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United States Patent [19]

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Fagan et al.

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- [54] **HIGH PERFORMANCE WIRES FOR USE IN MEDICAL DEVICES AND ALLOYS THEREFOR**
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- [73] Assignee: **C. R. Bard, Inc.**, Murray Hill, N.J.
- [21] Appl. No.: **391,010**
- [22] Filed: **Feb. 21, 1995**

Related U.S. Application Data

- [63] Continuation-in-part of Ser. No. 149,985, Nov. 10, 1993, abandoned.
- [51] Int. Cl.⁶ **A61B 5/00**
- [52] U.S. Cl. **128/772; 604/657; 604/658**
- [58] Field of Search **606/198; 604/95; 128/772; 148/606**

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Attorney, Agent, or Firm—Arthur Z. Bookstein

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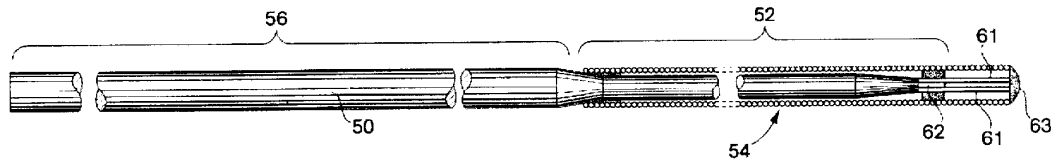
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[57] ABSTRACT

An elongate flexible wire-like medical device, such as a guidewire for use with a catheter, is formed with a shaft in which the difference between the magnitude of the tensile yield stress and compressive yield stress of the shaft is substantially reduced. The guidewire exhibits superior kink resistance without compromising other desirable characteristics and enables a guidewire to be made in a smaller diameter without loss of performance. The guidewire shaft may be formed from a precipitation hardenable alloy such as an alloy of nickel, cobalt, molybdenum and chromium (MP35N and Elgiloy), 455PH stainless steel or stainless steel alloy 1RK91. Also disclosed is a process for increasing the modulus of elasticity of an alloy of nickel, cobalt molybdenum and chromium. Further, the disclosure relates to an improved management and manufacturing process for constructing the tip of a medical guidewire.

40 Claims, 7 Drawing Sheets



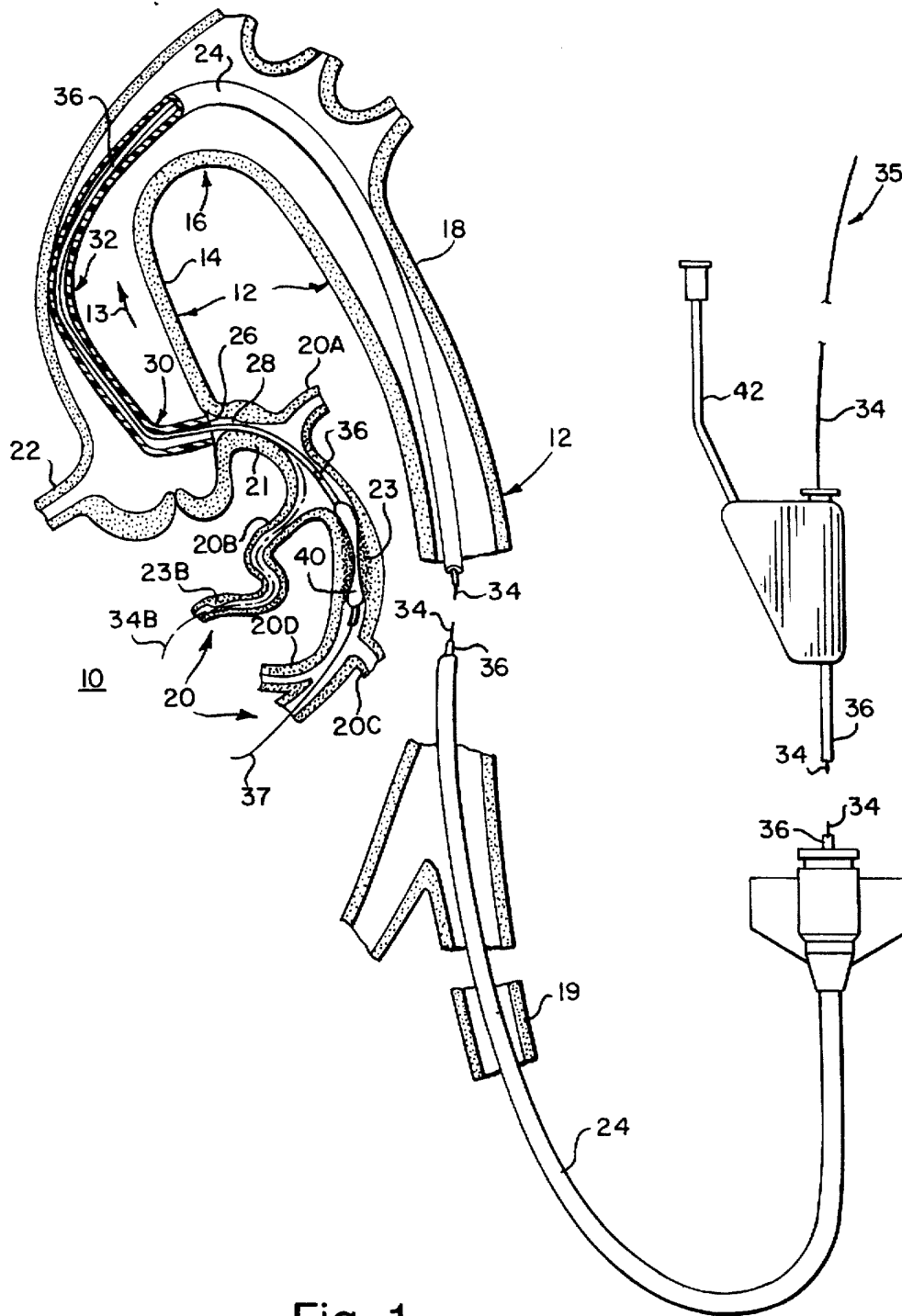


Fig. 1

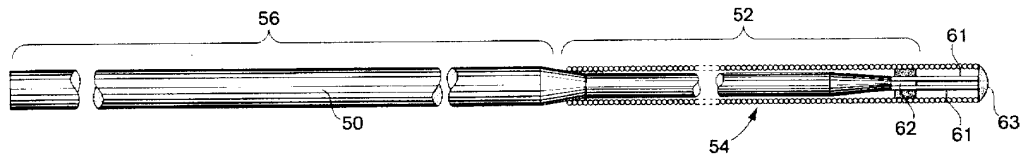


Fig. 2

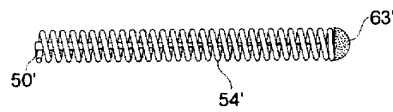


Fig. 10

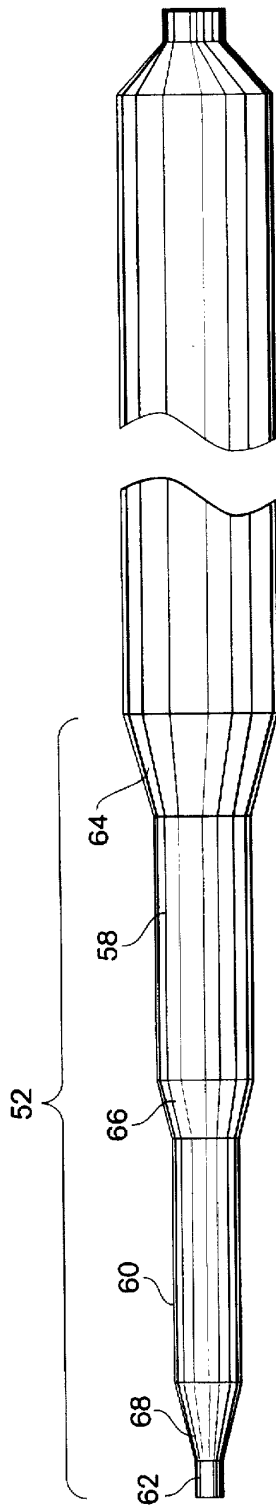


Fig. 2A

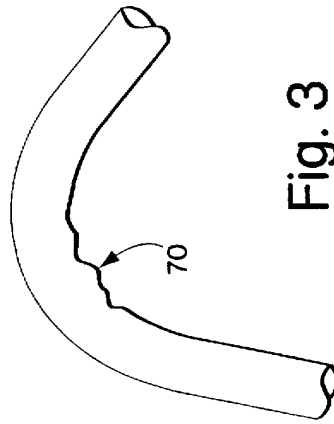


Fig. 3

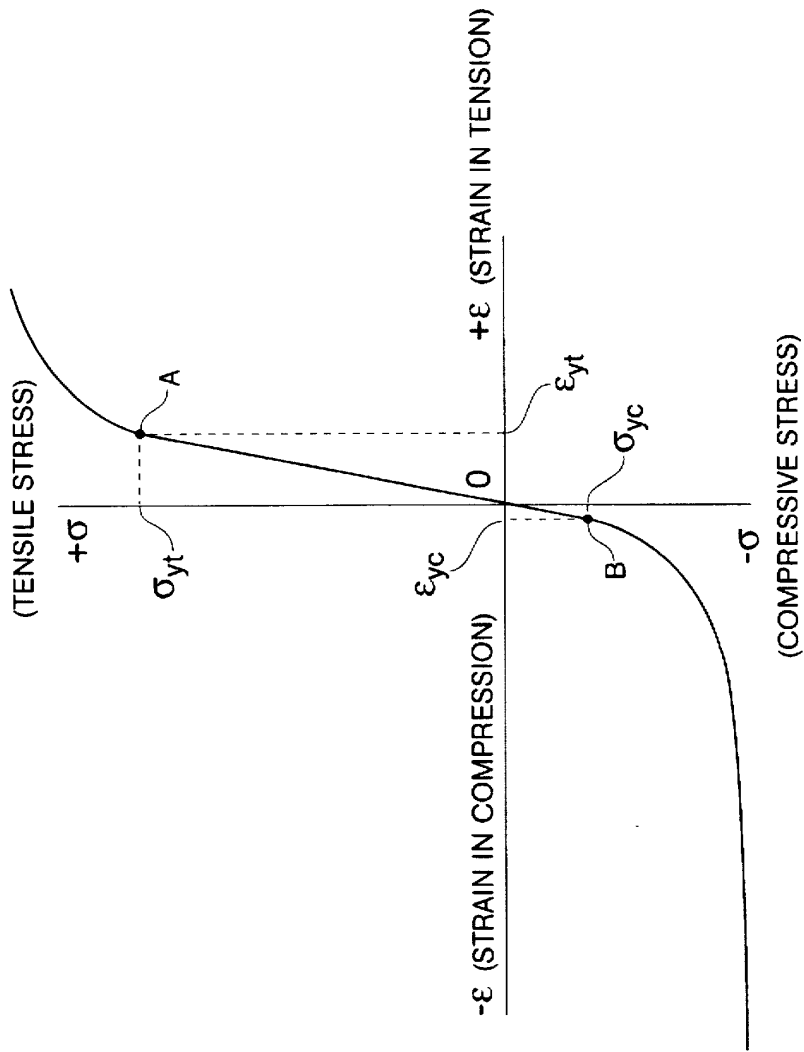


Fig. 4
(Prior Art)

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