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

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(54) **INNER NOZZLE FOR PLASMA TORCH**

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(\*\*) Term: **14 Years**

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(51) **LOC (9) Cl.** ..... **15-09**

(52) **U.S. Cl.** ..... **D15/144**

(58) **Field of Classification Search** ..... D15/144-144.2;  
219/121.4-121.5, 121.52, 121.57  
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,954,688	A *	9/1990	Winterfeldt	.....	219/121.5
5,747,767	A *	5/1998	Severance et al.	.....	219/121.5
5,841,095	A *	11/1998	Lu et al.	.....	219/121.48
5,856,647	A *	1/1999	Luo	.....	219/121.5
6,096,992	A *	8/2000	Severance, Jr.	.....	219/121.5
6,191,380	B1 *	2/2001	Thomas	.....	219/121.48
6,914,211	B2 *	7/2005	Brasseur et al.	.....	219/121.5
6,946,616	B2 *	9/2005	Kinerson et al.	.....	219/121.49
D511,663	S *	11/2005	Hewett et al.	.....	D8/30
D519,137	S *	4/2006	Furujo et al.	.....	D15/144
D520,037	S *	5/2006	Furujo et al.	.....	D15/144

D535,674	S *	1/2007	Conway et al.	.....	D15/144
D582,950	S *	12/2008	Yamaguchi et al.	.....	D15/144
D582,951	S *	12/2008	Yamaguchi et al.	.....	D15/144
7,598,473	B2 *	10/2009	Cook et al.	.....	219/121.5
7,737,383	B2 *	6/2010	Hussary et al.	.....	219/121.5
2005/0082263	A1 *	4/2005	Koike et al.	.....	219/121.49
2010/0264120	A1 *	10/2010	Reinke et al.	.....	219/121.5

\* cited by examiner

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(57) **CLAIM**

The ornamental design for an inner nozzle for plasma torch, as shown and described.

**DESCRIPTION**

FIG. 1 is a side view of an inner nozzle for plasma torch showing our design.

FIG. 2 is a front view thereof;

FIG. 3 is a rear view thereof;

FIG. 4 is a cross-sectional view taken along line 4-4 of FIG. 2;

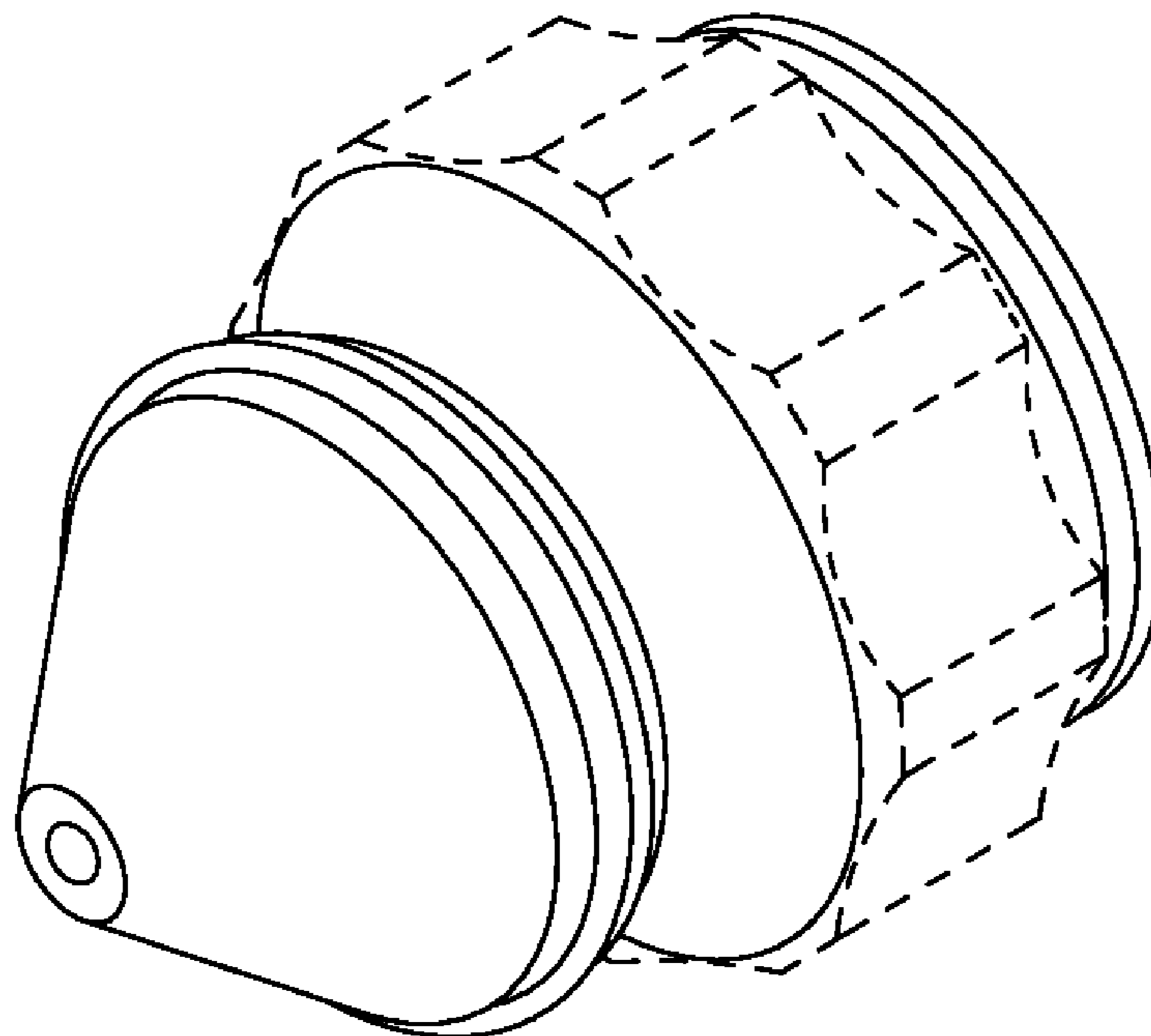
FIG. 5 is a perspective view thereof; and,

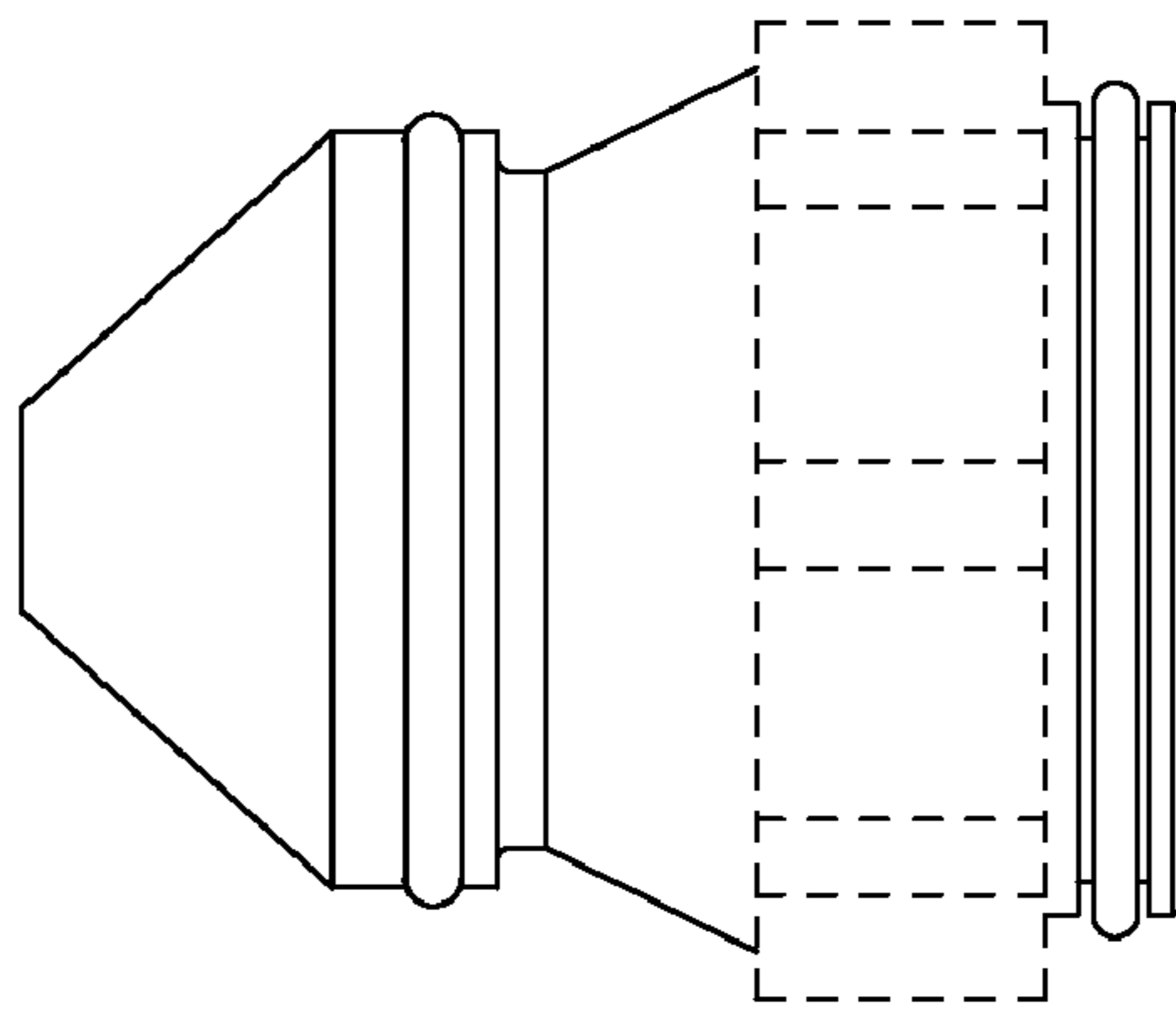
FIG. 6 is an exploded view of a plasma torch, including an outer nozzle therefor, inner cap, electrode, plasma torch body, and the inner nozzle shown in broken lines for environment only, illustrating the position of the inner nozzle relative to same forming no part of the claimed design.

In particular, the claimed article is an inner nozzle used with a plasma torch for high temperature cutting applications, such as cutting of metals.

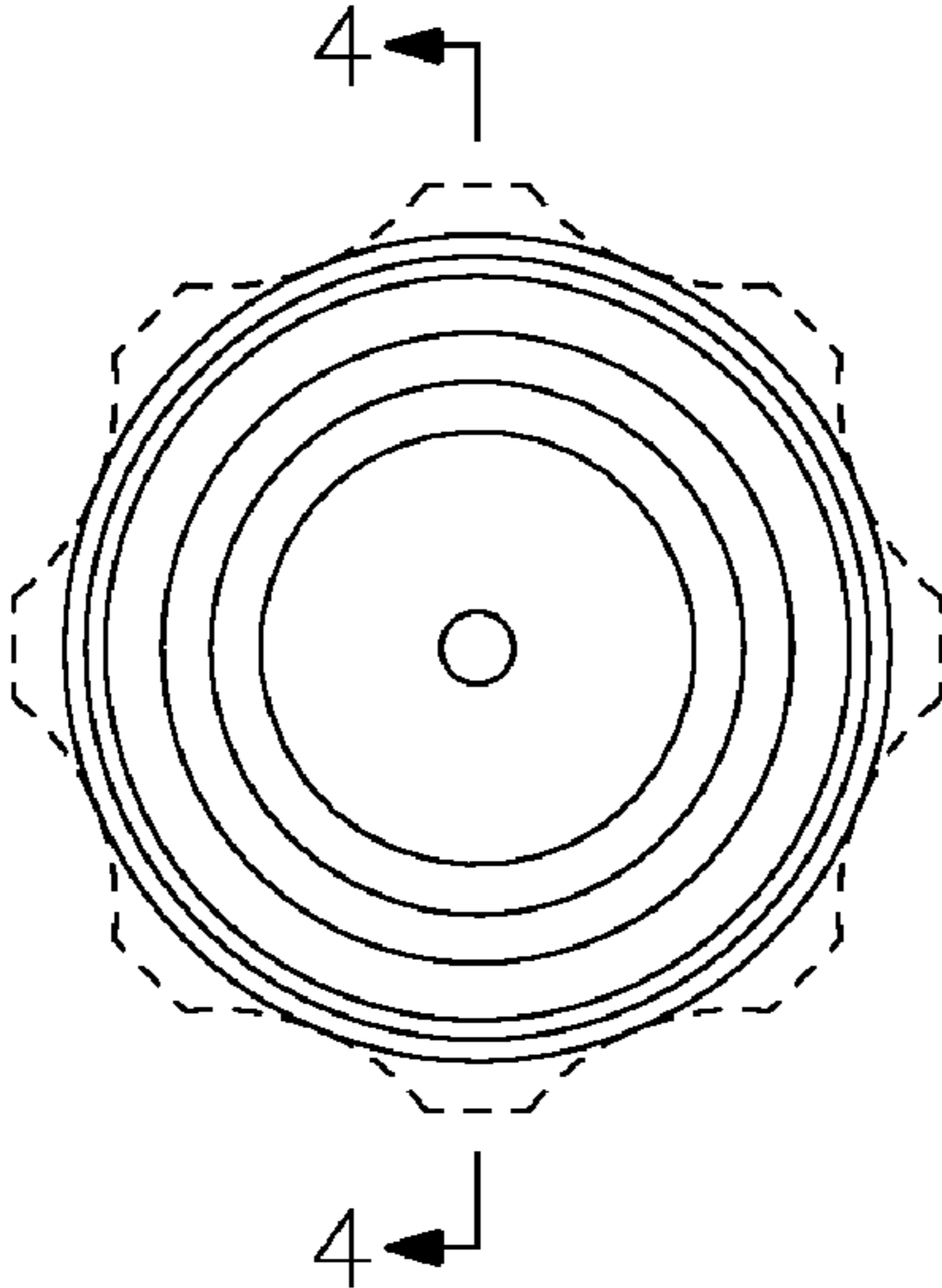
The broken lines in the drawings depict unclaimed environmental subject matter.

**1 Claim, 6 Drawing Sheets**

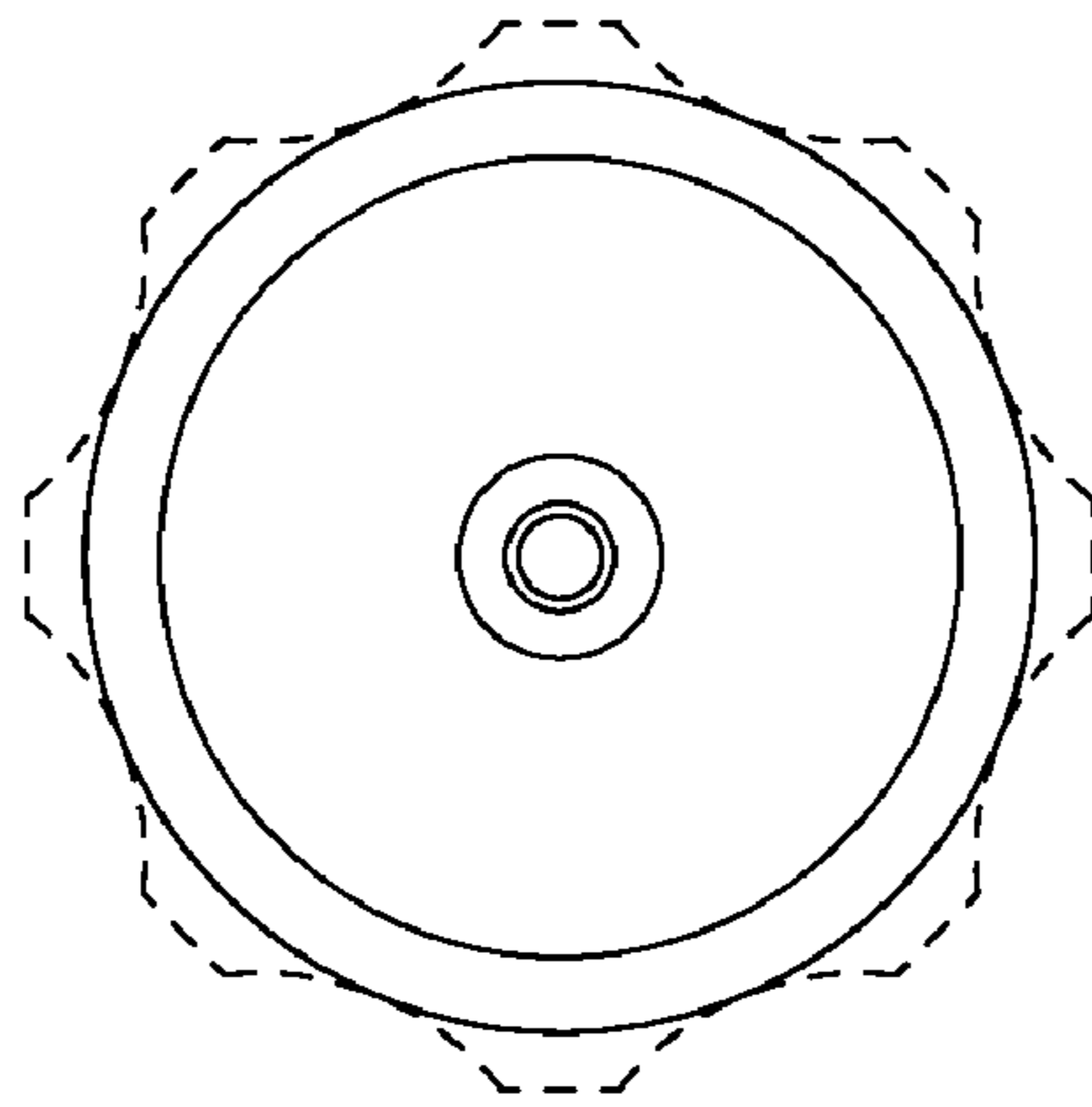




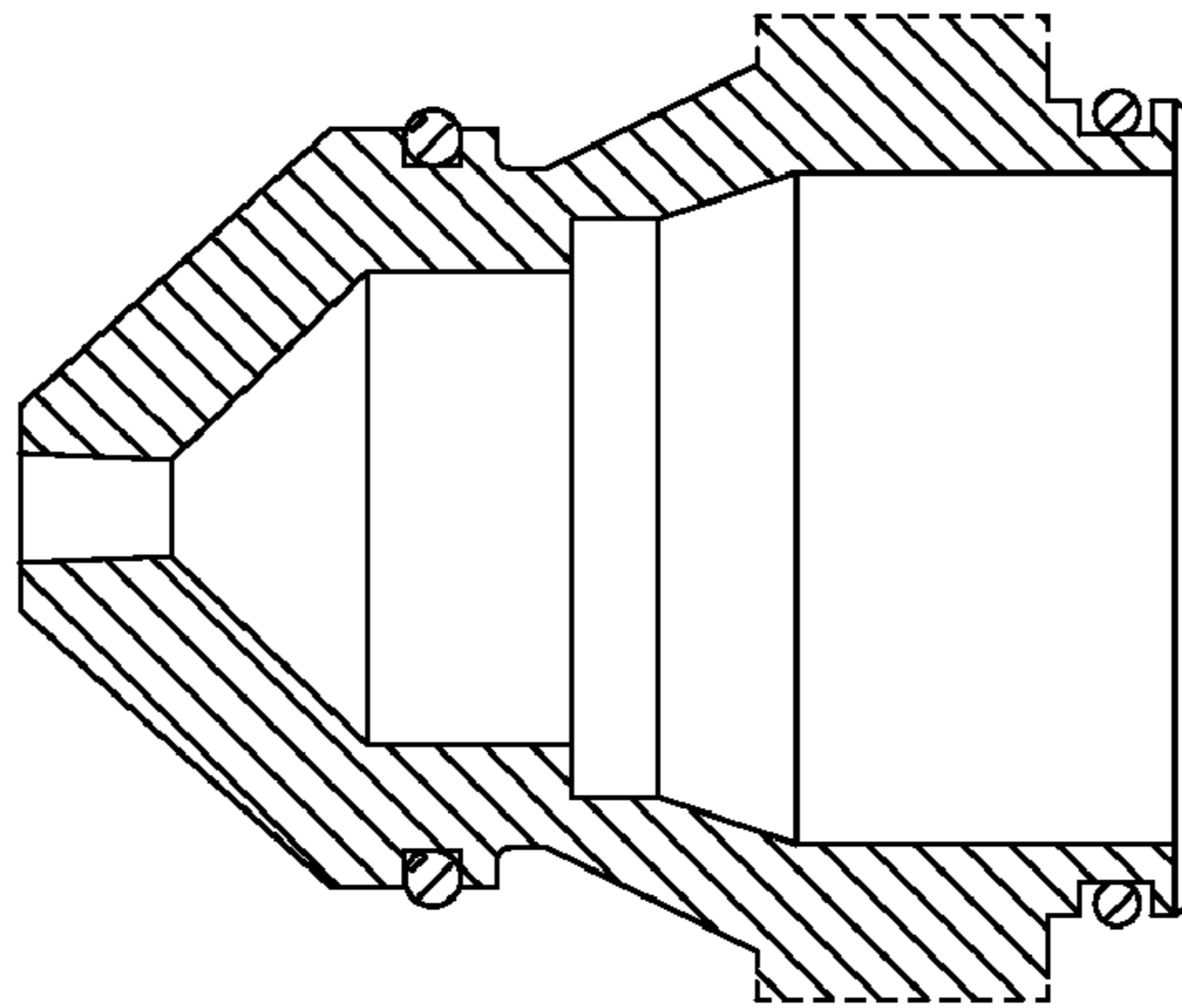
**FIG. 1**



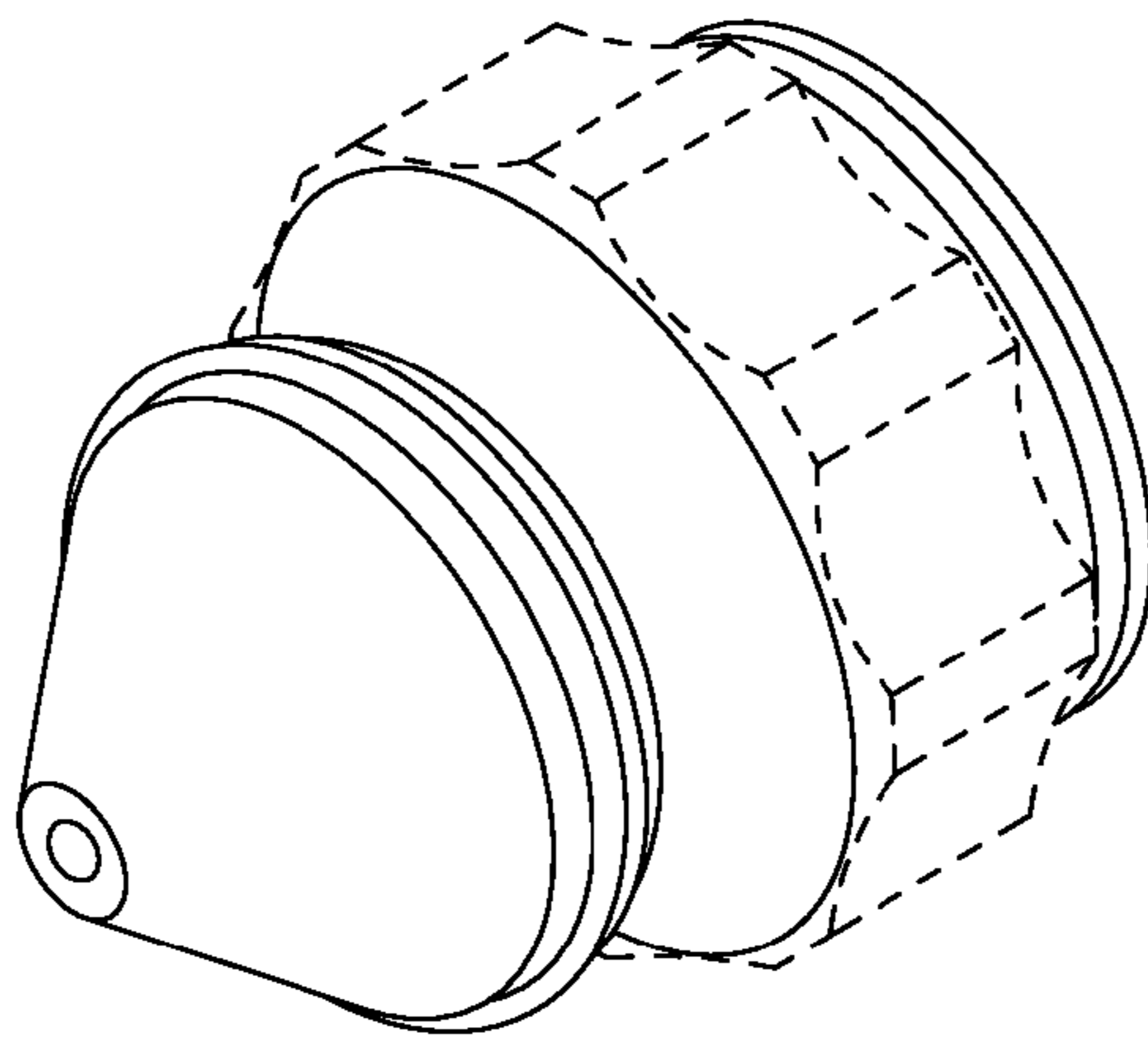
**FIG. 2**



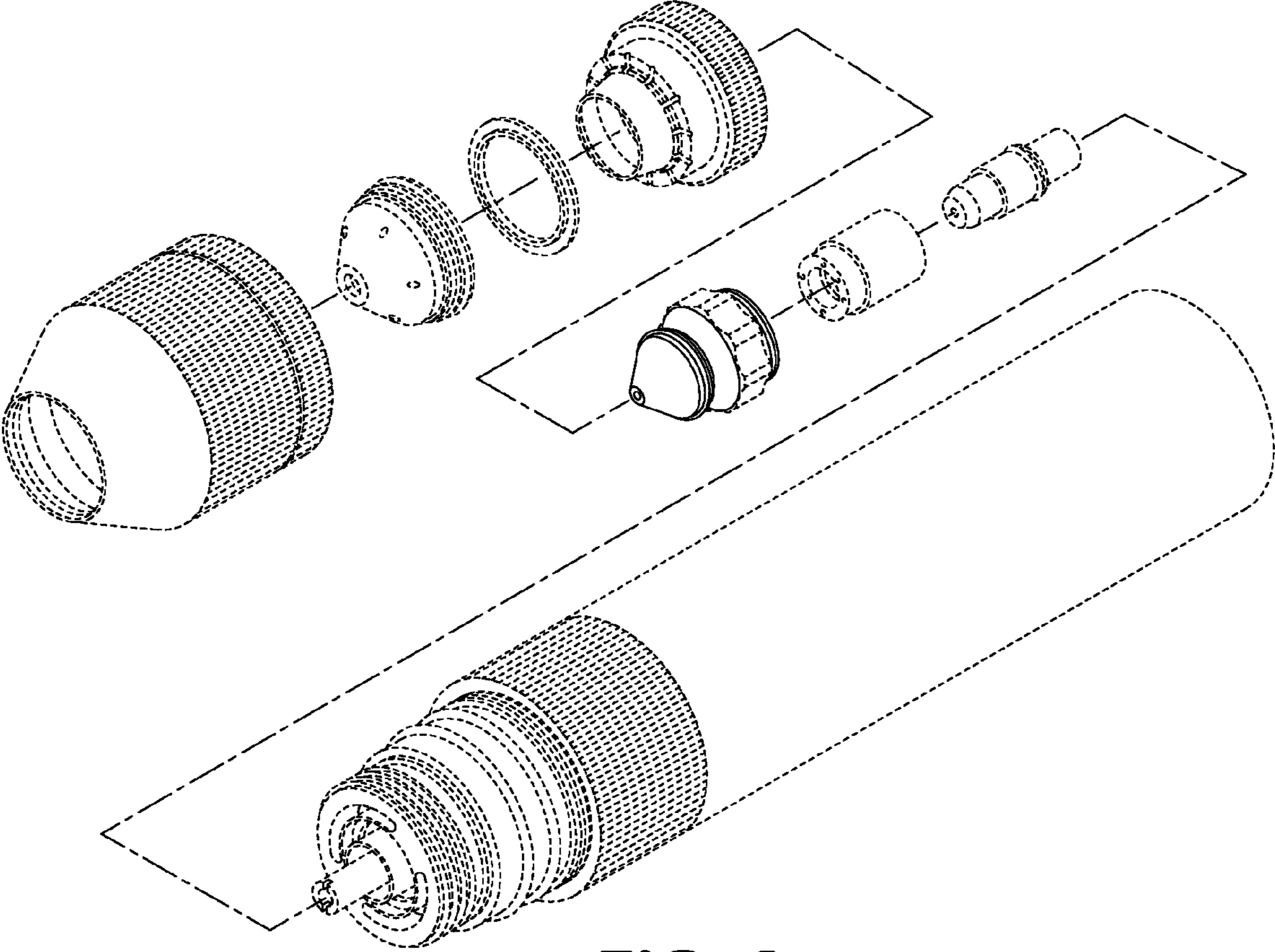
**FIG. 3**



**FIG. 4**



**FIG. 5**



**FIG. 6**