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(54) **EVERTING HEART VALVE**
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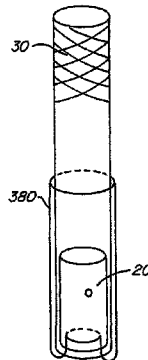
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(57) **ABSTRACT**

The present invention provides methods and apparatus for endovascularly replacing a patient's heart valve. The apparatus includes a replacement valve and an expandable anchor configured for endovascular delivery to a vicinity of the patient's heart valve. In some embodiments, the replacement valve is adapted to wrap about the anchor, for example, by everting during endovascular deployment. In some embodiments, the replacement valve is not connected to expandable portions of the anchor. In some embodiments, the anchor is configured for active foreshortening during endovascular deployment. In some embodiments, the anchor includes expandable lip and skirt regions for engaging the patient's heart valve during deployment. In some embodiments, the anchor comprises a braid fabricated from a single strand of wire. In some embodiments, the apparatus includes a lock configured to maintain anchor expansion. The invention also includes methods for endovascularly replacing a patient's heart valve. In some embodiments, the method includes the steps of endovascularly delivering a replacement valve and an expandable anchor to a vicinity of the heart valve, wrapping at least a portion of the replacement valve about the anchor, and expanding the anchor to a deployed configuration.

9 Claims, 63 Drawing Sheets



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