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United States Patent [19]

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Viola et al.

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- [54] **SELF-CONTAINED POWERED SURGICAL APPARATUS FOR APPLYING SURGICAL FASTENERS** 4,705,038 11/1987 Sjostrom et al. .
4,733,118 3/1988 Mihalko .
4,771,774 9/1988 Simpson et al. .
4,784,137 11/1988 Kulik et al. .
4,867,158 9/1989 Sugg .
4,887,599 12/1989 Muller .
4,936,845 6/1990 Stevens .
4,995,877 2/1991 Ams et al. .
5,040,715 8/1991 Green et al. .
5,059,203 10/1991 Husted .
5,071,430 12/1991 de Salis et al. .
5,133,359 7/1992 Kedem .
- [75] Inventors: **Frank J. Viola**, Sandy Hook; **Daniel E. Alesi**, Sherman; **Dominick L. Mastri**, Bridgeport; **Wayne P. Young**, Brewster; **Richard N. Granger**, Huntington; **Kenneth E. Toso**, Wilton, all of Conn.
- [73] Assignee: **United States Surgical Corporation**, Norwalk, Conn.

(List continued on next page.)

[21] Appl. No.: **08/883,790**

FOREIGN PATENT DOCUMENTS

[22] Filed: **Jun. 27, 1997**

Related U.S. Application Data

- [63] Continuation of application No. 08/319,852, Oct. 7, 1994, abandoned, which is a continuation-in-part of application No. 08/287,455, Aug. 5, 1994, abandoned.
- [51] **Int. Cl.⁶** **A61B 17/068**
- [52] **U.S. Cl.** **227/176.1; 227/79; 227/178.1; 227/180.1**
- [58] **Field of Search** **227/176.1, 175.1, 227/178.1, 180.1, 19**

- 0156774 10/1985 European Pat. Off. .
- 0216532 4/1987 European Pat. Off. .
- 0536903 4/1993 European Pat. Off. .
- 0539762 5/1993 European Pat. Off. .
- 0552050 7/1993 European Pat. Off. .
- 0593920 4/1994 European Pat. Off. .
- 0598579 5/1994 European Pat. Off. .
- 0621006 10/1994 European Pat. Off. .
- 2660851 10/1991 France .
- 2903159 7/1980 Germany .
- 3114135 10/1982 Germany .
- 4213426 10/1992 Germany .
- 51-149985 5/1975 Japan .
- 659146 4/1979 U.S.S.R. .
- 9308754 5/1993 WIPO .
- 9314706 8/1993 WIPO .

[56] **References Cited**

U.S. PATENT DOCUMENTS

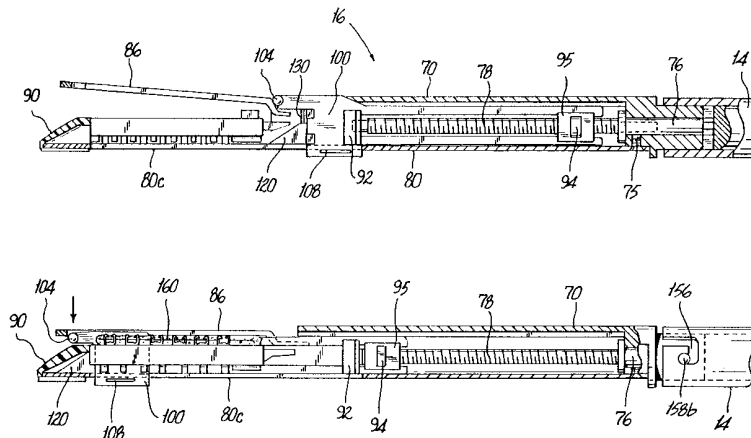
- 1,881,250 10/1932 Tomlinson .
- 3,618,842 11/1971 Bryan .
- 3,815,476 6/1974 Green et al. .
- 3,952,748 4/1976 Kaliher et al. .
- 4,071,029 1/1978 Richmond et al. .
- 4,289,131 9/1981 Mueller .
- 4,334,539 6/1982 Childs et al. .
- 4,484,503 11/1984 Sitte et al. .
- 4,489,724 12/1984 Arnegger .
- 4,494,057 1/1985 Hotta .
- 4,520,817 6/1985 Green .
- 4,605,001 8/1986 Rothfuss et al. .
- 4,610,383 9/1986 Rothfuss et al. .
- 4,644,952 2/1987 Patipa et al. .
- 4,650,460 3/1987 Roizenblatt .
- 4,655,673 4/1987 Hawkes .

Primary Examiner—Scott A. Smith

[57] ABSTRACT

A self-contained powered surgical apparatus for applying surgical fasteners to body tissue is disclosed which includes a handle assembly, a gear motor assembly disposed within the handle assembly, a power source disposed within the handle assembly for energizing the motor assembly, an elongated body extending distally from the handle assembly, a cartridge assembly detachably connected to a distal end portion of the elongated body, and an elongated drive shaft extending through the elongated body and detachably coupling the motor assembly to the cartridge assembly.

26 Claims, 9 Drawing Sheets



U.S. PATENT DOCUMENTS

5,133,713	7/1992	Huang et al. .	5,261,877	11/1993	Fine et al. .	
5,133,729	7/1992	Sjostrom .	5,268,622	12/1993	Philipp .	
5,170,925	12/1992	Madden et al. .	5,289,963	3/1994	McGarry et al. .	
5,192,292	3/1993	Cezana et al. .	5,312,023	5/1994	Green et al. .	
5,201,750	4/1993	Hocherl et al. .	5,318,221	6/1994	Green et al. .	
5,207,697	5/1993	Carusillo et al. .	5,326,013	7/1994	Green et al. .	
5,221,279	6/1993	Cook et al. .	5,403,327	4/1995	Thornton et al.	227/91
5,237,884	8/1993	Seto .	5,433,721	7/1995	Hooven et al.	227/19
5,249,583	10/1993	Mallaby .	5,467,911	11/1995	Tsuruta et al. .	
5,258,007	11/1993	Spetzler et al. .	5,482,197	1/1996	Green et al.	227/19
			5,485,947	1/1996	Olson et al.	227/19

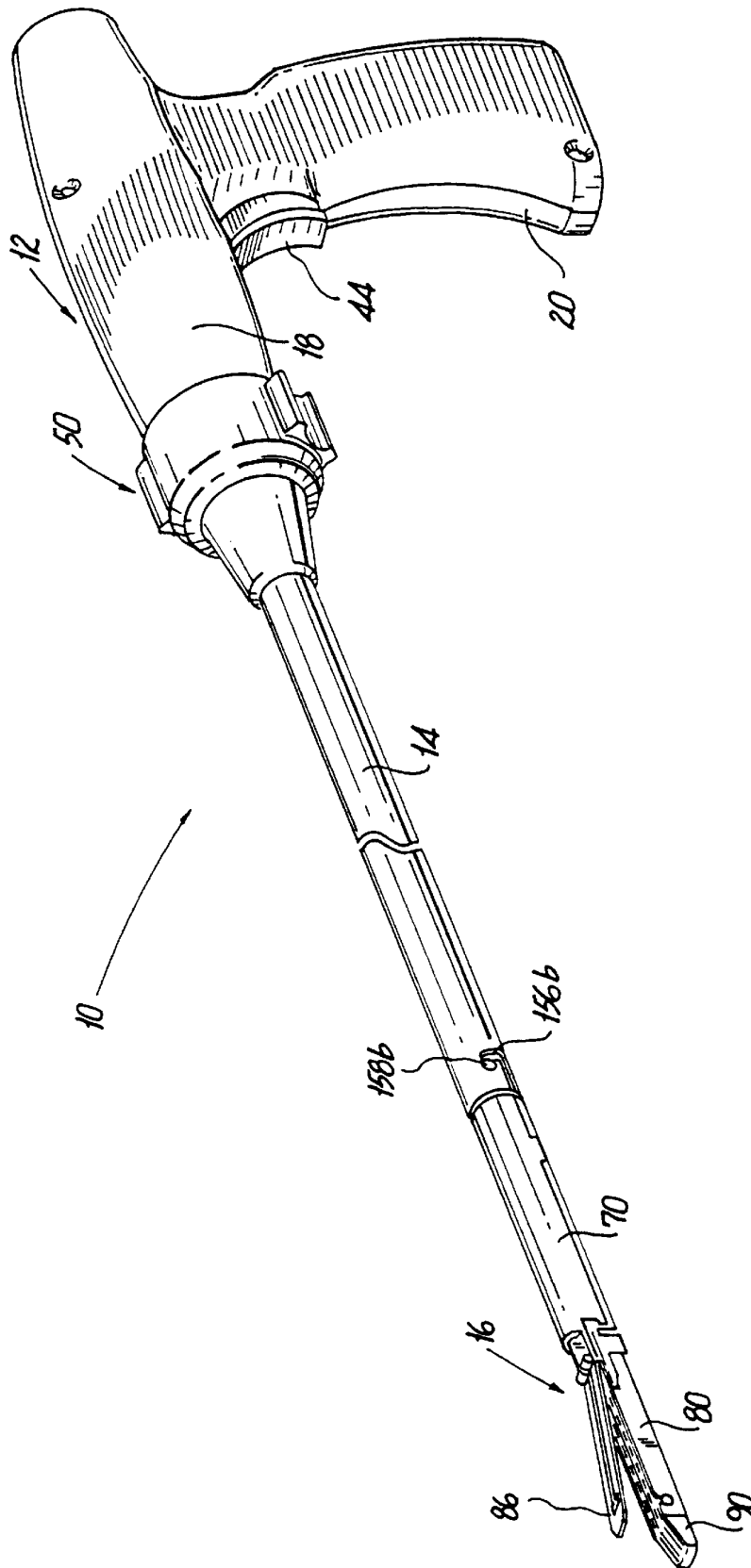


Fig. 1

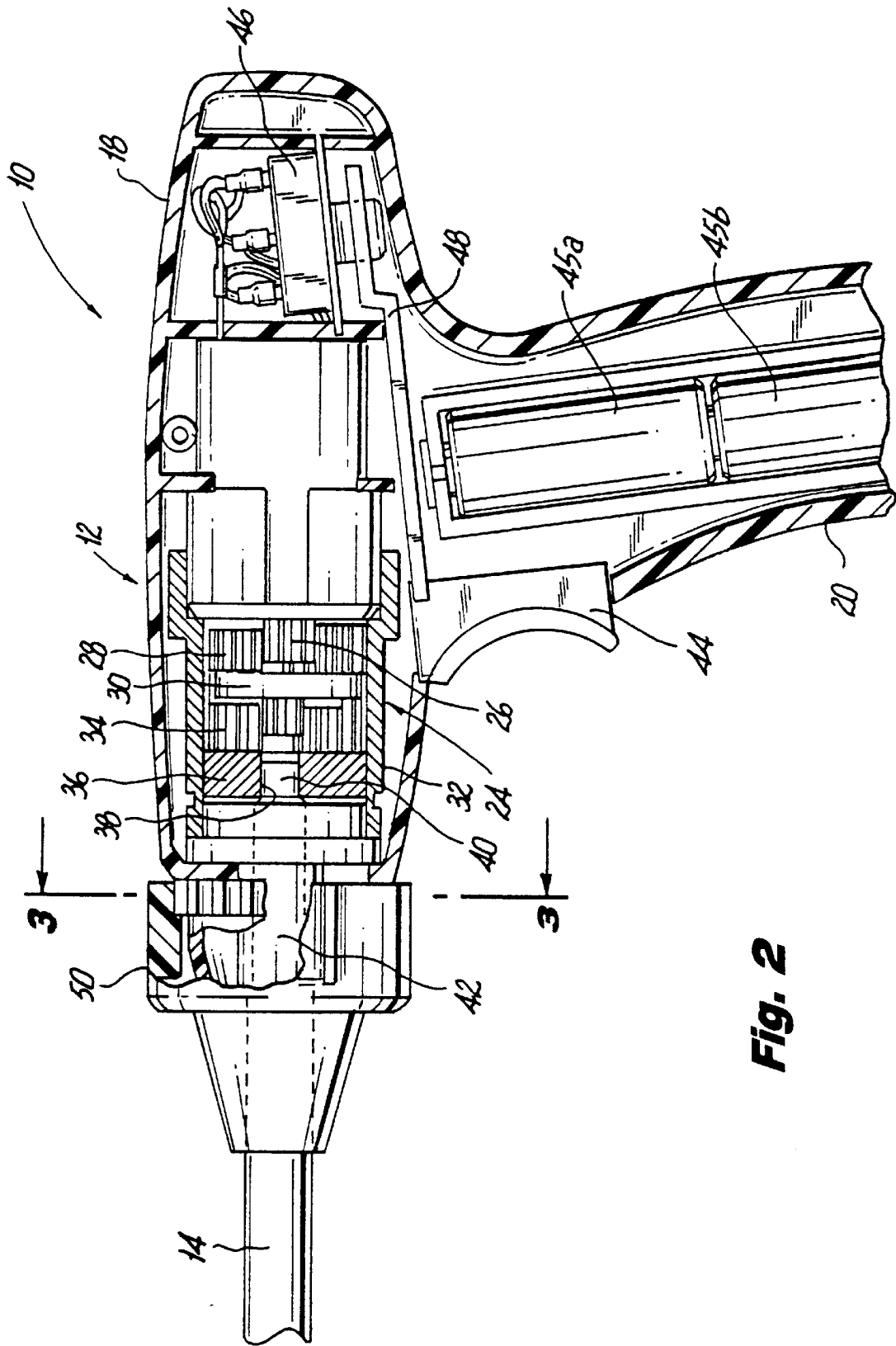


Fig. 2

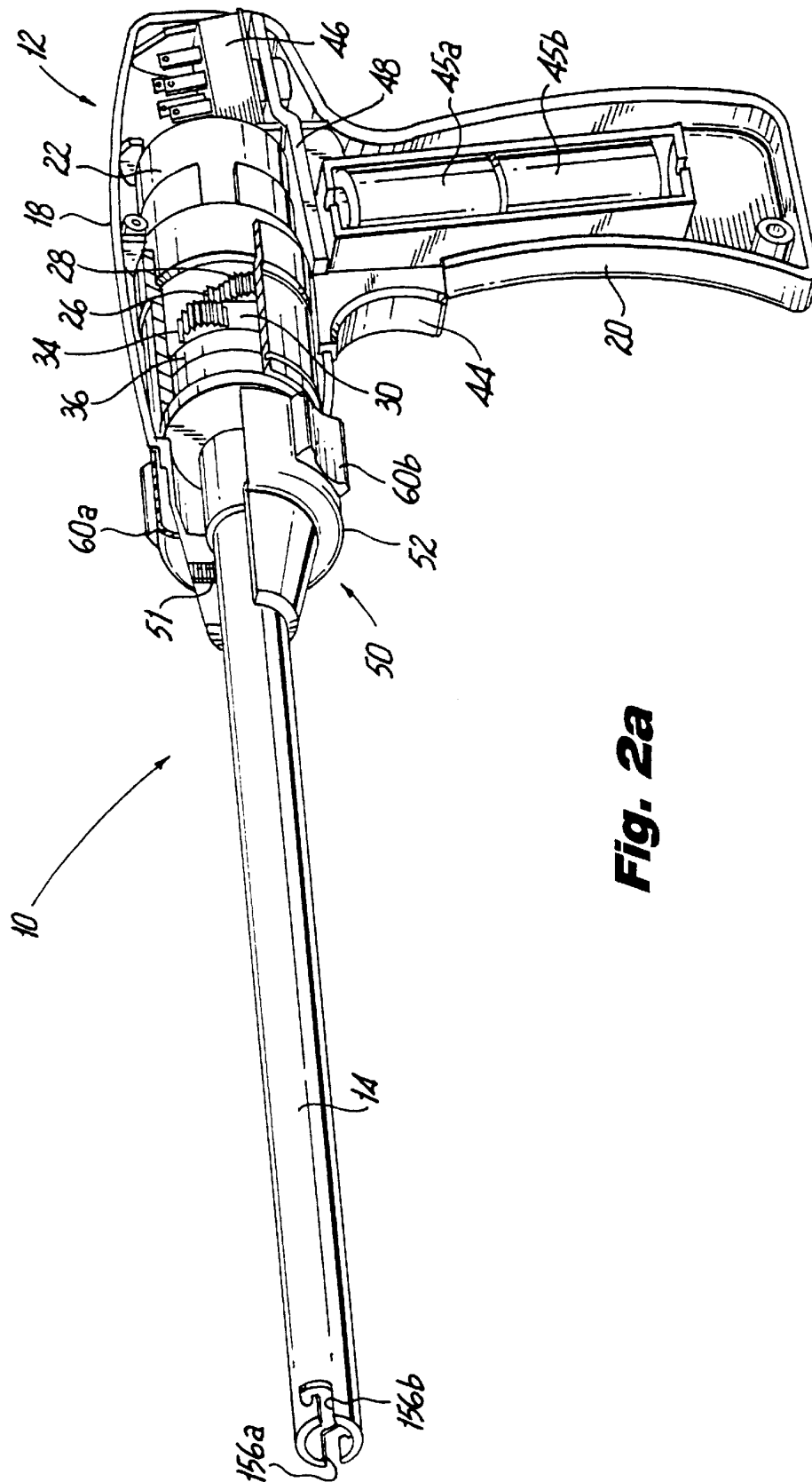


Fig. 2a

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