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# United States Patent [19]

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**Knodel et al.**

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[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

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### FOREIGN PATENT DOCUMENTS

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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.<sup>6</sup> ..... **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**

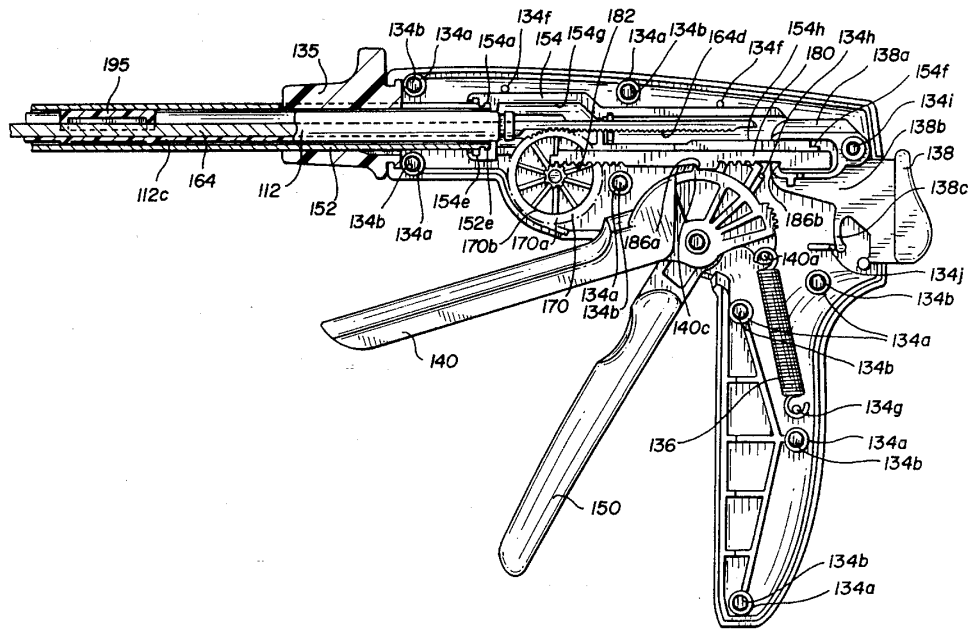
A surgical stapler instrument is provided for applying lateral lines of staples to tissue while cutting the tissue between those staple lines. The instrument includes a handle portion, an implement portion, a reciprocating section, a drive member and a movable actuator. The implement portion includes 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



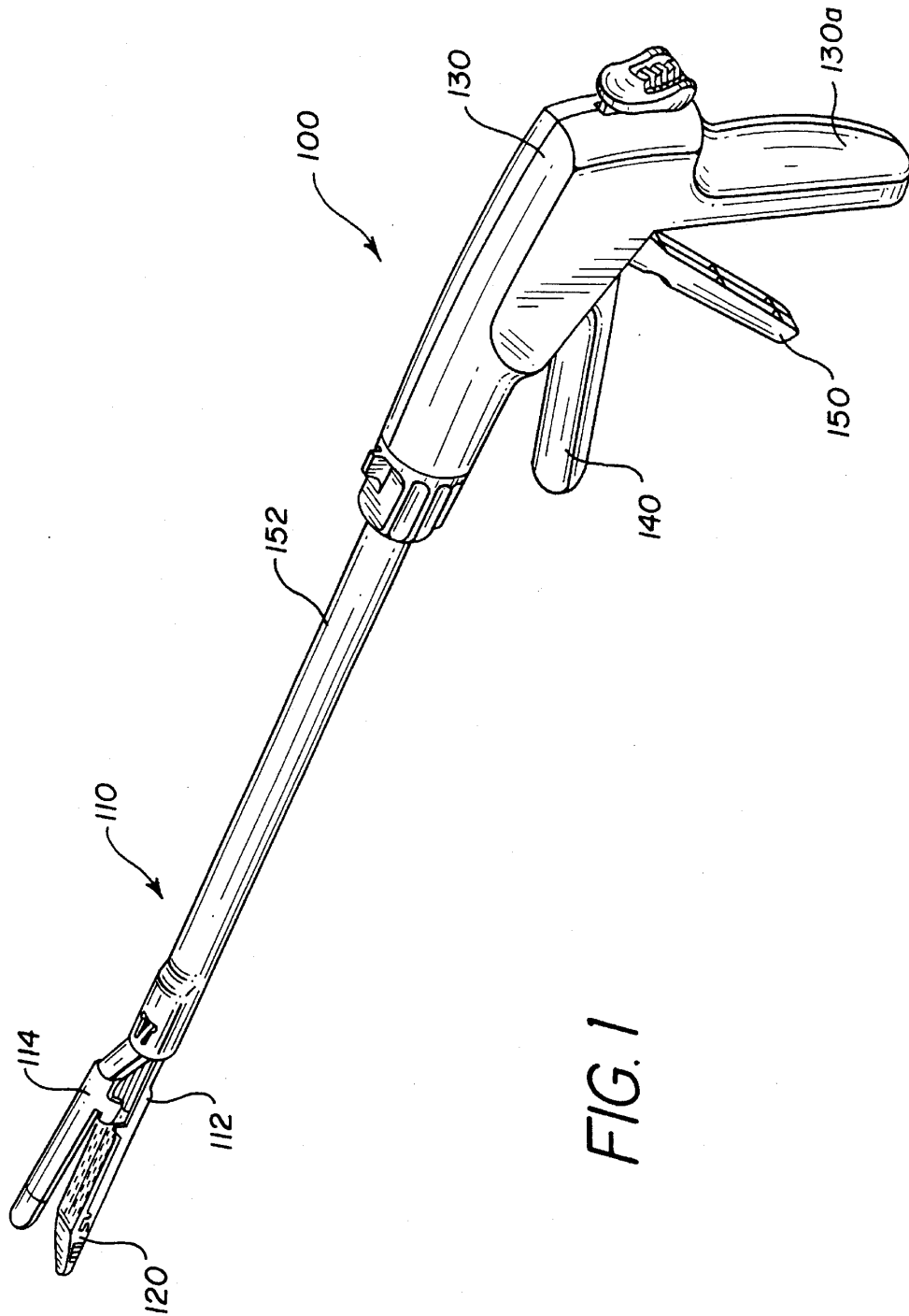
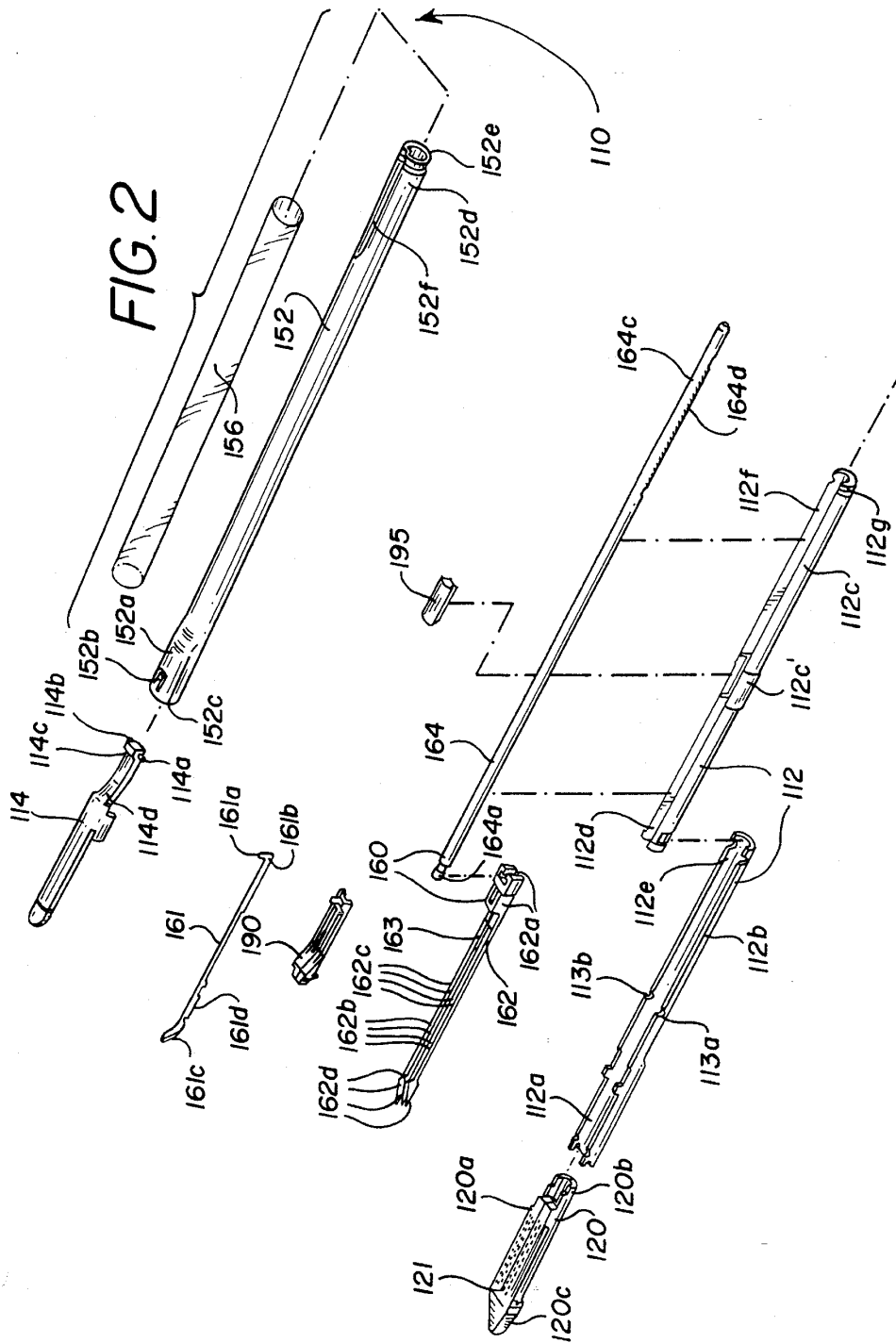
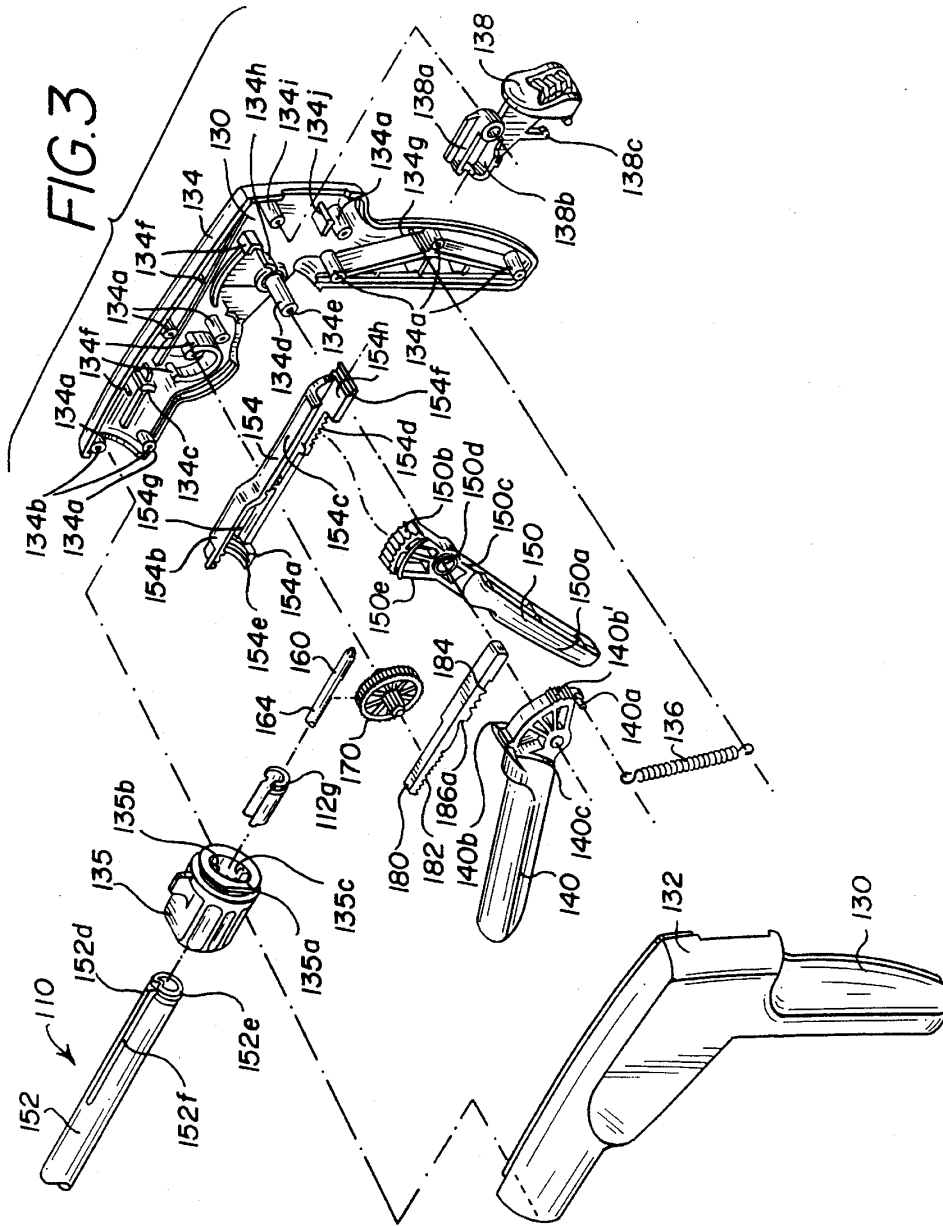
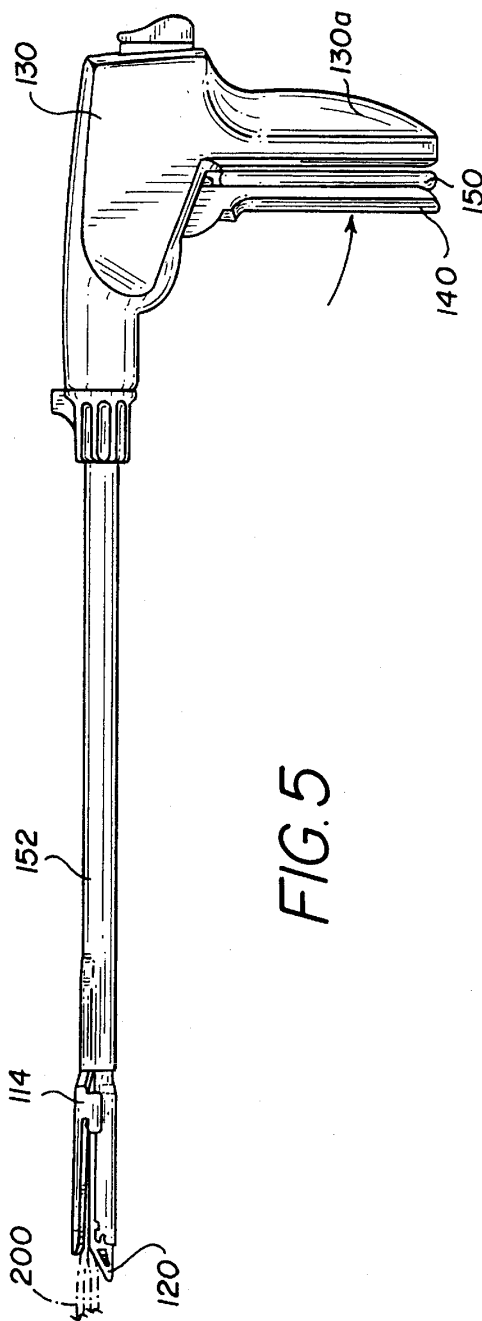
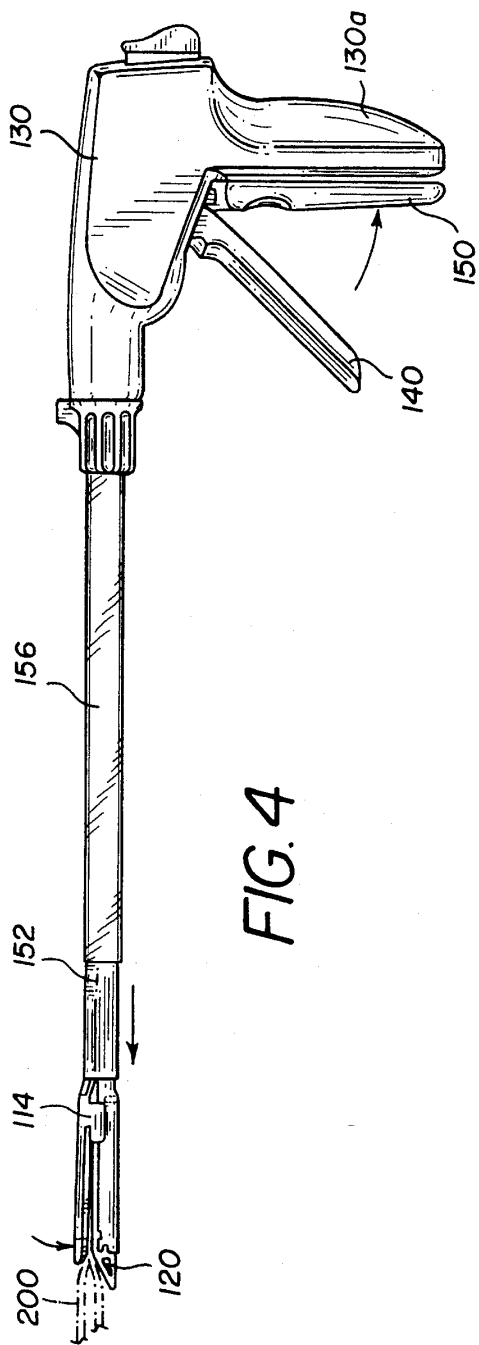


FIG. 1







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