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# United States Patent [19]

[11] Patent Number: **5,897,497**

Fernandez

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[54] **GUIDING CATHETER INTRODUCER ASSEMBLY**

5,324,262	6/1994	Fischell et al. .	
5,389,090	2/1995	Fischell et al. .	
5,397,310	3/1995	Chu et al. ....	604/158
5,413,561	5/1995	Fischell et al. ....	604/167
5,423,762	6/1995	Hillstead .	
5,514,236	5/1996	Avellan et al. ....	156/154
5,538,512	7/1996	Zenzon et al. ....	604/280
5,538,513	7/1996	Okajima ....	604/280
5,558,652	9/1996	Henke ....	604/280

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[21] Appl. No.: **08/508,098**

[22] Filed: **Jul. 27, 1995**

[51] Int. Cl.<sup>6</sup> ..... **A61B 6/00**

[52] U.S. Cl. .... **600/435**; 609/280

[58] Field of Search ..... 604/280, 281, 604/282, 283, 164, 165.7, 158; 128/658; 600/433-434, 435

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### [57] ABSTRACT

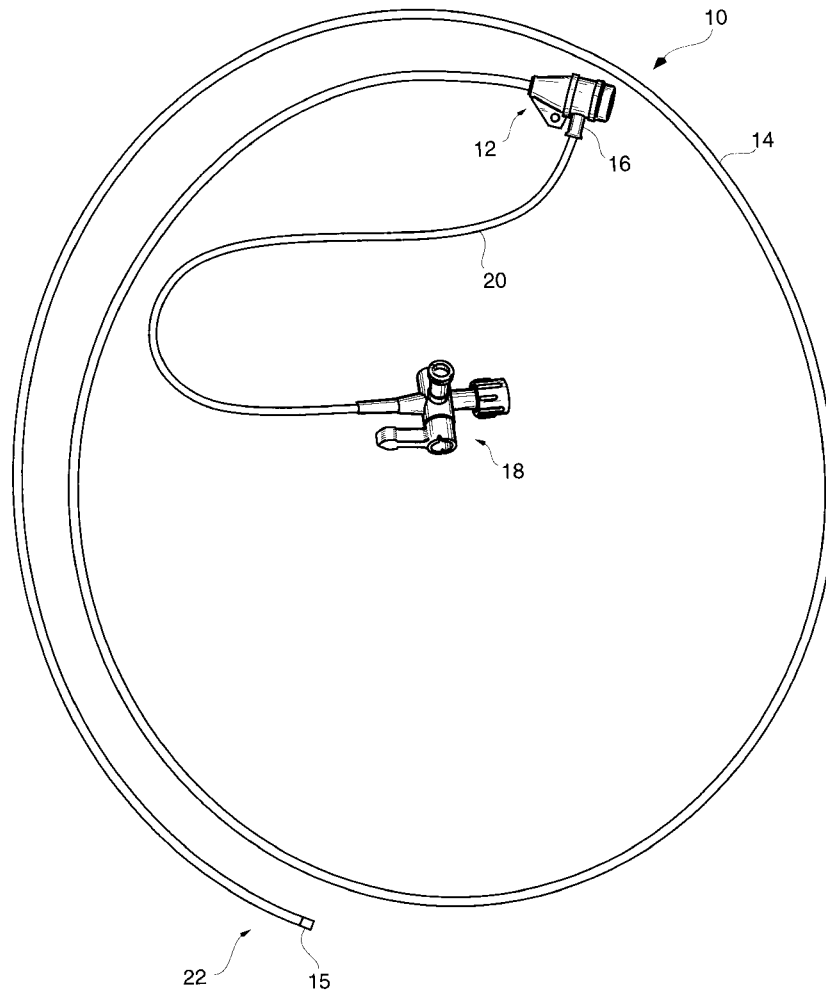
A guiding catheter introducer assembly that includes a catheter introducer sheath, with a hemostasis valve, attached or molded to a reinforced guiding catheter tubular body into a single assembly. The reinforced guiding catheter tubular body is made of braided wire construction. The catheter introducer sheath assembly includes a side port at which point a multiport stop cock is attached or molded, to facilitate the insertion and withdrawal of fluids.

### [56] References Cited

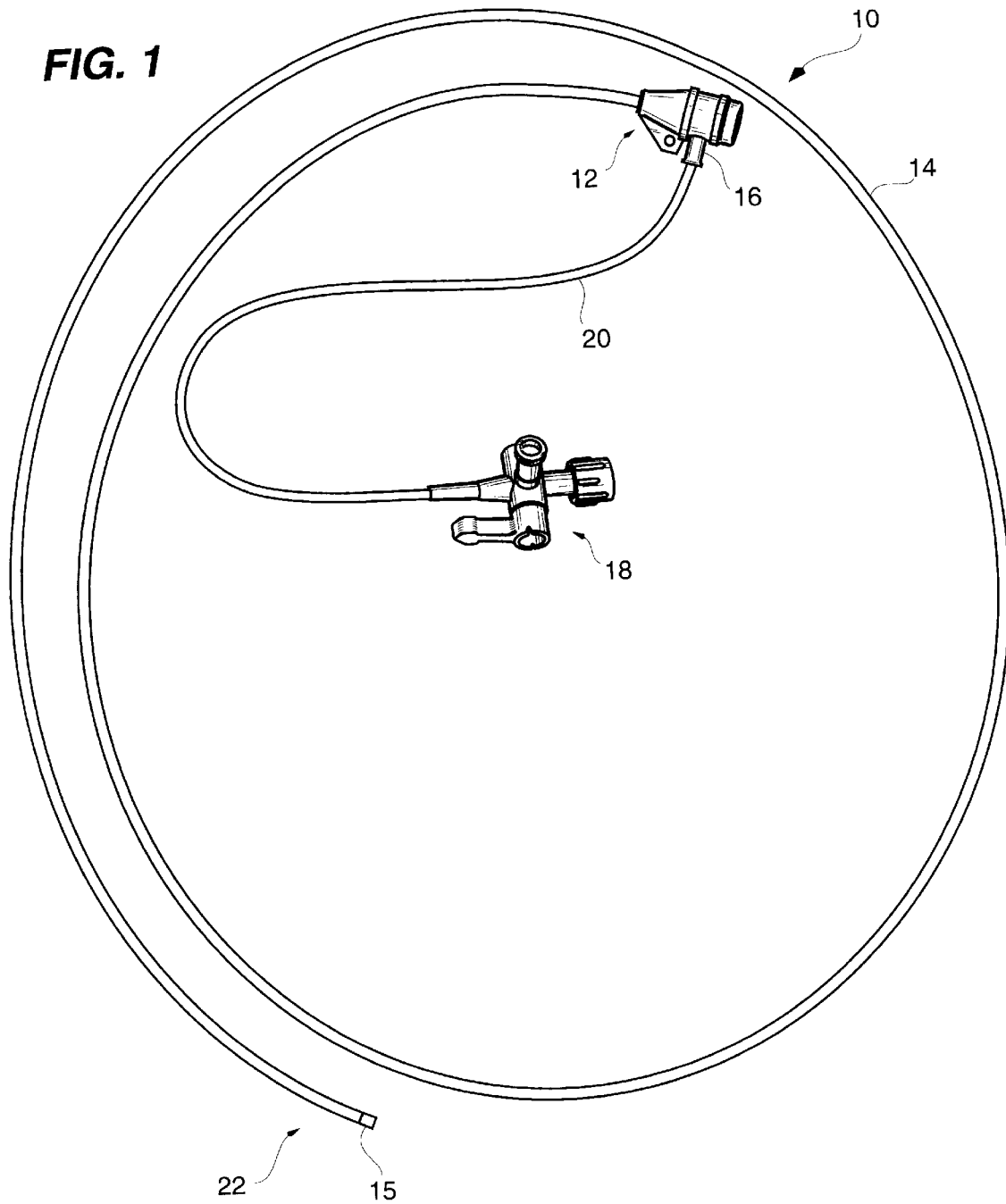
#### U.S. PATENT DOCUMENTS

4,650,472	3/1987	Bates .....	128/658
4,665,604	5/1987	Dubowik .	
5,045,072	9/1991	Castillo .	
5,066,285	11/1991	Hillstead .	
5,171,232	12/1992	Castillo .	
5,300,032	4/1994	Hibbs et al. .	

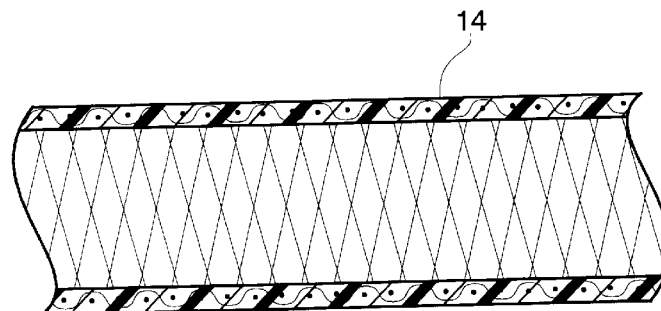
**4 Claims, 3 Drawing Sheets**

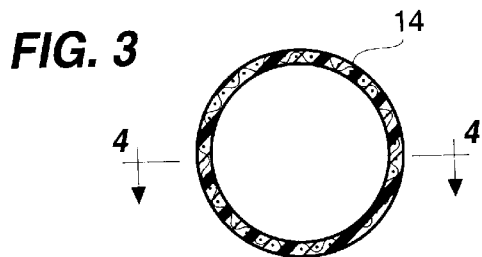
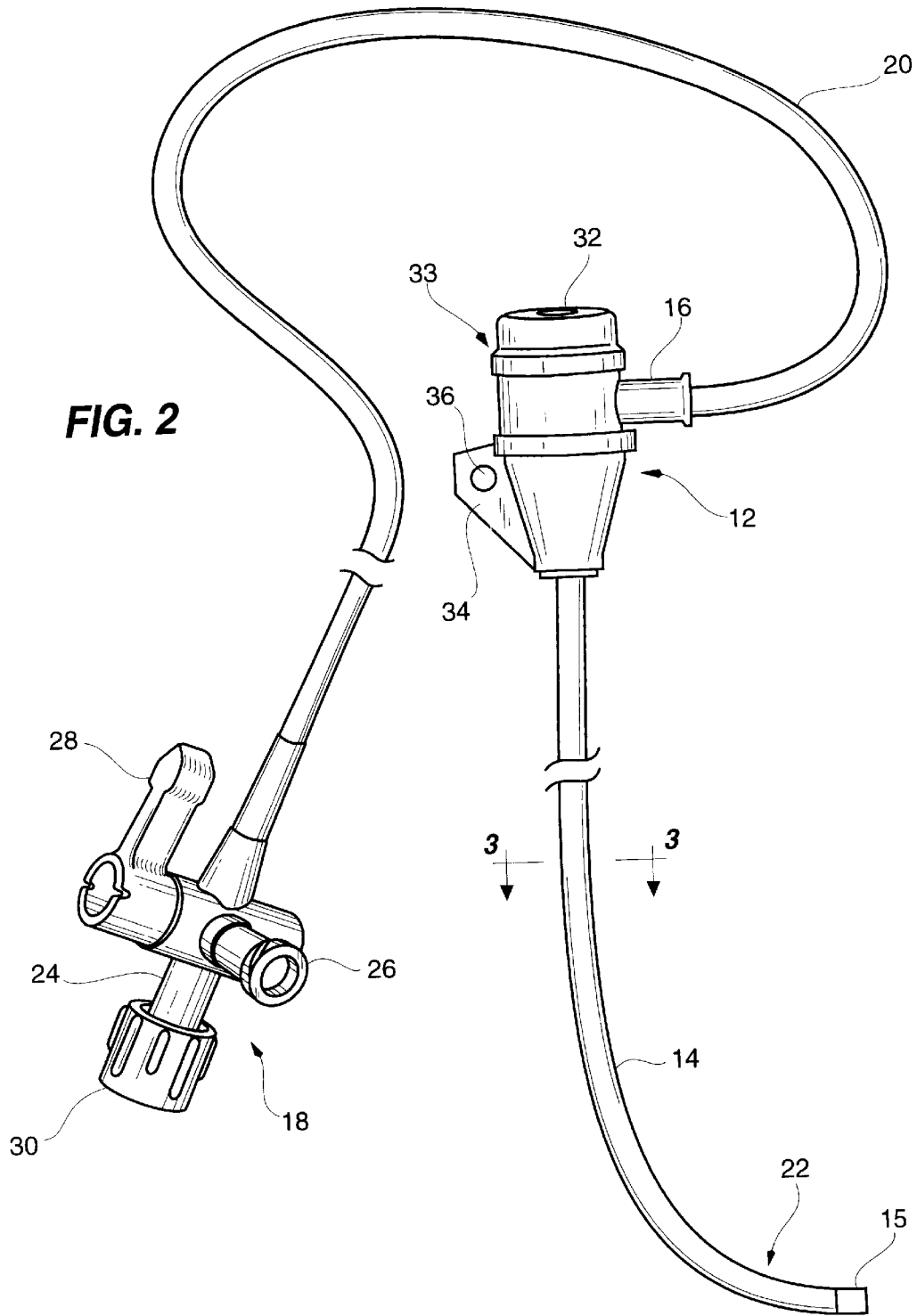


**FIG. 1**

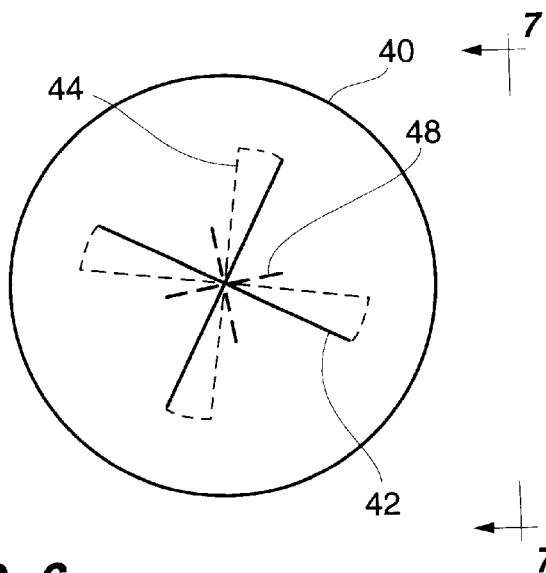
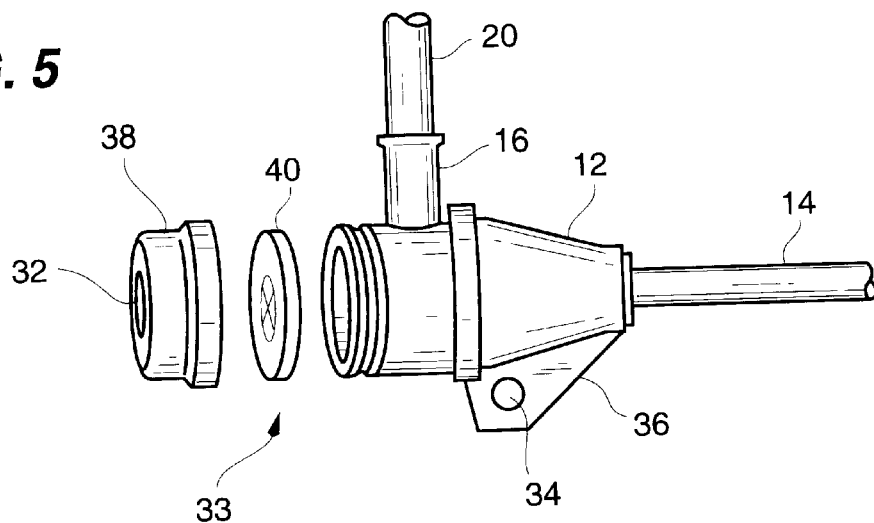


**FIG. 4**

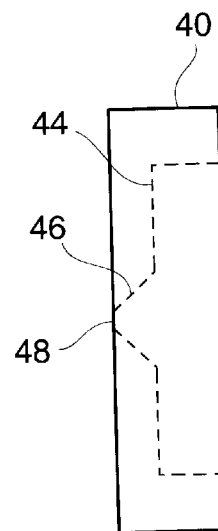




**FIG. 5**



**FIG. 6**



**FIG. 7**

## GUIDING CATHETER INTRODUCER ASSEMBLY

### BACKGROUND OF THE INVENTION

#### 1. Field of the Invention

The present invention relates to an intravascular guiding catheter assembly, for use in the insertion and removal of medical devices and/or fluids into a blood vessel of a patient.

2. Description of the related art including information disclosed under 37 CFR §§ 1.97–1.99.

Heretofore, various guiding and introducer catheters have been proposed. Several examples of analogous and non-analogous guiding and introducer catheter assemblies are disclosed in the following U.S. Pat. Nos:

U.S. Pat. No.	Patentee
5,066,285	Hillstead
5,300,032	Hibbs et al.
5,324,262	Fischell et al.
5,389,090	Fischell et al.

The Hillstead U.S. Pat. No. 5,066,285 discloses a catheter introducer with a sheath made of an expanded fibrous plastic, for gaining temporary entry into a patient's blood vessel with the use of a dilator. A catheter can subsequently be inserted into a patient's blood vessel after removal of the dilator through a hemostasis valve, located at the distal end of the catheter introducer sheath. The sheath features flexibility without kinking and high hoop strength.

The Hibbs et al. U.S. Pat. No. 5,300,032 discloses a catheter introducer with a rigid tubular body and a soft flexible tubular tip formed from a polymer material, such that the tip can navigate a greater curvature of a vessel wall without buckling. Attached to the proximal end of the tubular body is a valve and seal structure to prevent leakage during insertion and placement of the catheter.

The Fischell et al. U.S. Pat. No. 5,324,262 discloses an introducer sheath with an inflatable collar. The inflatable collar can be expanded to fit snugly against the edges of an opening in the blood vessel wall formed by the insertion of the introducer sheath to prevent blood leakage through the blood vessel wall. At a proximal section of the sheath is a proximal fitting containing a hemostasis valve.

The Fischell et al. U.S. Pat. No. 5,389,090 discloses a guiding catheter with an attached Touhy-Borst fitting. The guiding catheter uses a dilator and a guide wire to direct the catheter to its destination within a patient's artery without requiring an introducer sheath.

### SUMMARY OF THE INVENTION

According to the present invention there is provided a guiding catheter introducer assembly that includes a catheter introducer sheath, with a hemostasis valve, attached or molded to a reinforced guiding catheter tube into a single assembly. The reinforced guiding catheter tube comprises a braided wire reinforced tubular body. The catheter introducer sheath further includes a side port at which point a stop cock can be attached or molded, again part of the single assembly, to facilitate the insertion and withdrawal of fluids.

By incorporating a braided wire reinforced guiding catheter tube into a catheter introducer assembly with a hemostasis valve attached thereto having a stopcock valve connected thereto into a single assembly, such assembly allows a physician to insert and place the guiding catheter directly

into the body and start inserting medical devices through the hemostasis valve with minimal leakage of body fluids. Also liquids can be easily inserted into or withdrawn from the patient through the stopcock valve.

### BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of one embodiment of a guiding catheter introducer assembly constructed to the teachings of the present invention.

FIG. 2 is an exploded view of the same embodiment featured in FIG. 1 with the guiding catheter introducer assembly and a stop cock enlarged to show greater detail.

FIG. 3 is a cross section of one embodiment of a reinforced guiding catheter tubular body of the assembly and is taken along line 3—3 of FIG. 2.

FIG. 4 is a cross section of the same reinforced guiding catheter tubular body shown in FIG. 3 and is taken along line 4—4 of FIG. 3.

FIG. 5 is a partially exploded, perspective view of the guiding catheter sheath introducer assembly with an end cap portion removed and separated from a proximal end of the assembly to show a hemostasis valve of the assembly.

FIG. 6 is an enlarged plan view of the hemostasis valve partition.

FIG. 7 is an elevational view of the same hemostasis valve partition shown in FIG. 6 and is taken along line 7—7 of FIG. 6.

### DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to the drawings in greater detail, there is illustrated in FIG. 1 a guiding catheter introducer assembly 10 constructed according to the teachings of the present invention. The guiding catheter introducer assembly 10 includes a catheter sheath introducer body 12 integrally attached to a guiding catheter tubular body 14.

The guiding catheter tubular body 14 (shown in FIGS. 3 and 4) has a stiff braid reinforced body similar to the catheter body described in Dubowik, U.S. Pat. No. 4,665,604 whose specification is incorporated herein by reference. A soft tip 15 is provided and is void of the stiff braid reinforcing.

A side port 16 extends laterally outward from the catheter sheath introducer body 12. Integrally attached to the side port 16 is a multiport stop cock 18 via a tubing 20. The interior of tubing 20 couples to side port 16 and allows fluids to transfer through the catheter introducer body 12 to the guiding catheter tubular body 14 from the side port 16 and the multiport stop cock 18.

At a distal end 22 of the guiding catheter tubular body 14, the tip 15 is coated with a radiopaque material such that it is visible on an x-ray machine when inserted into the patient. A more detailed description of such structure can be found in the Castillo et al. U.S. Pat. No. 5,045,072, and the Castillo et al. U.S. Pat. No. 5,171,232, whose specifications are incorporated herein by reference.

Referring now to FIG. 2, there is illustrated therein an enlarged view of the guiding catheter introducer assembly 10, highlighting in greater detail the catheter sheath introducer body 12 and the multiport stop cock 18.

The multiport stop cock 18 has two side ports 24 and 26 and a lever 28 for opening and closing a path between the opening at the end of the side ports 24 and 26 and the interior of the tubing 20. Additionally, shown attached to side port 24 is a Luer-lock™ connector 30. The multiport stop cock 18

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