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Flint

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(54) **METHOD AND APPARATUS FOR DIRECTED DEVICE PLACEMENT IN THE CEREBRAL VENTRICLES OR OTHER INTRACRANIAL TARGETS**

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See application file for complete search history.

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(57) **ABSTRACT**

Apparatus for directed cranial access to a site includes a guidepiece and a receptacle. The receptacle includes a lower part having a rim and a base, and a hollow stem at the base adapted to be mounted in a hole in the skull; and an upper part having a rim and an opening at the top. Each part of the receptacle has an interior spherical surface, and they can be joined at the rims to form an inner surface enclosing a spherical interior. The guidepiece includes a body having a spherical outer surface and a cylindrical bore through the center, defining an alignment axis; and a guide tube in the bore. The guidepiece is dimensioned to fit rotatably within the receptacle interior, and the apparatus is assembled by joining the receptacle over the guidepiece body, with the guide tube projecting through the top opening. The guide tube is dimensioned to accept an imaging device such as an ultrasound probe during an imaging stage, and an adaptor is provided, dimensioned to accept a device to be placed at the site during a placement stage. The probe is inserted into the guide tube and the guidepiece is swiveled until the image shows that the alignment axis is aligned along an optimal trajectory to the site, the receptacle is tightened to lock the guidepiece, and the imaging device is withdrawn. Then the adaptor is inserted into the guide tube, and the device is inserted through the adaptor along the established trajectory to the site. After placement of the device into the intracranial target, the adaptor, guidepiece, and receptacle are removed as a unit over the device while the device is held in place.

21 Claims, 13 Drawing Sheets