



US005465895A

United States Patent [19]

[11] Patent Number: **5,465,895**

Knodel et al.

[45] Date of Patent: **Nov. 14, 1995**

[54] **SURGICAL STAPLER INSTRUMENT**

5,263,629	11/1993	Trumbull et al. .	
5,275,323	1/1994	Schulze et al. .	
5,307,976	5/1994	Olson et al. .	
5,318,221	7/1994	Green et al.	227/19
5,350,400	9/1994	Esposito et al.	227/902

[75] Inventors: **Bryan D. Knodel**, Cincinnati; **Richard P. Nuchols**; **Warren P. Williamson, IV**, both of Loveland, all of Ohio

FOREIGN PATENT DOCUMENTS

[73] Assignee: **Ethicon Endo-Surgery, Inc.**, Cincinnati, Ohio

728848 4/1980 U.S.S.R. .

Primary Examiner—Scott A. Smith

[21] Appl. No.: **191,412**

[57] **ABSTRACT**

[22] Filed: **Feb. 3, 1994**

[51] Int. Cl.⁶ **A61B 17/068**

[52] U.S. Cl. **227/176; 227/180; 227/19**

[58] Field of Search **227/19, 902, 175, 227/176, 178, 180**

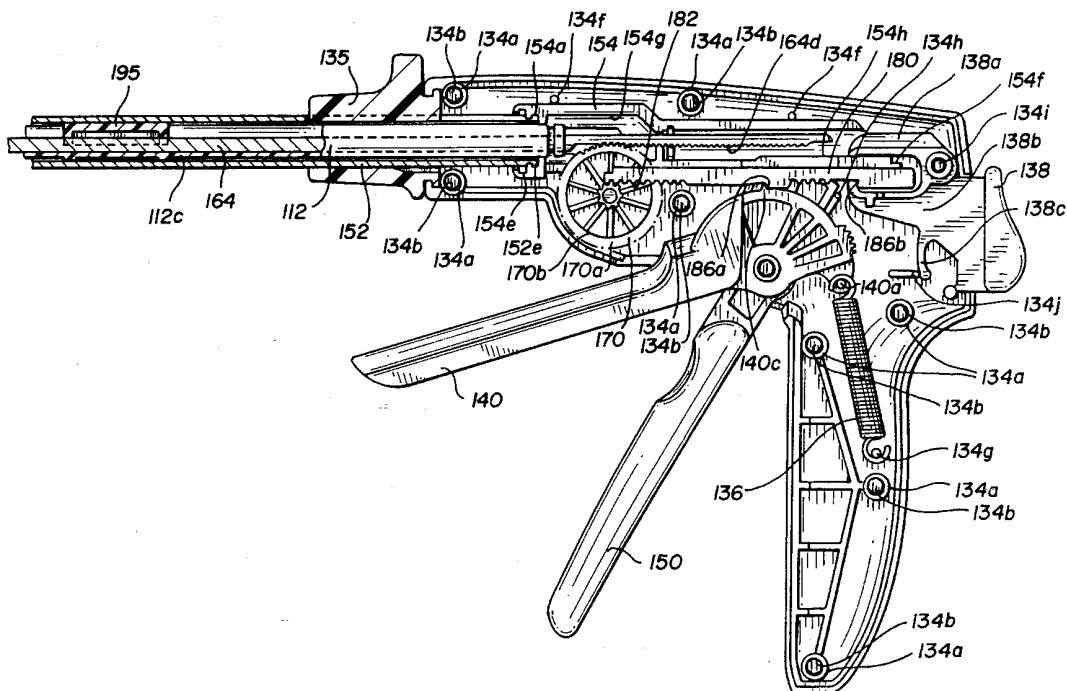
A surgical stapler instrument is provided for applying lateral lines of staples to tissue while cutting the tissue between those staple lines. The instrument includes a handle portion, an implement portion, a reciprocating section, a drive member and a movable actuator. The implement portion includes a staple cartridge and an anvil. The reciprocating section is adapted to move back and forth along an axis of the implement portion. The movable actuator is associated with the handle portion and is engaged with the drive member such that motion of the actuator causes the drive member to move back and forth between first and second drive positions separated by a first distance. A multiplier is further provided and is associated with the reciprocating section and the drive member for causing the reciprocating section to move back and forth between first and second reciprocating positions in response to movement of the drive member. The reciprocating section includes a work portion which, when moved distally, effects the firing of staples in the staple cartridge toward the anvil. The work portion is also provided with a reciprocating knife. The first and second reciprocating positions are separated by a second distance which differs from the first distance.

[56] References Cited

U.S. PATENT DOCUMENTS

- 4,530,453 7/1985 Green .
- 4,568,009 2/1986 Green .
- 4,573,622 3/1986 Green et al. .
- 4,589,582 5/1986 Bilotti .
- 4,596,351 6/1986 Fedotov et al. .
- 4,605,001 8/1986 Rothfuss et al. .
- 4,607,636 8/1986 Kula et al. .
- 4,633,861 1/1987 Chow et al. .
- 4,633,874 1/1987 Chow et al. .
- 4,915,100 4/1990 Green 227/178
- 4,978,049 12/1990 Green .
- 5,014,899 5/1991 Presty et al. .
- 5,040,715 8/1991 Green et al. .
- 5,156,315 10/1992 Green et al. .
- 5,156,614 10/1992 Green et al. .
- 5,170,925 12/1992 Madden et al. .
- 5,180,092 1/1993 Crainich .

15 Claims, 16 Drawing Sheets



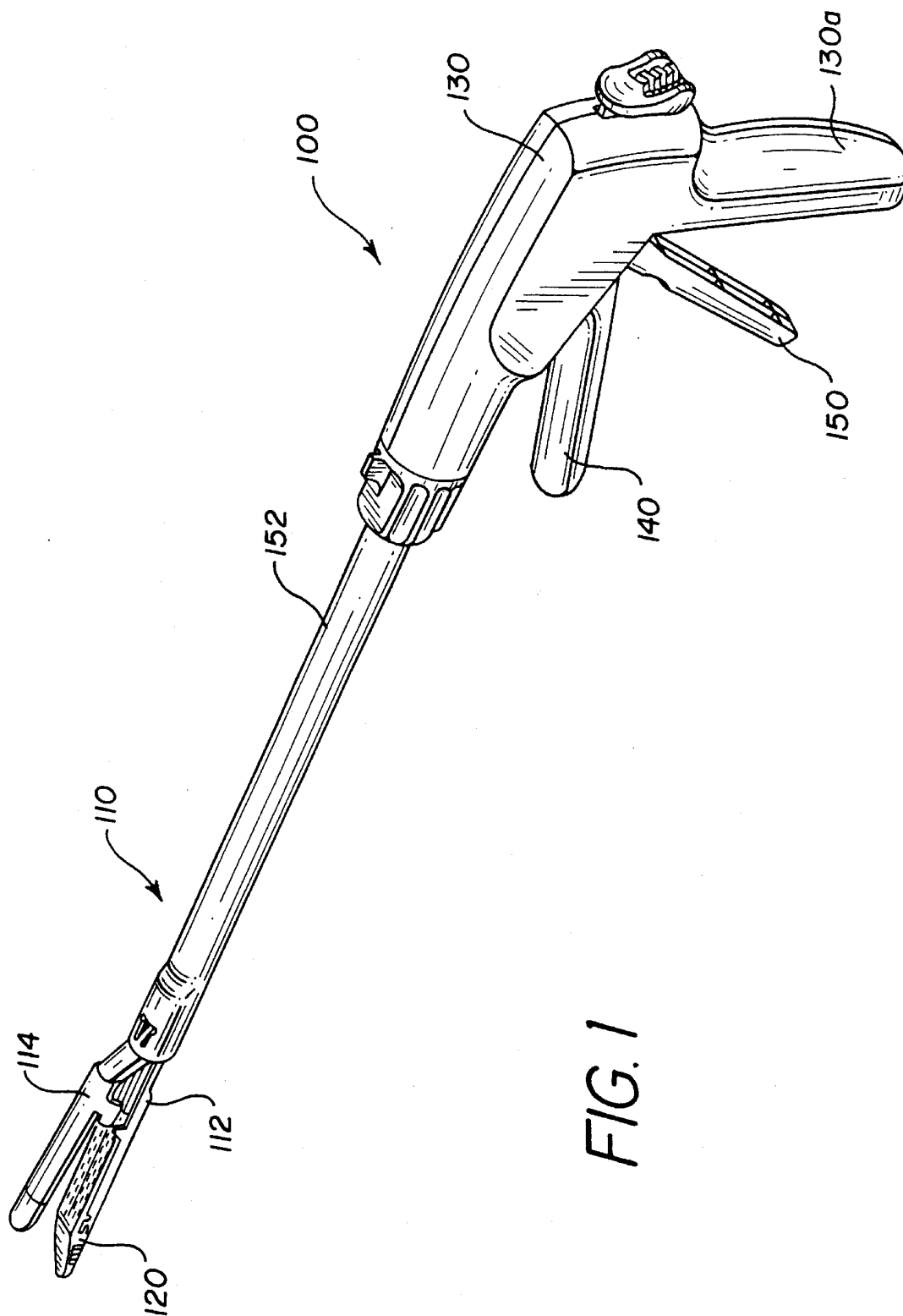
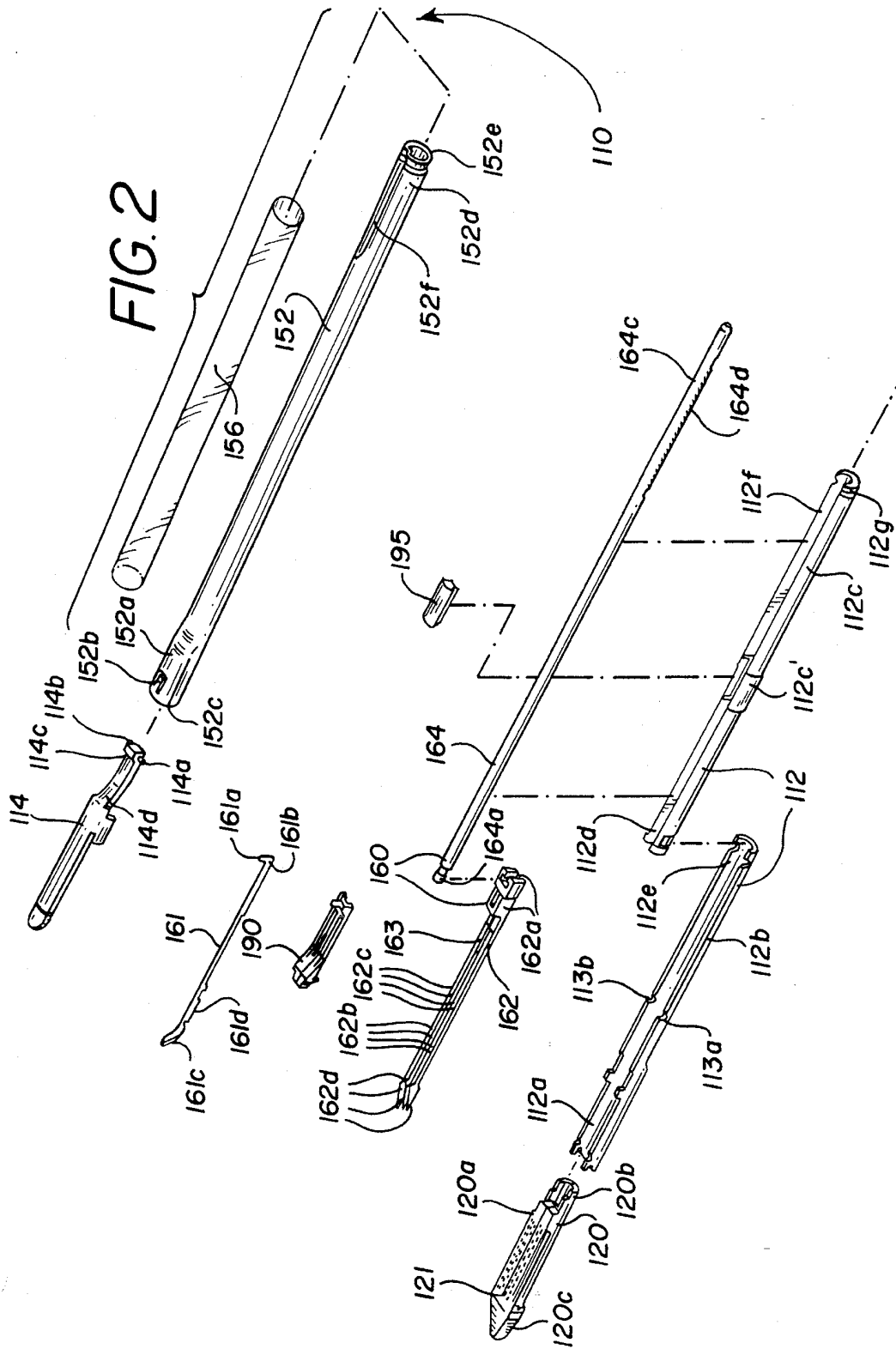


FIG. 1



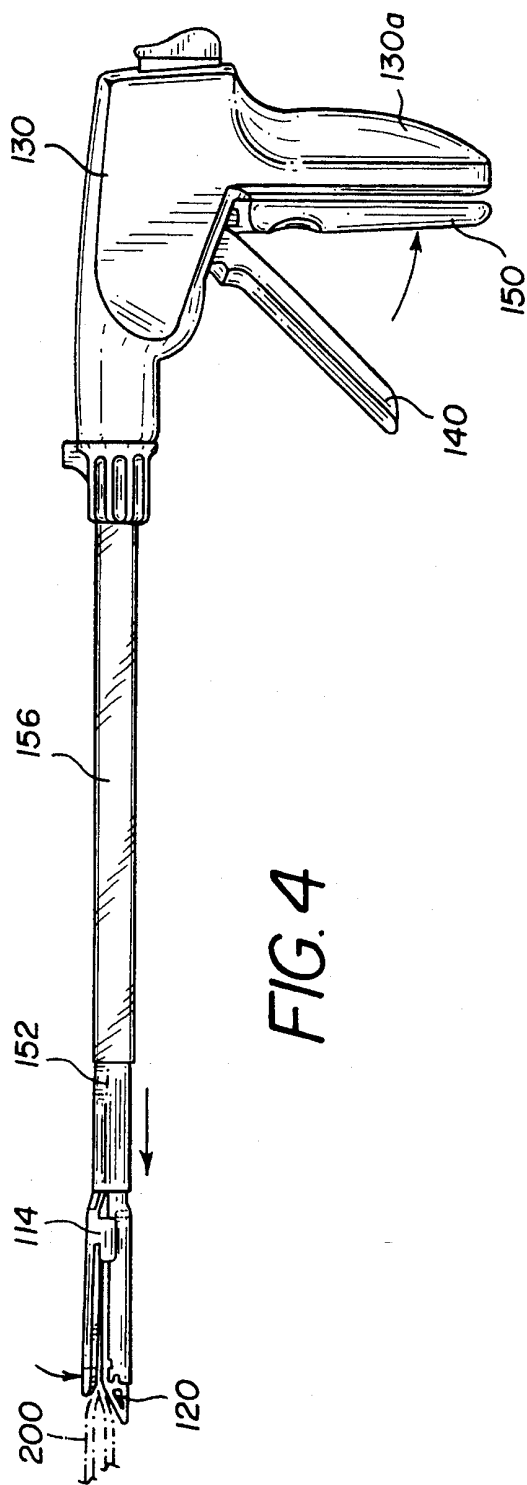


FIG. 4

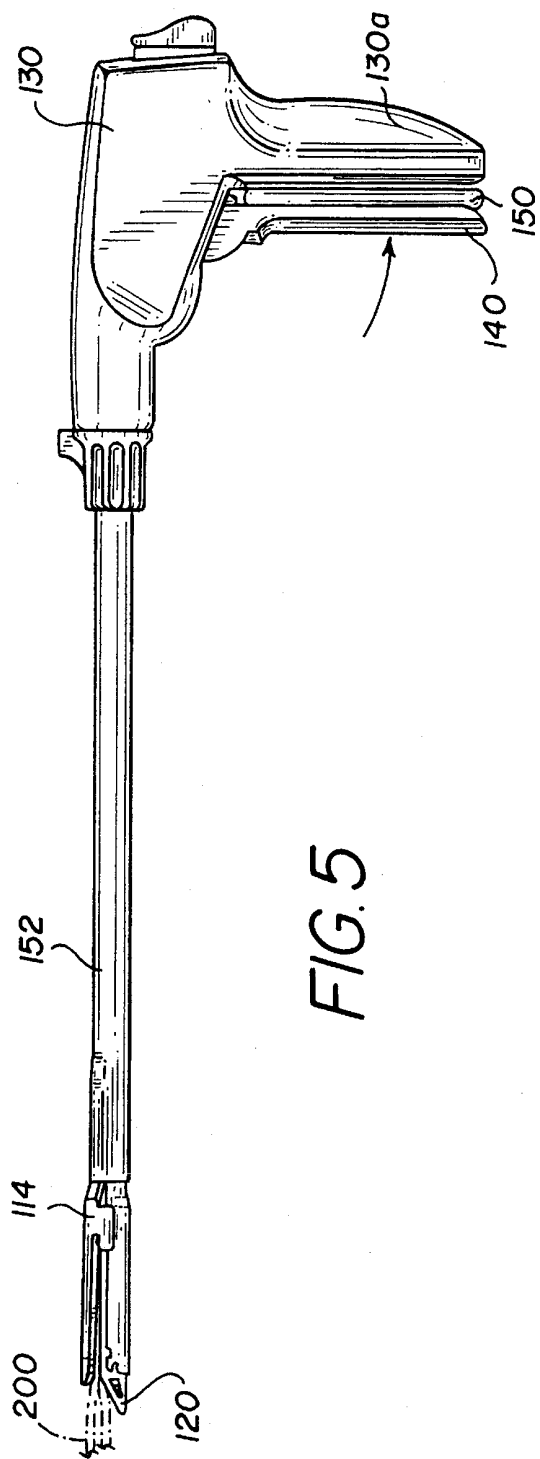


FIG. 5

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.