CLAIM CONSTRUCTION
Claim 1 of the '404 and '888 Patents
DOT's Proposed Construction

- forming a passage in the bone marrow → forming an opening, hole or perforation in the bone marrow

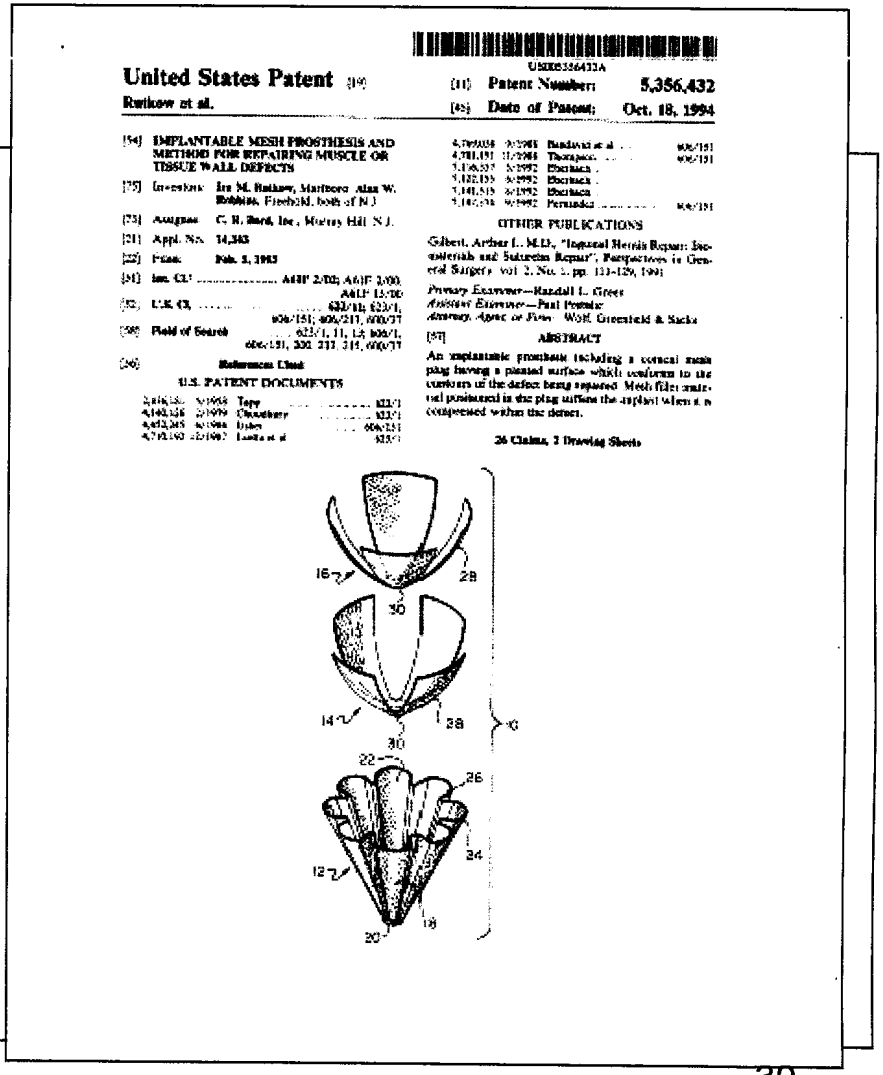
- **compacting the bone marrow to increase the volume of said passage** → **using an inflatable device to form a void in the interior of a bone, by compressing substantially all of the bone marrow away from a central portion of an interior bone volume, towards the walls of the bone, to thereby increase a volume of a passage.**

- flowable material capable of setting to a hardened condition → a nonsolid substance that tends to conform to the shape of a container

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C.R. Bard, Inc. v. United States Surgical Corp.
Required a Plug With a Pleated Surface

The Patent-In-Suit in Bard related to hernia plugs:



United States Patent [19]
Rutkow et al.

[11] Patent Number: 5,356,432
[45] Date of Patent: Oct. 18, 1994

[54] IMPLANTABLE MESH PROSTHESIS AND METHOD FOR REPAIRING MUSCLE OR TISSUE WALL DEFECTS

[75] Inventors: Ira M. Rutkow, Marlboro; Alan W. Robbins, Freehold, both of N.J.

[73] Assignee: C. R. Bard, Inc., Murray Hill, N.J.

[21] Appl. No.: 14,303

[22] Filed: Feb. 5, 1993

[51] Int. Cl.[5] A61F 2/00; A61F 2/00, A61F 13/00

[52] U.S. Cl. 623/11; 623/1; 606/151; 606/217; 600/37

[58] Field of Search 623/1, 11, 12; 606/1, 606/151, 200, 213, 215; 600/37

[56] References Cited

U.S. PATENT DOCUMENTS

OTHER PUBLICATIONS

Gilbert, Arthur I., M.D., "Inguinal Hernia Repair: Biomaterials and Suturless Repair", Perspectives in General Surgery, vol. 2, No. 2, pp. 113-129, 1991

Primary Examiner—Randall L. Green
Assistant Examiner—Paul Prebilic
Attorney, Agent, or Firm—Wolf, Greenfield & Sacks

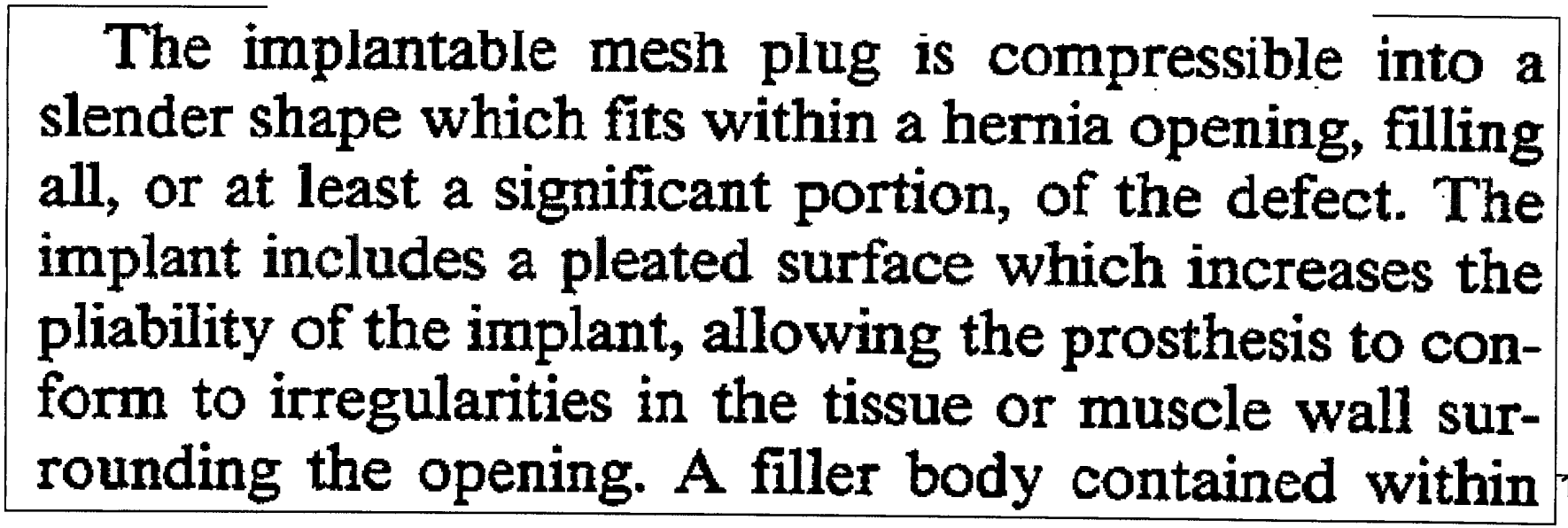
[57] ABSTRACT

An implantable prosthesis including a conical mesh plug having a pleated surface which conforms to the contours of the defect being repaired. Mesh fabric material positioned in the plug stiffens the implant when it is compressed within the defect.

26 Claims, 2 Drawing Sheets

C.R. Bard, Inc. v. United States Surgical Corp.
Required a Plug With a Pleated Surface

"First, the Summary of the invention begins by stating that "[t]he present invention is an implantable prosthesis." '432 patent, col. 1, ll. 36. In the next paragraph, before the embodiments of the invention are described, the patent states that "*[t]he implant includes a pleated surface.*" *Id.* at col. 1, ll. 51-52 (emphasis added)." Bard, 388 F.3d at 864.



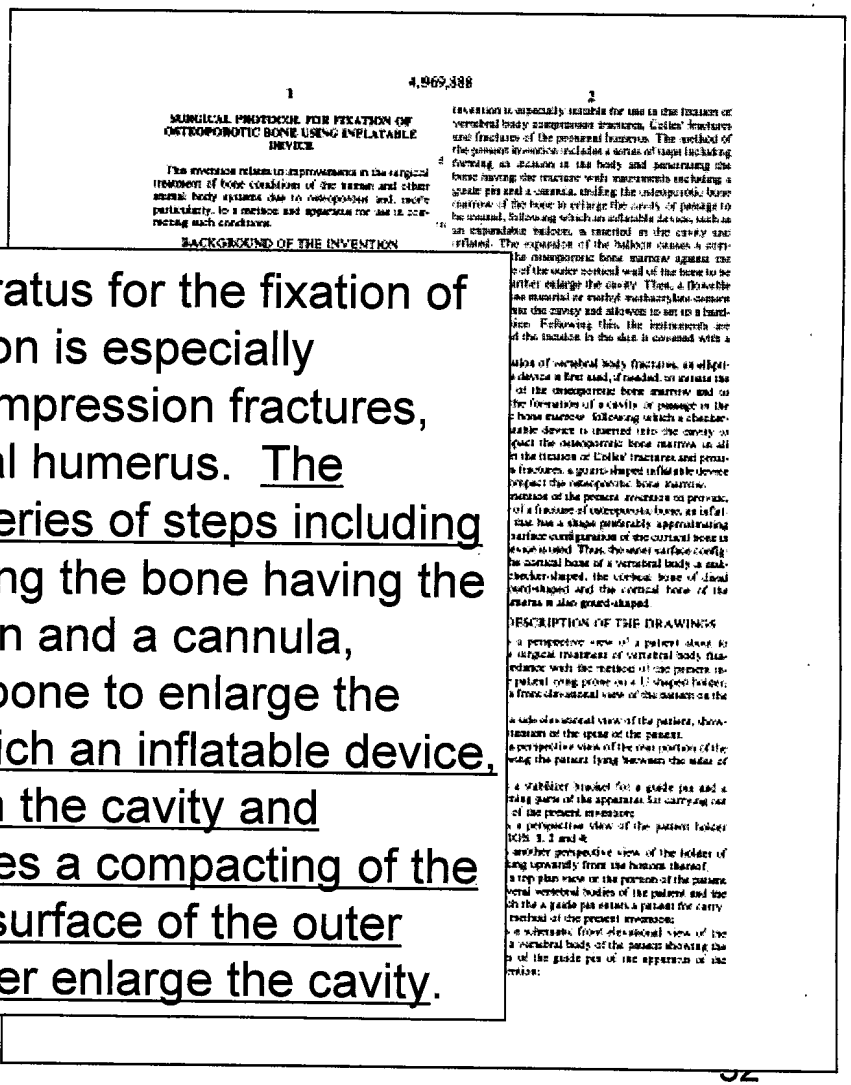
SUMMARY OF THE INVENTION

The implantable mesh plug is compressible into a slender shape which fits within a hernia opening, filling all, or at least a significant portion, of the defect. The implant includes a pleated surface which increases the pliability of the implant, allowing the prosthesis to conform to irregularities in the tissue or muscle wall surrounding the opening. A filler body contained within

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The Claims of the '404 and '888 Patents Require a Balloon

Summary of Invention:



4,969,888

SURGICAL PROTOCOL FOR FIXATION OF OSTEOPOROTIC BONE USING INFLATABLE DEVICE

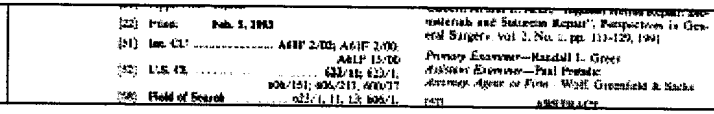
BACKGROUND OF THE INVENTION

This invention relates to a method and apparatus for the fixation of fractures of osteoporotic bones. The invention is especially suitable for use in the fixation of vertebral compression fractures, Colles' fractures and fractures of the proximal humerus. The method of the present invention includes a series of steps including forming an incision in the body and penetrating the bone having the fracture with instruments including a guide pin and a cannula, drilling the osteoporotic bone marrow of the bone to enlarge the cavity or passage to be treated, following which an inflatable device, such as an expandable balloon, is inserted in the cavity and inflated. The expansion of the **balloon** causes a compacting of the osteoporotic bone marrow against the inner surface of the outer cortical wall of the bone to be treated to further enlarge the cavity.

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C.R. Bard, Inc. v. United States Surgical Corp.
Required a Plug With a Pleated Surface

"Second, the Abstract describes "[a]n implantable prosthesis including *a* conical mesh plug having a pleated surface which conforms to the contours of the defect being repaired." *Id.*, Abstract (emphasis added)" Bard, 388 F.3d 864



[57] **ABSTRACT**

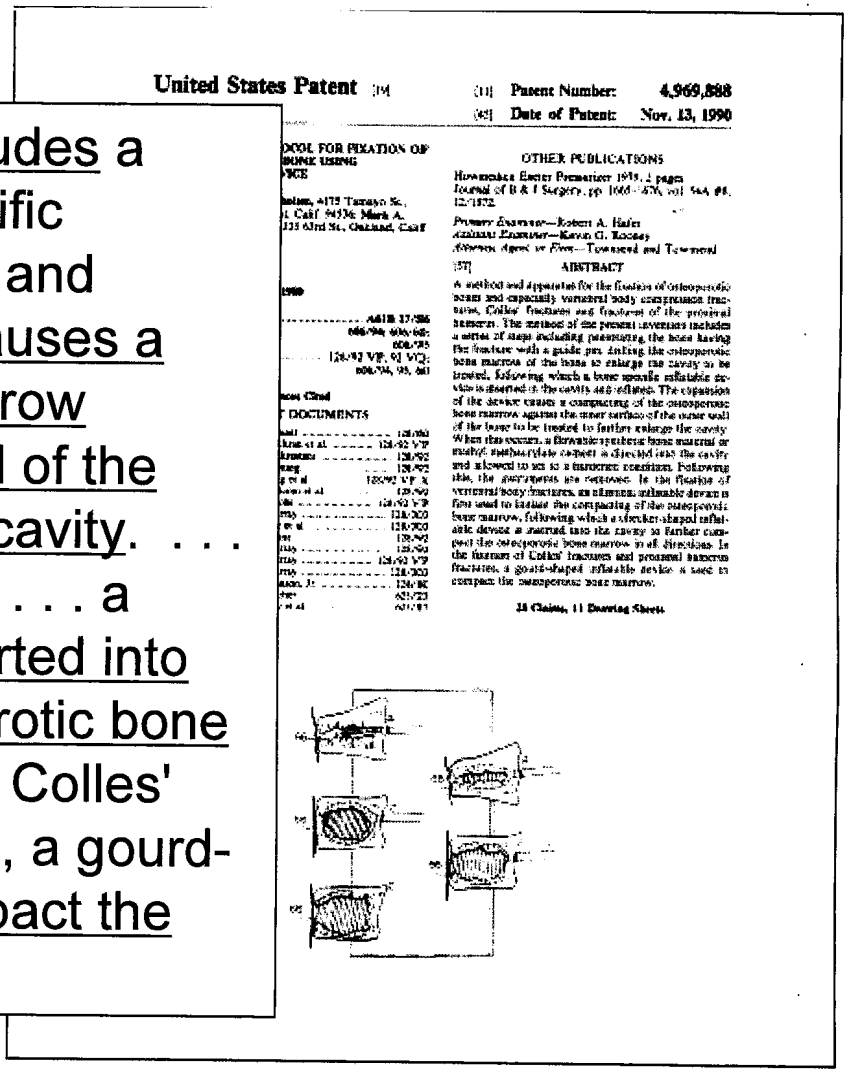
An implantable prosthesis including a conical mesh plug having a pleated surface which conforms to the contours of the defect being repaired. Mesh filler material positioned in the plug stiffens the implant when it is compressed within the defect.

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The Claims of the '404 and '888 Patents Require a Balloon

Abstract:

The method of the present invention includes a series of steps including . . . a bone specific **inflatable** device is inserted in the cavity and **inflated.** The expansion of the device causes a compacting of the osteoporotic bone marrow against the inner surface of the outer wall of the bone to be treated to further enlarge the cavity. . . . In the fixation of vertebral body fractures, . . . a checker-shaped **inflatable** device is inserted into the cavity to further compact the osteoporotic bone marrow in all directions. In the fixation of Colles' fractures and proximal humerus fractures, a gourd-shaped **inflatable** device is used to compact the osteoporotic bone marrow.



United States Patent [19]

[11] Patent Number: 4,969,888

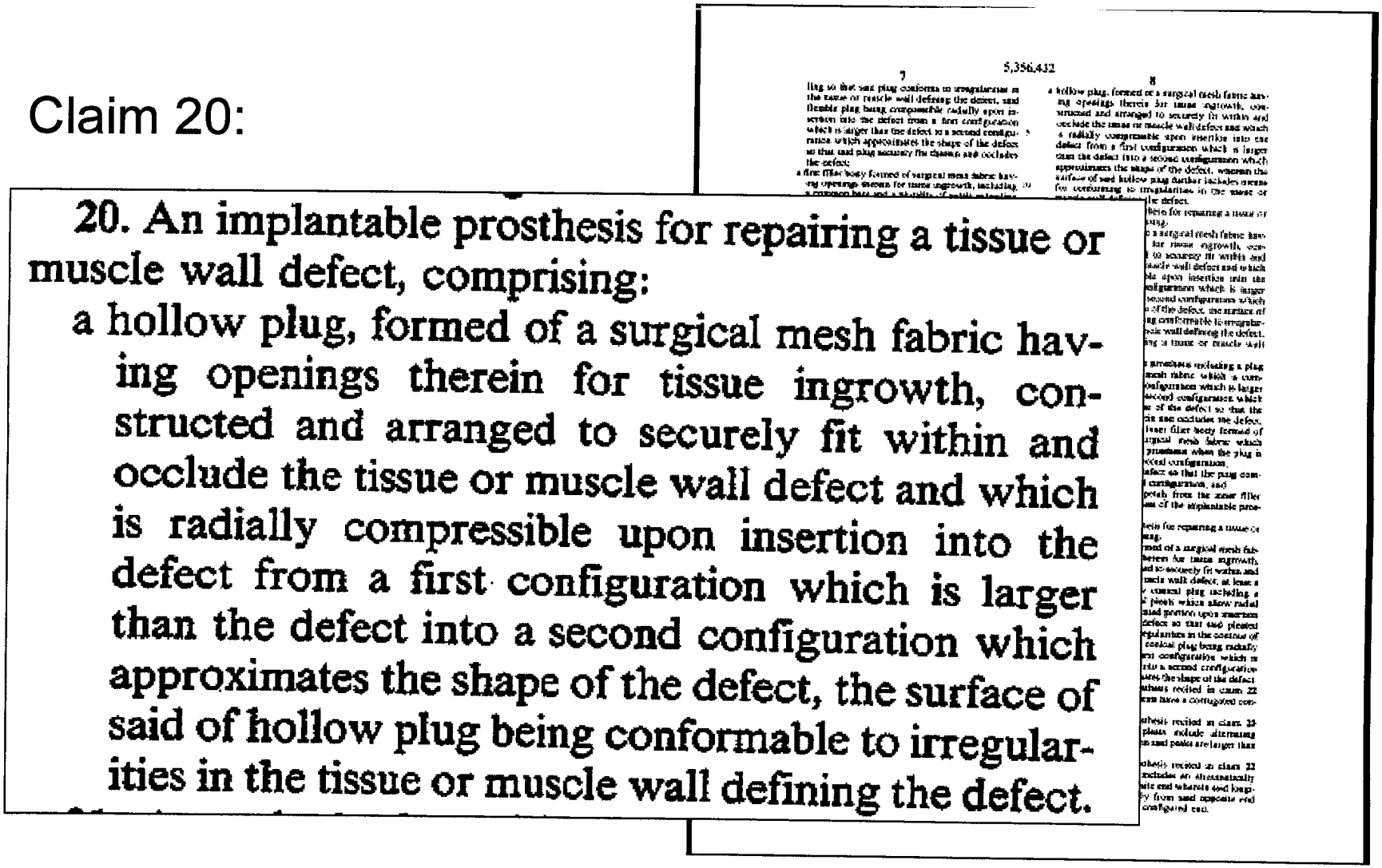
[45] Date of Patent: Nov. 13, 1990

OTHER PUBLICATIONS

ABSTRACT

C.R. Bard, Inc. v. United States Surgical Corp.
Required a Plug With a Pleated Surface

Claim 20:



20. An implantable prosthesis for repairing a tissue or muscle wall defect, comprising:

a hollow plug, formed of a surgical mesh fabric having openings therein for tissue ingrowth, constructed and arranged to securely fit within and occlude the tissue or muscle wall defect and which is radially compressible upon insertion into the defect from a first configuration which is larger than the defect into a second configuration which approximates the shape of the defect, the surface of said of hollow plug being conformable to irregularities in the tissue or muscle wall defining the defect.

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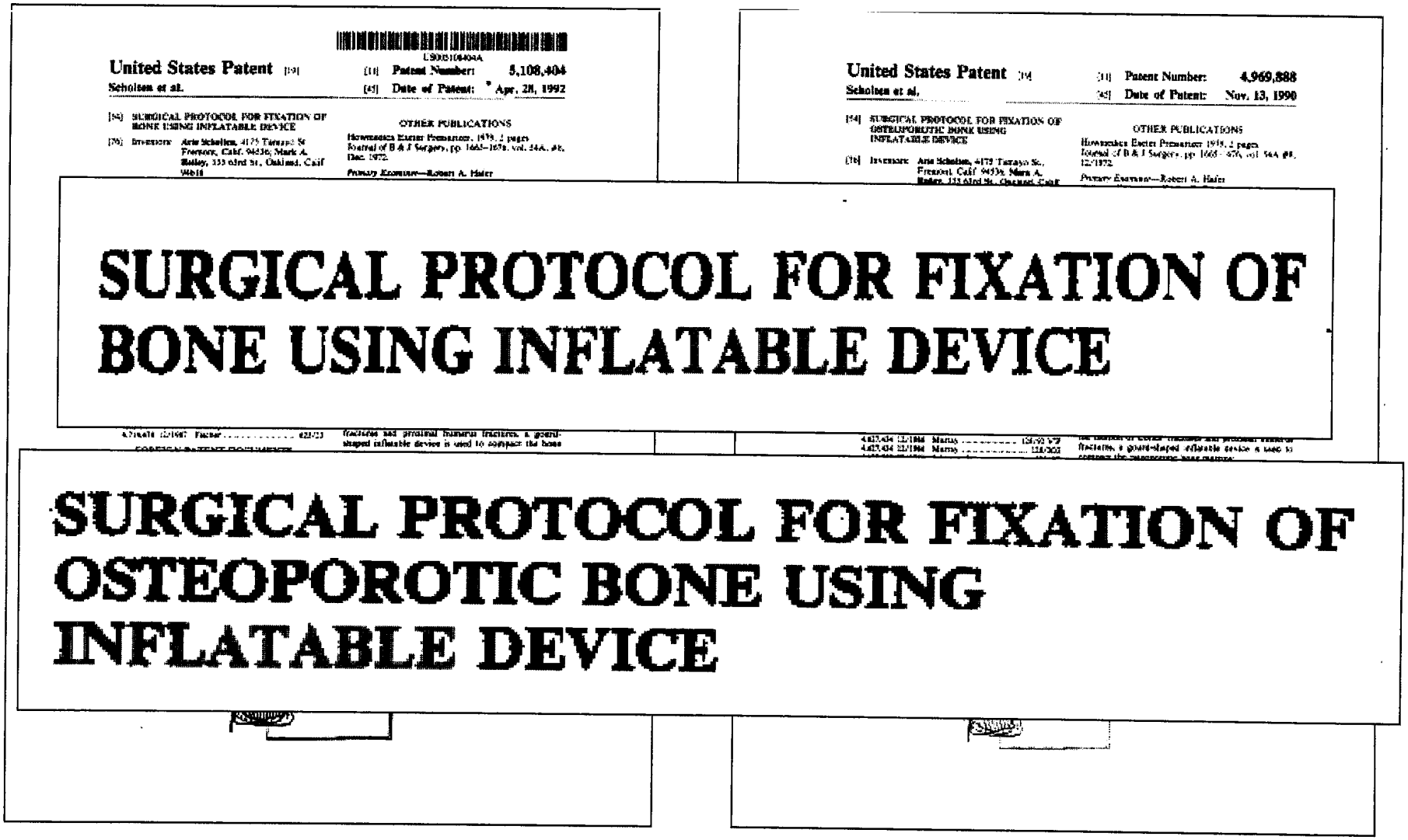
C.R. Bard, Inc. v. United States Surgical Corp.
Required a Plug With a Pleated Surface

Claim 22:

22. An implantable prosthesis for repairing a tissue or muscle wall defect, comprising:

a hollow conical plug formed of a surgical mesh fabric having openings therein for tissue ingrowth, constructed and arranged to securely fit within and occlude the tissue or muscle walk defect, at least a portion of said hollow conical plug including a plurality of longitudinal pleats which allow radial compression of said pleated portion upon insertion of said plug into the defect so that said pleated portion conforms to irregularities in the contour of the defect, said hollow conical plug being radially compressible from a first configuration which is larger than the defect into a second configuration which closely approximates the shape of the defect.

Here, Even the Titles Include "Inflatable Device"

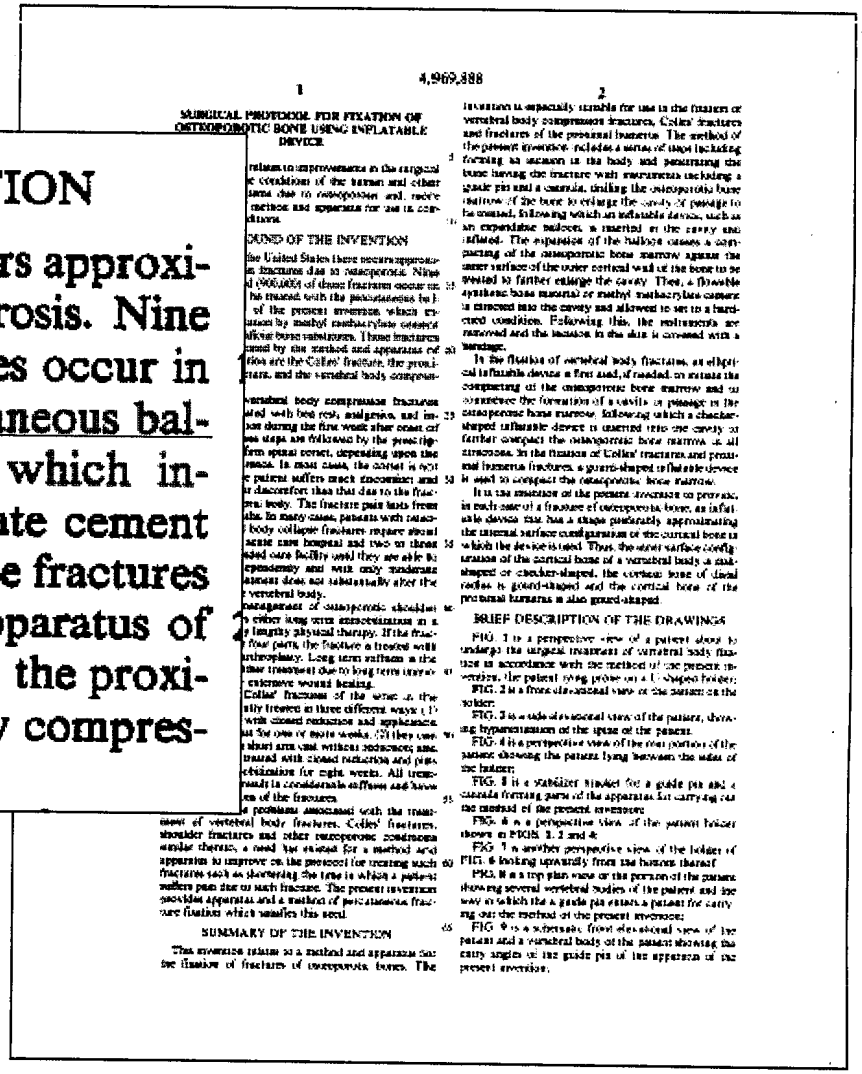


The Claims of the '404 and '888 Patents Require a Balloon

Background of Invention:

BACKGROUND OF THE INVENTION

Every year in the United States there occurs approximately 1.2 million fractures due to osteoporosis. Nine hundred thousand (900,000) of those fractures occur in bones which can be treated with the percutaneous balloon technology of the present invention which includes instant fixation by methyl methacrylate cement or with liquid artificial bone substitutes. Those fractures which can be treated by the method and apparatus of the present invention are the Colles' fracture, the proximal humerus fracture, and the vertebral body compressions fracture.



4,969,888

SURGICAL PROTOCOL FOR FIXATION OF OSTEOPOROTIC BONE USING INFLATABLE DEVICE

SUMMARY OF THE INVENTION

BRIEF DESCRIPTION OF THE DRAWINGS

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