pre-operatively or interoperatively, an optimum material, position and orientation for a bearing member of an acetabular cup assembly to be implanted at a particular implant site, with increased ease and at lowered expense. As such, the present invention attains several objects and advantages, some of which are summarized as follows: Accommodates a wide choice of bearing materials in the bearing member of an acetabular cup assembly, while utilizing a common acetabular shell; enables the choice of size, position and orientation of the bearing surface of a bearing member selected for assembly with a particular acetabular shell; increases the range of bearing materials, as

well as bearing size, positioning and orientation, and renders the choices available in a practical manner for either pre-operative or interoperative selection; allows a surgeon greater latitude in accommodating the needs of different patients while meeting the requirements imposed by various conditions encountered at a particular implant site, and enables appropriate choices to be made interoperatively, as well as pre-operatively; promotes greater accuracy in the replacement of a natural hip joint, with increased economy; provides a surgeon with the ability to make both pre-operative choices and interoperative choices from a wider range of options; enables the securement of a bearing member of selected material within a common acetabular shell, with increased ease and economy, and without complex, specialized instruments; provides an acetabular cup assembly having a bearing member of appropriate bearing material and accurate sizing, positioning and orientation, with economy of manufacture and use, and long-term reliability.

The above objects and advantages, as well as further objects and advantages, are attained by the present invention which may be described briefly as an acetabular cup assembly having an external shell member with an internal cavity, and an internal bearing member for securement within the cavity, the internal bearing member being selected from a plurality of bearing members having different characteristics such that the acetabular cup assembly selectively is provided with characteristics corresponding to the characteristics of the selected internal bearing member, the acetabular cup assembly comprising: a metallic securing member for reception within the cavity of the acetabular shell, the securing member including an external securing element and an internal receptor element; an external receptor element on the bearing member, the external receptor element and the internal receptor element being compatible with particular characteristics of the bearing member such that upon engagement of the external receptor element with the internal receptor element the internal bearing member is secured to the securing member; and an internal securing element within the cavity of the shell member, the internal securing element being

essentially complementary to the external securing element of the securing member such that upon selective engagement of the external securing element with the internal securing element the securing member is secured selectively within the shell member.

Further, the invention includes a shell member for use in an acetabular cup assembly having an internal bearing member for securement within the shell member, the internal bearing member being selected from a plurality of bearing members having different characteristics such that the acetabular cup assembly selectively is provided with characteristics corresponding to the characteristics of the selected internal bearing member, the shell member comprising: an internal cavity; a first securing element within the cavity of the shell member, the first securing element being compatible with the securing characteristics of at least one of the plurality of internal bearing members; and a second securing element within the cavity of the shell member, the second securing element being compatible with the securing characteristics of at least another of the plurality of internal bearing members; whereby the one and the another of the internal bearing members each is selectable for securement within the shell member for completion of the acetabular cup assembly.

In addition, the invention provides an improvement in a method for implanting an acetabular cup assembly having an external shell member with an internal cavity, and an internal bearing member for securement within the cavity, the internal bearing member being selected from a plurality of bearing members having different characteristics such that the acetabular cup assembly selectively is provided with characteristics corresponding to the characteristics of the selected internal bearing member, the improvement including the steps comprising: providing metallic securing members for selective reception within the cavity of the acetabular shell, the securing members each including an external securing element and an internal receptor element; providing each of the plurality of bearing members with an external receptor element on the respective bearing member, the external receptor element and the internal receptor element being compatible with particular characteristics

of the respective bearing member; engaging the internal receptor element of each metallic securing member with the external receptor element of a respective bearing member so as to secure each bearing member to a corresponding securing member; and securing the selected bearing member within the cavity of the shell member by securing the corresponding securing member to an internal securing element within the cavity of the shell member, the internal securing element being essentially complementary to the external securing element of the corresponding securing member such that upon selective engagement of the external securing element with the internal securing element the corresponding securing member is secured selectively within the shell member.

Further, the invention provides an improvement in a method for implanting an acetabular cup assembly having an external shell member with an internal cavity, and an internal bearing member for securement within the cavity, the internal bearing member being selected from a plurality of bearing members having different characteristics such that the acetabular cup assembly selectively is provided with characteristics corresponding to the characteristics of the selected internal bearing member, the improvement including the steps comprising: providing a first securing element within the cavity of the shell member, the first securing element being compatible with the securing characteristics of at least one of the plurality of internal bearing members; providing a second securing element within the cavity of the shell member, the second securing element being compatible with the securing characteristics of at least another of the plurality of internal bearing members; and selecting the one or the another of the internal bearing members and securing the selected internal bearing member within the shell member by engaging the selected internal bearing member with the corresponding first securing element or second securing element for completion of the acetabular cup assembly.

The invention will be understood more fully, while still further objects and advantages will become apparent, in the

following detailed description of preferred embodiments of the invention illustrated in the accompanying drawing, in which:

FIG. 1 is an exploded elevational view, partially sectioned, of an acetabular cup assembly constructed in accordance with the present invention;

FIG. 2 is a top plan view of the shell component of the acetabular cup assembly;

FIG. 3 is a top plan view of the bearing insert component of the acetabular cup assembly;

FIG. 4 is an enlarged fragmentary view of a portion of the shell component as illustrated in FIG. 1;

FIG. 5 is an enlarged fragmentary view of a portion of the bearing insert component as illustrated in FIG. 1;

FIG. 6 is an enlarged fragmentary view of the portions shown in FIGS. 4 and 5, with the acetabular cup assembly assembled;

FIG. 7 is an exploded elevational view, partially sectioned, of the acetabular cup assembly shown utilizing alternate component parts;

FIG. 8 is a top plan view of a securing component of the acetabular cup assembly;

FIG. 9 is an enlarged fragmentary view of a portion of the securing component as illustrated in FIG. 7;

FIG. 10 is an enlarged fragmentary cross-sectional view of a portion of the acetabular cup assembly illustrated in FIG. 7, with the component parts assembled;

FIG. 11 is an exploded elevational view, partially sectioned, of an alternate securing component and bearing insert component for the acetabular cup assembly;

FIG. 12 is an enlarged fragmentary view of a portion of the securing component of FIG. 11;

FIG. 13 is an enlarged fragmentary view of portions of the acetabular cup assembly utilizing the alternate component parts illustrated in FIG. 11, with the component parts assembled;

FIG. 14 is an elevational cross-sectional view of an alternate securing component; and

FIG. 15 is an elevational cross-sectional view of another alternate securing component.

Referring now to the drawing, and especially to FIGS. 1 through 3 thereof, an acetabular cup assembly constructed in accordance with the present invention is illustrated generally at 20. Acetabular cup assembly 20 includes a shell component in the form of metallic shell member 22 and a bearing insert which, in this instance, is in the form of a plastic bearing member 24. Shell member 22 has an outer surface 26 having a profile configuration which enables the shell member 22 to be seated and fixed in place within an appropriately prepared acetabulum in a now well-known manner. A plurality of screw holes 28 are provided in the shell member 22 for receiving anchoring screws (not shown) when such supplemental securing means are desired. An inner cavity 30 extends upwardly into shell member 22, from a lower opening 32 at a lower end 34 toward an upper end 36. A rim 38 is located at the lower end 34.

Bearing member 24 has a generally domed exterior 40 which is essentially complementary to the cavity 30 of the shell member 22 and extends longitudinally from a base 42 to a top 44. A basal flange 46 extends circumferentially around the base 42 of the bearing member 24 and projects laterally outwardly to provide a transverse bearing face 48 at the base 42 of the bearing member 24. A bearing socket 50 extends upwardly into the bearing member 24 and provides a spherical bearing surface 52 for a complementary femoral head (not shown).

Acetabular cup assembly 20 is to be implanted in stages; that is, the shell member 22 and the bearing member 24 are to be assembled interoperatively, so as to enable appropriate sizing, placement and orientation of the bearing socket 50, based upon a pre-operative assessment or upon an evaluation of conditions encountered at the site of the implant. To that end, alternate bearing members 24 are made available, the alternate bearing members 24 providing corresponding bearing sockets 50 placed at different locations and orientations, relative to the seated and secured shell member 22, any one of which bearing sockets 50 then being capable of securement in place in the shell member 22, interoperatively, with the bearing surface 52 appropriately located and oriented for accommodating the needs of the patient.

A selected bearing member 24 is secured in place appropriately within the shell member 22 by means of a securing mechanism 60 provided adjacent the lower end 34 of the shell member 22 and adjacent the base 42 of the bearing member 24. Turning now to FIGS. 4 through 6, as well as to FIGS. 1 through 3, securing mechanism 60 is seen to include a securing element in the form of an annular recess 62 extending laterally outwardly into the shell member 22 adjacent the lower end 34. a complementary securing element in the form of an annular lip 64 extends laterally outwardly from the bearing member 24, adjacent the base 42 of the bearing member 24. A preferred material for the plastic bearing member 24 is an ultra-high molecular weight polyethylene commonly used in connection with such bearing members, the securing characteristics of which material include a resiliency sufficient to assure that upon inserting the bearing member 24 into the shell member 22, and seating the bearing member 24 in the shell member 22, as seen in FIG. 6, the annular lip 64 is seated within the annular recess 62 to secure the bearing member 24 within the shell member 22.

The position and orientation of the bearing socket 50 relative to the fixed shell member 22 are selected by providing the different locations and orientations of the bearing socket 50 within the bearing member 24, as set forth above. Thus, as seen in FIG. 1, the bearing socket 50 may be offset from the central axis C of the bearing member 24, as illustrated in phantom by an alternate offset bearing socket 50A, by varied amounts in different selectable bearing members 24, for the selection of an appropriate position for the bearing socket 50 at the implant site. Likewise, an appropriate orientation of bearing socket 50 is made available through the provision of alternate angled orientations, as illustrated in phantom by an alternately oriented bearing socket 50B in FIG. 1. Once seated in place, the selected bearing member 24 is secured within the shell member 22 by engagement of the complementary securing elements in the form of recess 62 and lip 64, common to the securing mechanism 60 provided for all of the alternate bearing members 24. In addition, once the selected bearing member 24 is

seated appropriately within the shell member 22, rotation of the bearing member 24 about the axis C relative to the shell member 22 is precluded by engagement of protrusions 70 extending radially inwardly from the rim 38 of the shell member 22 with counterpart portions 72 of the bearing member 24, adjacent the flange 46 of the bearing member 24.

Should the surgeon determine, either on the basis of a pre-operative assessment of a patient or during the course of the implant procedure, that based upon the needs of a particular patient, as determined by the pre-operative assessment or by an evaluation of conditions encountered at the particular implant site, a bearing material having characteristics other than those of the material of bearing member 24 would be more appropriate, acetabular cup assembly 20 provides the surgeon with the ability to choose a bearing member having a bearing material which exhibits characteristics more appropriate to the needs of that particular patient. Thus, as seen in FIGS. 7 through 10, an alternate bearing member 80 is constructed of a ceramic material and includes a generally domed exterior portion 82 which extends to a top 84. A bearing socket 86 extends upwardly into the bearing member 80 and provides a spherical bearing surface 88 for a complementary femoral head (not shown).

One of the most effective, convenient, mechanically simple and easily used securement mechanisms available for securing together mechanical components, where neither component is constructed of a resilient material such as the material of plastic bearing member 24, is mating tapered surfaces. The degree to which the tapered surfaces are tapered depends upon securing characteristics of the particular materials being secured together. However, the securing characteristics of ceramic bearing member 80 are such that securement of the bearing member 80 is best accomplished with a securement surface which is essentially cylindrical. Accordingly, bearing member 80 is provided with an external receptor element in the form of a generally cylindrical securement surface 90 which extends essentially parallel to the central axis C of the bearing member 80, between the base 92 of the bearing member 80 and the domed

exterior portion 82. In order to enable simplified interoperative securement of the bearing member 80 within shell member 22, subsequent to locating and seating shell member 22 within the acetabulum, securing mechanism 60 provides appropriate mating tapered surfaces. Thus, securing mechanism 60 includes a metallic securing member shown in the form of a sleeve 100 having an annular ring portion 102 adjacent a lower end 103 and a domed portion 104 extending between the ring portion 102 and an upper end 105. The domed portion 104 is essentially complementary to the counterpart portion of the inner cavity 30 of the shell member 22, and the ring portion 102 is provided with an external securing element in the form of an external seating surface 106 and an internal receptor element in the form of a generally cylindrical internal securement surface 108. The configuration of the internal securement surface 108 and the configuration of the external securement surface 90 are compatible with the particular characteristics of the material of the bearing member 80 so that upon engagement of the external securement surface 90 with the internal securement surface 108, as by an interference fit, the bearing member 80 is secured to the sleeve 100.

Securing mechanism 60 further includes an internal securing element in the form of internal seating surface 110 located on the shell member 22, within the cavity 30 adjacent the lower end 34 of the shell member 22. Internal seating surface 110 is complementary to external seating surface 106 for mating engagement of the seating surfaces 106 and 110, as seen in FIG. 10. The seating surfaces 106 and 110 are provided with a tapered configuration, as illustrated by angle A, the taper of the configuration being compatible with the securing characteristics of the material of the sleeve 100 and the shell member 22 such that the sleeve 100 is secured within the shell member 22 by virtue of the locking of the tapered seating surfaces 106 and 110 in response to engagement of the seating surfaces 106 and 110. In the preferred embodiment, the shell member 22 and the sleeve 100 are constructed of commercially pure titanium and the angle A is about 6°.

Referring now to FIGS. 11 through 13, should the surgeon desire to employ another material as a bearing material in the acetabular cup assembly 20, another alternative bearing member constructed of that material is available for securement within the shell member 22. Thus, alternate bearing member 120 is constructed of another metal, such as, for example, a cobalt-chrome alloy. Bearing member 120 includes a generally domed exterior portion 122 which extends to a top 124. A bearing socket 126 extends upwardly into the bearing member 120 and provides a spherical bearing surface 128 for a complementary femoral head (not shown). Bearing member 120 is provided with an external receptor element in the form of an external securing surface 130. Here again, securing mechanism 60 includes a metallic securing member shown in the form of a sleeve 140 having an annular ring portion 142 and a domed portion 144. The domed portion 144 is essentially complementary to the counterpart portion of the inner cavity 30 of the shell member 22, and the ring portion 142 is provided with an external securing element in the form of an external seating surface 146 and an internal receptor element in the form of an internal securement surface 148.

The configuration of the internal securement surface 148 and the configuration of the external securement surface 130 are compatible with the particular securing characteristics of the material of the bearing member 120 so that upon engagement of the external securement surface 130 with the internal securement surface 148, the bearing member 120 is secured to the sleeve 140 in response to such engagement and seating of the sleeve 140 on the bearing member 120. To that end, the securement surfaces 130 and 148 are tapered at an angle B which effects a secure lock between the bearing member 120 and the sleeve 140. The sleeve 140, in turn, is secured within the shell member 22 by the lock effected between the seating surfaces 146 and 110. In the preferred embodiment, sleeve 140 and shell member 22 both are constructed of commercially pure titanium and the seating surfaces 146 and 110 are tapered at angle A, compatible with the securing characteristics of the material of sleeve 140 and shell

member 22, as described above in connection with sleeve 100. In this manner, the shell member 22 is able to receive any selected one of a plurality of bearing members constructed of different materials, such as bearing members 24, 80 and 120, with securement of the selected bearing member being effected either pre-operatively or interoperatively with ease, accuracy and minimal effort on the part of the surgeon, and without the necessity for complex special instruments.

Turning now to FIG. 14, where it is desired to select a particular position of the bearing surface of a bearing member relative to a shell member within which the bearing member is to be secured, utilizing a metallic securing member in the form of a sleeve constructed in accordance with the present invention, alternate sleeves are provided in which the relative location of the internal receptor element and the external securing element of the sleeve differ from sleeve to sleeve. Thus, in an alternate sleeve 150, the internal receptor element includes an internal securement surface 152 having a central axis 154 which extends in a longitudinal direction, the external securing element includes an external seating surface 156 having a central axis 158 which extends in a longitudinal direction, and the central axis 154 is offset laterally from the central axis 158, as seen at 159. A desired position of the bearing surface of a bearing member is attained by selecting a sleeve 150 having a particular offset 159.

A desired orientation of the bearing surface of a bearing member is attained by selecting a sleeve which provides that orientation. As seen in FIG. 15, an alternate sleeve 160 includes an internal securement surface 162 having a central axis 164 which extends in a longitudinal direction, the external securing element includes an external seating surface 166 having a central axis 168 which extends in a longitudinal direction, and the central axis 164 makes an acute angle 169 with the central axis 168 such that the selection of the magnitude of angle 169 results in a concomitant selection of the relative orientation of the surfaces 162 and 166. A desired orientation of the

bearing surface of a bearing member is attained by selecting a sleeve 160 having a particular angle 169.

It will be understood that the selected positioning and the selected orientation described in connection with sleeves 150 and 160 are illustrative examples only. Various combinations of positioning and orientation, as well as other positions and orientations, are available by modifying the configuration of the metallic securing member to accommodate the desired positioning and orientation of the bearing surface of a particular bearing member.

It will be seen that acetabular cup assembly 20 provides a surgeon with a wide range of choices for a pre-operative or an interoperative selection of characteristics of the bearing member of the acetabular cup assembly 20, with simplicity and lowered cost. Such characteristics include material, size, positioning and orientation. As such, the present invention attains the several objects and advantages summarized above, namely: Accommodates a wide choice of bearing materials in the bearing member of an acetabular cup assembly, while utilizing a common acetabular shell; enables the choice of size, position and orientation of the bearing surface of a bearing member selected for assembly with a particular acetabular shell; increases the range of bearing materials, as well as bearing size, positioning and orientation, and renders the choices available in a practical manner for either pre-operative or interoperative selection; allows a surgeon greater latitude in accommodating the needs of different patients while meeting the requirements imposed by various conditions encountered at a particular implant site, and enables appropriate choices to be made interoperatively, as well as pre-operatively; promotes greater accuracy in the replacement of a natural hip joint, with increased economy; provides a surgeon with the ability to make both pre-operative choices and interoperative choices from a wider range of options; enables the securement of a bearing member of selected material within a common acetabular shell, with increased ease and economy, and without complex, specialized instruments; provides an acetabular cup assembly having a bearing member of appropriate bearing

material and accurate sizing, positioning and orientation, with economy of manufacture and use, and long-term reliability.

It is to be understood that the above detailed description of preferred embodiments of the invention is provided by way of example only. Various details of design, construction and procedure may be modified without departing from the true spirit and scope of the invention, as set forth in the appended claims.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. An acetabular cup assembly having an external shell member with an internal cavity, and an internal bearing member for securement within the cavity, the internal bearing member being selected from a plurality of bearing members having different characteristics such that the acetabular cup assembly selectively is provided with characteristics corresponding to the characteristics of the selected internal bearing member, the acetabular cup assembly comprising:

a metallic securing member for reception within the cavity of the acetabular shell, the securing member including an external securing element and an internal receptor element;

an external receptor element on the bearing member, the external receptor element and the internal receptor element being compatible with particular characteristics of the bearing member such that upon engagement of the external receptor element with the internal receptor element the internal bearing member is secured to the securing member; and

an internal securing element within the cavity of the shell member, the internal securing element being essentially complementary to the external securing element of the securing member such that upon selective engagement of the external securing element with the internal securing element the securing member is secured selectively within the shell member.

2. The invention of claim 1 wherein the internal securing element of the shell member and the external securing element of the securing member include complementary tapered securing surfaces for interlocking in response to seating engagement of the complementary securing surfaces.

3. The invention of claim 2 wherein the internal receptor element of the securing member and the external receptor element of the bearing member include complementary securing surfaces for

interlocking upon seating engagement of the complementary securing surfaces.

4. The invention of claim 3 wherein the complementary securing surfaces of the external receptor element include complementary tapered surfaces for interlocking in response to seating engagement of the complementary tapered surfaces.

5. The invention of claim 4 wherein the shell member includes a lower end and an upper end, the cavity extends from the lower end toward the upper end of the shell member, and the internal securing element is located adjacent the lower end of the shell member.

6. The invention of claim 5 wherein the metallic securing member includes a lower end and an upper end, and the external securing element is located adjacent the lower end of the metallic securing member.

7. The invention of claim 6 wherein the metallic securing member includes a ring portion adjacent the lower end and a domed portion extending between the ring portion and the upper end of the metallic securing member.

8. The invention of claim 1 wherein the shell member includes a lower end and an upper end, the cavity extends from the lower end toward the upper end of the shell member, the internal receptor element includes a central axis extending longitudinally between the lower end and the upper end of the shell member, the external securing element includes a central axis extending longitudinally between the lower end and the upper end of the shell member, and the central axis of the internal receptor element is offset laterally from the central axis of the external securing element.

9. The invention of claim 8 wherein the internal securing element of the shell member and the external securing element of

the securing member include complementary tapered securing surfaces for interlocking in response to seating engagement of the complementary securing surfaces.

10. The invention of claim 9 wherein the internal receptor element of the securing member and the external receptor element of the bearing member include complementary securing surfaces for interlocking upon seating engagement of the complementary securing surfaces.

11. The invention of claim 10 wherein the complementary securing surfaces of the external receptor element include complementary tapered surfaces for interlocking in response to seating engagement of the complementary tapered surfaces.

12. The invention of claim 1 wherein the shell member includes a lower end and an upper end, the cavity extends from the lower end toward the upper end of the shell member, the internal receptor element includes a central axis extending longitudinally between the lower end and the upper end of the shell member, the external securing element includes a central axis extending longitudinally between the lower end and the upper end of the shell member, and the central axis of the internal receptor element makes an acute angle with the central axis of the external securing element.

13. The invention of claim 12 wherein the internal securing element of the shell member and the external securing element of the securing member include complementary tapered securing surfaces for interlocking in response to seating engagement of the complementary securing surfaces.

14. The invention of claim 13 wherein the internal receptor element of the securing member and the external receptor element of the bearing member include complementary securing surfaces for interlocking upon seating engagement of the complementary securing surfaces.

15. The invention of claim 14 wherein the complementary securing surfaces of the external receptor element include complementary tapered surfaces for interlocking in response to seating engagement of the complementary tapered surfaces.

16. A shell member for use in an acetabular cup assembly having an internal bearing member for securement within the shell member, the internal bearing member being selected from a plurality of bearing members having different characteristics such that the acetabular cup assembly selectively is provided with characteristics corresponding to the characteristics of the selected internal bearing member, the shell member comprising:

an internal cavity;

a first securing element within the cavity of the shell member, the first securing element being compatible with the securing characteristics of at least one of the plurality of internal bearing members; and

a second securing element within the cavity of the shell member, the second securing element being compatible with the securing characteristics of at least another of the plurality of internal bearing members;

whereby the one and the another of the internal bearing members each is selectable for securement within the shell member for completion of the acetabular cup assembly.

17. The invention of claim 16 wherein the shell member includes a lower end and an upper end, the cavity extends from the lower end toward the upper end of the shell member, and the first and second securing elements are located adjacent the lower end of the shell member.

18. The invention of claim 17 wherein the bearing member includes a lip projecting from the bearing member, and the first securing element includes a recess in the shell member for receiving the lip of the bearing member.

19. The invention of claim 17 wherein the bearing member includes an external securing surface, and the second securing element includes an internal securing surface, the external securing surface and the internal securing surface having complementary tapered configurations for interlocking in response to seating engagement of the complementary tapered configurations.

20. In a method for implanting an acetabular cup assembly having an external shell member with an internal cavity, and an internal bearing member for securement within the cavity, the internal bearing member being selected from a plurality of bearing members having different characteristics such that the acetabular cup assembly selectively is provided with characteristics corresponding to the characteristics of the selected internal bearing member, the steps comprising:

providing metallic securing members for selective reception within the cavity of the acetabular shell, the securing members each including an external securing element and an internal receptor element;

providing each of the plurality of bearing members with an external receptor element on the respective bearing member, the external receptor element and the internal receptor element being compatible with particular characteristics of the respective bearing member;

engaging the internal receptor element of each metallic securing member with the external receptor element of a respective bearing member so as to secure each bearing member to a corresponding securing member; and

securing the selected bearing member within the cavity of the shell member by securing the corresponding securing member to an internal securing element within the cavity of the shell member, the internal securing element being essentially complementary to the external securing element of the corresponding securing member such that upon selective engagement of the external securing element with the internal securing

element the corresponding securing member is secured selectively within the shell member.

21. The method of claim 20 including implanting the shell member at an implant site prior to securing the selected bearing member within the cavity of the shell member.

22. In a method for implanting an acetabular cup assembly having an external shell member with an internal cavity, and an internal bearing member for securement within the cavity, the internal bearing member being selected from a plurality of bearing members having different characteristics such that the acetabular cup assembly selectively is provided with characteristics corresponding to the characteristics of the selected internal bearing member, the steps comprising:

providing a first securing element within the cavity of the shell member, the first securing element being compatible with the securing characteristics of at least one of the plurality of internal bearing members;

providing a second securing element within the cavity of the shell member, the second securing element being compatible with the securing characteristics of at least another of the plurality of internal bearing members; and

selecting the one or the another of the internal bearing members and securing the selected internal bearing member within the shell member by engaging the selected internal bearing member with the corresponding first securing element or second securing element for completion of the acetabular cup assembly.

23. The method of claim 22 including implanting the shell member at an implant site prior to securing the selected internal bearing member within the cavity of the shell member.

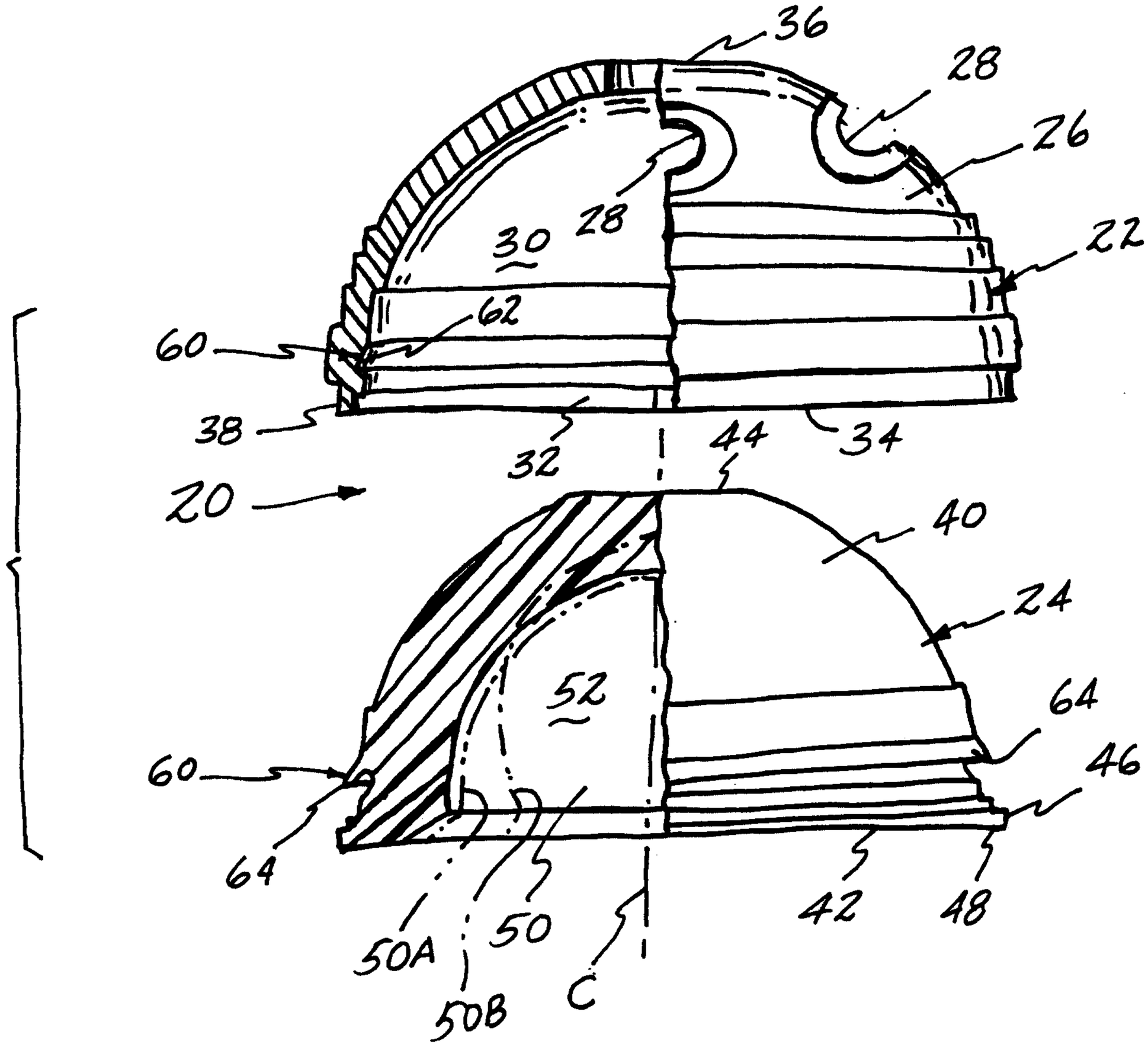


FIG. 1

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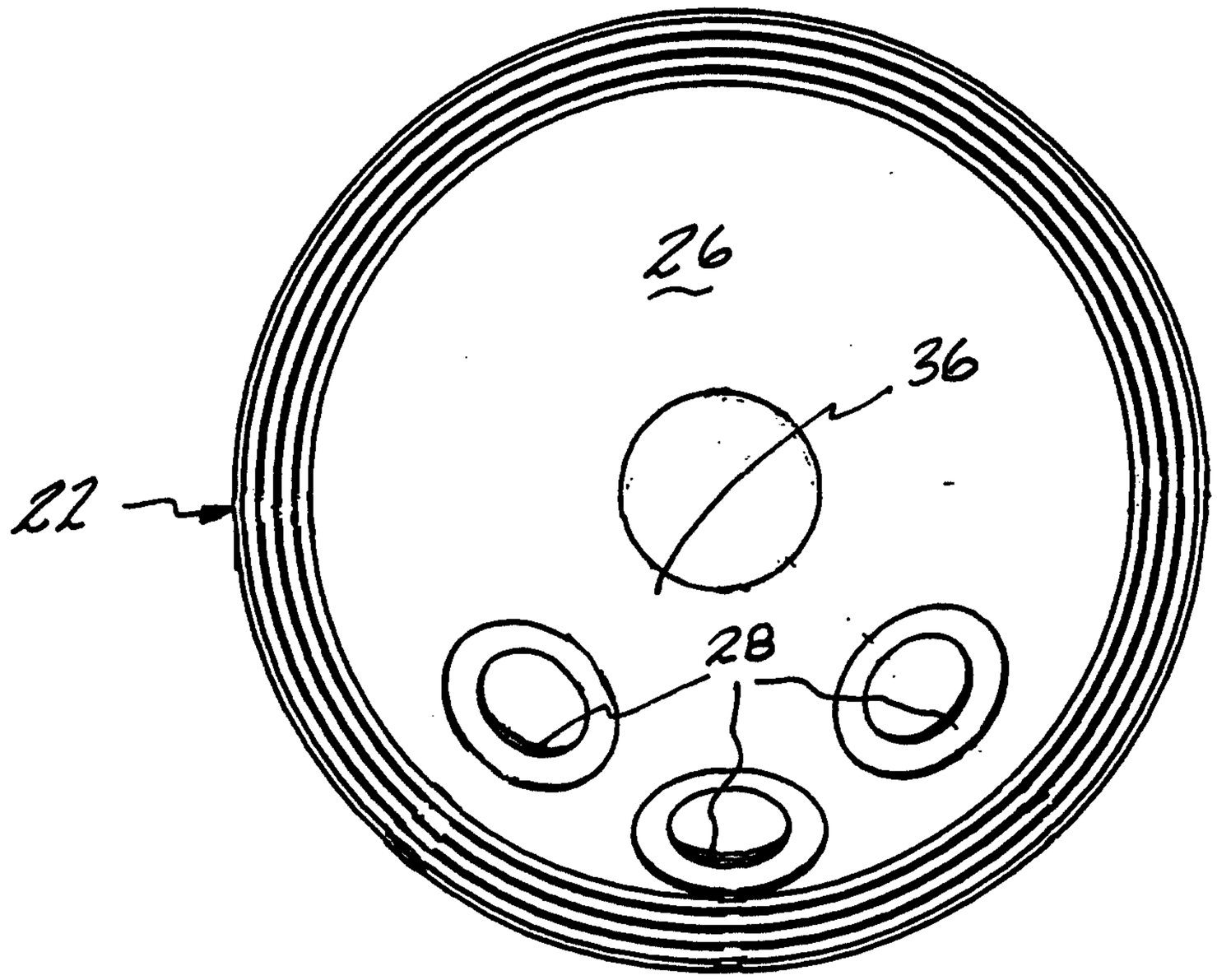

FIG. 2

FIG. 3

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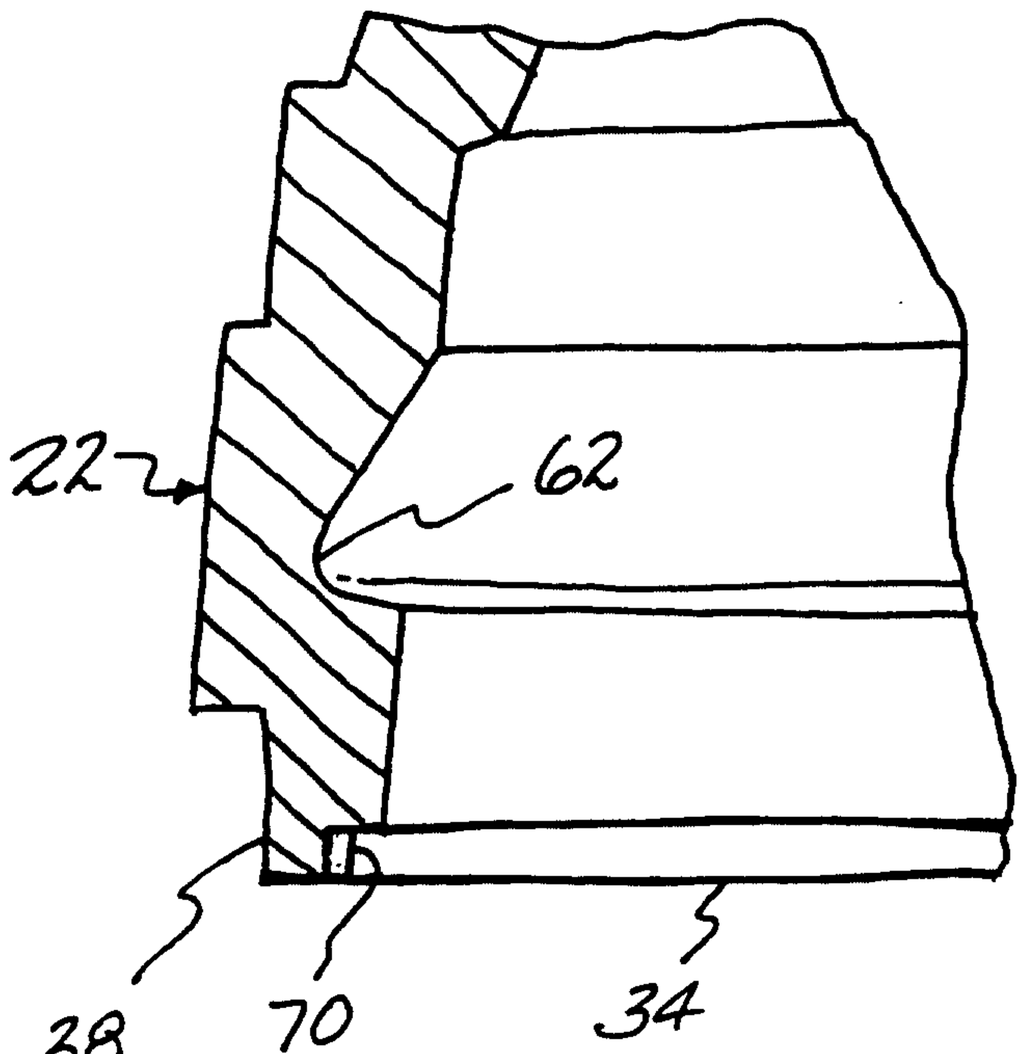

FIG. 4

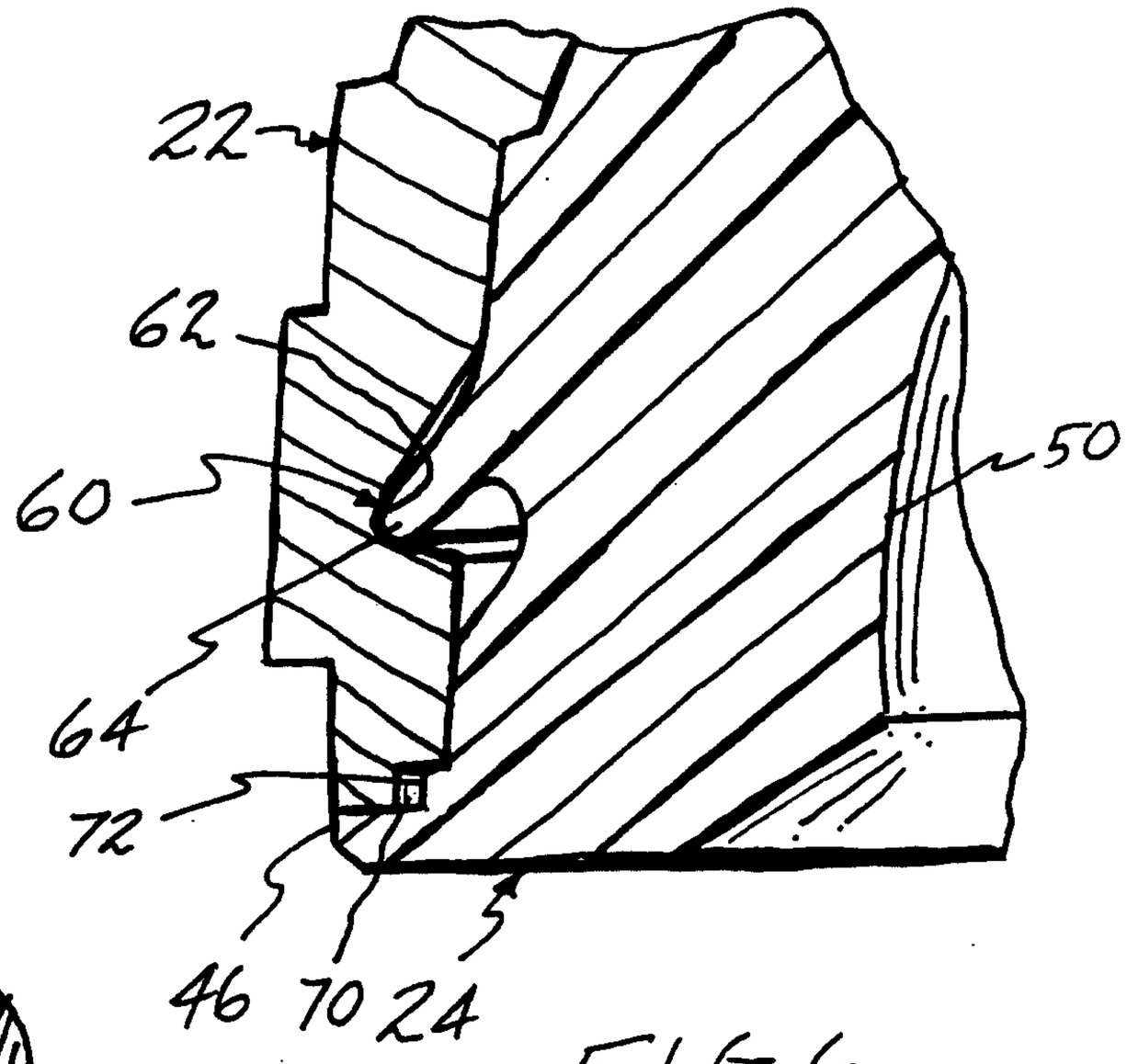

FIG. 6

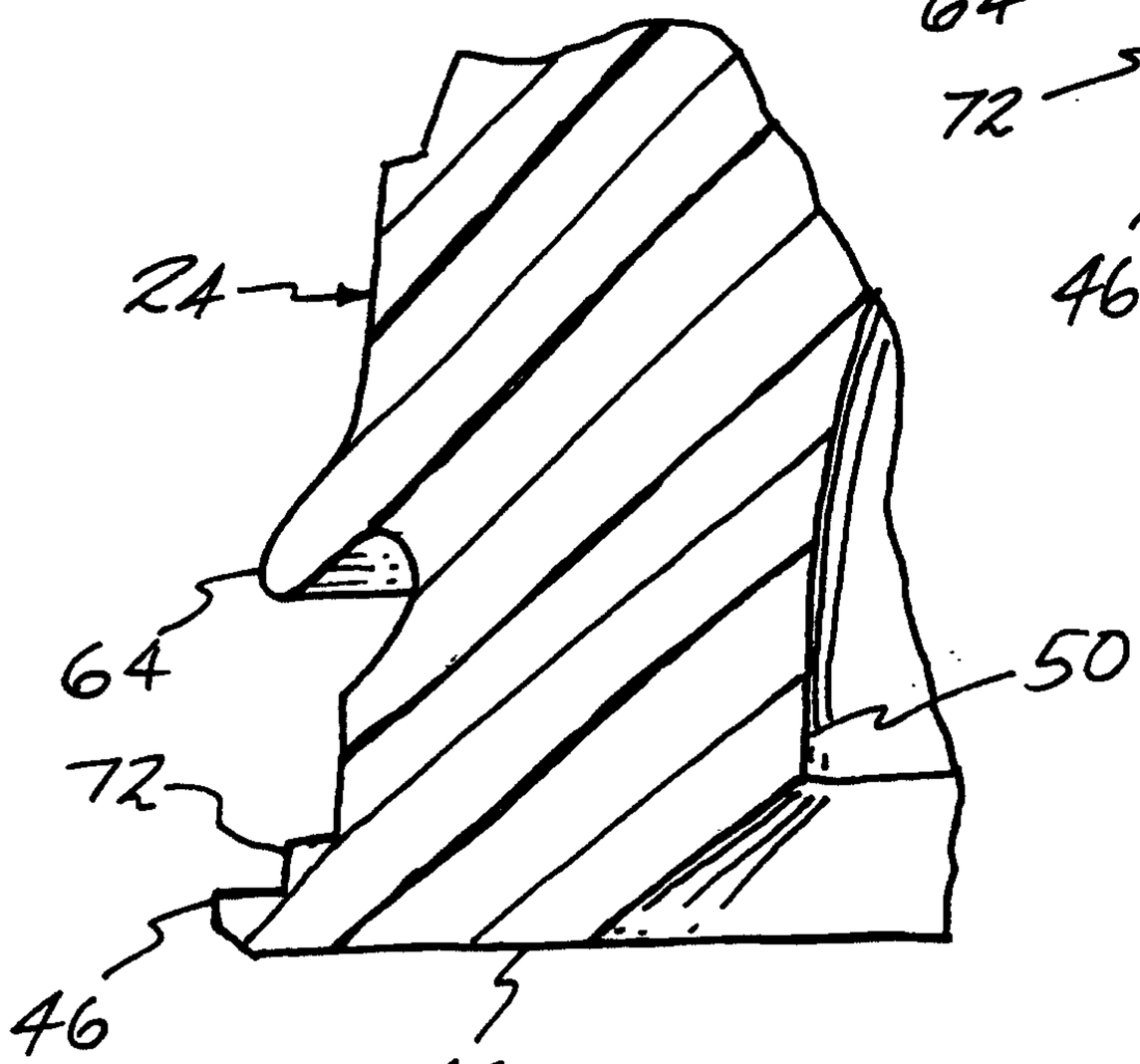

FIG. 5

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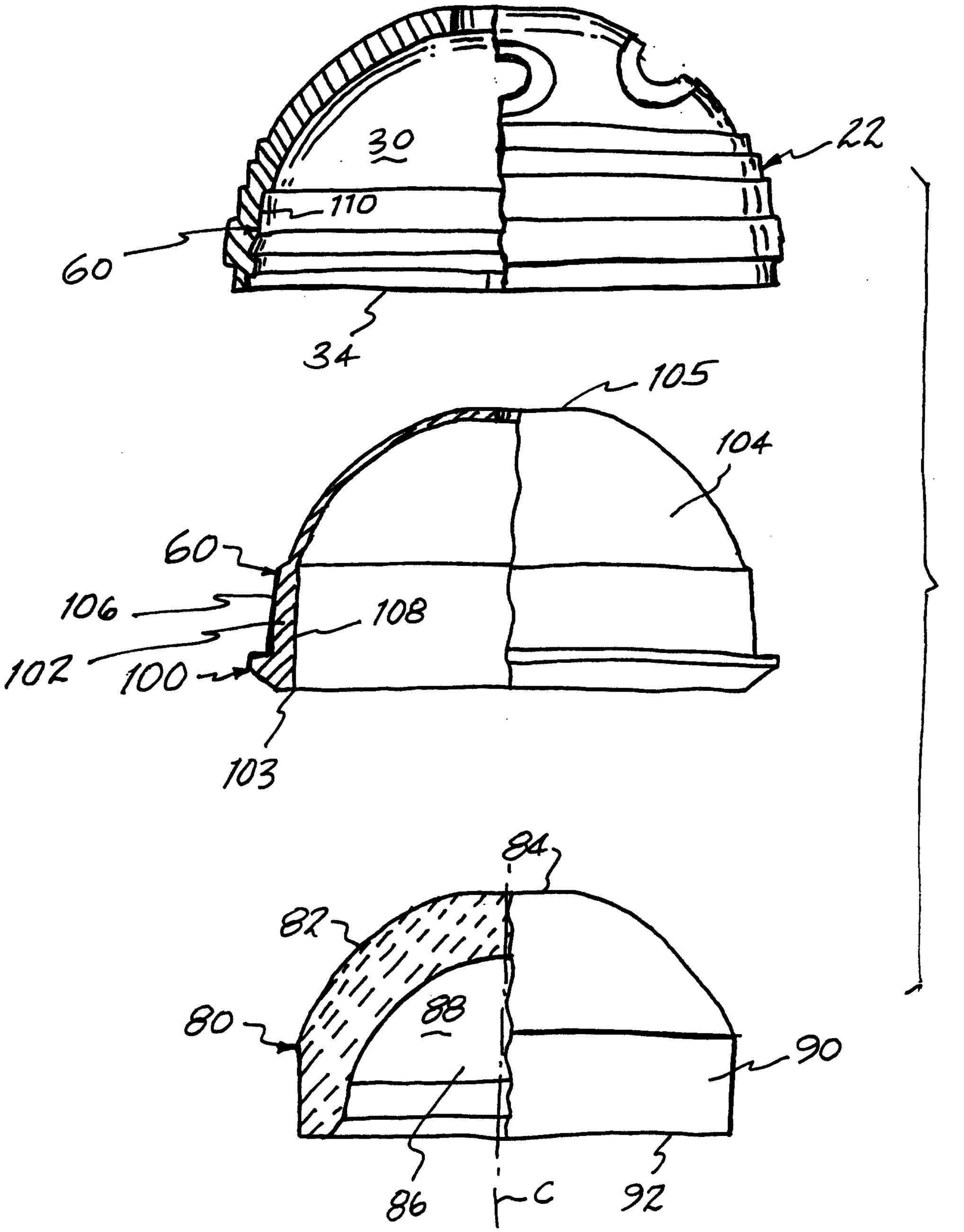

FIG. 7

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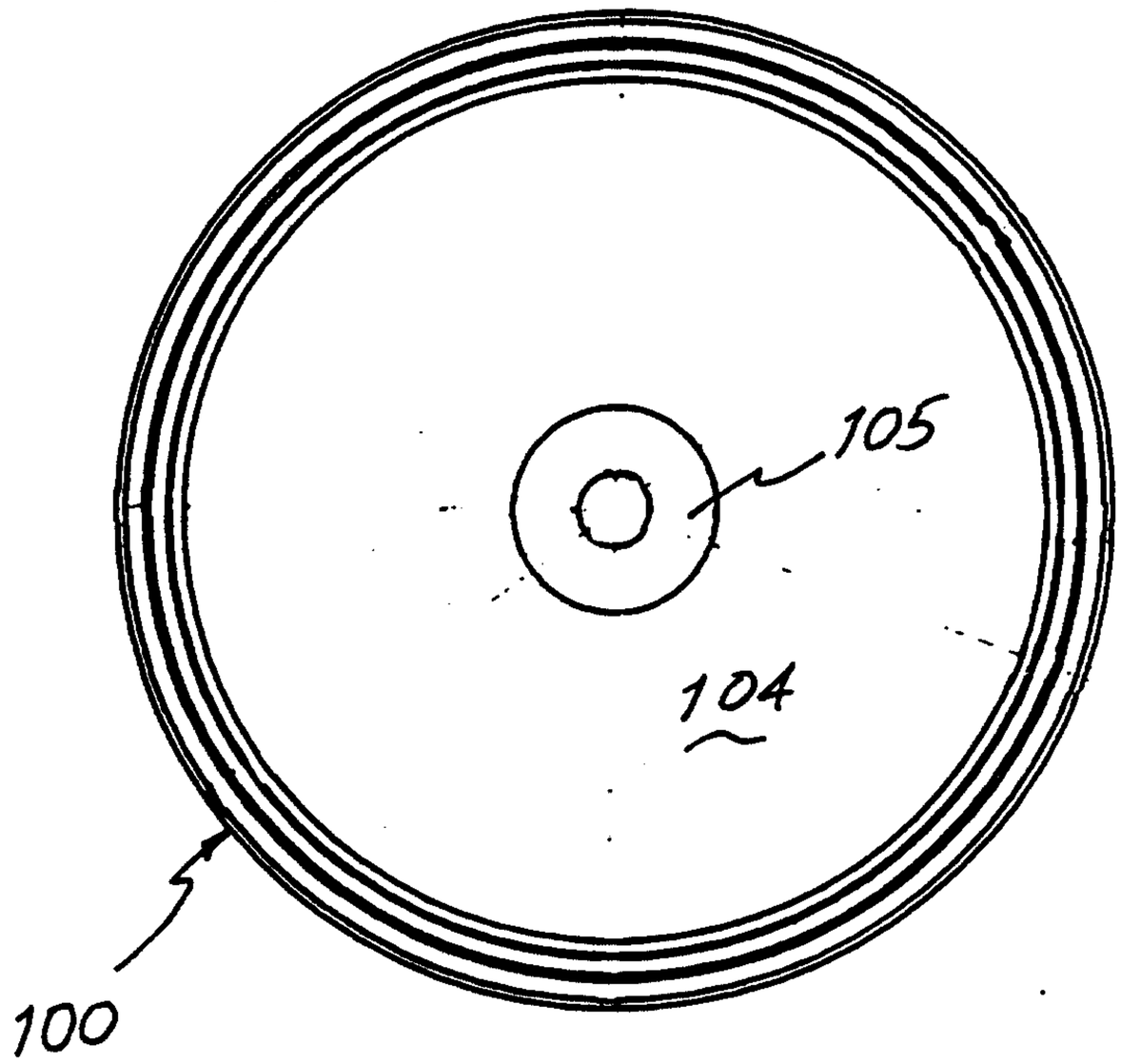

FIG. 8

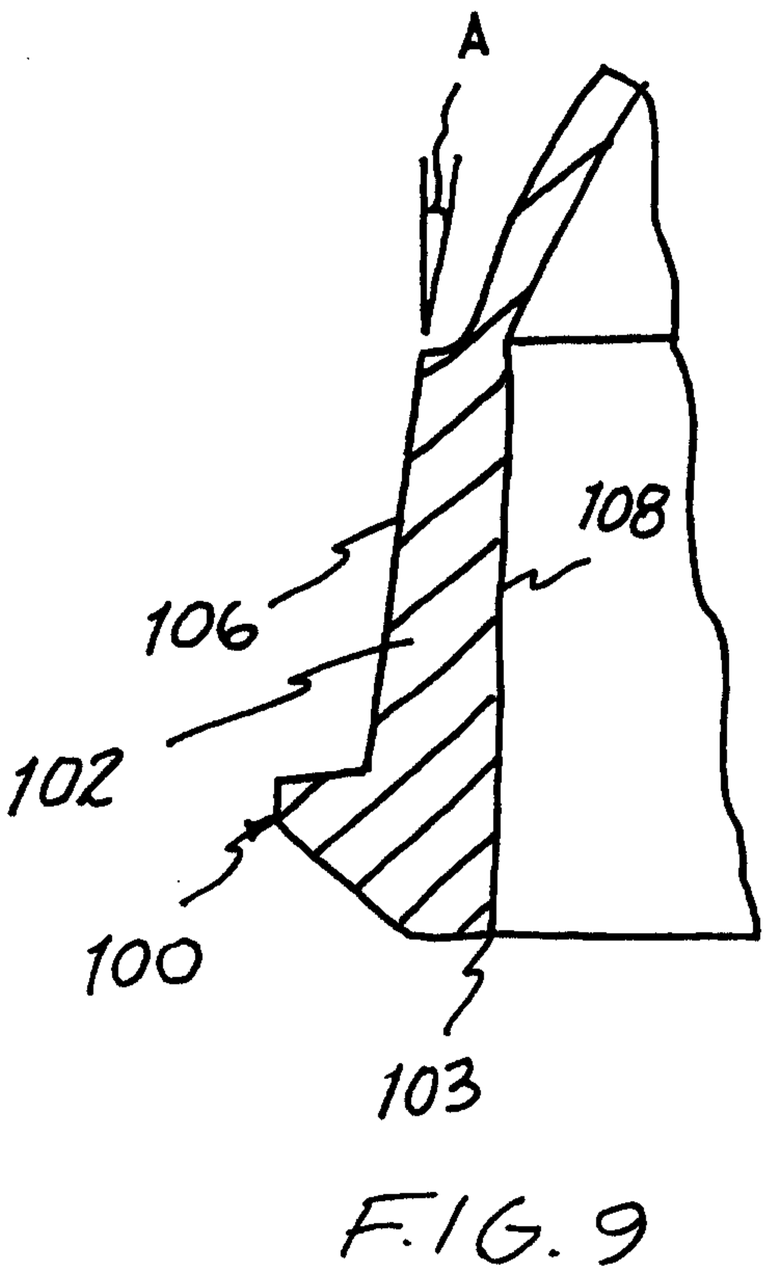

FIG. 9

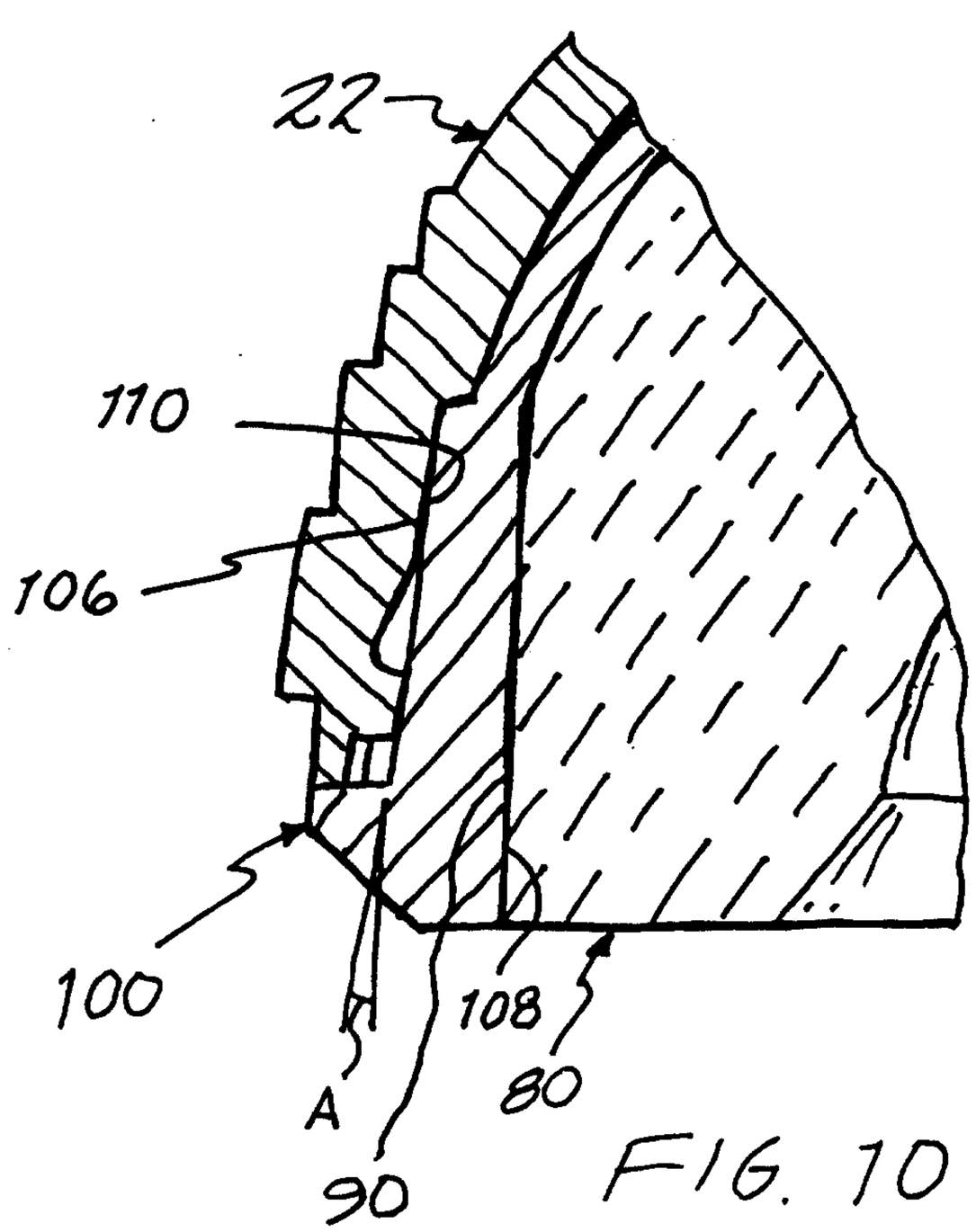

FIG. 10

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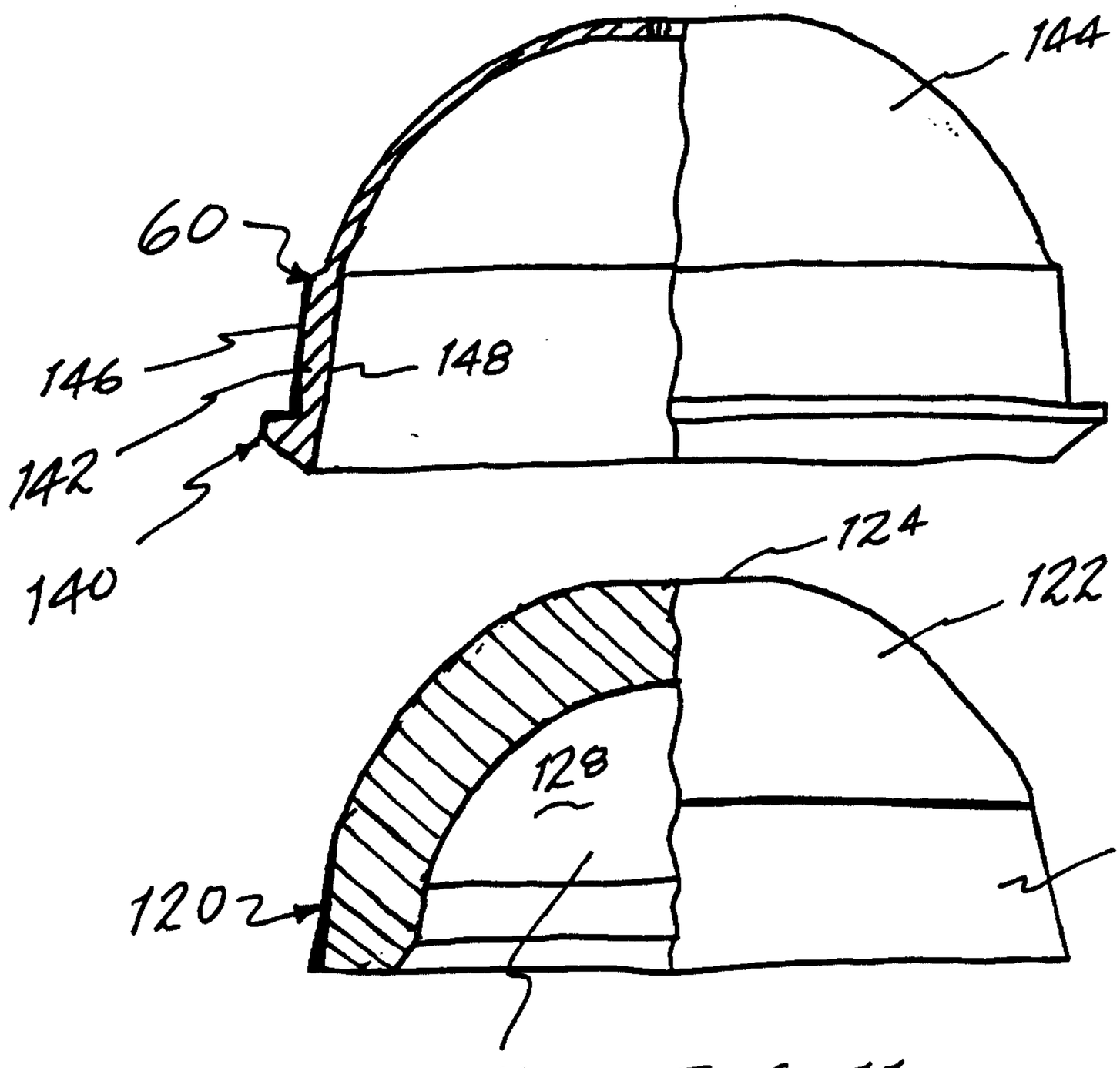

FIG. 11

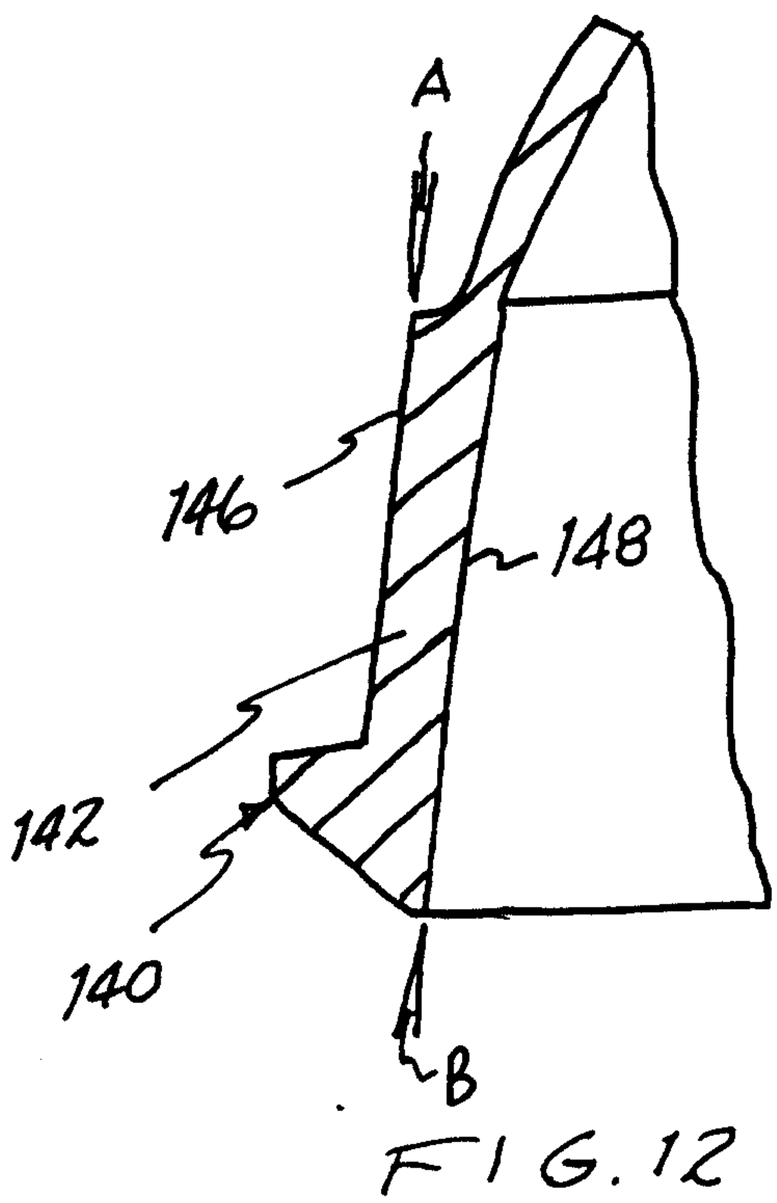

FIG. 12

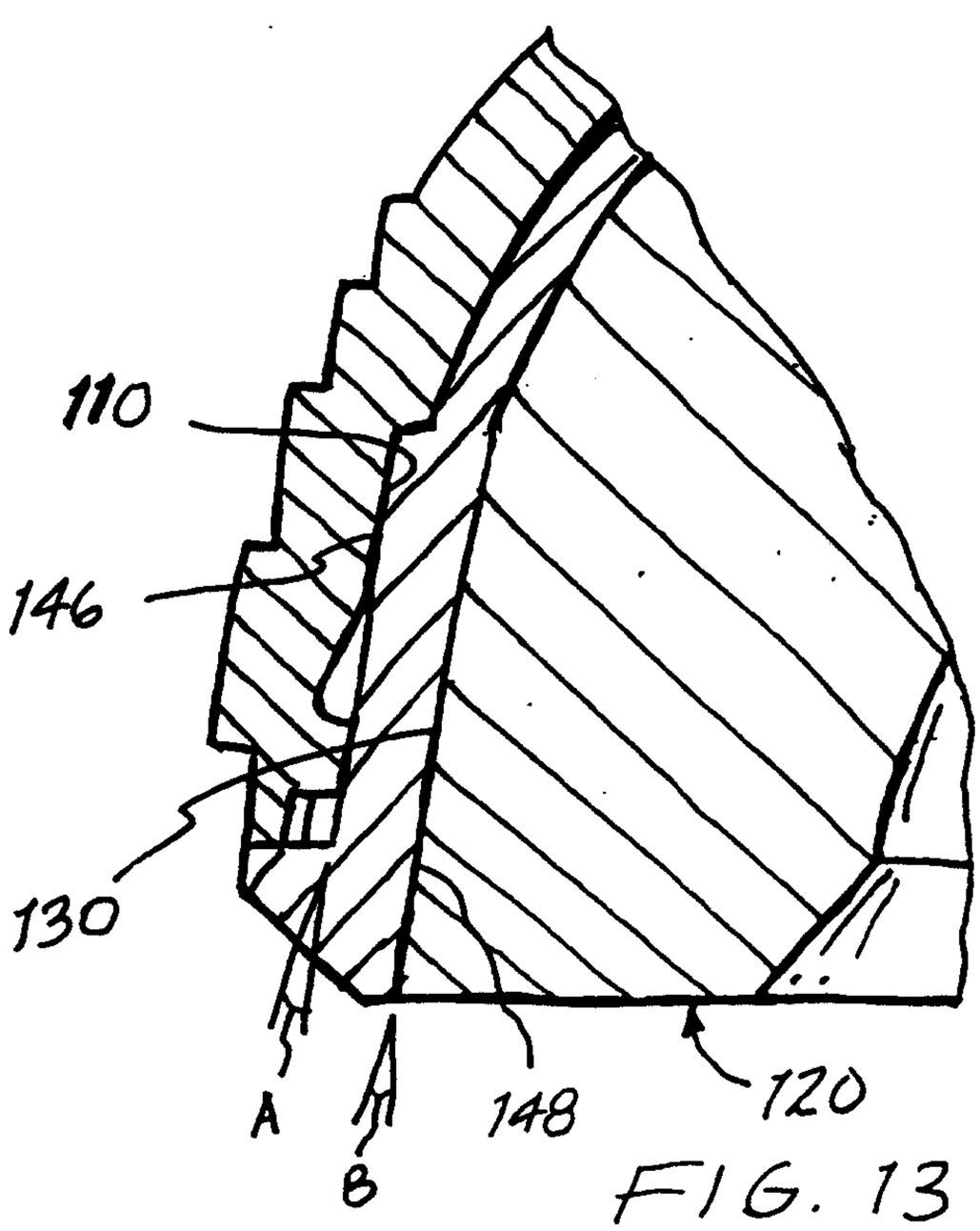

FIG. 13

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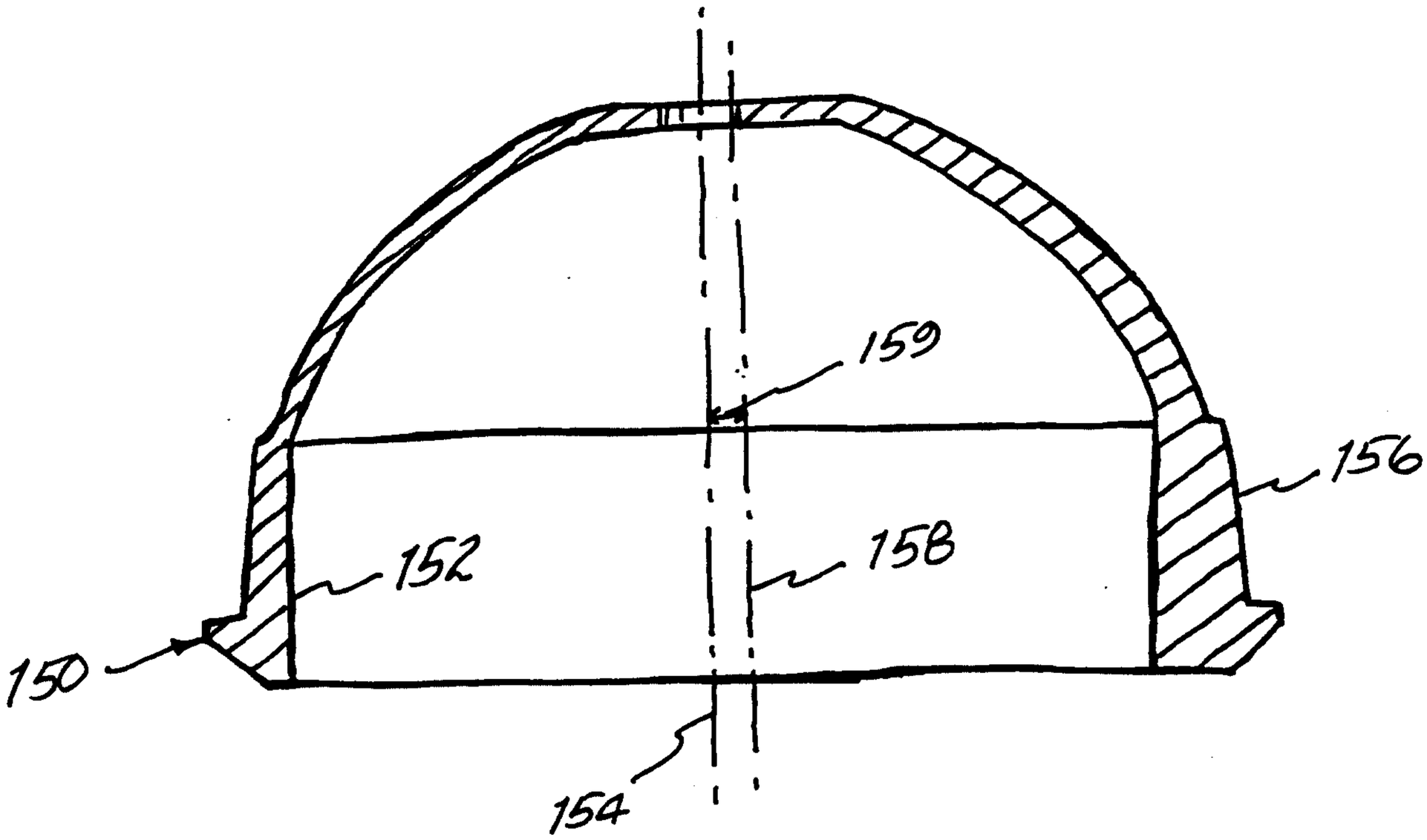

FIG. 14

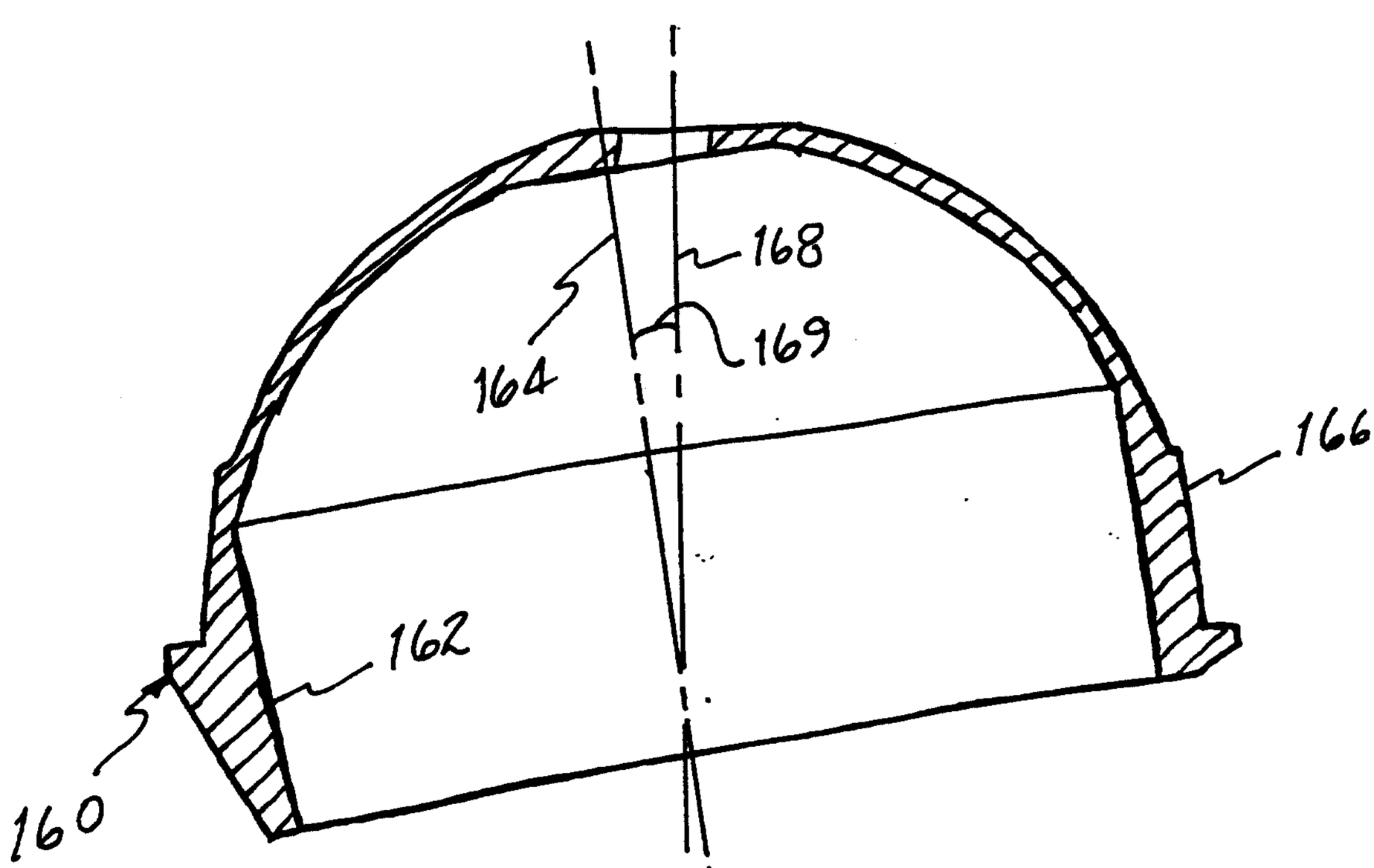

FIG. 15

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