



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

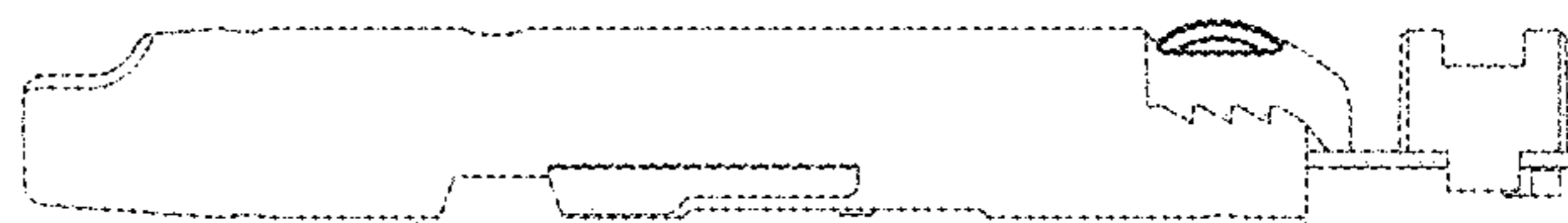
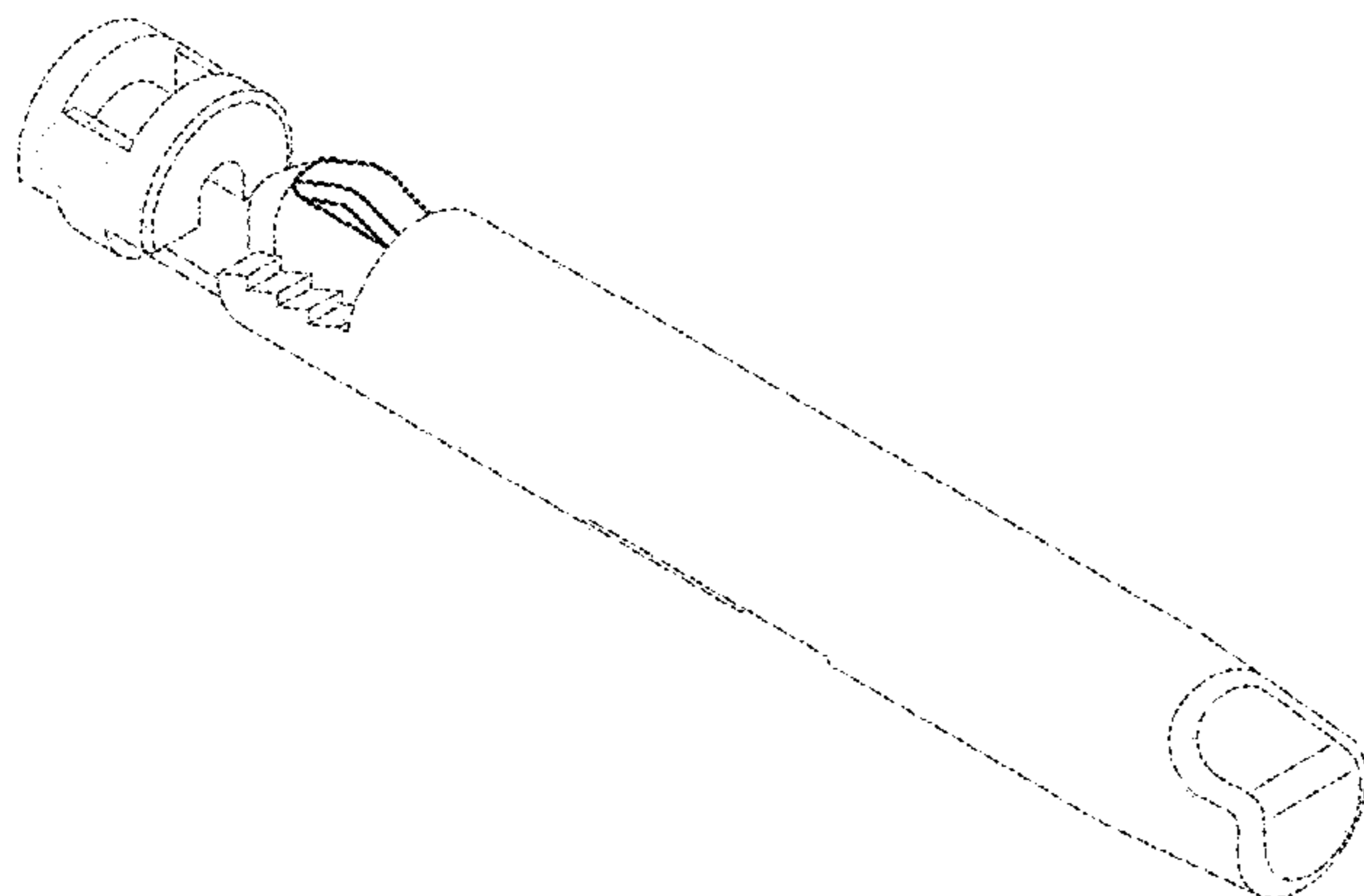
(57) **CLAIM**

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**



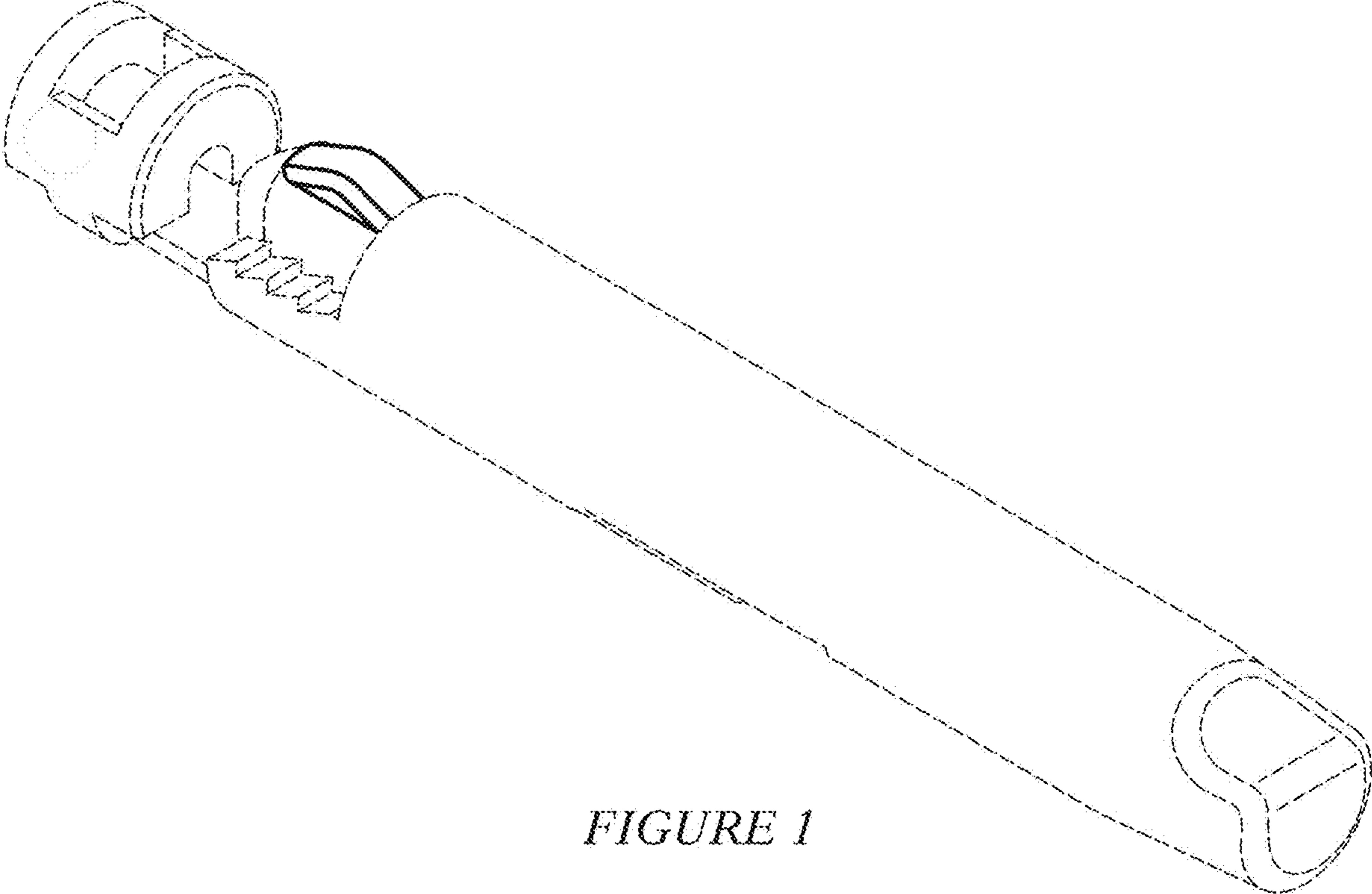
(56)

**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

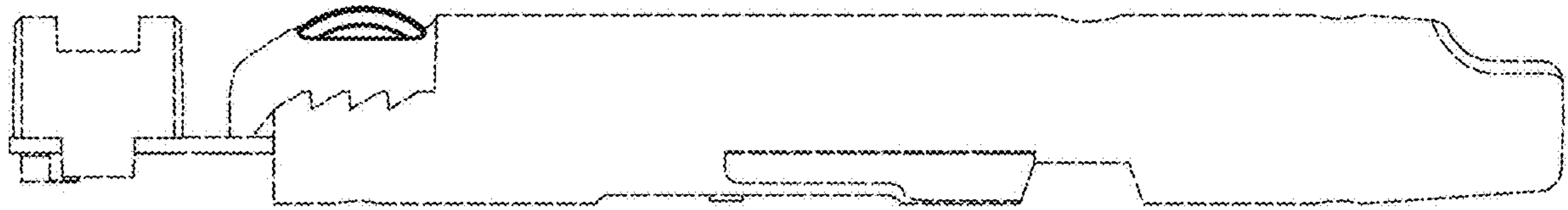


FIGURE 3

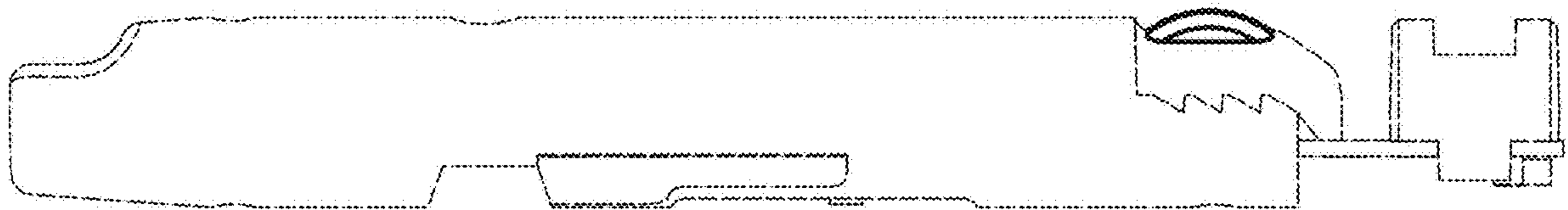


FIGURE 4

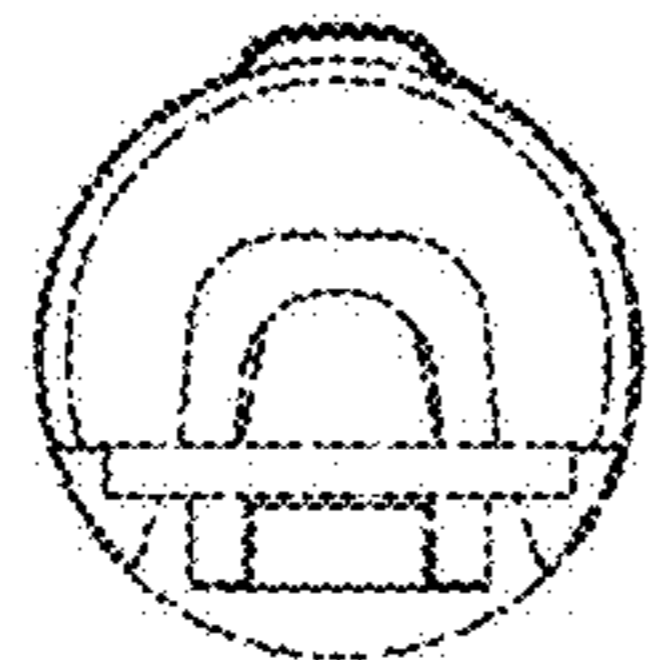


FIGURE 5

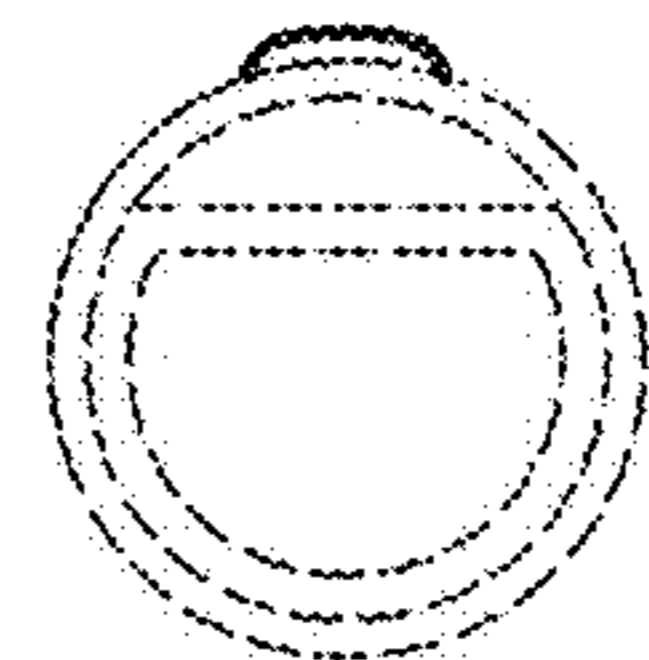


FIGURE 6