



US00D907163S

(12) **United States Design Patent**
Kruger et al.

(10) **Patent No.:** **US D907,163 S**
(45) **Date of Patent:** **** Jan. 5, 2021**

(54) **DETONATOR MODULE WITH A FRICTION LOCK STRUCTURE**

(71) Applicant: **DETNET SOUTH AFRICA (PTY) LTD**, Sandton (ZA)

(72) Inventors: **Michiel Jacobus Kruger**, Sandton (ZA); **Christopher Malcolm Birkin**, Sandton (ZA); **Andre Louis Koekemoer**, Sandton (ZA); **Richard Joseph Michna**, Barkhamsted, CT (US); **Daniel Auguste Maurissens**, Sandton (ZA)

(73) Assignee: **DETNET SOUTH AFRICA (PTY) LTD**, Sandton (ZA)

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

(21) Appl. No.: **29/699,790**

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

(30) **Foreign Application Priority Data**

Jan. 28, 2019 (ZA) F2019/00129

(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 39/32; A44B 17/0041; A44B 11/2592

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

5,499,581 A * 3/1996 Sutula, Jr. C06C 5/06
102/275.12
5,747,722 A * 5/1998 Gladden C06C 5/04
102/275.11
6,694,886 B1 * 2/2004 Woodall C06C 5/04
102/275.1
6,736,068 B1 * 5/2004 Dumenko F42B 3/10
102/205
D719,236 S * 12/2014 Kilcullen D22/112
D756,481 S * 5/2016 Kilcullen D22/112
10,746,002 B2 * 8/2020 Barker E21B 43/117
2004/0055494 A1 * 3/2004 O'Brien C06C 5/06
102/275.12

(Continued)

Primary Examiner — Michael A. Pratt

(74) *Attorney, Agent, or Firm* — Cantor Colburn LLP

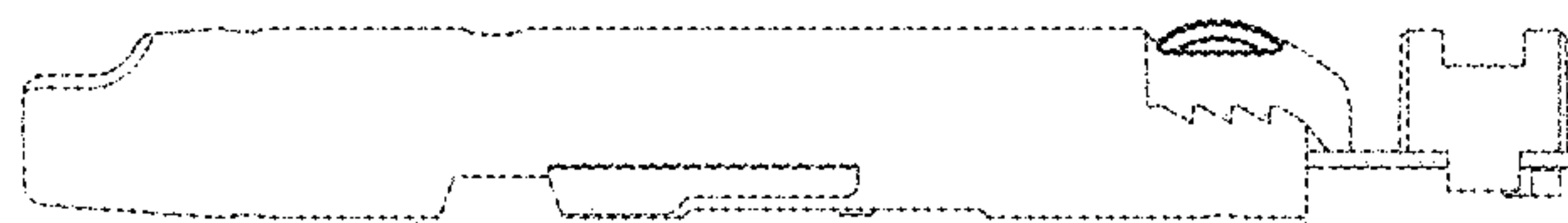
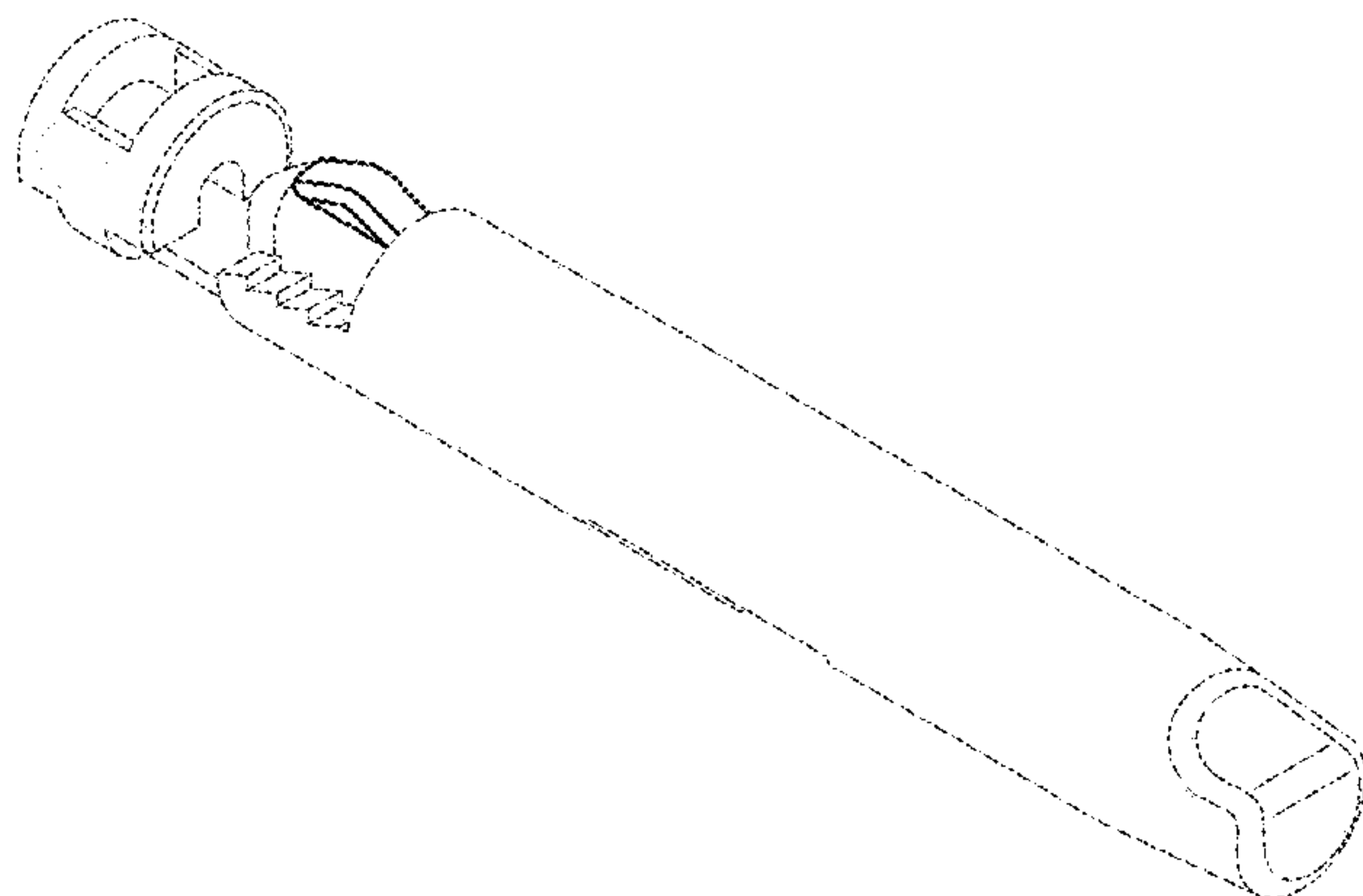
(57) **CLAIM**

We claim, the ornamental design for a detonator module with a friction lock structure, as shown and described.

DESCRIPTION

FIG. 1 is a perspective view of a detonator module with a friction lock structure according to the new design; FIG. 2 is a top-plan view of the detonator module with a friction lock structure of FIG. 1; FIG. 3 is a view from a first side of the detonator module with a friction lock structure of FIG. 1; FIG. 4 is a view from an opposing second side of the detonator module with a friction lock structure of FIG. 1; FIG. 5 is a view of a first end of the detonator module with a friction lock structure of FIG. 1; and, FIG. 6 is a view from an opposing second end of the detonator module with a friction lock structure of FIG. 1. The broken-lines shown in the drawings represent portions of the article that form no part of the claimed design.

1 Claim, 2 Drawing Sheets



(56)

References Cited

U.S. PATENT DOCUMENTS

2004/0200372 A1* 10/2004 Gladden F42B 3/10
102/275
2005/0183610 A1* 8/2005 Barton C06C 7/00
102/275.11
2019/0025018 A1* 1/2019 Frank F42D 1/20

* cited by examiner

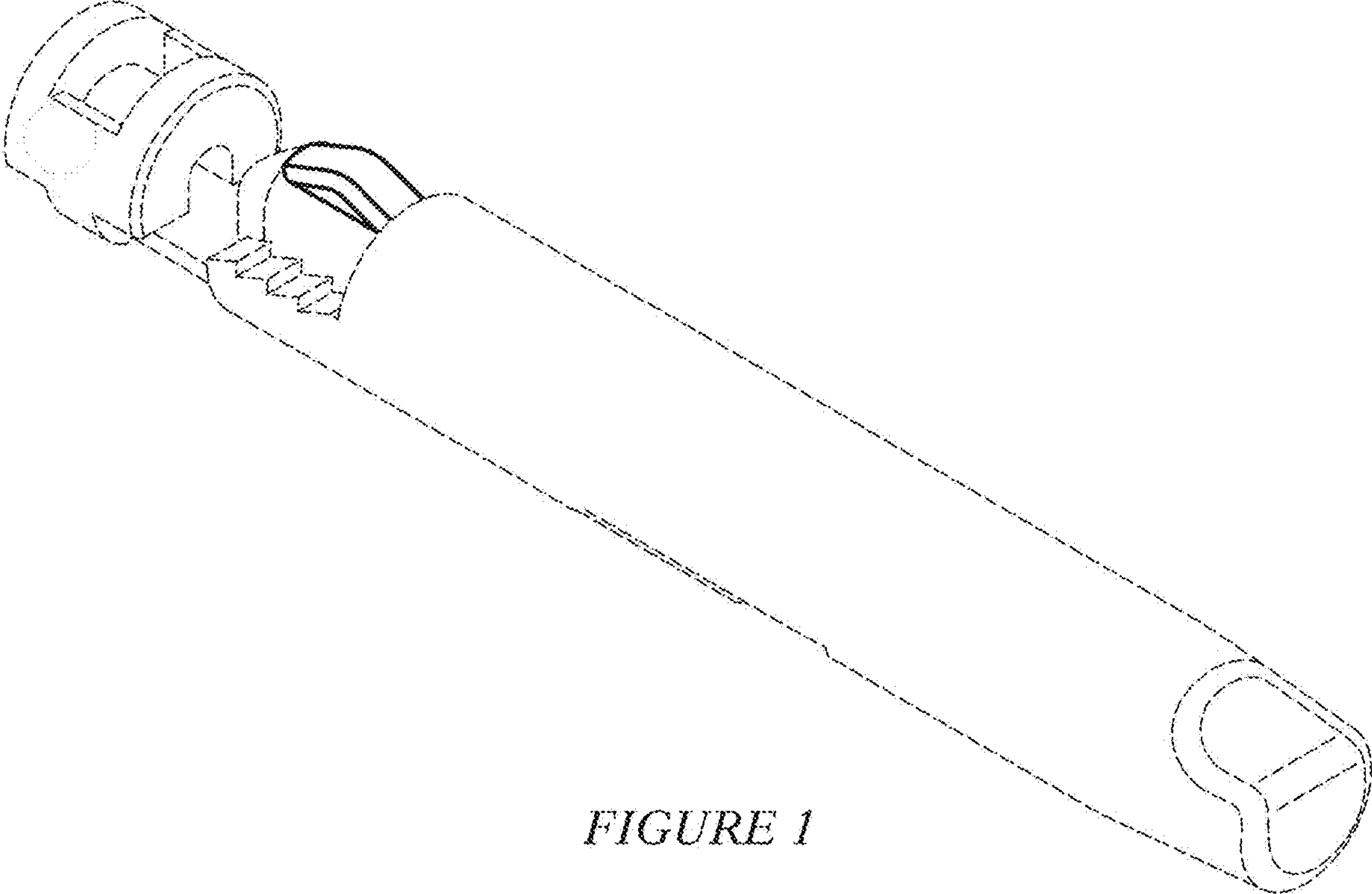


FIGURE 1



FIGURE 2

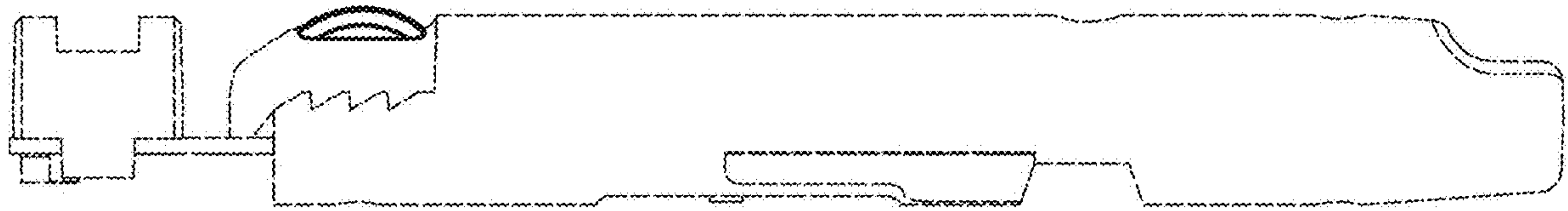


FIGURE 3

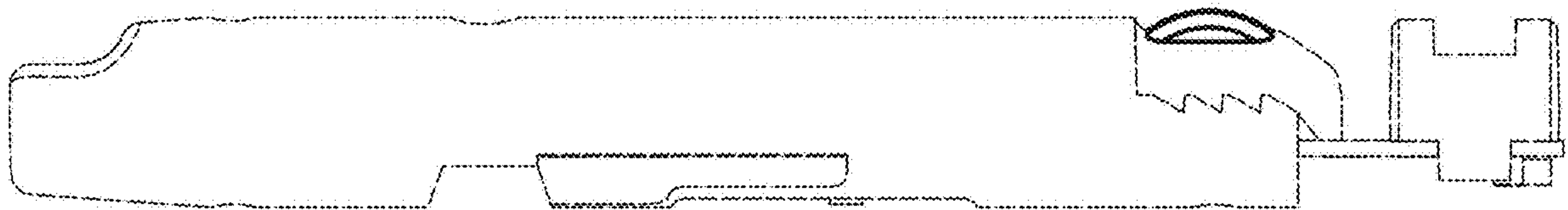


FIGURE 4

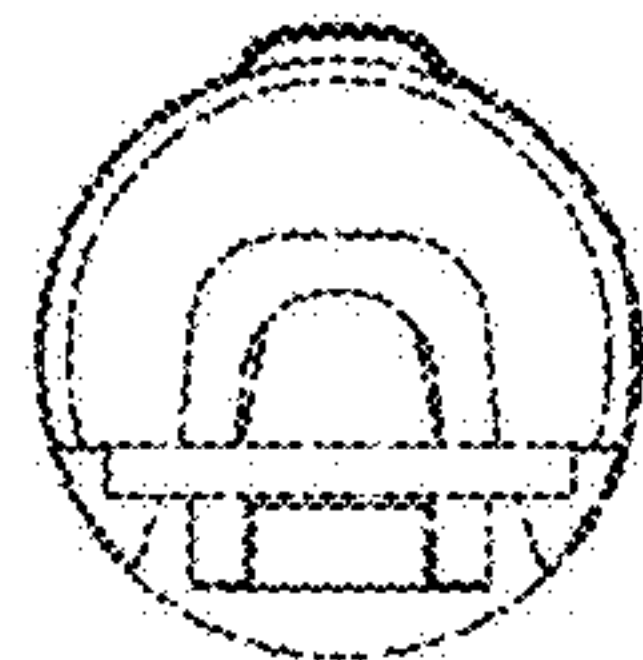


FIGURE 5

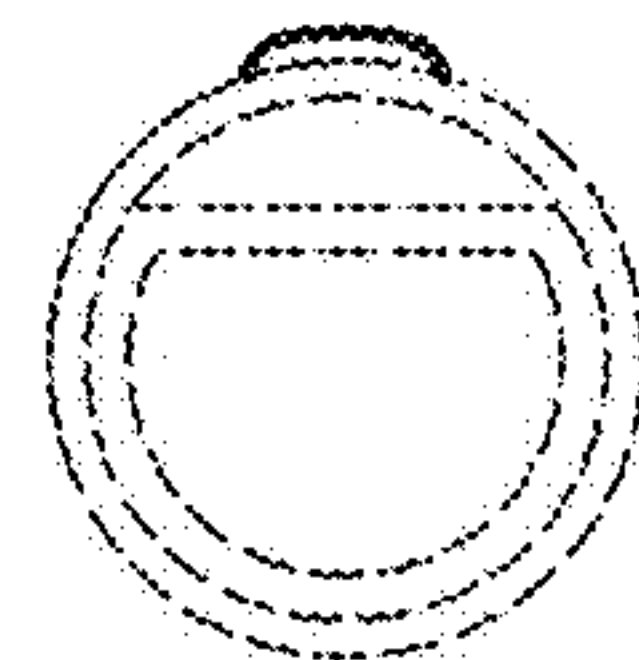


FIGURE 6