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(12) **United States Design Patent** (10) **Patent No.:** **US D810,158 S**
Liao (45) **Date of Patent:** **** Feb. 13, 2018**

- (54) **DRILLING AND TAPPING CUTTER**
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- 6,931,967 B1 * 8/2005 Chang B25B 15/001 81/125
- 7,214,009 B2 * 5/2007 Quanz B23B 31/005 408/144
- 2004/0071516 A1 4/2004 Hakenjos
- 2009/0139379 A1 * 6/2009 Chiang B25B 23/0035 81/438
- 2009/0174157 A1 * 7/2009 Chang B25B 15/001 279/99
- 2009/0288525 A1 * 11/2009 Chen B25B 23/12 81/451
- 2011/0197721 A1 * 8/2011 Debaker B25B 15/002 81/436
- 2012/0003054 A1 1/2012 Takagi
- 2012/0087753 A1 * 4/2012 Kataoka B23B 51/02 408/1 R

(Continued)

Related U.S. Application Data

- (63) Continuation-in-part of application No. 14/979,438, filed on Dec. 27, 2015, now abandoned, which is a continuation-in-part of application No. 14/944,270, filed on Nov. 18, 2015, now abandoned.
- (51) **LOC (11) Cl.** **15-09**
- (52) **U.S. Cl.**
USPC **D15/139**
- (58) **Field of Classification Search**
USPC D8/70; D15/131, 138, 139
CPC ... B23B 31/005; B23B 51/02; B23B 2226/75;
B23B 2251/248; B23B 2260/072; B23C
5/10; B23D 77/00; B23G 5/064; Y10T
407/19; Y10T 408/907
See application file for complete search history.

References Cited

U.S. PATENT DOCUMENTS

- 659,125 A 10/1900 Boentgen
- 2,898,612 A 8/1959 Hofbaner
- 3,592,555 A 7/1971 Mackey, Sr.
- 4,605,347 A 8/1986 Jodock
- 6,341,926 B1 * 1/2002 Liu B23B 31/005 408/222

FOREIGN PATENT DOCUMENTS

- CN 201008996 Y 1/2008
- CN 103100854 A 5/2013

(Continued)

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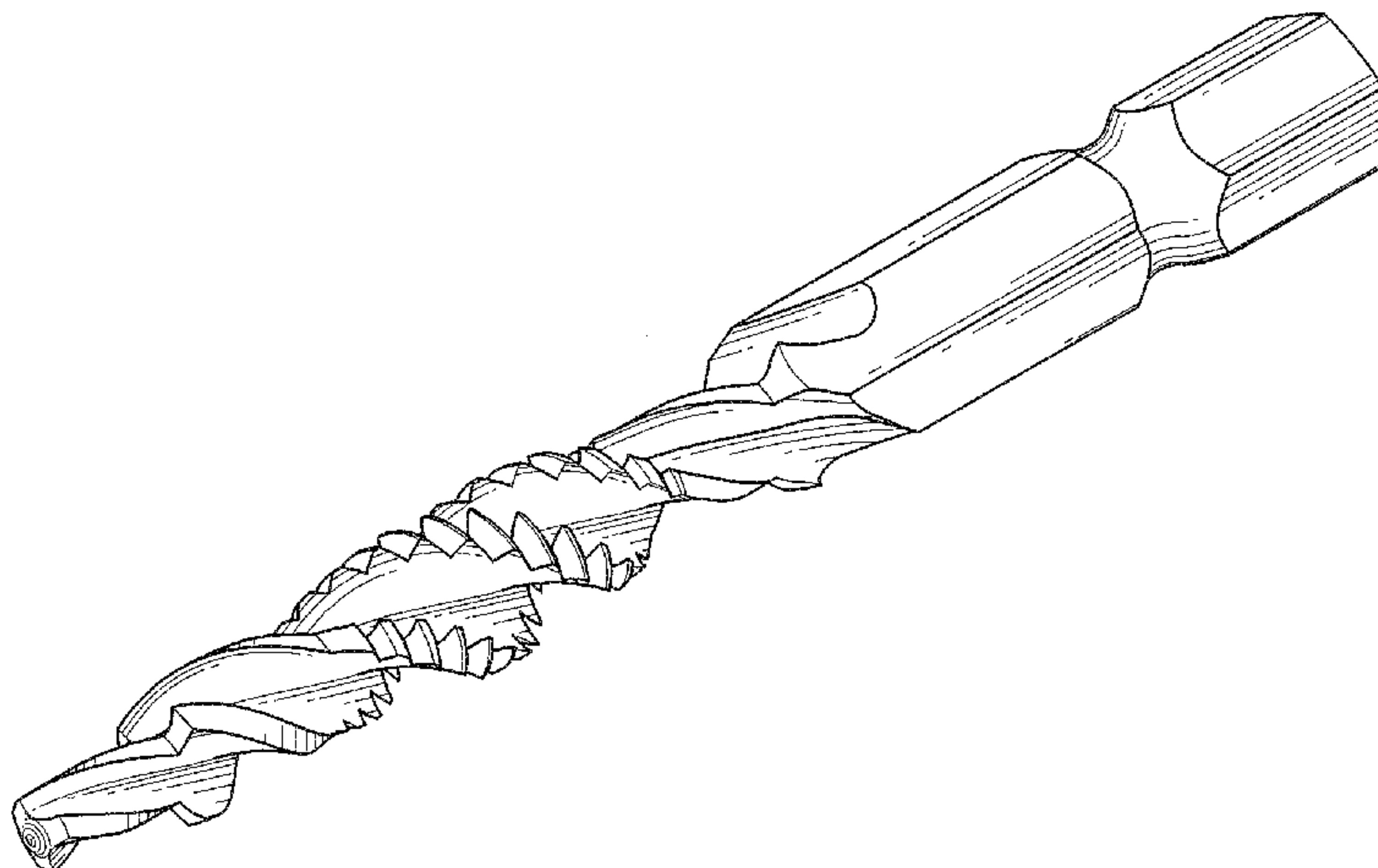
(57) **CLAIM**

The ornamental design for a drilling and tapping cutter, as shown.

DESCRIPTION

FIG. 1 is a perspective view of a drilling and tapping cutter showing my new design;
FIG. 2 is a front view thereof;
FIG. 3 is a rear view thereof;
FIG. 4 is a left view thereof;
FIG. 5 is a right view thereof;
FIG. 6 is a top view thereof; and,
FIG. 7 is a bottom view thereof.

1 Claim, 6 Drawing Sheets



(56)

References Cited

U.S. PATENT DOCUMENTS

2012/0170985 A1* 7/2012 Hill B23C 5/10
407/62
2012/0195701 A1* 8/2012 Pan B23C 5/10
407/54
2013/0058734 A1* 3/2013 Volokh B23B 51/08
408/223
2013/0136552 A1 5/2013 Ono
2014/0126968 A1* 5/2014 Van Den Boogard B23C 5/10
407/54
2014/0212234 A1* 7/2014 Sawabe B23B 51/0018
408/1 R
2014/0294527 A1* 10/2014 Hirt B23B 51/02
408/1 R
2015/0023749 A1* 1/2015 Wheatley B23G 1/16
408/1 BD
2017/0326651 A1* 11/2017 Allen B23B 51/0081

FOREIGN PATENT DOCUMENTS

DE 3246663 A1 6/1984
DE 19834039 A1 2/1999
JP 62004515 A 1/1987
JP 10118845 A 5/1998
JP 11245119 A 9/1999
JP 2003236721 A 8/2003
JP 2012071405 A 4/2012
TW M419631 A 1/2012

* cited by examiner

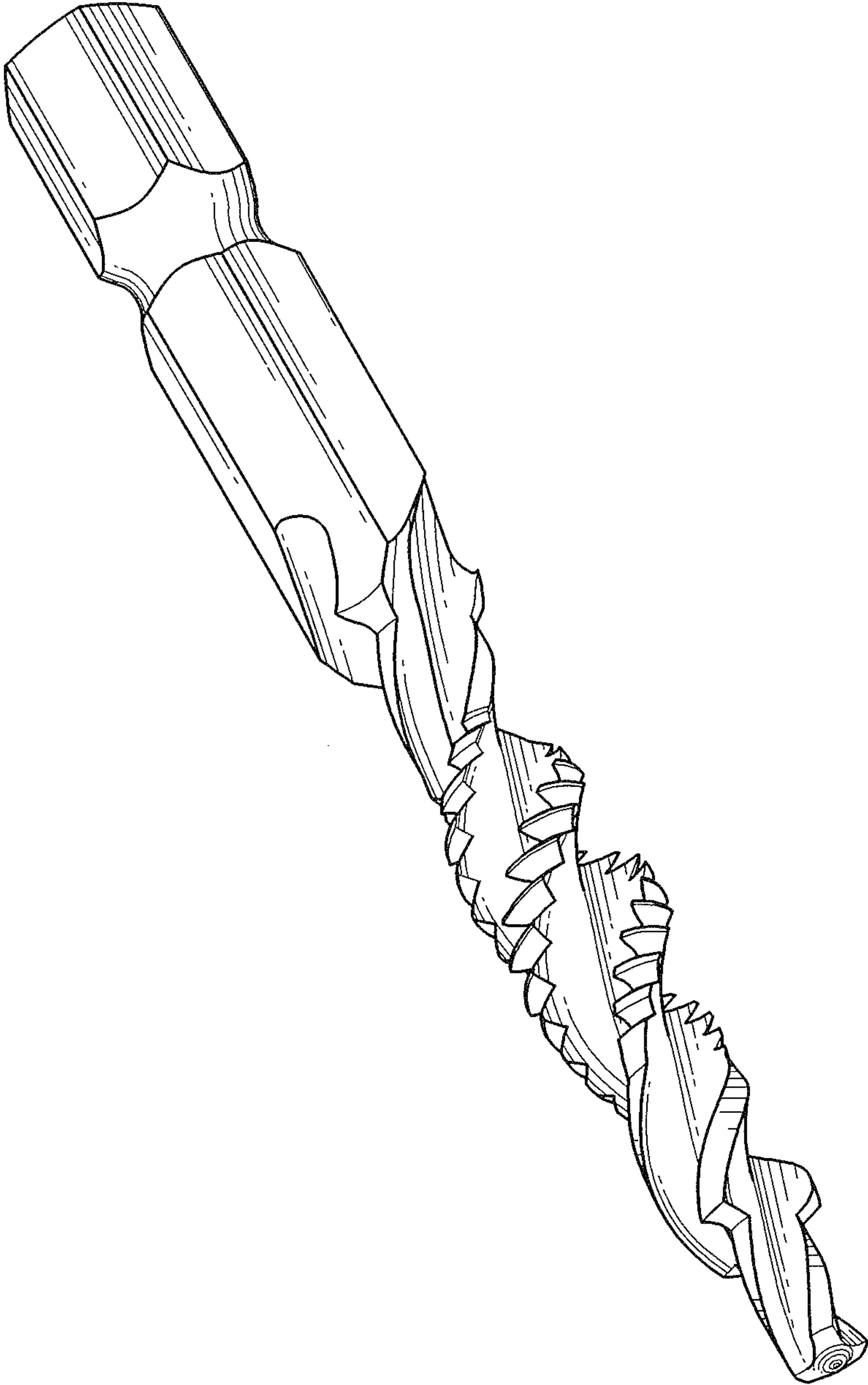


FIG. 1

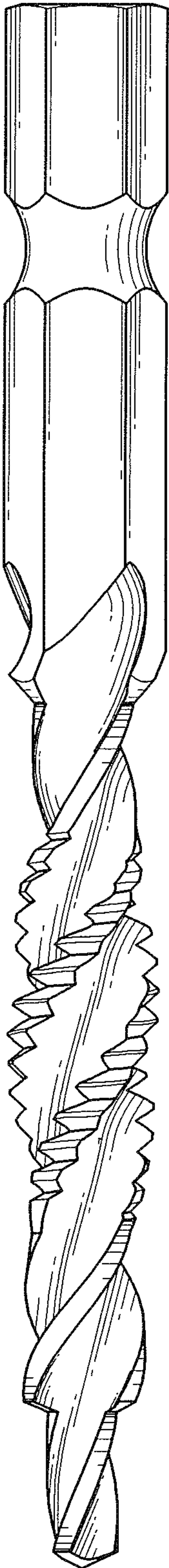


FIG. 2

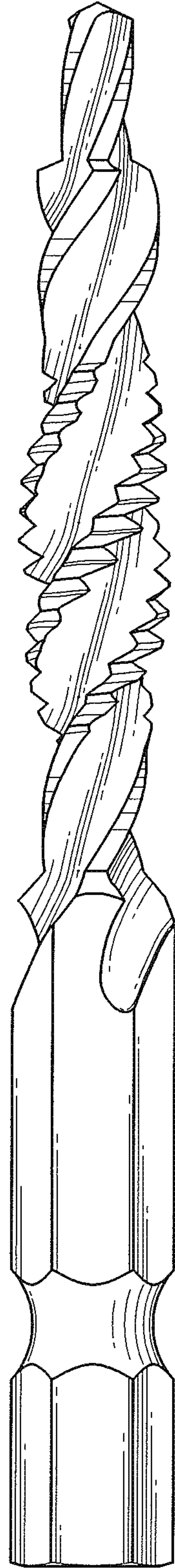


FIG. 3

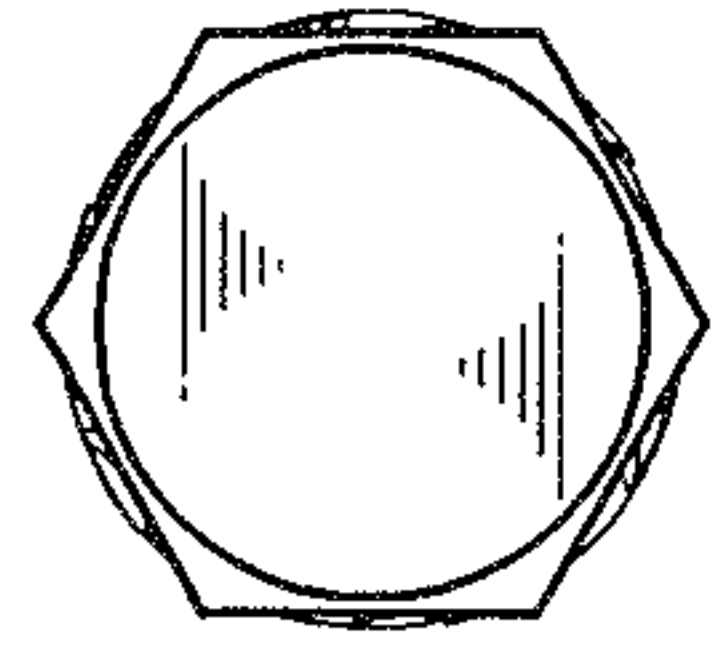


FIG. 5

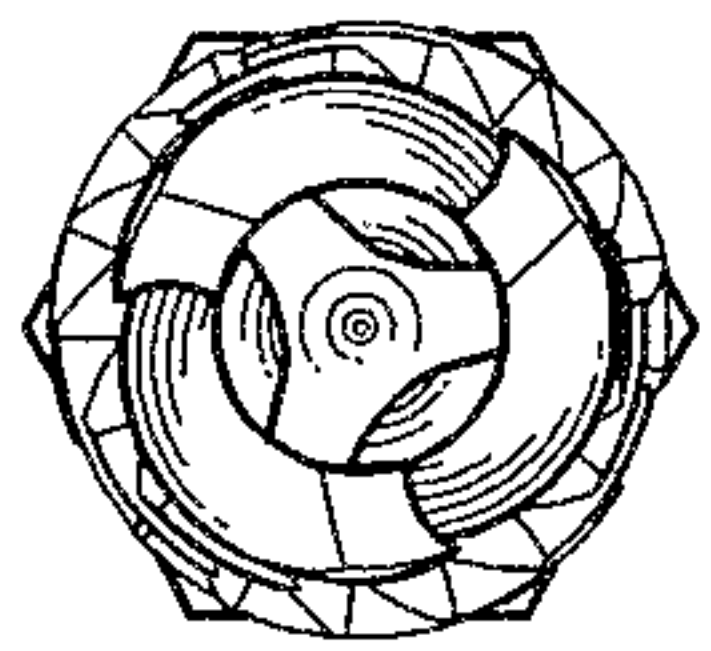


FIG. 4

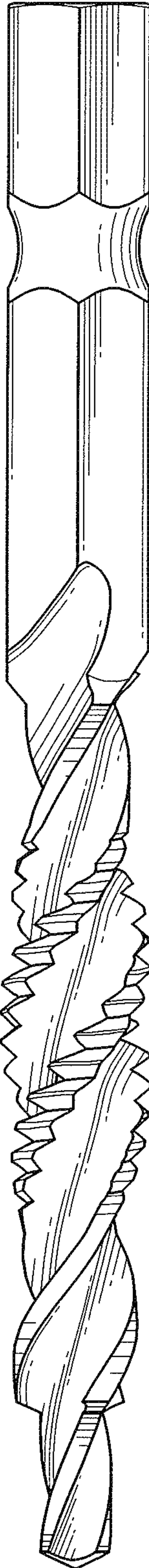


FIG. 6

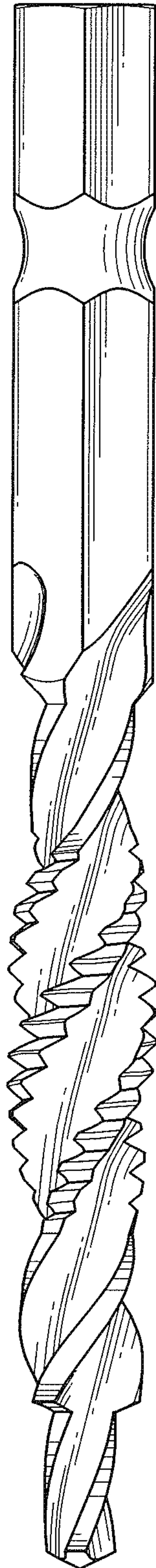


FIG. 7