



US006640674B1

(12) **United States Patent**  
**Rinner et al.**

(10) **Patent No.:** **US 6,640,674 B1**  
(45) **Date of Patent:** **Nov. 4, 2003**

(54) **SCREWDRIVER HAVING A VARIABLE TORQUE-LIMITING IN-LINE DRIVE**

(75) Inventors: **James A. Rinner**, Racine, WI (US);  
**Hua Gao**, Fox Point, WI (US)

(73) Assignee: **Pilling Weck Incorporated**

(\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

3,942,337 A	3/1976	Leonard	
4,062,203 A	12/1977	Leonard	
4,063,474 A	12/1977	Klopping	
4,272,973 A	6/1981	Fu-Tsai	
4,517,865 A	5/1985	Huang	
4,653,359 A	3/1987	Liao	
4,901,610 A *	2/1990	Larson et al.	81/473
5,746,298 A *	5/1998	Krivec et al.	192/48.3
6,076,439 A *	6/2000	Dzieman	81/473
6,095,020 A	8/2000	Rinner	
6,132,435 A	10/2000	Young	
6,155,147 A	12/2000	Dzieman	
6,273,200 B1 *	8/2001	Smith et al.	173/216

(21) Appl. No.: **10/151,549**

(22) Filed: **May 21, 2002**

(51) Int. Cl.<sup>7</sup> ..... **B25B 23/157**

(52) U.S. Cl. .... **81/475; 81/473; 81/474;**  
81/476; 81/477

(58) Field of Search ..... 81/475, 473, 474,  
81/476, 477, 467, 429, 436

(56) **References Cited**

**U.S. PATENT DOCUMENTS**

2,732,746 A	1/1956	Livermont
2,733,622 A	2/1956	Evans
2,968,979 A	1/1961	Aijala
3,068,667 A	12/1962	Sussman
3,205,985 A	9/1965	Pearl
3,292,678 A	12/1966	Noga
3,695,059 A	10/1972	Laubach

\* cited by examiner

*Primary Examiner*—Joseph J. Hail, III

*Assistant Examiner*—Alvin J Grant

(74) *Attorney, Agent, or Firm*—Arthur J. Hansmann

(57) **ABSTRACT**

A screwdriver of the type having a variable torque-limiting in-line drive with a handle having a cavity and a drive bit disposed in the cavity. Over-ride drive members are disposed in the cavity and a spring exerts a force on the drive members for transmitting only a maximum force to a bit in the screwdriver. Two adjustable controls are at a back end of the tool and they are used to apply a varying force to the spring and thus limit the amount of maximum torque to be transmitted.

**17 Claims, 2 Drawing Sheets**

