

(12) **United States Patent**  
**Weier et al.**

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(54) **REDUCED-PROFILE SLIDE AND LOCK STENT**

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(\* ) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 81 days.

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(57)

**ABSTRACT**

(51) **Int. Cl.**  
**A61F 2/93** (2013.01)

An expandable slide and lock stent comprises a tubular member that can be expanded from a collapsed state to an expanded state. The tubular member can comprise a reversing helical backbone and at least one rail member extending from the helical backbone in a circumferential direction. The backbone can have at least one engagement element that can be configured to receive a rail member to form the tubular member. In some embodiments, the reversing helical backbone can comprise a plurality of discrete segments having a variable profile and/or wave form. A plurality of regions of each backbone may have a recessed or "nesting" profile providing for a smaller overall stent profile in a compacted configuration, and improved stent retention as mounted on a balloon catheter.

(52) **U.S. Cl.**  
CPC ..... **A61F 2/93** (2013.01); **A61F 2230/0013** (2013.01); **A61F 2230/0054** (2013.01)

(58) **Field of Classification Search**  
CPC ..... A61F 2/92; A61F 2/93; A61F 2002/91558–2002/91575  
See application file for complete search history.

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**20 Claims, 28 Drawing Sheets**

