



US00D913402S

(12) **United States Design Patent** (10) **Patent No.:** **US D913,402 S**
Kruger et al. (45) **Date of Patent:** **** Mar. 16, 2021**

(54) **DETONATOR STRUCTURE** 5,499,581 A * 3/1996 Sutula, Jr. C06C 5/06
102/275.12
(71) Applicant: **DETNET SOUTH AFRICA (PTY)** 5,747,722 A * 5/1998 Gladden C06C 5/04
LTD, Sandton (ZA) 102/275.11
6,694,886 B1 * 2/2004 Woodall C06C 5/04
102/275.1
(72) Inventors: **Michiel Jacobus Kruger, Sandton** 6,736,068 B1 * 5/2004 Dumenko F42B 3/10
(ZA); Christopher Malcolm Birkin, 102/205
Sandton (ZA); Andre Louis D719,236 S * 12/2014 Kilcullen D22/112
Koekemoer, Sandton (ZA); Richard D756,481 S * 5/2016 Kilcullen D22/112
Joseph Michna, Barkhamsted, CT 10,746,002 B2 * 8/2020 Barker E21B 43/117
(US); Daniel Auguste Maurissens, 2004/0055494 A1 * 3/2004 O'Brien C06C 5/06
Sandton (ZA) 102/275.12
(73) Assignee: **DETNET SOUTH AFRICA (PTY)** 2004/0200372 A1 * 10/2004 Gladden F42B 3/10
LTD., Sandton (ZA) 102/275
2005/0183610 A1 * 8/2005 Barton C06C 7/00
102/275.11

(Continued)

Primary Examiner — Michael A. Pratt
(74) *Attorney, Agent, or Firm* — Cantor Colburn LLP

(**) Term: **15 Years**

(21) Appl. No.: **29/699,794**

(22) Filed: **Jul. 29, 2019**

(30) **Foreign Application Priority Data**

Jan. 28, 2019 (ZA) F2019/00133

(51) **LOC (13) Cl.** **22-03**

(52) **U.S. Cl.**
USPC **D22/112**

(58) **Field of Classification Search**
USPC D22/112
CPC C06C 7/02; C06C 7/00; C06C 5/06; C06C
5/04; F42B 3/00; F42B 3/02; F42C
19/08; F16B 39/282
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

3,580,171 A * 5/1971 Maes C06B 47/08
102/315
5,204,492 A * 4/1993 Jacob C06C 5/06
102/275.12

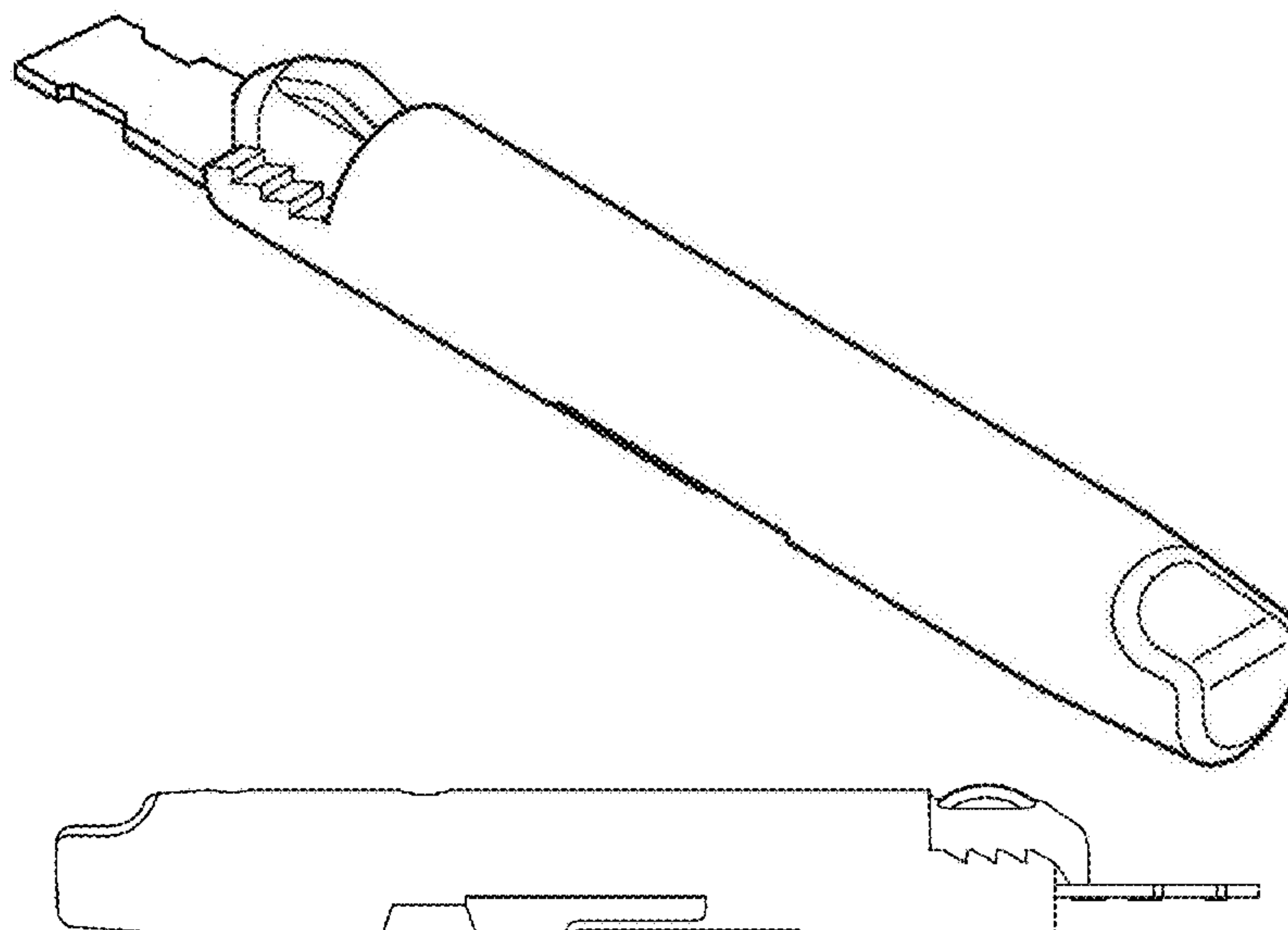
(57) **CLAIM**

We claim, the ornamental design for a detonator structure, as shown and described.

DESCRIPTION

FIG. 1 is a perspective view of a detonator structure according to the new design;
FIG. 2 is a top-plan view of the detonator structure of FIG. 1;
FIG. 3 is a view from a first side of the detonator structure of FIG. 1;
FIG. 4 is a view from an opposing second side of the detonator structure of FIG. 1;
FIG. 5 is a bottom-plan view of the detonator structure of FIG. 1;
FIG. 6 is a view from a first end of the detonator structure of FIG. 1; and,
FIG. 7 is a view from an opposing second end of the detonator structure of FIG. 1.

1 Claim, 2 Drawing Sheets



(56)

References Cited

U.S. PATENT DOCUMENTS

2019/0025018 A1 * 1/2019 Frank F42D 1/20

* cited by examiner

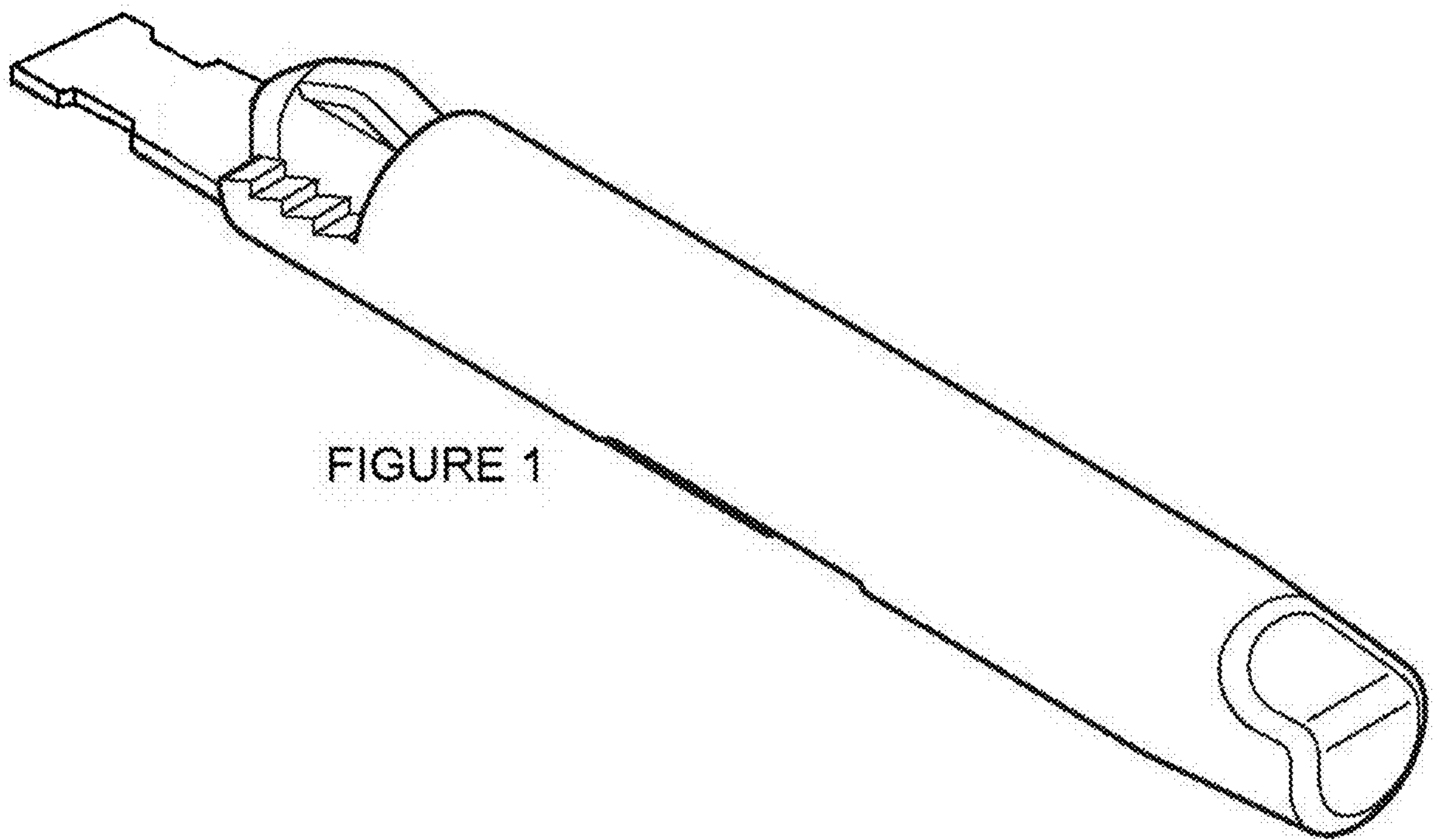


FIGURE 1

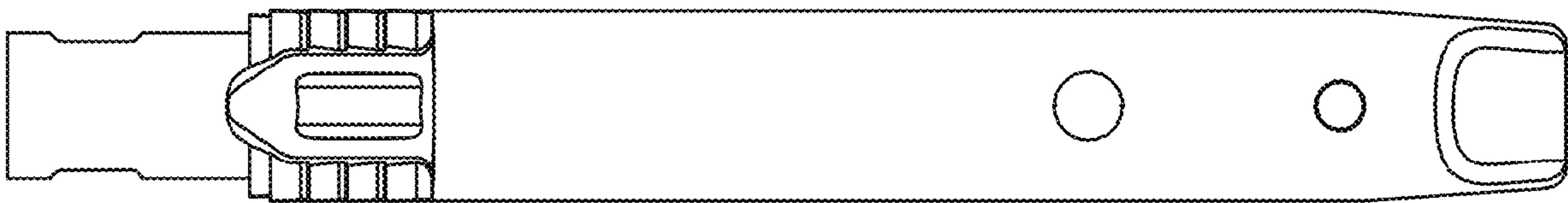


FIGURE 2

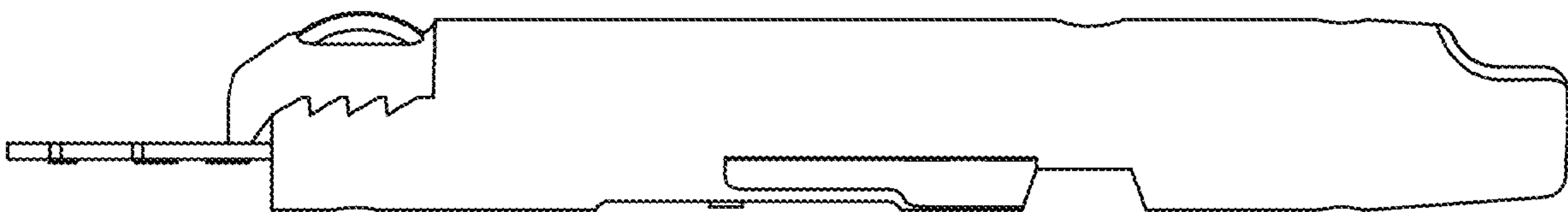


FIGURE 3



FIGURE 4

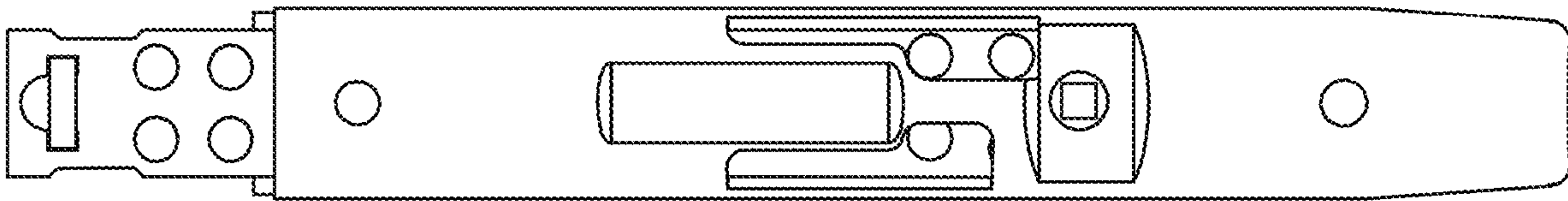


FIGURE 5

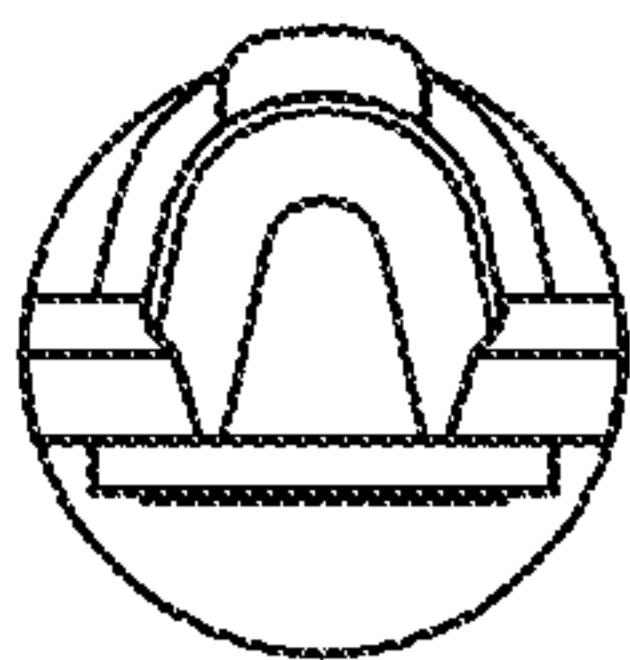


FIGURE 6

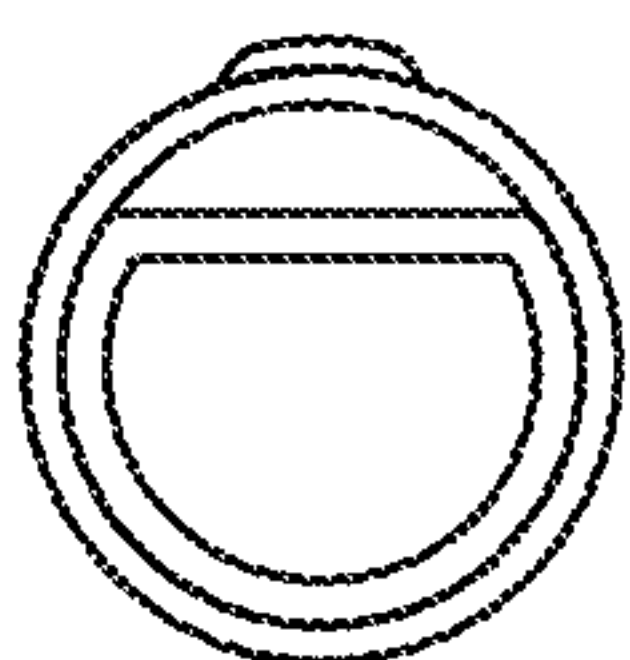


FIGURE 7