



[54] STENT CRIMPING TOOL AND METHOD OF USE

U.S. application No. 08/962,632 filed Nov. 3, 1997.

The eXtraordinary Stent, C.R. Bard Brochure (Undated).

[75] Inventor: Stephen A. Morales, Mountain View, Calif.

Primary Examiner—S. Thomas Hughes

Assistant Examiner—John Preta

[73] Assignee: Advanced Cardiovascular Systems, Inc., Santa Clara, Calif.

Attorney, Agent, or Firm—Fulwider Patton Lee & Utecht, LLP

[21] Appl. No.: 09/063,905

[22] Filed: Apr. 21, 1998

[57] ABSTRACT

[51] Int. Cl.⁷ A61M 29/00; B23P 11/00; B23P 19/02

[52] U.S. Cl. 29/516; 29/270; 29/282; 29/407.08; 29/235; 606/1; 606/108; 606/198; 623/1

A tool and method for enabling substantially uniform and tight crimping of an intravascular stent onto a balloon catheter assembly. The crimping tool is constructed from a rigid cylindrical chassis sealed at both ends, having a hollow interior containing an elastic tube that partially occupies the interior. A piston abuts the elastic tube and forms a hermetically sealed chamber behind the piston and a closed end of the chassis. A port connected to an inflator and positioned on the chassis provides an inlet into and out of the chamber. A stent that is loaded onto the balloon portion of the catheter is inserted through a central opening in another end of the chassis to position the stent catheter assembly within the axial space inside the elastic tube. The inflator injects a fluid into the chamber thereby increasing its pressure which in turn displaces the piston into the elastic tube compressing the tube longitudinally. The elastic tube decreases in length and expands in thickness radially to crimp the stent onto the balloon catheter. Once pressure is relieved from the chamber, the piston moves away from the elastic tube, which restores to its original shape. The crimped stent and catheter can then be withdrawn. The piston may be driven by a power screw in place of fluid pressure.

[58] Field of Search 29/516, 407.08, 29/282, 280, 715, 423, 517, 234, 235, 283, 269, 270, 237; 606/1, 108, 198; 623/1; 72/402

[56] References Cited

U.S. PATENT DOCUMENTS

- 696,289 3/1902 Williams .
- 3,568,495 3/1971 Duffield et al. .
- 4,043,172 8/1977 Schmitton .
- 4,379,397 4/1983 Langr .
- 4,468,224 8/1984 Enzmann et al. .

(List continued on next page.)

FOREIGN PATENT DOCUMENTS

- 159065 2/1921 United Kingdom .
- WO 98/14120 4/1998 WIPO .
- WO 98/19633 5/1998 WIPO .

OTHER PUBLICATIONS

- U.S. application No. 08/795,335 filed Feb. 4, 1997.
- U.S. application No. 08/837,771 filed Apr. 22, 1997.
- U.S. application No. 08/089,936 filed Jul. 15, 1997.

28 Claims, 3 Drawing Sheets

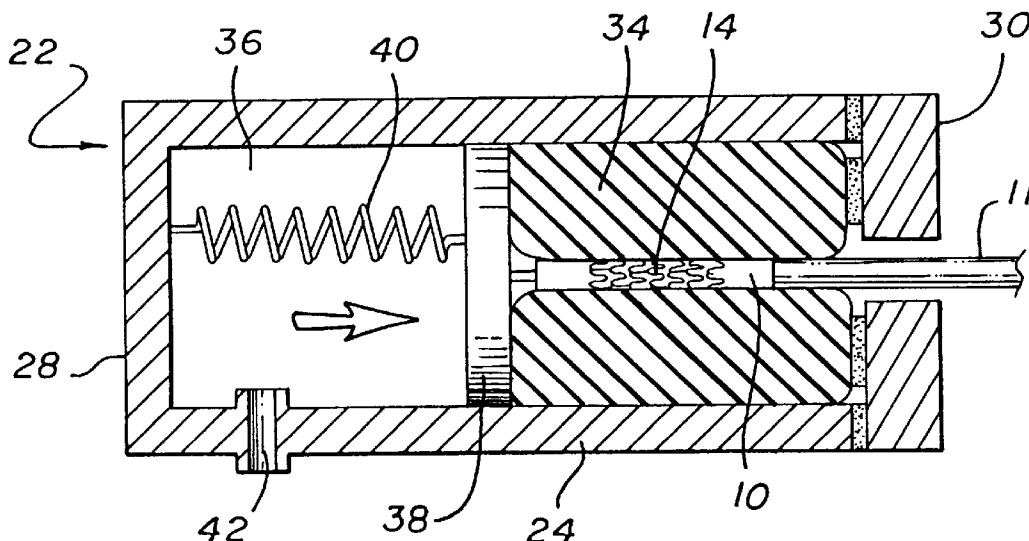


FIG. 1

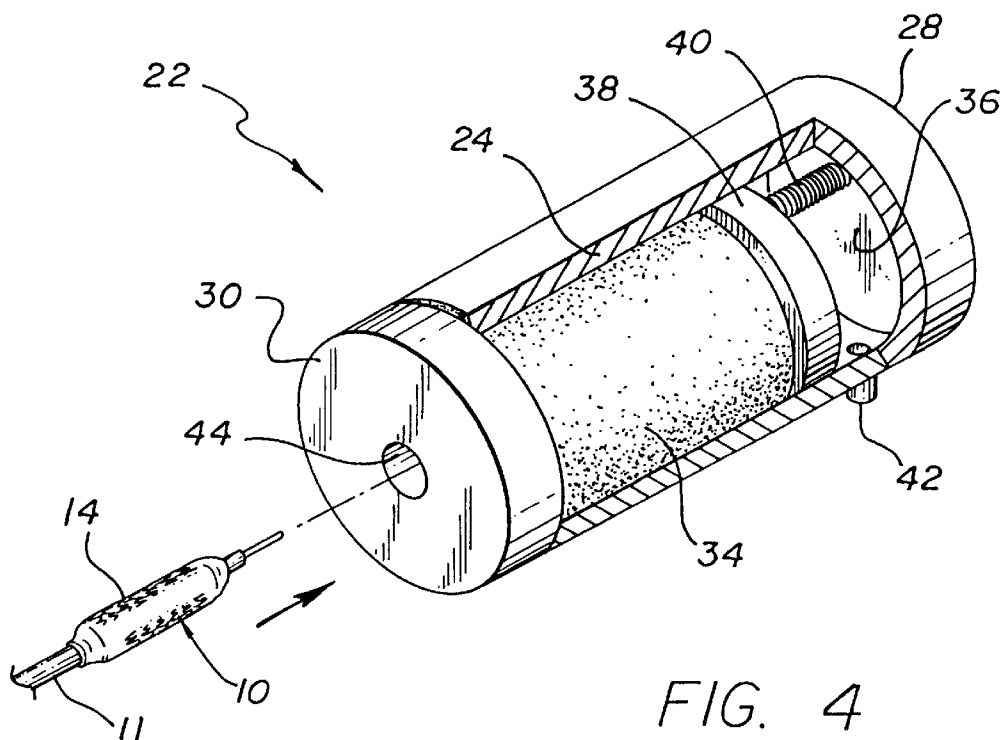
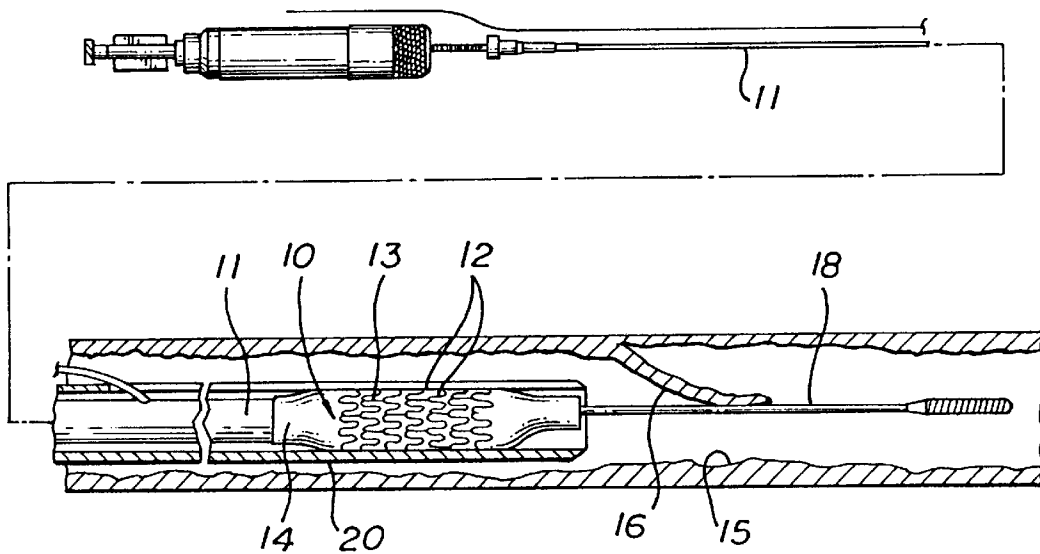


FIG. 4

FIG. 2

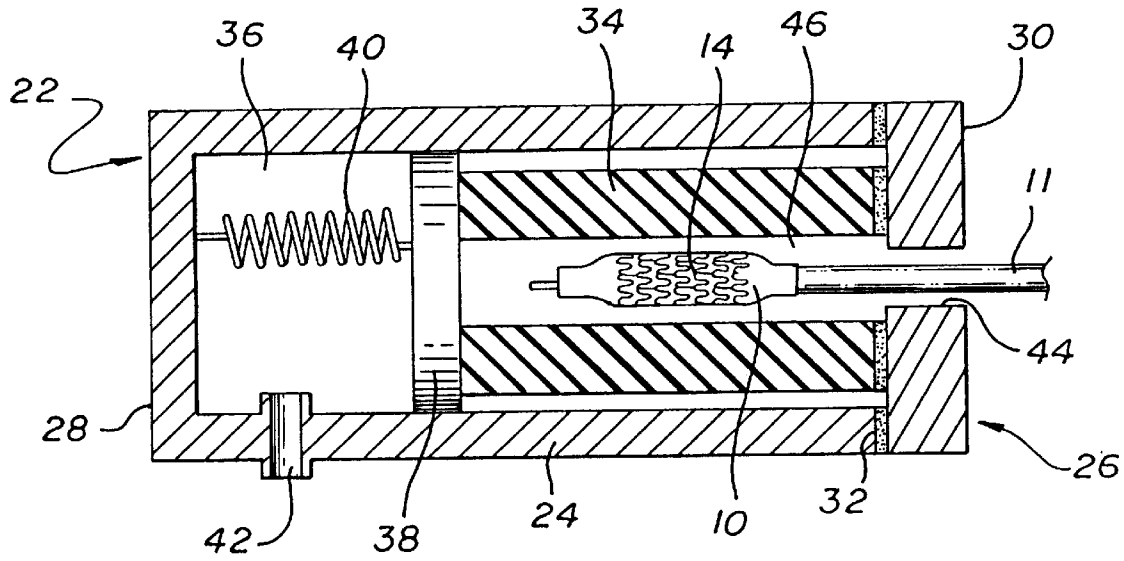


FIG. 3

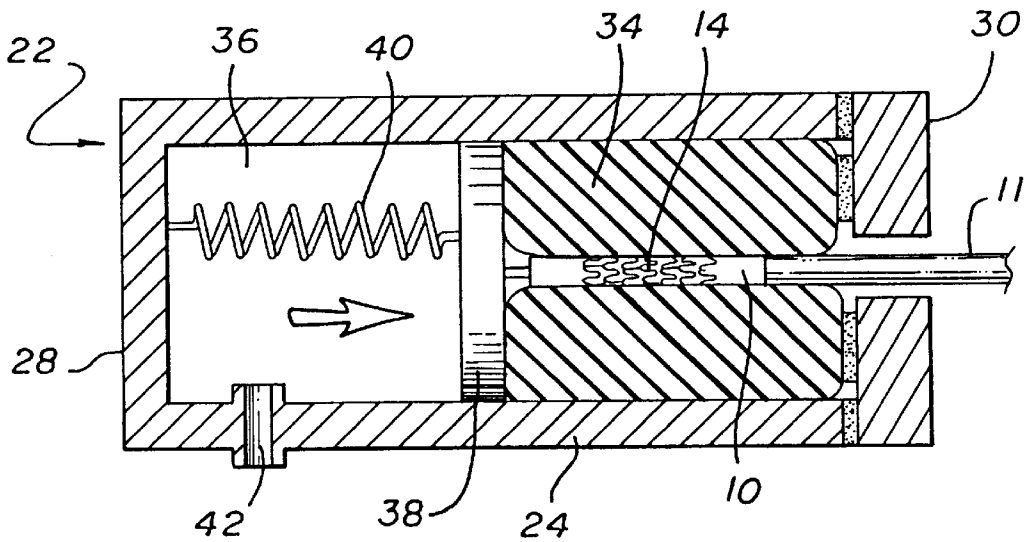


FIG. 5

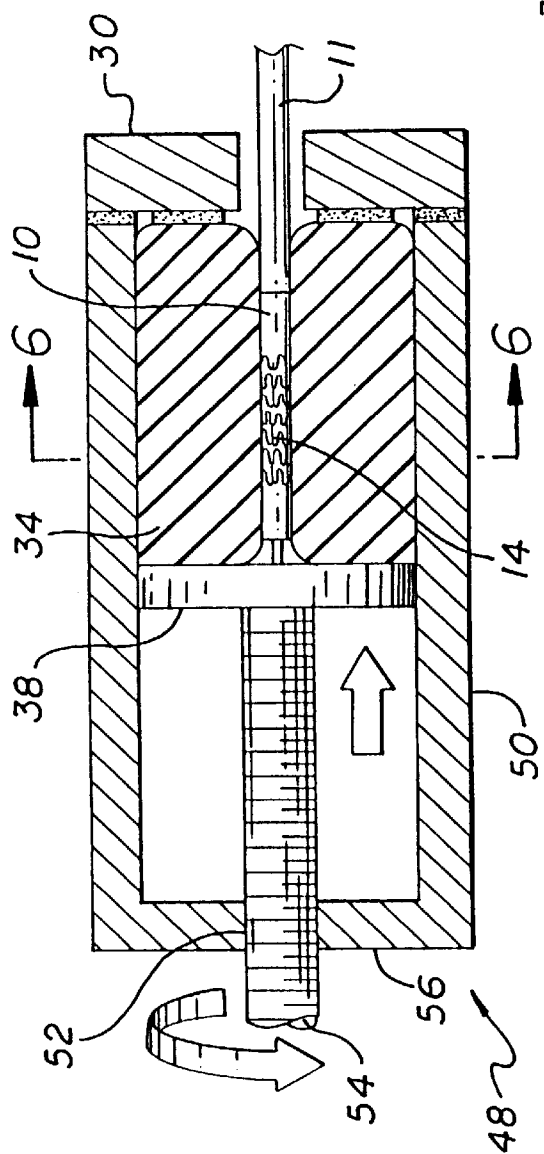


FIG. 6

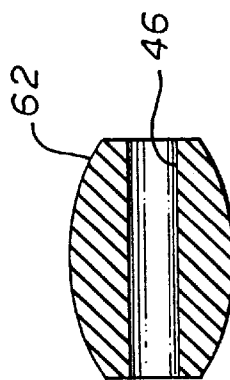
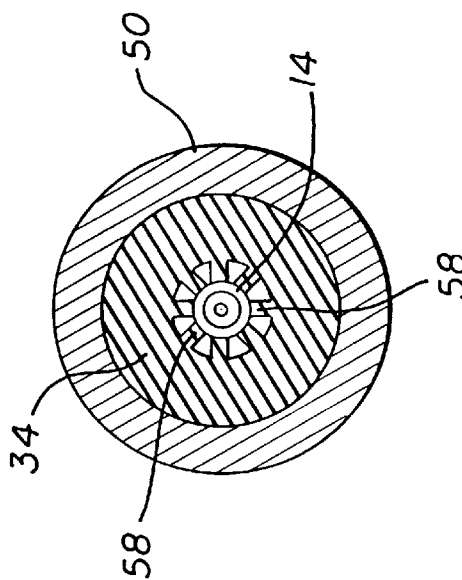


FIG. 7B

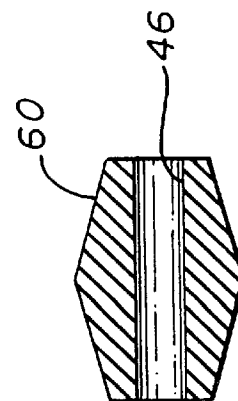


FIG. 7A

Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.