US00RE48453E

(19) **United States**
(12) **Reissued Patent**
Kiefer

(10) **Patent Number: US RE48,453 E**
(45) **Date of Reissued Patent: Mar. 2, 2021**

(54) **FEEDING TUBE APERTURE**

(71) Applicant: **Henry Kiefer**, Casper, WY (US)

(72) Inventor: **Henry Kiefer**, Casper, WY (US)

(21) Appl. No.: **16/561,236**

(22) Filed: **Sep. 5, 2019**

Related U.S. Patent Documents

Reissue of:
(64) Patent No.: **9,750,665**
Issued: **Sep. 5, 2017**
Appl. No.: **15/053,386**
Filed: **Feb. 25, 2016**

U.S. Applications:
(63) Continuation-in-part of application No. 13/253,945, filed on Oct. 5, 2011, now abandoned.

(51) **Int. Cl.**

A61J 15/00	(2006.01)
A61M 39/02	(2006.01)
A61M 39/10	(2006.01)
A61M 39/12	(2006.01)
A61M 25/02	(2006.01)

(52) **U.S. Cl.**
CPC ***A61J 15/0061*** (2013.01); ***A61J 15/0015*** (2013.01); ***A61J 15/0034*** (2013.01); ***A61J 15/0096*** (2013.01); ***A61M 39/0247*** (2013.01); *A61M 39/105* (2013.01); *A61M 39/12* (2013.01); *A61M 2025/0233* (2013.01); *A61M 2039/0255* (2013.01); *A61M 2039/0261* (2013.01); *A61M 2039/0264* (2013.01); *A61M 2039/0276* (2013.01); *A61M 2039/0282* (2013.01); *A61M 2039/0285* (2013.01); *A61M 2039/0288* (2013.01); *A61M 2039/1066* (2013.01)

(58) **Field of Classification Search**
CPC A61J 15/0015; A61J 15/0061; A61J 15/0096; A61M 2025/0233; A61M 2039/0255; A61M 2039/0282
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,344,435 A *	8/1982	Aubin	....	A61J 15/0015 604/246
4,393,873 A	7/1983	Nawash et al.		
4,397,647 A	8/1983	Gordon		
4,666,433 A *	5/1987	Parks	....	A61J 15/0015 128/DIG. 12

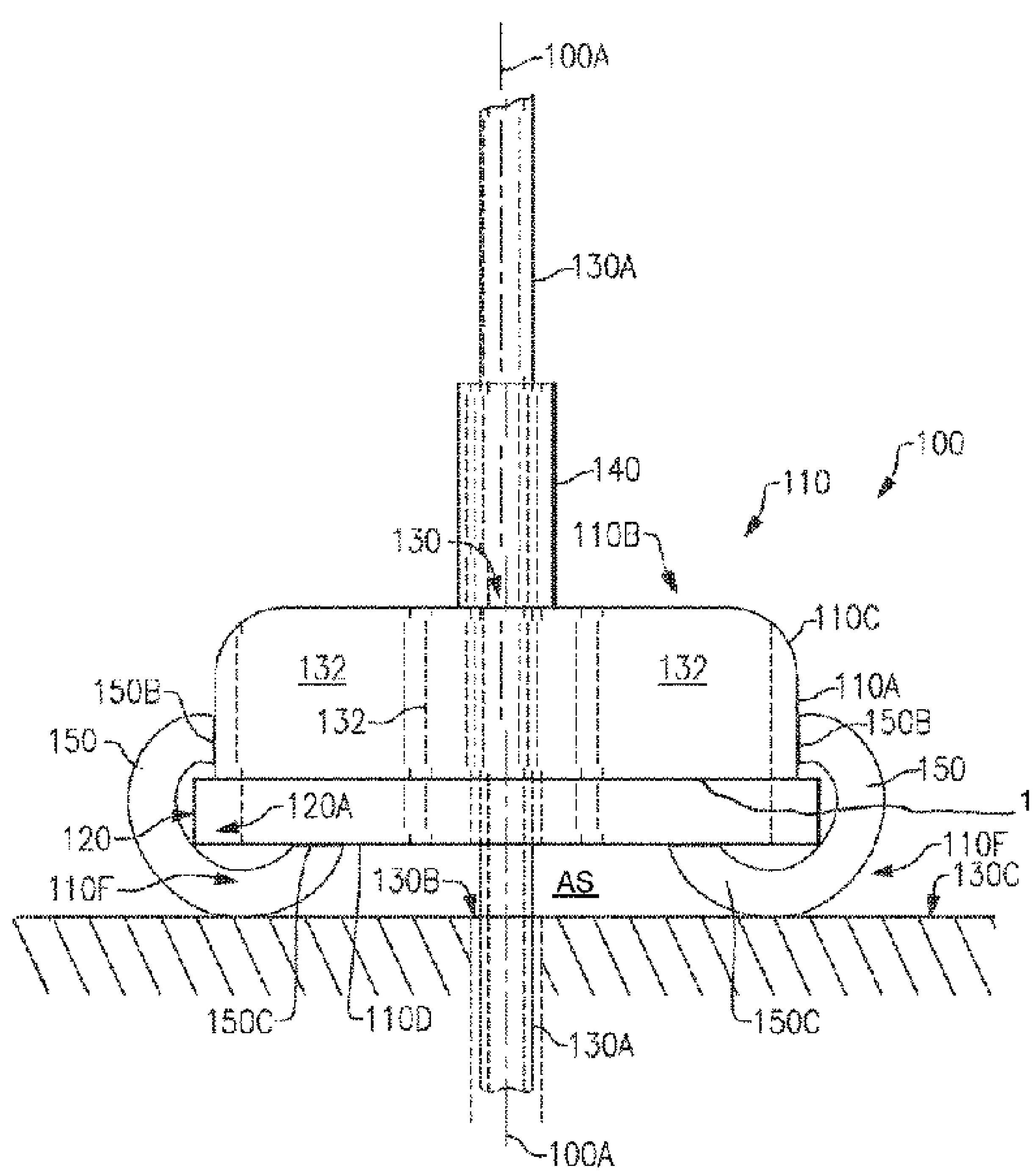
(Continued)

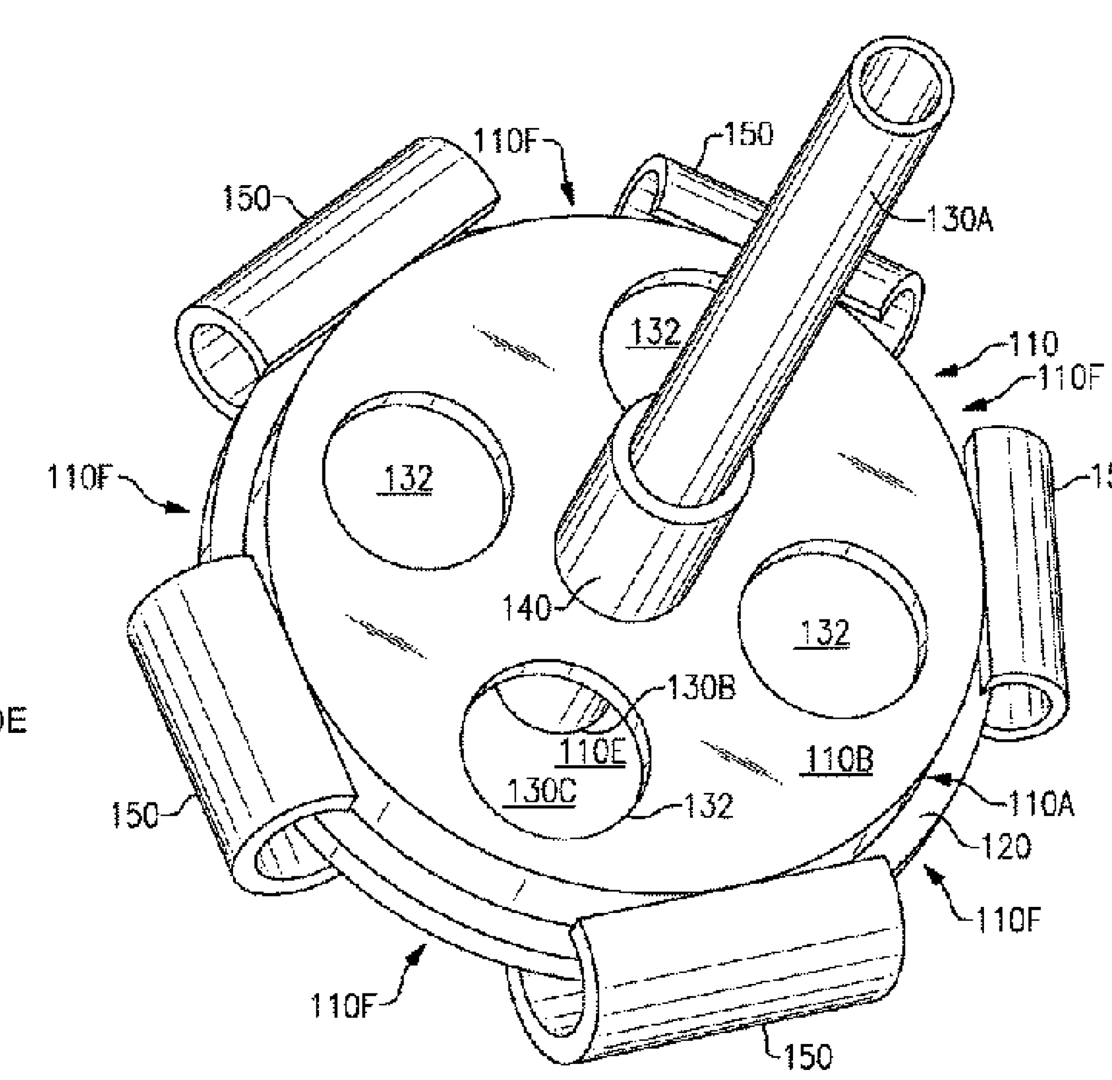
Primary Examiner — Cary E Wehner
(74) *Attorney, Agent, or Firm* — Davis & Bujold PLLC; Michael J. Bujold

(57) **ABSTRACT**

A feeding tube aperture supported and aligned with a feeding tube opening in an abdominal wall of a patient, including a base having a first end surface transverse to an axis of the base and a feeding tube, a second opposed end surface, a central feeding tube passage extending between the first and second end surfaces, a plurality of vent passages around the feeding tube passage and extending between the first and second end surfaces, a hollow, cylindrical feeding tube support extension centered on and extending outwardly from the feeding tube passage to support and align the feeding tube aperture, and a plurality of spaced apart resilient spacers extending outwards from the second end surface. The plurality of spaced apart resilient spacers resiliently space the second end surface from the abdominal wall and form a plurality of air passages to allow a flow of air around the abdominal wall and the feeding tube opening.

4 Claims, 3 Drawing Sheets





AMENDED

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,342,321	A *	8/1994	Potter	A61J 15/0065 604/103.03
5,792,119	A	8/1998	Marx	
6,231,549	B1 *	5/2001	Noecker	A61J 15/0026 128/DIG. 26
7,410,477	B2 *	8/2008	Gomez	A61M 25/02 604/96.01
2003/0109830	A1 *	6/2003	Picha	A61J 15/0015 604/174
2007/0078441	A1 *	4/2007	Adams	A61J 15/0061 604/533
2011/0288534	A1	11/2011	Aguirre et al.	

* cited by examiner

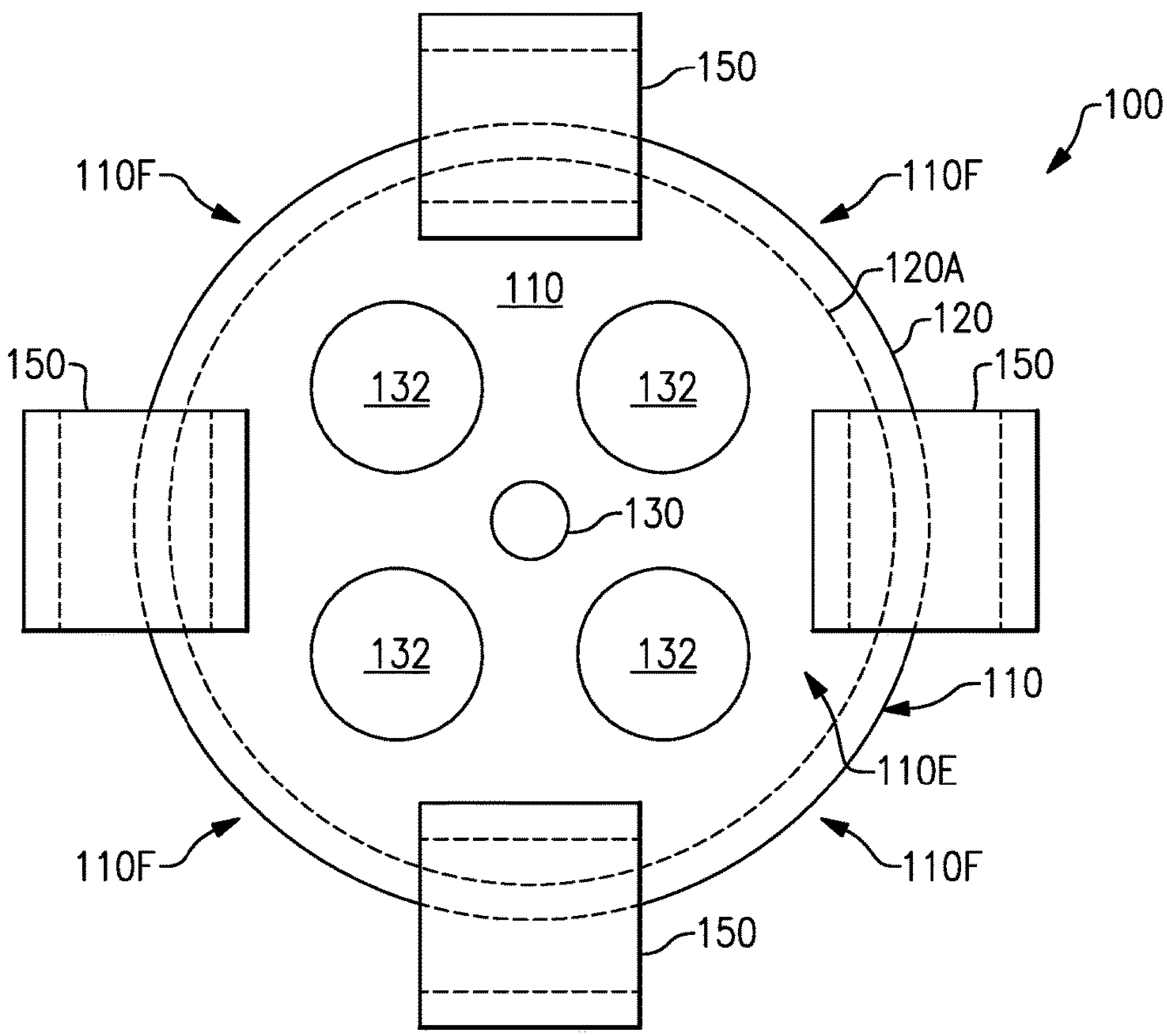

150
100
110F
110F
120A
110
120
150
150
132
132
130
132
132
110
110E
110F
110F
150

FIG.1A

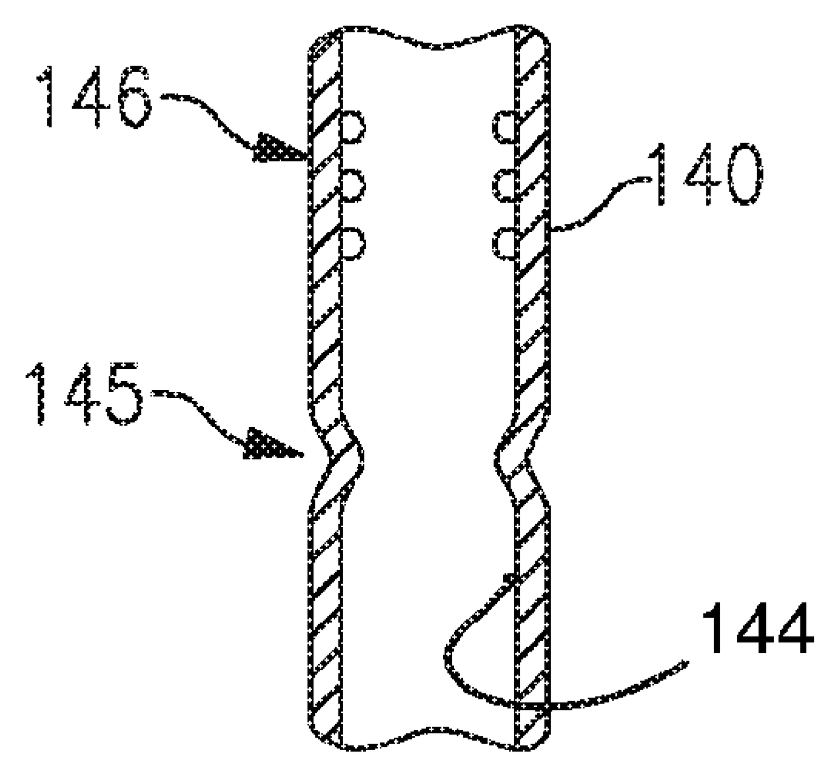


FIG.1C

AMENDED

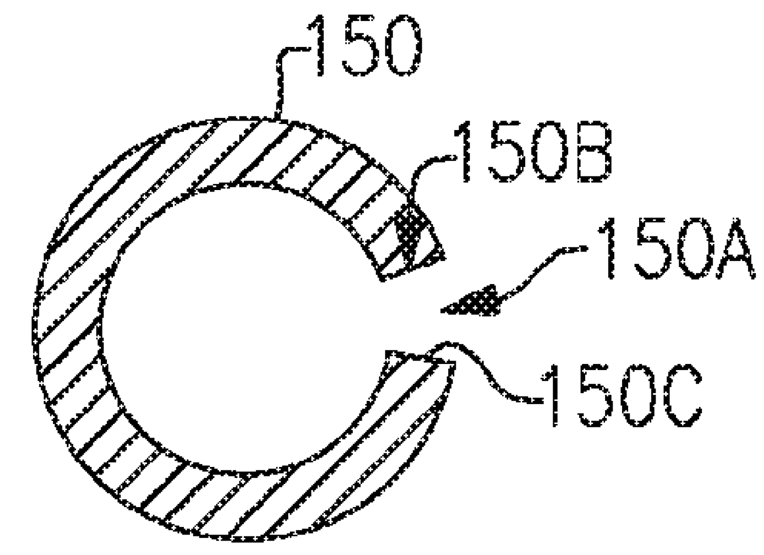


FIG.1D

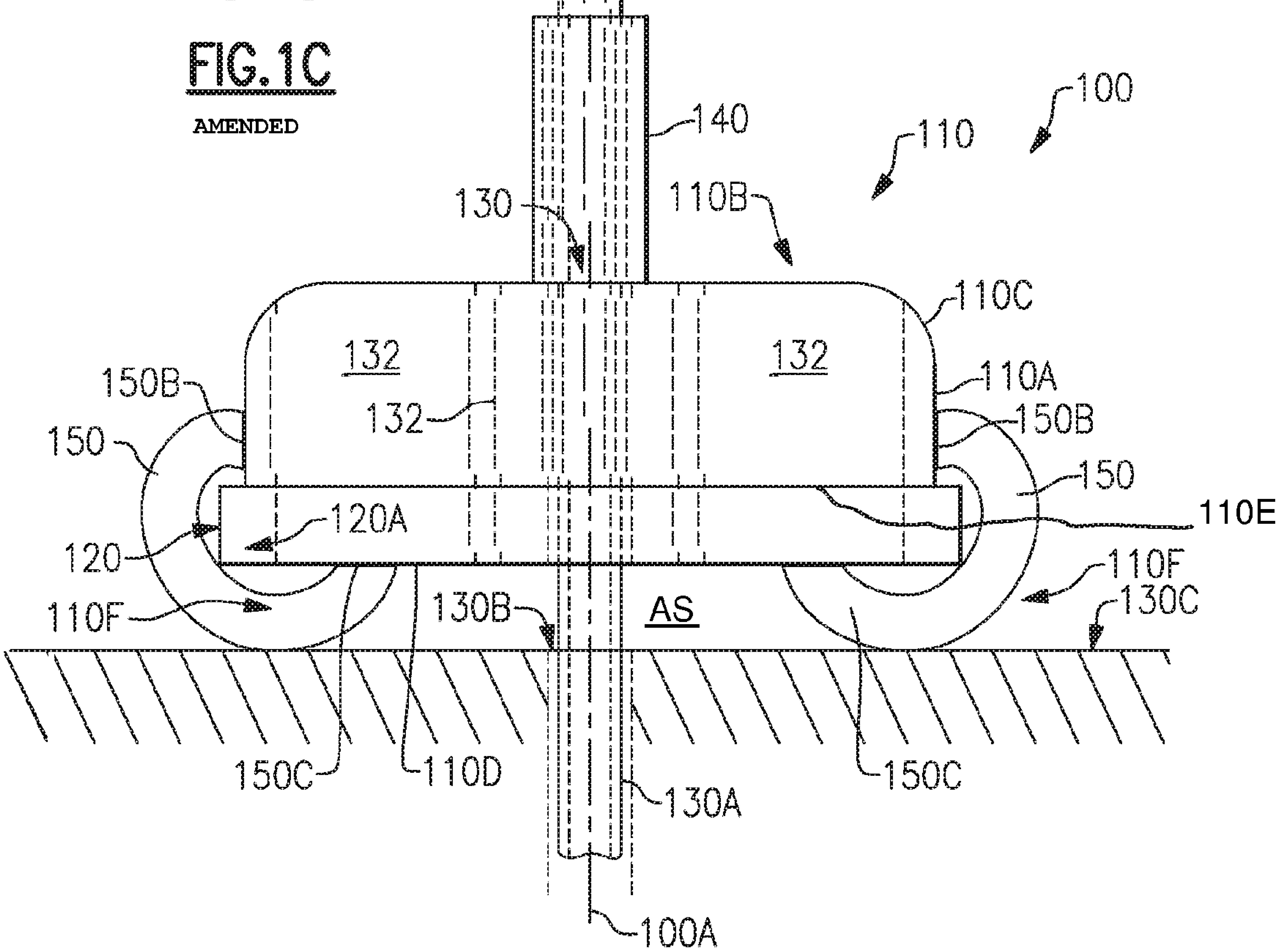


FIG.1B

AMENDED

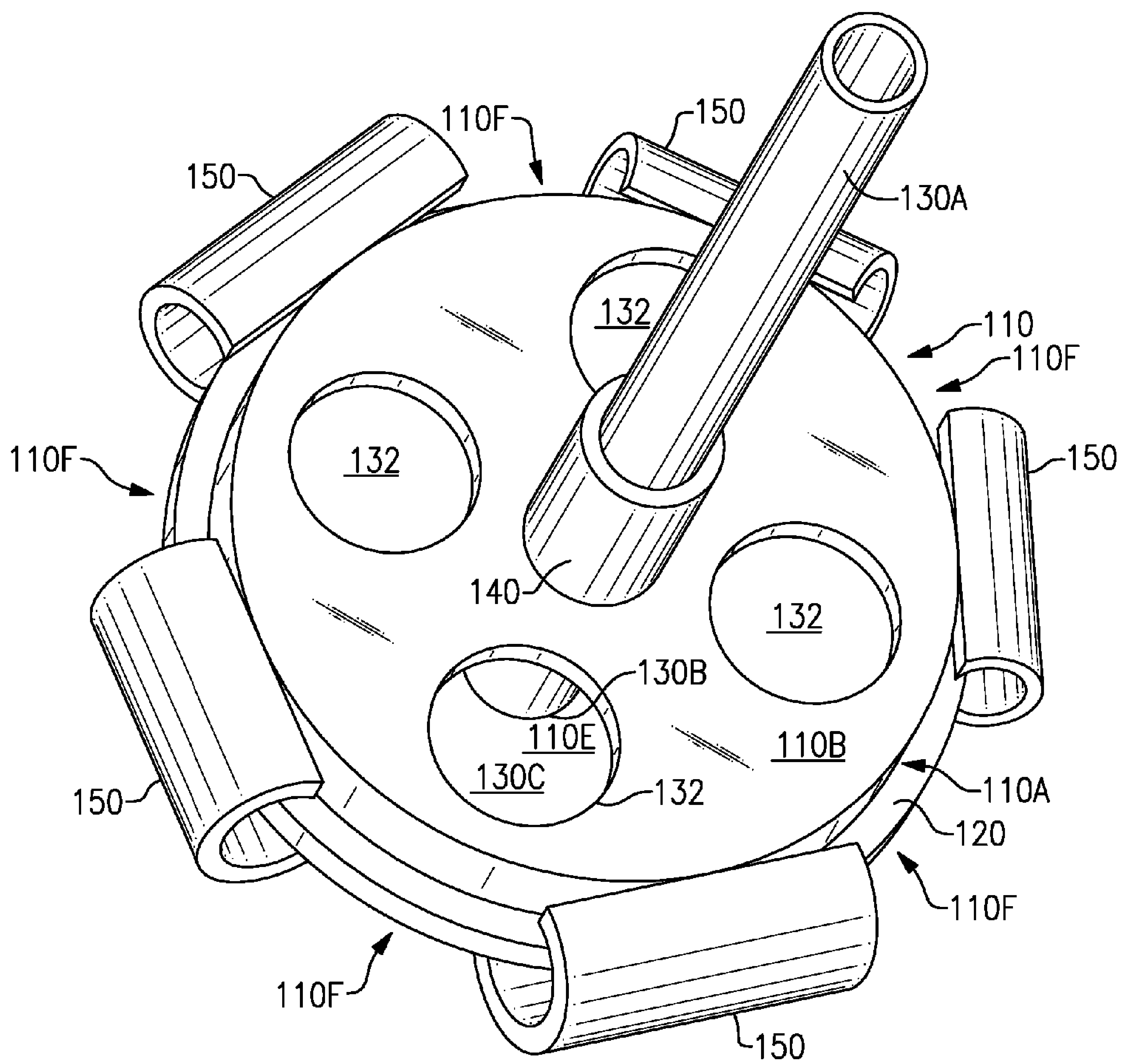

110F
150
150
130A
132
110
110F
110F
132
150
140
132
130B
110E
110B
130C
110A
150
132
120
110F
110F
150

FIG.2

FEEDING TUBE APERTURE

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates the additions made by reissue; a claim printed with strikethrough indicates that the claim was canceled, disclaimed, or held invalid by a prior post-patent action or proceeding.

CROSS REFERENCES TO RELATED APPLICATIONS

The present Application is related to and claims benefit of U.S. patent application Ser. No. 13/253,945 for a Feeding Tube Aperture filed Oct. 5, 2011 by Henry Kiefer.

FIELD OF THE INVENTION

The present invention relates to the gavage administration of liquid foods and medications directly to the stomach of a patient through a feeding tube extending from the interior of the patient's stomach and through, for example, the patient's abdominal wall, to an exterior source of liquid food or medication or both and, in particular to a feeding tube aperture positioned generally at exterior of the patient's abdominal wall to support the feeding tube.

BACKGROUND OF THE INVENTION

Many medical processes, such as treatment for cancer in a patient's thoracic region, require the long term implantation of a gavage feeding tube, hereafter generally referred to as a "feeding tube," that is anchored in the patient's stomach and extends through the patient's abdominal wall and skin to an exterior source of liquid food or medications. The implantation of such feeding tubes, however, often results in further medical problems for a number of reasons, such as movement of the stomach itself or relative movement between the patient and the exterior source of liquid food or medication, which often result in displacement of the feeding tube and frequently results in laceration, puncturing, distortion or irritation of the feeding tube opening through the abdominal wall. It is therefore generally necessary to provide some means of feeding tube support at the feeding tube opening to prevent or limit motion between the feeding tube and the abdominal wall and skin of the patient in this region.

Feeding tube support devices of the prior art have proven generally unsatisfactory for general use for a number of reasons. For example, the devices described in U.S. Pat. No. 5,792,119 to Marx for a TUBULAR IMPLANT TO BE USED FOR PERCUTANEOUSLY FEED A PATIENT, U.S. Pat. No. 4,344,435 to Aubin for a METHOD AND SURGICALLY IMPLANTABLE APPARATUS FOR PROVIDING FLUID COMMUNICATION WITH THE INTERIOR OF THE BODY, U.S. Patent Application Publication No. US2011/0288534 to Aguirre et al. For a DEVICE FOR EXTERNAL PERCUTANEOUS CONNECTIONS, and U.S. Pat. No. 4,393,873 to Nawash et al. For a GASTROSTOMY AND OTHER PERCUTANEOUS TUBES are generally too complex in structure, or require complex implantation methods and apparatus, and therefore too expensive for general use.

In addition, such devices are often and typically detrimental to the patient. For example, the feeding tube support devices of the prior art generally entrap body fluids seeping from the patient's body in the region around the opening through which the feeding tube penetrates the patient's skin while preventing or limiting the flow of air to and cleaning access to the region around the feeding tube opening. These limitations generally result in irritation to and very possibly necrosis of the patent's skin in the region around the feeding tube, and possibly even within the feeding tube passage through the patient's abdominal wall. In addition, the feeding tube support devices of the prior art are typically rigid structures of significant size and frequently cause discomfort to the patient by digging into the skin of the patient as the patient moves about.

Certain other feeding tube devices of the prior art, such as that described in U.S. Pat. No. 4,397,647 to Gordon for a CATHETER STABLIZATION FITTING HAVING A SNAP-OVER COVER, may provide some support to a feeding tube but are attached to the patient at some distance from the feeding tube opening through the patient's abdominal wall and mere prevent or limit disturbance to the feeding tube due to movement between the patient and the exterior source of liquid food or medication and do not and cannot provide the necessary support in the region of the feeding tube opening through the patient's abdominal wall.

Other feeding tube support devices of the prior art, such as that described in U.S. Pat. No. 4,666,433 to Parks for a GASTROSTOMY FEEDING DEVICE, have the virtue of simplicity and thus of reasonable cost, but also have the limitations and disadvantages of the above discussed devices of the prior art. For example, the Parks '433 device includes a disk-like element that bears against the skin of the patient in the region around the feeding tube opening, this providing at least some degree of discomfort to the patient as discussed above. While Parks '433 purports to provide openings through the disk-like element that bears against the skin of the patient around feeding tube opening for to provide air circulation, it is apparent that the described openings are too small to provide any useful degree of air circulation and are in any case blocked by the skin of the patient. The Parks '433 embodiment having radial ridges on the bottom of the disk-like element to space the disk-like element from the skin of the patient still only allows very limited air circulation as the ridges themselves limit air circulation; in addition, the hard, sharp edged ridges will themselves be yet another source of irritation to the skin around the feeding tube opening.

It is therefore apparent that the prior art does not offer a feeding tube support device that offers medical patients comfortable, easy-to-use support for feeding tubes or a feeding tube support device that will not puncture, rip or otherwise irritate the skin around a feeding tube opening or the internal tissue lining of a feeding tube passage or that can reliably prevent necrosis and possible infection.

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention will be described by way of exemplary embodiments, but not limitations, illustrated in the accompanying drawings in which like references denote similar elements, and in which:

FIG. **1**A shows an end view of a feeding tube aperture;

FIG. **1**B shows a side view of a feeding tube aperture;

FIG. **1**C shows a sectional side view of a feeding tube support extension;

FIG. **1**D shows a sectional end view of a resilient spacer; and

FIG. **2** is an isometric view of a feeding tube aperture.

SUMMARY OF THE INVENTION

A feeding tube aperture positionable at an external abdominal wall of a patient and along a feeding tube extending through the abdominal wall of the patient to support and align the feeding tube with a feeding tube opening through the abdominal wall of the patient.

In a present embodiment the feeding tube aperture includes a base having a circumferential surface symmetric about an axis, a first end surface transverse to the axis, a second end surface transverse to the axis and facing in an axially opposite direction from the first end surface, a centrally located feeding tube passage extending along the axis and through the base from the first end surface to the second end surface and having an interior diameter accommodating the feeding tube in a slidable frictional engagement between the feeding tube and an interior surface of feeding tube passage, a hollow, cylindrical feeding tube support extension extending outwardly from the first end surface and axially centered on the axis with an interior diameter accommodating the feeding tube in a slidable frictional engagement between the feeding tube and an interior surface of the feeding tube support extension, a plurality of large axial vent passages occupying a region between the centrally located feeding tube passage and the circumferential surface and extending through the base from the first end surface to the second end surface with the axial vent passages being disposed symmetrically around the centrally located feeding tube passage, and a plurality of resilient spacers extending outwards from the second end surface and spaced circumferentially apart around a circumference of the second end surface.

When the feeding tube aperture is mounted onto a feeding tube with the second end surface oriented toward and directly adjacent the abdominal wall with the resilient spacers in contact with the abdominal wall the feeding tube aperture is resiliently spaced apart from the abdominal wall by the resilient spacers, and the resilient spacers form an air space between the second end surface and the abdominal wall and a plurality of circumferential vent passages between the air space and the resilient spacers, so that the axial vent passages through the base, the air space between the second end surface and the abdominal wall and the circumferential vent passages allow a flow of air around the abdominal wall and the feeding tube opening in the abdominal wall.

In further embodiments of the feeding tube aperture, the feeding tube aperture may include a circumferential flange located on the circumference of the second end surface and extending outwards from second end surface, and each of the resilient spacers is comprised of a generally cylindrical hollow tube of resilient foam with a longitudinal opening extending lengthwise from end to end along a wall of the resilient spacer wherein each resilient spacer is attached to the feeding tube aperture by mounting the resilient spacer at a selected location on the circumference of the circumferential flange with one side of the longitudinal opening of the longitudinal opening bearing against the base in the region of the circumferential surface of the base an adjacent surface of the circumferential flange and a second side of the longitudinal opening bearing against an inner edge of circumferential flange and second end surface.

In still further embodiments, the interior surface of the feeding tube support extension may further include at least one of at least one crimped region and at least one raised nub to engage the feeding tube to resist inadvertent movement between the feeding tube and the feeding tube aperture.

DETAILED DESCRIPTION OF ILLUSTRATIVE EMBODIMENTS

A feeding tube aperture of the present invention will be described in the following with reference to FIGS. **1**A, **1**B, **1**C and **1**D and FIG. **2** wherein FIGS. **1**A and **1**B are respectively diagrammatic illustrations of an end view and a sectional side view of a feeding tube aperture **100** of the present invention. FIG. **1**C is a side cross section view of a part of a feeding tube support extension, FIG. **1**D is an end cross section view of a resilient spacer and FIG. **2** is an isometric diagrammatic view of a feeding tube aperture **100** of the present invention.

As illustrated therein, a feeding tube aperture **100** is generally disk shaped and includes a base **110** having a circumferential surface **110**A symmetric about an axis **100**A, a first end surface **[116**E**]** *110E* transverse to axis **100**A with a circumferential curved surface **110**C extending between and joining circumferential surface **110**A and first end surface **110**B, a second end surface **110**D transverse to axis **100**A and facing in an axially opposite direction from first end surface **110**B, and may include a circumferential flange **120** located on the circumference **120**A of second end surface **110**D.

Feeding tube aperture **100** includes a centrally located feeding tube passage **130** extending along axis **100**A and through base **110** from first end surface **110**E to second end surface **110**D. The interior diameter of feeding tube passage **130** has a diameter to accommodate a feeding tube **130**A in a slidable friction engagement between a feeding tube **130**A and the interior surface of feeding tube passage **130**. In use, feeding tube aperture **100** will be oriented with first end surface **110**A facing away from an abdominal wall **130**C of a patient and second end surface **110**B facing toward the abdominal wall **130**C with a feeding tube **130**A extending from a feeding tube opening **130**B in the abdominal wall **130**C of a patient and passing through feeding tube passage **130** so that the feeding tube **130**A and will be secured by feeding tube aperture **100** in a generally perpendicular orientation to the abdominal wall **130**C of the patient.

Feeding tube aperture **100** further includes a plurality of relatively large axial vent passages **132** occupying the region between central feeding tube passage **130** and circumferential surface **110**A of base **110** and extending through base **110** from first end surface **110**B to second end surface **110**D with axial vent passages **132** generally being disposed symmetrically around feeding tube passage **130**. It will also be noted that axial vent passages **132** together occupy a relatively large portion of the areas of first end surface **110**B and second end surface **110**D, as illustrated in FIGS. **1**A, **1**B and **2** and as will be discussed further below.

In a presently preferred embodiment, a feeding tube aperture **100** further includes a hollow, cylindrical feeding tube support extension **140** that is secured to and extends outwardly from first end surface **110**B with feeding tube support extension **140** being axially centered on axis **100**A and feeding tube passage **130**. Feeding tube support extension **140** has an interior diameter accommodating a feeding tube **130**A to allow a feeding tube **130**A to pass through feeding tube support extension **140** in a slidable friction engagement between a feeding tube **130**A and the interior surface of feeding tube passage **130**. For these purposes, and as illustrated in FIG. **[10]** *1C*, feeding tube support extension **140** may include crimped regions **145** or a plurality of internal raised nubs **146** disposed on the interior surface **144** of feeding tube support extension **140** to prevent the plastic tube anchor **140** from inadvertently sliding or supping along the feeding tube **130**A. Lastly, feeding tube support extension **140** may, for example, be a separate element that is secured to base **110**, for example by glue or a mechanical joint, or may be cast or molded as an integral part of base **110** and circumferential flange **120**.

A feeding tube aperture **100** further includes a plurality of resilient foam "booties," hereafter referred to as resilient spacers **150**, mounted to and spaced circumferentially apart from each other around the circumference **120**A of second end surface **11** OD with resilient spacers **150** extending outwards from the second end surface **11** OD. It will be noted that the number of resilient spacers **150** may vary, depending on the specific embodiment of a feeding tube aperture **100**, but there will typically be at least three resilient spacers and may be four, as illustrated in FIG. **1**B, or five, as illustrated in FIG. **2**. It must also be noted that for purposes of clarity showing other elements of a feeding tube aperture **100**, only two opposed mounted resilient spacers **150** are illustrated in FIG. **1**A; it will be understood, however, that as stated and as shown in FIGS. **1**B and **2**, a feeding tube aperture **100** will include 3 or more resilient spacers **150**, such as four or five or more.

When feeding tube aperture **100** is in use, as illustrated in FIGS. **1**A, **1**B and **2**, the feeding tube aperture **100** is slidingly mounted onto a feeding tube **130**A and directly adjacent to the patient's abdominal wall **130**C with feeding tube aperture **100** oriented with first end surface **110**B and feeding tube support extension **140** facing away from abdominal wall **130**C of a patient and second end surface **110**D facing toward abdominal wall **130**C with a feeding tube **130**A extending from a feeding tube opening **130**B in the abdominal wall **130**C. Resilient spacers **150** will then bear against abdominal wall **130**C so that second end surface **110**D will thereby be resiliently spaced apart from abdominal wall **130**C.

Because resilient spacers **150** are located around the circumference **120**A of second end surface **110**D, resilient spacers **150** are thereby radially spaced apart from the feeding tube opening **130**B in the abdominal wall **130**C of a patient. Feeding tube aperture **100** therefore does not exert pressure directly on feeding tube opening **130**B or the area immediately surrounding feeding tube opening **130**B and such pressure as is exerted against abdominal wall **130**C by feeding tube aperture **100** is resiliently cushioned and distributed over a signification area of the surrounding abdominal wall **130**C by resilient spacers **150**.

As further illustrated in FIGS. **1**A, **1**B and **3**, resilient spacers **150** occupy only a portion of the circumference **120**A of second end surface **110**D, being illustrated in the figures as approximately half or less of the circumference **120**A of second end surface **110**C. The circumferential spacing of resilient spacers **150** around the circumference **120**A of second end surface **110**D, together with second end surface **110**D of feeding tube aperture **100** being spaced apart from abdominal wall **130**C and feeding tube opening **130**B by resilient spacers **150**, thereby provides a relatively large air space **[**110E**]** *AS* between second end surface **110**D and abdominal wall **130**C and a plurality of relatively large circumferential vent passages **110**F between air space **[**110E**]** *AS* and the exterior surroundings of the feeding tube aperture **100**. Axial vent passages **132** through base **110**, air space **[**110E**]** *AS* between second end surface **110**D and circumferential vent passages **110**F thereby provide significantly increased air flow to and around the area between abdominal wall **130**C and feeding tube opening **130**B and feeding tube aperture **100**, thereby significantly reducing the risk of irritation, infection and necrosis of the tissues at or around feeding tube opening **130**B.

In a present embodiment of a feeding tube aperture **100**, and as illustrated in FIGS. **1**A, **1**B, **1**D and **2**, each resilient spacer **150** comprises a generally cylindrical hollow tube of resilient foam with a longitudinal opening **150**A extending lengthwise from end to end along the wall **150**B of the resilient spacer **150**. Resilient spacers **150** are attached to feeding tube aperture **100** by mounting each resilient spacer **150** at a selected location on circumferential flange **120** with circumferential flange **120** entering into longitudinal opening **150**A. As indicated, a first side **150**E of longitudinal opening **150**A will thereby bear against base **110** in the region of circumferential surface **110**A and the adjoining area of circumferential flange **120** and a second side **150**C side of longitudinal opening **150**A will bear against second end surface **110**D of base **110**. The resilience of the foam material comprising resilient spacers **150** will retain resilient spacers **150** on feeding tube aperture **100** and circumferential flange **120**, but resilient spacers **150** may be further secured to feeding tube aperture by, for example, an adhesive or glue. It will also be noted that the resilient of the foam material comprising resilient spacers **150** will tend to allow resilient spacers **150** to conform to the curvature of circumferential flange **120**, but resilient spacers **150** may be molded with a curvature matching that of circumferential flange **120** or circumference **120**A of second end surface **110**D.

It will be further understood that resilient spacers **150** may assume other forms, such as blocks or legs of resilient foam secured to second end surface **110**D or to second end surface **110**G and circumferential flange **120**, such as by adhesives or glue, so long as such resilient spacers **150** occupy only a portion of the circumference **120**A of second end surface **110**D and resiliently space second end surface **110**D and feeding tube aperture **100** apart from abdominal wall **130**C to provide relatively large air spaces and air passages between second end surface **110**D and abdominal wall **130**C with feeding tube opening **130**B to thereby provide significantly increased air flow to and around the area between abdominal wall **130**C and feeding tube opening **130**B and feeding tube aperture **100**. Further in this regard, it will be recognized that in the present shown exemplary embodiment of a feeding tube aperture **100** of the present invention the primary function of circumferential flange **120** is to provide a means for attaching the illustrated resilient spacers **150** to the feeding tube aperture **100**, and that certain alternative implementations of resilient spacers **150** may not require a circumferential flange **120**.

Lastly with regard to use of a feeding tube aperture **100** of the present invention, it has been described above that the interior diameters and configurations of feeding tube passage **130** and feeding tube support extension **140** are selected to engage a feeding tube **130**A in a sliding frictional engagement so that the feeding tube aperture **100** will not slide inadvertently with respect to the feeding tube **130**A. At the same time, the interior diameters and configurations of feeding tube passage **130** and feeding tube support extension **140** are selected to allow the feeding tube aperture **100** to be intentionally slide along the feeding tube **130**A to allow the feeding tube aperture **100** to be moved away from abdominal wall **130**C and feeding tube opening **130**B to allow cleaning of the feeding tube aperture **100**, abdominal wall **130**C and feeding tube opening **130**B, and any medical treatment that may be necessary or desirable.

In a present embodiment of a feeding tube aperture **100**, the axial length of feeding tube aperture **100**, that is of base **110** and circumferential flange **120**, is on the order of 0.75 inches and the diameter of circumferential flange **120** is on the order of 2.00 inches and feeding tube aperture **100** includes four symmetrically disposed circular axial vent passages **132** having diameters on the order of 0.5 inches while the diameter of feeding tube passage **130** and thus the interior diameter of feeding tube support extension **140** are selected to provide a frictional sliding fit with a feeding tube **130**A, typically about 0.25 inches. It will be understood, however, that these dimensions may differ from those illustrated in the exemplary present embodiment of a feeding tube aperture **100**, depending upon the specific application and use and the diameter of the feeding tubes **130**A with which the feeding tube aperture **100** is to be used.

Lastly, in the present exemplary embodiment of a feeding tube aperture **100** and feeding tube support extension **140** the feeding tube aperture **100** and feeding tube support extension **140** will typically be cast or molded from a plastic material and feeding tube aperture **100** and feeding tube support extension **140** may comprise separate pieces joined mechanically or by an adhesive or glue or may be cast or molded as a single, integral body. The material comprising feeding tube aperture **100** and feeding tube support extension **140** will preferably accommodate various sterilization processes and will preferably have smooth surfaces to reduce accumulated deposits of body fluids, liquid food or medication, to facilitate cleaning of the feeding tube aperture **100**, feeding tube opening **130**B and the abdominal wall **130**C around feeding tube aperture **130**, and to reduce potential irritation to the patient.

While the present invention has been related in terms of the foregoing embodiments, those skilled in the art will recognize that the invention is not limited to the embodiments described. The present invention can be practiced with modification and alteration within the spirit and scope of the appended claims. Thus, the description is to be regarded as illustrative instead of restrictive on the present invention.

What is claimed is:

1. A feeding tube aperture positionable at an external abdominal wall of a patient and along a feeding tube extending through the abdominal wall of the patient to support and align the feeding tube with a feeding tube opening through the abdominal wall of the patient, comprising:

a base having

a circumferential surface symmetric about an axis,

a first end surface transverse to the axis,

a second end surface transverse to the axis and facing in an axially opposite direction from the first end surface,

a centrally located feeding tube passage extending along the axis and through the base from the first end surface to the second end surface and having an interior diameter accommodating the feeding tube in a slidable frictional engagement between the feeding tube and an interior surface of the feeding tube passage,

a plurality of large axial vent passages occupying a region between the centrally located feeding tube passage and the circumferential surface and extending through the base from the first end surface to the second end surface with the plurality of large axial vent passages being disposed symmetrically around the centrally located feeding tube passage,

a hollow, cylindrical feeding tube support extension extending outwardly from the first end surface and axially centered on the axis with an interior diameter accommodating the feeding tube in a slidable frictional engagement between the feeding tube and an interior surface of the feeding tube support extension, and

a plurality of resilient spacers attached to a circumference of the second end surface and extending outward from the second end surface, the plurality of resilient spacers being spaced circumferentially apart around the circumference of the second end surface with a longitudinal axis of each of the plurality of resilient spacers extending generally along the circumference of the second end surface, so that

when the feeding tube aperture is mounted onto the feeding tube with the second end surface oriented toward and directly adjacent the abdominal wall with the plurality of resilient spacers in contact with the abdominal wall,

the feeding tube aperture is resiliently spaced from the abdominal wall by the plurality of resilient spacers, and

the plurality of resilient spacers form a common air space located between the second end surface and the abdominal wall, the air space extending from the centrally located feeding tube passage to the circumference of the second end surface and communicating with each of the plurality of large axial vent passages and with each of a plurality of circumferential vent passages formed between adjacent pairs of the plurality of resilient spacers, so that the plurality of large axial vent passages through the base, the air space between the second end surface and the abdominal wall and the plurality of circumferential vent passages allow a flow of air around the abdominal wall and the feeding tube opening in the abdominal wall during use.

2. The feeding tube aperture of claim **1**, further comprising:

a circumferential flange located on the circumference of the second end surface and extending outwards from the second end surface, wherein

each of the plurality of resilient spacers comprises a generally cylindrical hollow tube of resilient foam with a longitudinal opening in a wall of the generally cylindrical hollow tube extending lengthwise along the longitudinal axis of each of the plurality of resilient spacers, and

each of the plurality of resilient spacers is attached to the feeding tube aperture by mounting each of the resilient spacers at a selected location on a circumference of the circumferential flange with a first side of the longitudinal opening bearing against the base in a region of the circumferential surface of the base and an adjoining surface of the circumferential flange and a second side of the longitudinal opening bearing against the second end surface of the base.

3. The feeding tube aperture of claim **1**, further comprising:

a circumferential flange located on the circumference of the second end surface and extending outwards from the second end surface, wherein

each of the plurality of resilient spacers comprises a generally cylindrical hollow tube of resilient foam having a longitudinal opening formed in a wall of the generally cylindrical hollow tube, and

each of the plurality of resilient spacers is attached to the feeding tube aperture via engagement of the longitudinal opening with the circumference of the second end surface.

4. A medical tube aperture positionable at skin of a patient and along a medical tube extending through the skin of the patient to support and align the medical tube with a medical tube opening through the skin of the patient, comprising: a base having a circumferential surface symmetric about an *axis, a first end surface transverse to the axis, a second end surface transverse to the axis and facing in an axially opposite direction from the first end surface, a centrally located medical tube passage extending along the axis and through the base from the first end surface to the second end surface and having an interior diameter accommodating the medical tube in a slidable frictional engagement between the medical tube and an interior surface of the medical tube passage, a plurality of large axial vent passages occupying a region between the centrally located medical tube passage and the circumferential surface and extending through the base from the first end surface to the second end surface with the plurality of large axial vent passages being disposed symmetrically around the centrally located medical tube passage, a hollow, cylindrical medical tube support extension extending outwardly from the first end surface and axially centered on the axis with an interior diameter accommodating the medical tube in a slidable frictional engagement between the medical tube and an interior surface of the medical tube support extension, and a plurality of resilient spacers attached to a circumference of the second end surface and extending outward from the second end surface, the plurality of resilient spacers being spaced circumferentially apart around the circumference of the second end surface with a longitudinal axis of each of the plurality of resilient spacers extending generally along the circumference of the second end surface, so that when the medical tube aperture is mounted onto the medical tube with the second end surface oriented toward and directly adjacent the skin with the plurality of resilient spacers in contact with the skin, the medical tube aperture is resiliently spaced from the skin by the plurality of resilient spacers, and the plurality of resilient spacers form a common air space located between the second end surface and the skin, the air space extending from the centrally located medical tube passage to the circumference of the second end surface and communicating with each of the plurality of large axial vent passages and with each of a plurality of circumferential vent passages formed between adjacent pairs of the plurality of resilient spacers, so that the plurality of large axial vent passages through the base, the air space between the second end surface and the skin and the plurality of circumferential vent passages allow a flow of air around the skin and the medical tube opening in the skin during use.*

* * * * *