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(54) **INTRAVASCULAR HINGE STENT**

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(57) **ABSTRACT**

The hinge stent is a balloon-expandable or self-expandable intravascular endoprosthesis used for treatment of vascular injury. The hinge stent is formed of a single stent section or of multiple stent sections joined together. Each stent section has a node and strut structure extending throughout in order to uncouple expansion forces of the stent to hold a blood vessel outward from crush forces that resist the formation of an oval shape during a crush deformation. Each node includes a hinge which is joined via a transition region to a strut. The hinge can bend in the direction of a uniformly curved surface of the stent but not in the radial direction. The strut can bend in the radial direction but not in the uniformly curved surface of the stent. The widths, lengths, and radial dimensions of the hinges and struts provide a balloon-expandable hinge stent that is non-crushable. For a self-expandable stent the hinge and strut dimensions provide expansion forces that are controlled independently from crush forces. The hinge stent can be formed of a high modulus metal with expansion properties being determined by the hinge dimensions and crush properties being determined independently by the design of the strut dimensions. The node and strut structure of the hinge stent provides for flexibility in traversing along tortuous passages.

19 Claims, 35 Drawing Sheets

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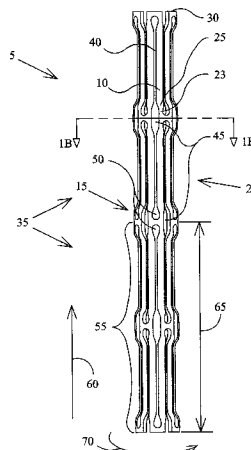
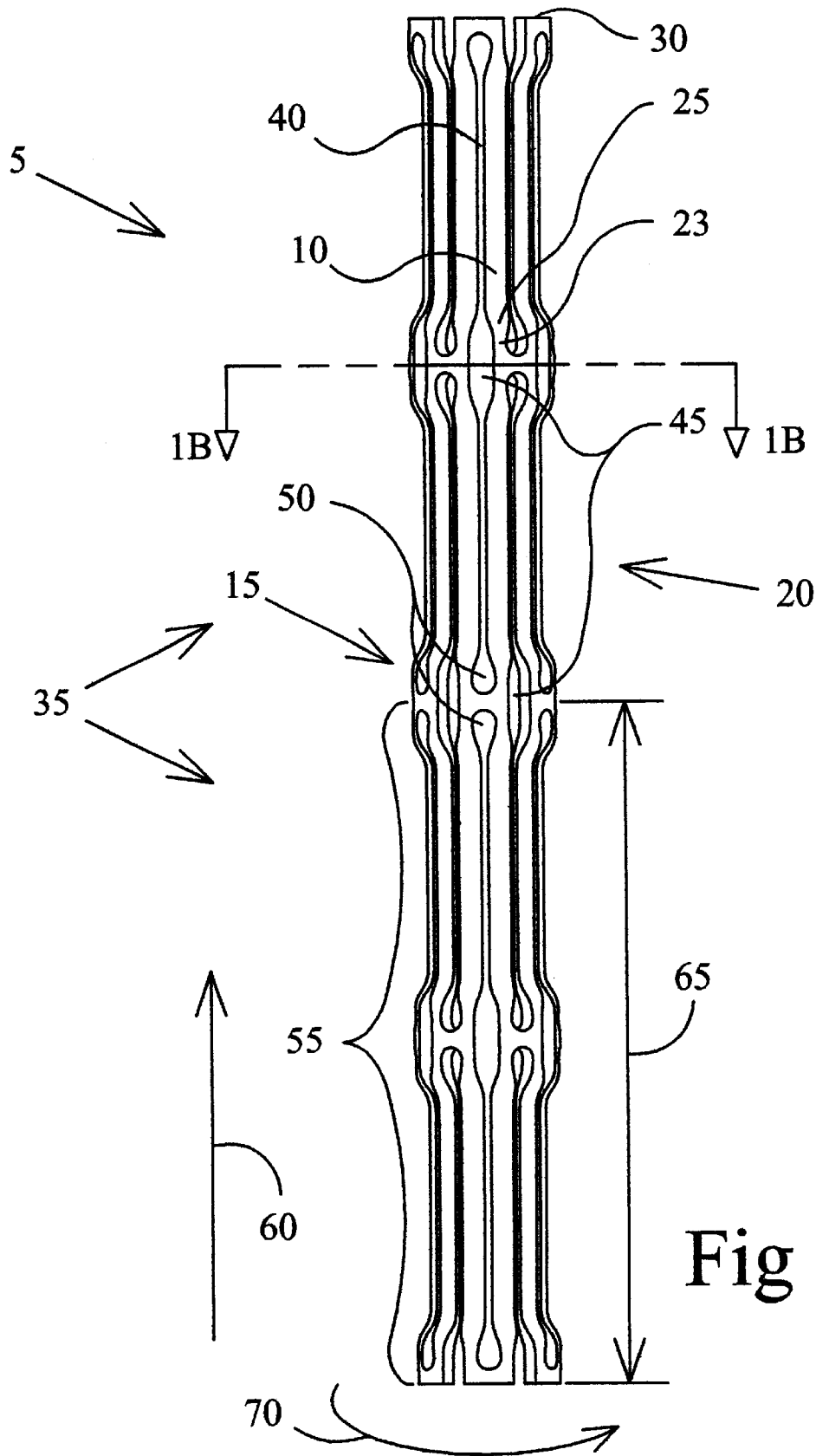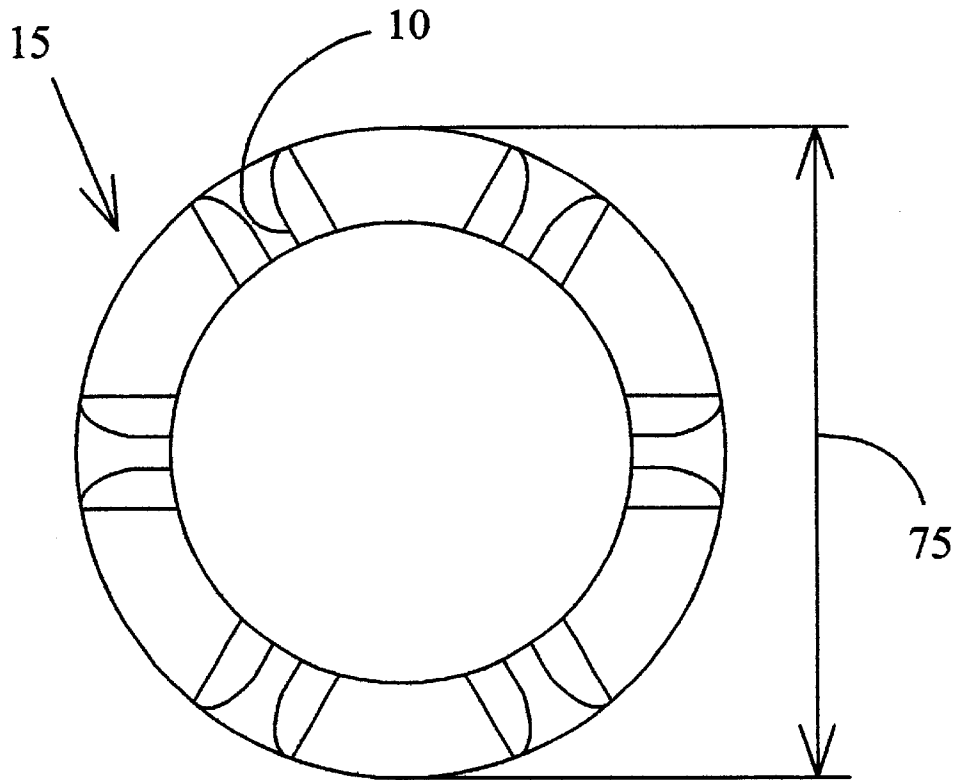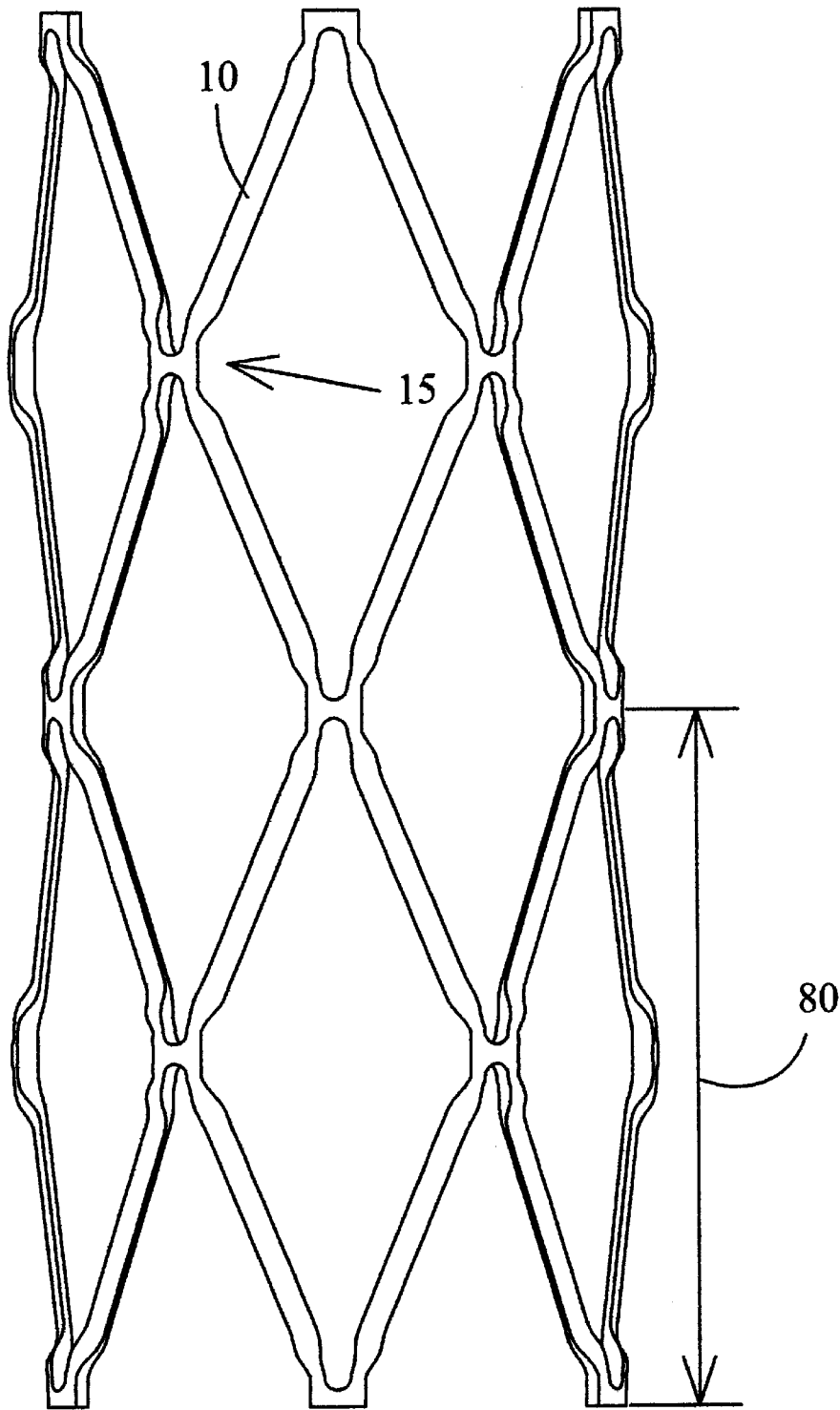|			
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Fig 1A

Fig 1B

Fig 2A

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