outward from the second housing **30** away from the threaded core **32**, is adapted to receive a standard luer-lok syringe or intravenous (IV) tube connection, as are known in the art. The stylus **36** projects from the connector **34** into the threaded core **32** and has an essentially centered bore **38**. As shown in FIGS. **4** and **5**, near the threaded core end of the stylus, the bore **38** has a diameter sufficient to receive an injection needle **92**. Near the connector end, the bore **38** is enlarged to allow the needle end **94** of a syringe **90** to be received within the bore **38**.

The first housing **20** is attached to the second housing **30** by engaging the threads **28** of the valve end **24** with the threaded core **31** of the attachment end **32**. As shown in FIGS. **3** and **4**, the housings **20**, **30** can be tightened until the first housing **20** abuts the second housing **30**, and the stylus **36** protrudes through the diaphragm **50**. This defines an "open" position for the catheter assembly **10**, with the stylus bore **38** in fluid communication with the first housing bore **26** and the catheter **12**. When the catheter assembly **10** is open, fluids can flow through the intravenous tubing into the flash chamber **19**, then into the catheter **12**, and then into the patient's circulatory system. Because the stylus **36** is in direct contact with the diaphragm **50**, it is preferable but not required that the stylus **36** be slightly blunted so that the stylus **36** does not scratch rubber shreds from the diaphragm **50**.

As shown in FIGS. **2** and **5**, the catheter system **10** also has a "closed" position in which the first housing **20** is separated from the second housing **30** such that a space or gap **60** remains between the receiver end **22** and the attachment end **32**. In the closed position, the housings **20**, **30** are sufficiently separated so that the stylus **36** does not penetrate the diaphragm **50**. As shown in FIG. **5**, the stylus **36** can be removed from the diaphragm **50** but the needle **92** can remain in position through the diaphragm **50**. This allows the diaphragm **50** to partially close and to form a seal around the needle **92**. Then, the needle **92** can be removed allowing the diaphragm **50** to completely close, or seal, preventing blood from moving beyond the flash chamber **14**. The sequential removal of the stylus **36** and then the needle **92** is not necessary for the diaphragm **50** to seal as intended, but by allowing the diaphragm **50** to close in two stages, the risk of blood leakage is further reduced. With the stylus **36** and needle **92** removed and the diaphragm **50** closed, blood can flow into the centered bore **26** allowing visual identification that the patient's blood vessel has been properly punctured. However, the blood can move no further than the diaphragm **50**. In a preferred embodiment, when the catheter assembly **10** is closed, the stylus **36** abuts but does not penetrate the diaphragm **50**. The presence of the stylus **36** creates a slight pressure against the diaphragm **50** to help keep the slit closed, thereby minimizing the risk of blood leakage through the diaphragm **50**.

Because time can be critical in many medical procedures, particularly when an intravenous line is being inserted, it is advantageous to have a catheter assembly **10** that is easy to use. In an embodiment, the first housing **20** and second housing **30** are oriented such that by rotating the second housing **30** about 90° relative to the first housing **20** the catheter assembly **10** moves from the closed to the opened position. Thus, when an IV line is connected to the connector **34**, simply rotating the second housing **30** slightly closes the gap **60** and initiates flow from the IV source to the patient's blood vessel. Optionally, stops or barricades which are known in the art may be added to the threaded core **32** and the threads **28** to limit the relative rotation of the housings **20**, **30** although such stops are not required to allow the catheter assembly to function as intended. Further, optional fins **29**, **39** may be added to the first and second housings **20**, **30** to provide an easier finger grip for the practitioner. The fins **29**, **39** can make it slightly easier to rotate the second housing **30** relative to the first housing **20**, but the fins **29**, **39** are not a required element of the catheter assembly **10**.

In use, the catheter assembly **10** is prepared by attaching the catheter **12** to the first housing **20** of the flash chamber **14**. The assembly is then opened by rotating the second housing **30** relative to the first housing **20** so that the stylus **36** protrudes through the diaphragm **50**. With the diaphragm **50** forced open, the needle **92** and its associated guidewire **96** are inserted through the stylus **36** and through the catheter **12**. The needle **92** is then used to puncture the patient's skin, and is positioned within the vein, or within the artery with the aid of the guidewire **96**, as is known in the art. The second housing **30** is then turned to the closed position to form the gap **60**. Preferably, this action is completed before removing the needle **92**, as shown in FIG. **5**. By removing the stylus **36** from the diaphragm **50**—that is, by opening the gap **60**—and then retracting the syringe **90** and needle **92** from the catheter assembly **10**, the diaphragm **50** can close completely as the needle **92** is removed preventing the backflow of blood. The IV line can then be connected at the connector **32**, the second housing **30** turned to close the gap **60** forcing the stylus **36** through the diaphragm **50**, and the fluid flow initiated. In practice, because of the natural turning actions required to remove the syringe **90** and to connect the IV line with the connector **32**, the stylus **36** tends to be removed from the diaphragm **50** as the syringe **90** is removed and it **36** is forced through the diaphragm **50** as the IV line is connected. In an alternative embodiment, the needle **92** and guidewire **96** may be supplied already inserted through the catheter assembly **10**. In this case, the practitioner can simply insert the catheter in the patient's vein or artery and proceed as above.

It is understood that, in light of a reading of the foregoing description and drawings, those with ordinary skill in the art will be able to make changes and modifications to the present invention without departing from the spirit or scope of the invention, as defined herein. For example, although the embodiments presented herein anticipate that the first housing is threaded and the second housing is adapted to receive the threads of the first housing, other means which function to keep the housings together and that allow for relative axial movement between the housings may be used.

What is claimed is:

1. A flash chamber for use with a catheter, said flash chamber comprising:

a. a self-closing valve;

b. a first housing, having a receiver end and a valve end, said receiver end being adapted to reversibly receive said catheter and said valve end being adapted to receive said self-closing valve, and said first housing having a centered bore extending longitudinally from said valve end to said receiver end; and

c. a second housing, having a connector, a stylus and an attachment end, said connector projecting outward and being adapted to receive an intravenous (IV) tube connection, said stylus having a centered bore to permit an injection needle to slidingly pass into and through said stylus bore and projecting from said connector toward said attachment end, and said attachment end being adapted to receive said valve end of said first housing such that said first housing can be rotated