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(12) **United States Design Patent** (10) **Patent No.:** **US D798,920 S**  
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(54) **CUTTING TOOL ASSEMBLY**

(71) Applicant: **US SYNTHETIC CORPORATION,**  
Orem, UT (US)

(72) Inventor: **Gary Eugene Weaver,** Conroe, TX  
(US)

(73) Assignee: **US SYNTHETIC CORPORATION,**  
Orem, UT (US)

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CPC ..... B23D 61/06; B28D 1/122; B28D 1/186;  
B28D 1/188; E01C 23/088; E01C 23/127;  
E21C 35/183; E21C 35/197; E21C  
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See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

2,665,893 A 1/1954 Ball  
3,671,075 A 6/1972 Bland et al.  
3,695,726 A \* 10/1972 Krekeler ..... E21C 35/197  
299/106

3,751,114 A 8/1973 Davis  
3,785,021 A 1/1974 Norgren et al.  
D238,243 S \* 12/1975 Polivka ..... D8/14.1  
4,006,936 A 2/1977 Crabiel  
4,083,644 A 4/1978 Friedline et al.  
4,193,638 A 3/1980 Heckenhauer  
4,299,424 A \* 11/1981 LeBegue ..... E21C 35/183  
299/103

4,335,921 A 6/1982 Swisher, Jr. et al.  
4,340,325 A 7/1982 Gowanlock et al.  
D270,059 S 8/1983 Wilkins  
D271,497 S 11/1983 Green

4,484,644 A 11/1984 Cook et al.  
4,580,930 A 4/1986 Zinner et al.  
4,605,343 A 8/1986 Hibbs, Jr. et al.  
4,655,508 A 4/1987 Tomlinson  
4,678,237 A 7/1987 Collin et al.  
4,679,858 A 7/1987 Tank  
D296,107 S 6/1988 Andersson  
4,784,023 A 11/1988 Dennis et al.  
4,787,466 A 11/1988 Tomlinson et al.  
4,836,178 A 6/1989 Tomlinson  
4,850,649 A \* 7/1989 Beach ..... E21C 35/197  
299/107

4,880,278 A 11/1989 Tomlinson  
4,902,073 A 2/1990 Tomlinson et al.  
D307,279 S 4/1990 Vincent  
D311,747 S 10/1990 Mihic  
5,007,685 A 4/1991 Beach et al.  
5,060,739 A 10/1991 Griffin et al.  
5,090,491 A 2/1992 Tibbitts et al.  
5,318,351 A \* 6/1994 Walker ..... B28D 1/188  
299/106

5,431,239 A 7/1995 Tibbitts et al.  
5,605,382 A \* 2/1997 Massa ..... E21C 35/1933  
299/107

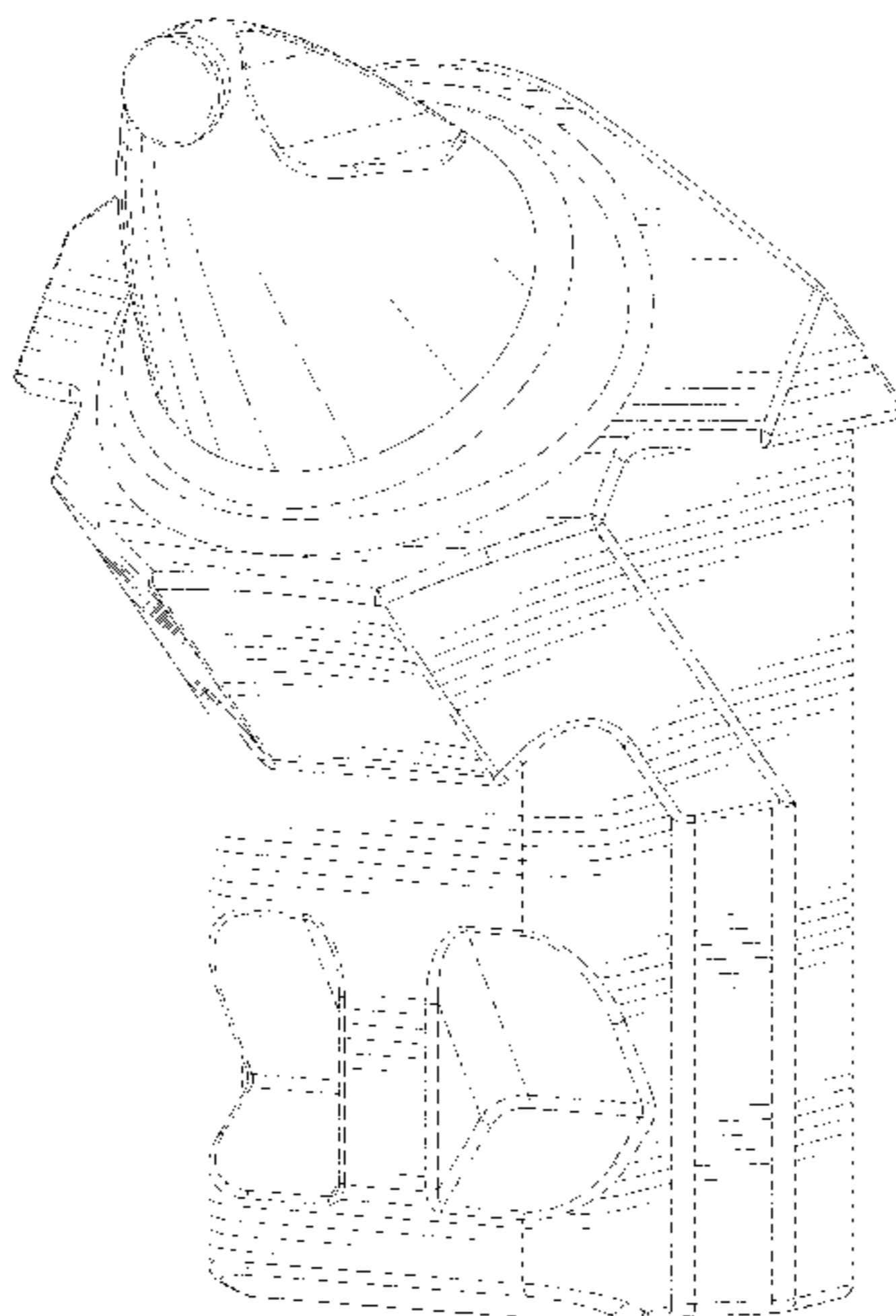
5,690,393 A \* 11/1997 Massa ..... E21C 35/197  
299/107

5,881,830 A 3/1999 Cooley  
6,089,123 A 7/2000 Chow et al.  
6,213,931 B1 4/2001 Twardowski et al.  
6,283,844 B1 9/2001 Tank  
6,485,104 B1 \* 11/2002 Keller ..... E21C 35/187  
175/424

6,779,850 B1 \* 8/2004 Schibeci ..... B28D 1/188  
299/102

7,108,212 B2 9/2006 Latham  
D558,802 S 1/2008 Nicholas  
D616,003 S 5/2010 Ueda et al.  
7,866,418 B2 1/2011 Bertagnolli et al.  
7,998,573 B2 8/2011 Qian et al.  
8,034,136 B2 10/2011 Sani  
8,047,260 B2 11/2011 Uno et al.  
8,079,785 B2 12/2011 Nicholas  
8,236,074 B1 8/2012 Bertagnolli et al.  
D666,640 S 9/2012 Cox et al.  
8,672,415 B2 3/2014 Neilson et al.  
8,727,044 B2 5/2014 Qian et al.  
8,789,894 B2 7/2014 Claesson et al.  
9,017,438 B1 4/2015 Miess et al.  
9,027,675 B1 5/2015 Jones et al.  
9,028,008 B1 \* 5/2015 Bookhamer ..... E21C 35/197  
299/104

9,238,893 B2 1/2016 Latham et al.  
9,272,392 B2 3/2016 Mukhopadhyay et al.



9,272,814	B2	3/2016	Carver et al.	
9,303,511	B2	4/2016	George et al.	
9,382,794	B2	7/2016	Latham et al.	
9,434,091	B2	9/2016	Burton et al.	
9,593,577	B2 *	3/2017	Lachmann	E21C 35/183
2002/0153175	A1 *	10/2002	Ojanen	E21C 35/197 299/107
2005/0082898	A1 *	4/2005	Keller	E21C 35/187 299/81.1
2006/0033379	A1 *	2/2006	Frear	E21C 35/197 299/107
2006/0087169	A1	4/2006	Hesse et al.	
2007/0090679	A1 *	4/2007	Ojanen	E21C 35/183 299/106
2008/0030065	A1 *	2/2008	Frear	E21C 35/197 299/104
2008/0035383	A1	2/2008	Hall et al.	
2008/0036280	A1	2/2008	Hall et al.	
2008/0202819	A1	8/2008	Fader	
2008/0250724	A1	10/2008	Hall et al.	
2008/0309146	A1	12/2008	Hall et al.	
2009/0256413	A1	10/2009	Majagi	
2010/0052406	A1 *	3/2010	Beach	E21C 35/197 299/104
2010/0194176	A1	8/2010	Lucek et al.	
2010/0244545	A1	9/2010	Hall et al.	
2011/0132667	A1	6/2011	Lai Sang et al.	
2011/0233987	A1 *	9/2011	Maushart	E02F 9/2825 299/110
2012/0138370	A1	6/2012	Mukhopadhyay	
2012/0175939	A1 *	7/2012	O'Neill	B02C 13/2804 299/81.3
2013/0052481	A1	2/2013	Konyashin	
2013/0092452	A1	4/2013	Mukhopadhyay et al.	
2013/0322975	A1 *	12/2013	Tan	B23P 11/00 409/80
2014/0110991	A1	4/2014	Sollami	
2014/0175853	A1	6/2014	Warren	
2014/0225418	A1	8/2014	Lachmann et al.	
2014/0240634	A1	8/2014	Matsuzaki	
2014/0339879	A1	11/2014	Burton et al.	
2014/0339883	A1	11/2014	Burton et al.	
2015/0176408	A1	6/2015	Latham	
2015/0176409	A1	6/2015	Latham	
2015/0240635	A1	8/2015	Lachmann et al.	
2015/0314483	A1	11/2015	Miess et al.	
2016/0102550	A1 *	4/2016	Paros	E21C 35/197 299/113
2016/0273356	A1 *	9/2016	Ojanen	E21C 35/197
2016/0332269	A1 *	11/2016	Provins	E21C 25/10

FOREIGN PATENT DOCUMENTS

AU	2013101370	11/2013
CN	102108866	6/2011
CN	202073564	12/2011
CN	203081445	7/2013
GB	1481278	7/1977
GB	2170843	8/1986
GB	2177144	1/1987
GB	2193740	2/1988
WO	WO 2010/083015	7/2010
WO	WO 2012/130870	10/2012
WO	2016/071001	5/2016

OTHER PUBLICATIONS

Advisory Action received for U.S. Appl. No. 14/275,574 mailed Mar. 9, 2017.  
 Final Office Action for U.S. Appl. No. 14/266,437 mailed Dec. 12, 2016.  
 Final Office Action for U.S. Appl. No. 14/275,574 mailed Nov. 29, 2016.  
 Supplemental Notice of Allowance for U.S. Appl. No. 14/273,360 mailed Aug. 10, 2016.  
 U.S. Appl. No. 13/070,636, filed Mar. 24, 2011.

U.S. Appl. No. 13/765,027, filed Feb. 12, 2013.  
 U.S. Appl. No. 13/795,027, filed Mar. 12, 2013.  
 U.S. Appl. No. 14/273,360, filed Mar. 7, 2016.  
 U.S. Appl. No. 61/824,022, filed May 16, 2013.  
 U.S. Appl. No. 12/961,787, filed Dec. 7, 2010, Mukhopadhyay et al.  
 U.S. Appl. No. 13/027,954, filed Feb. 15, 2011, Miess et al.  
 U.S. Appl. No. 13/070,636, filed Mar. 24, 2011, Qian et al.  
 U.S. Appl. No. 13/100,388, filed May 4, 2011, Jones et al.  
 U.S. Appl. No. 13/275,372, filed Oct. 18, 2011, Mukhopadhyay et al.  
 U.S. Appl. No. 13/648,913, filed Oct. 10, 2012, Mukhopadhyay et al.  
 U.S. Appl. No. 13/765,027, filed Feb. 12, 2013, Carver, et al.  
 U.S. Appl. No. 61/824,022, filed May 16, 2013, Burton et al.  
 U.S. Appl. No. 61/824,007, filed May 16, 2013, Burton et al.  
 U.S. Appl. No. 62/030,525, filed Jul. 29, 2014, Myers et al.  
 U.S. Appl. No. 14/811,699, filed Jul. 28, 2015, Myers et al.  
 U.S. Appl. No. 62/232,732, filed Sep. 25, 2015, Weaver et al.  
 U.S. Appl. No. 29/540,597, filed Sep. 25, 2015, Weaver.  
 International Search Report and Written Opinion from International Application No. PCT/US2014/037708 mailed Oct. 30, 2014.  
 International Search Report and Written Opinion from International Application No. PCT/US2014/037381 mailed Oct. 30, 2014.  
 International Search Report and Written Opinion from International Application No. PCT/US2015/027830 mailed Jul. 14, 2015.  
 Roepke et al.; "Drag Bit Cutting Characteristics Using Sintered Diamond Inserts" Report of Investigations 8802; Bureau of Mines Report of Investigations/ 1983; (1983) 35 pages.  
 U.S. Appl. No. 14/273,360, filed Jun. 12, 2015, Office Action.  
 U.S. Appl. No. 14/273,360, filed Oct. 22, 2015, Office Action.  
 U.S. Appl. No. 14/273,360, filed Mar. 7, 2016, Office Action.  
 U.S. Appl. No. 14/273,360, filed May 18, 2016, Notice of Allowance.  
 U.S. Appl. No. 14/273,360, filed Aug. 17, 2016, Issue Notification.  
 U.S. Appl. No. 14/275,574, filed Apr. 6, 2016, Office Action.  
 U.S. Appl. No. 14/266,437, filed Jun. 9, 2016, Office Action.  
 Advisory Action received for U.S. Appl. No. 14/266,437 mailed Mar. 24, 2017.  
 Non-Final Office for U.S. Appl. No. 29/555,279 mailed Mar. 24, 2017.  
 Non-Final Office Action for U.S. Appl. No. 14/266,437 dated Apr. 21, 2017.  
 Non-Final Office Action received for U.S. Appl. No. 14/275,574 dated Apr. 7, 2017.  
 Notice of Allowance received for U.S. Appl. No. 29/555,269 dated Apr. 6, 2017.  
 Notice of Allowance received for U.S. Appl. No. 29/555,281 dated Apr. 12, 2017.  
 Supplemental Notice of Allowance for U.S. Appl. No. 29/555,269 dated Apr. 28, 2017.  
 U.S. Appl. No. 29/540,597, dated May 8, 2017, Notice of Allowance.  
 U.S. Appl. No. 29/540,597, dated Jun. 1, 2017, Notice of Allowance.  
 U.S. Appl. No. 29/555,281, dated Jun. 12, 2017, Notice of Allowance.

\* cited by examiner

Primary Examiner — Patricia Palasik  
 (74) Attorney, Agent, or Firm — Dorsey & Whitney LLP

(57) CLAIM

The ornamental design for a cutting tool assembly, as shown and described.

DESCRIPTION

FIG. 1 is a front, left perspective view of a cutting tool assembly according to a first embodiment;

FIG. 2 is a back, right perspective view of the cutting tool assembly shown in FIG. 1;

FIG. 3 is a right side elevational view of the cutting tool assembly shown in FIG. 1; the left side elevational view being a mirror image;

FIG. 4 is a front elevational view of the cutting tool assembly shown in FIG. 1;

FIG. 5 is a back elevational view of the cutting tool assembly shown in FIG. 1;

FIG. 6 is a top plan view of the cutting tool assembly shown in FIG. 1;

FIG. 7 is a bottom plan view of the cutting tool assembly shown in FIG. 1;

FIG. 8 is a front, left perspective view of a cutting tool assembly according to a second embodiment;

FIG. 9 is a back, right perspective view of the cutting tool assembly shown in FIG. 8;

FIG. 10 is a right elevational side view of the cutting tool assembly shown in FIG. 8; the left side elevational view being a mirror image;

FIG. 11 is a front elevational view of the cutting tool assembly shown in FIG. 8;

FIG. 12 is a back elevational view of the cutting tool assembly shown in FIG. 8;

FIG. 13 is a top plan view of the cutting tool assembly shown in FIG. 8;

FIG. 14 is a bottom plan view of the cutting tool assembly shown in FIG. 8.

FIG. 15 is an enlarged portion of the top plan view of the cutting tool assembly shown in FIG. 13 taken from region 15 thereof.

FIG. 16 is a back, right perspective view of the cutting tool assembly shown in FIGS. 1-7 secured in a base body for illustrating an environment in which the cutting tool assembly shown in FIGS. 1-7 can be used;

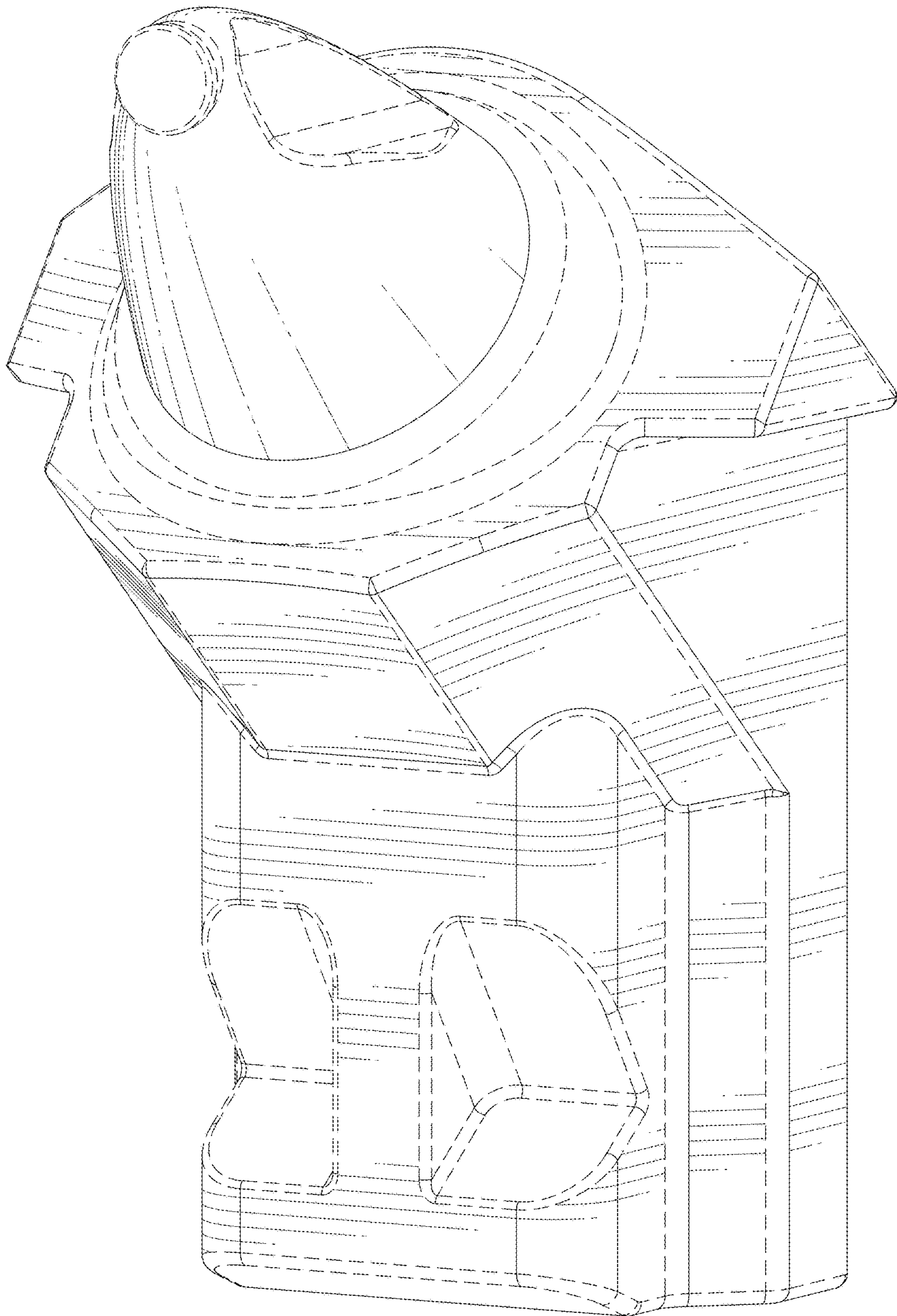
FIG. 17 is a front, left, perspective view of the cutting tool assembly secured of FIG. 16 secured in the base body;

FIG. 18 is a perspective view of the cutting tool assembly shown in FIGS. 1-7 secured to a drum body for illustrating an environment in which the cutting tool assembly shown in FIGS. 1-7 can be used; and,

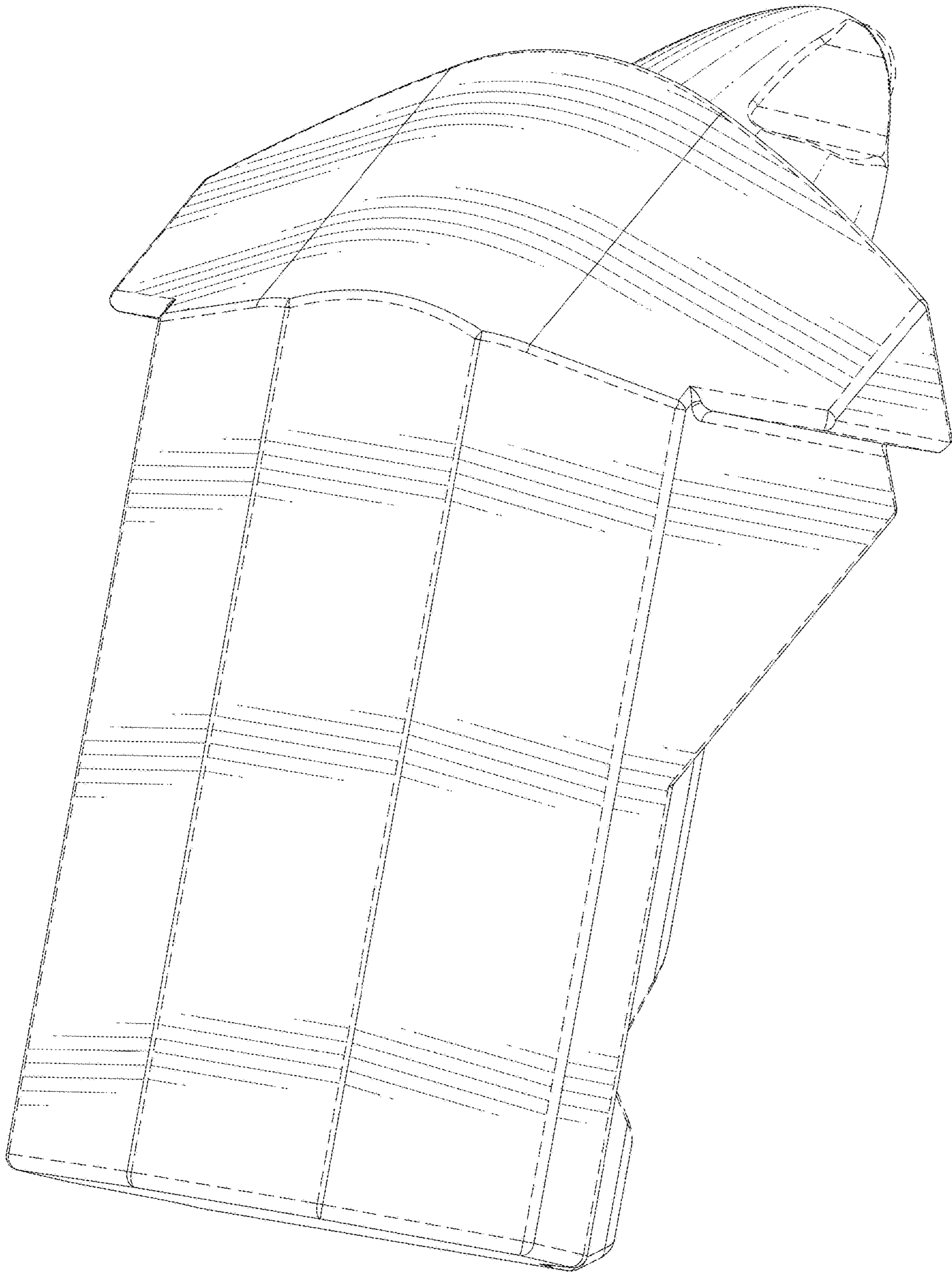
FIG. 19 is an enlarged portion of the cutting tool assembly and its environment shown in FIG. 18, taken from region 19 thereof.

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

**1 Claim, 9 Drawing Sheets**



**Fig. 1**



**Fig. 2**

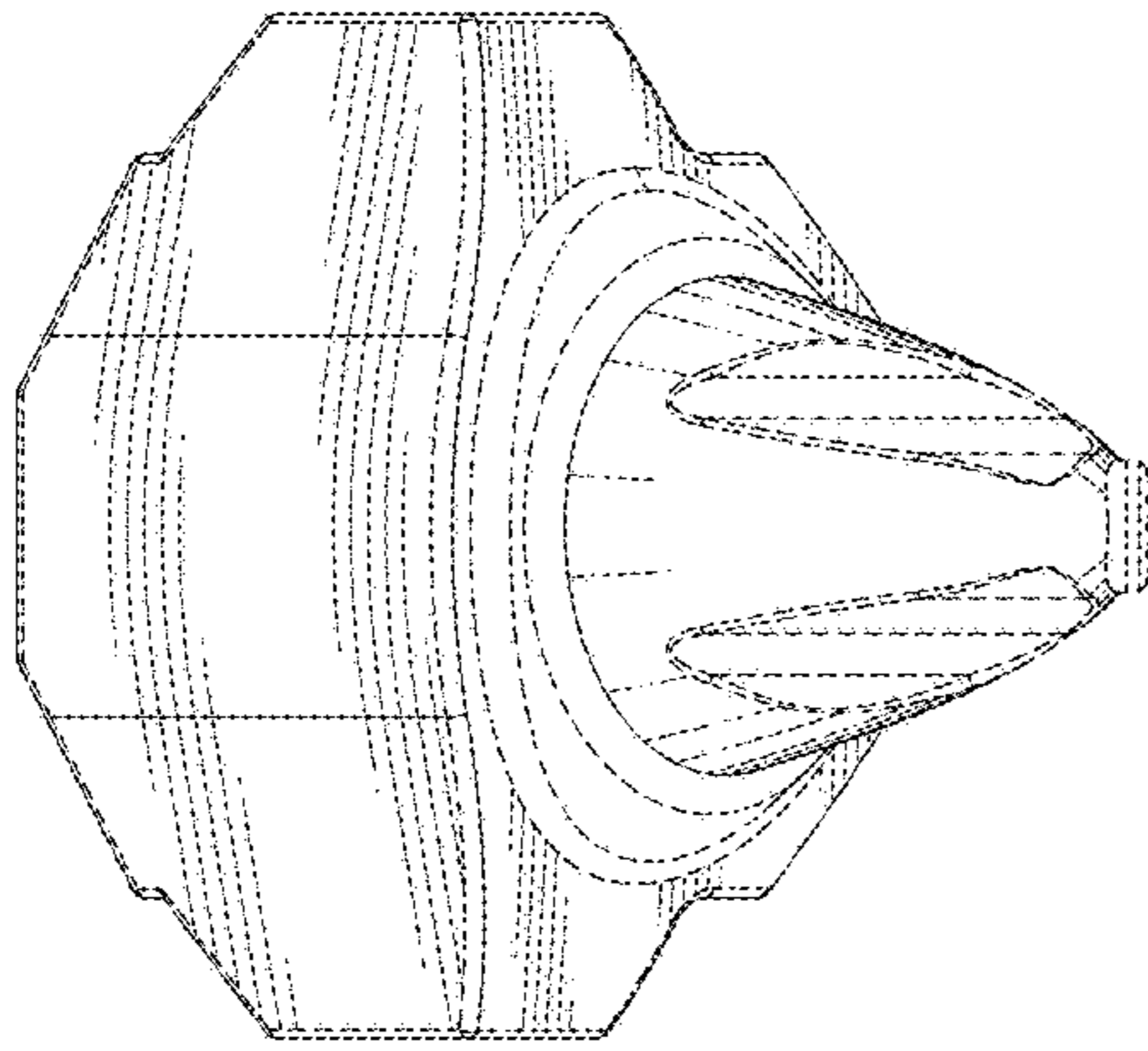


Fig. 6

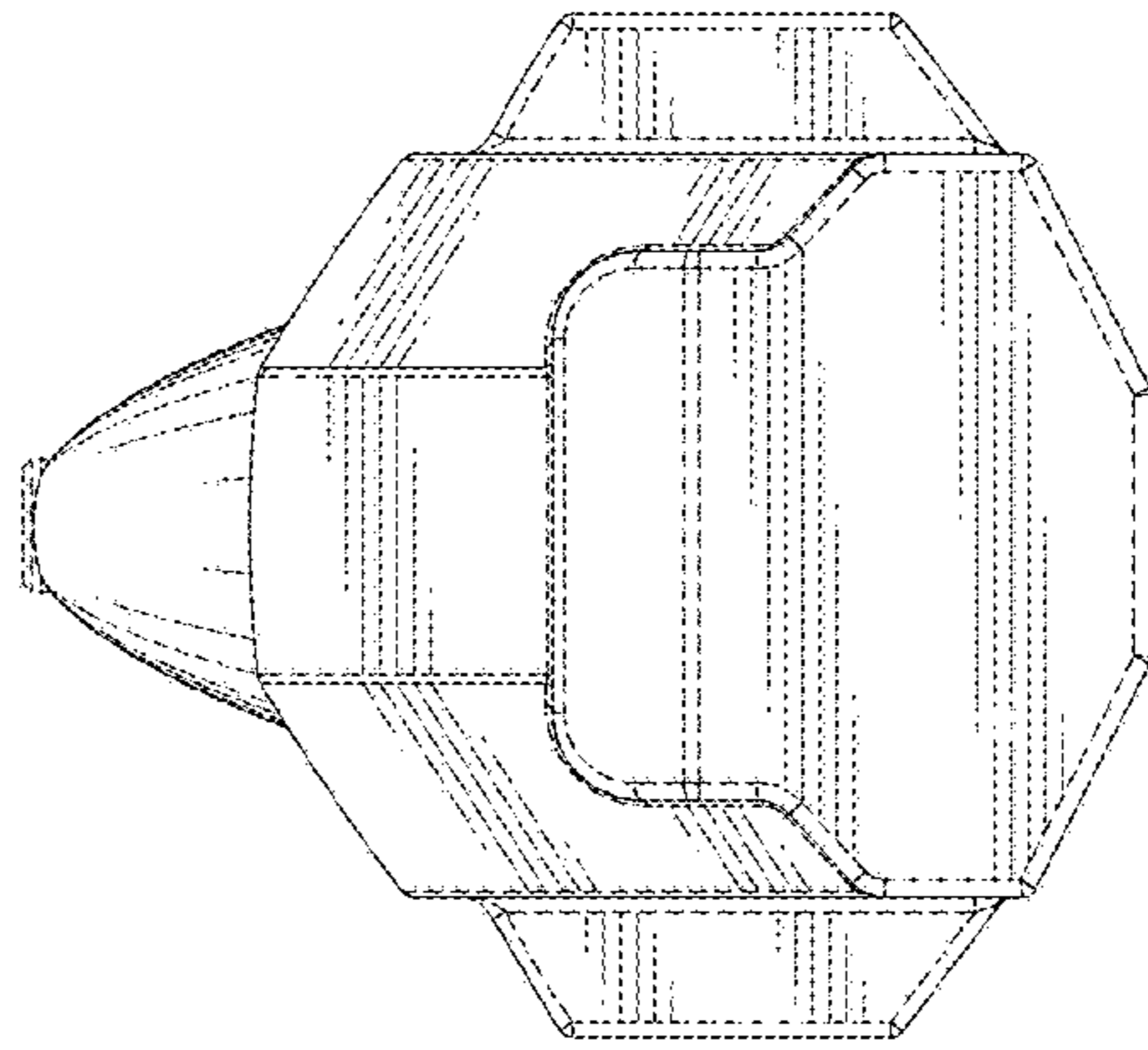


Fig. 7

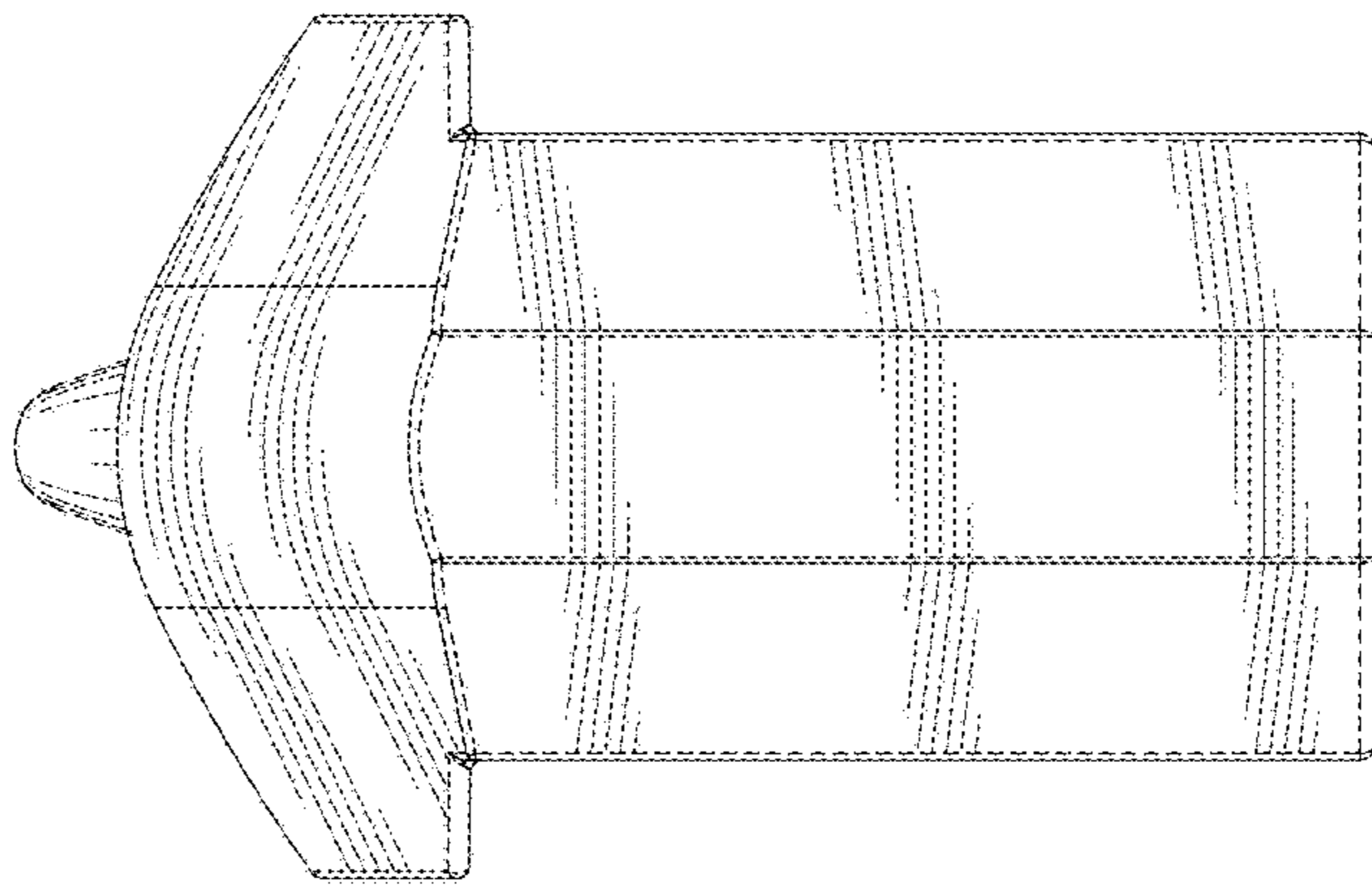


Fig. 5

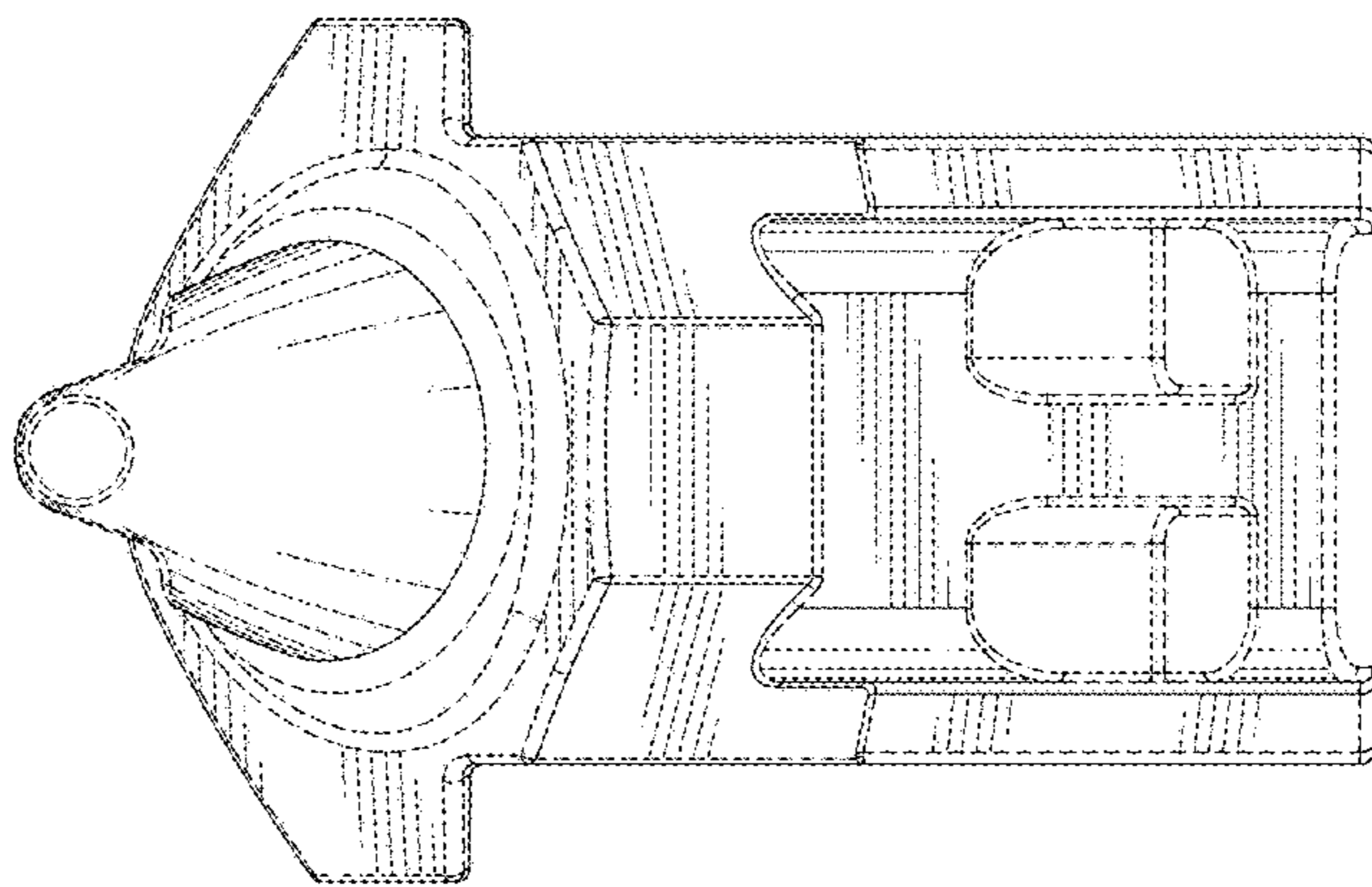


Fig. 4

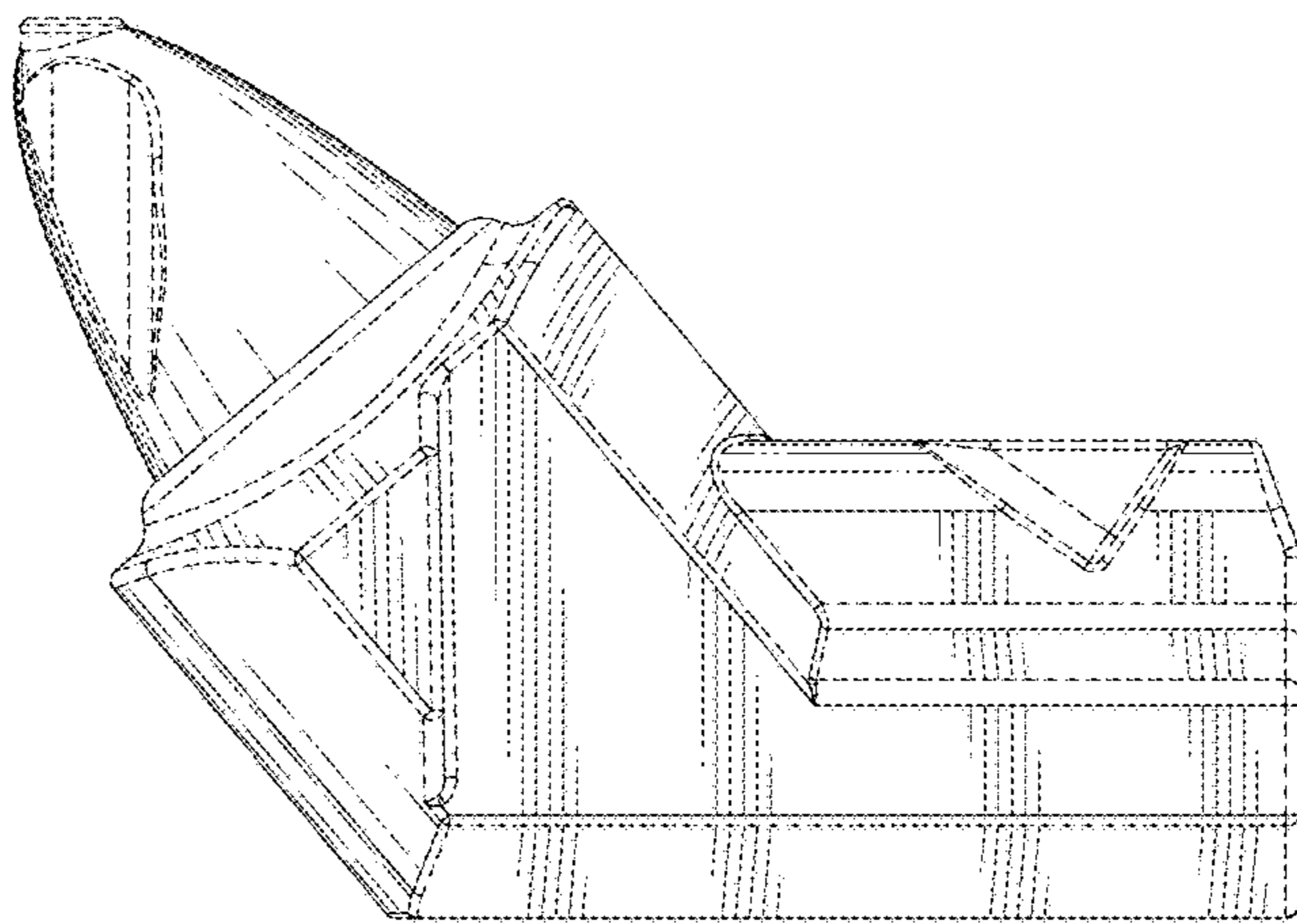
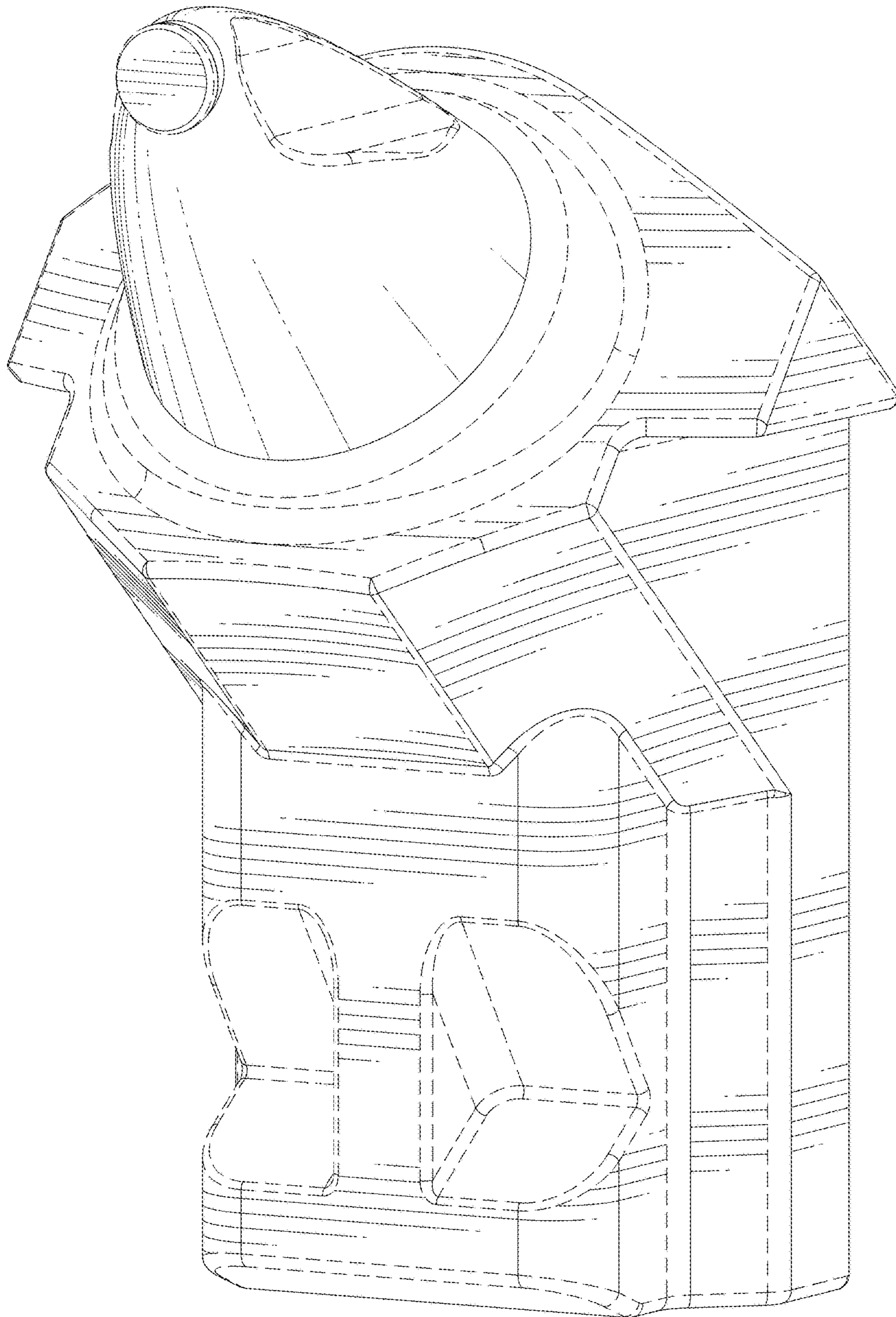
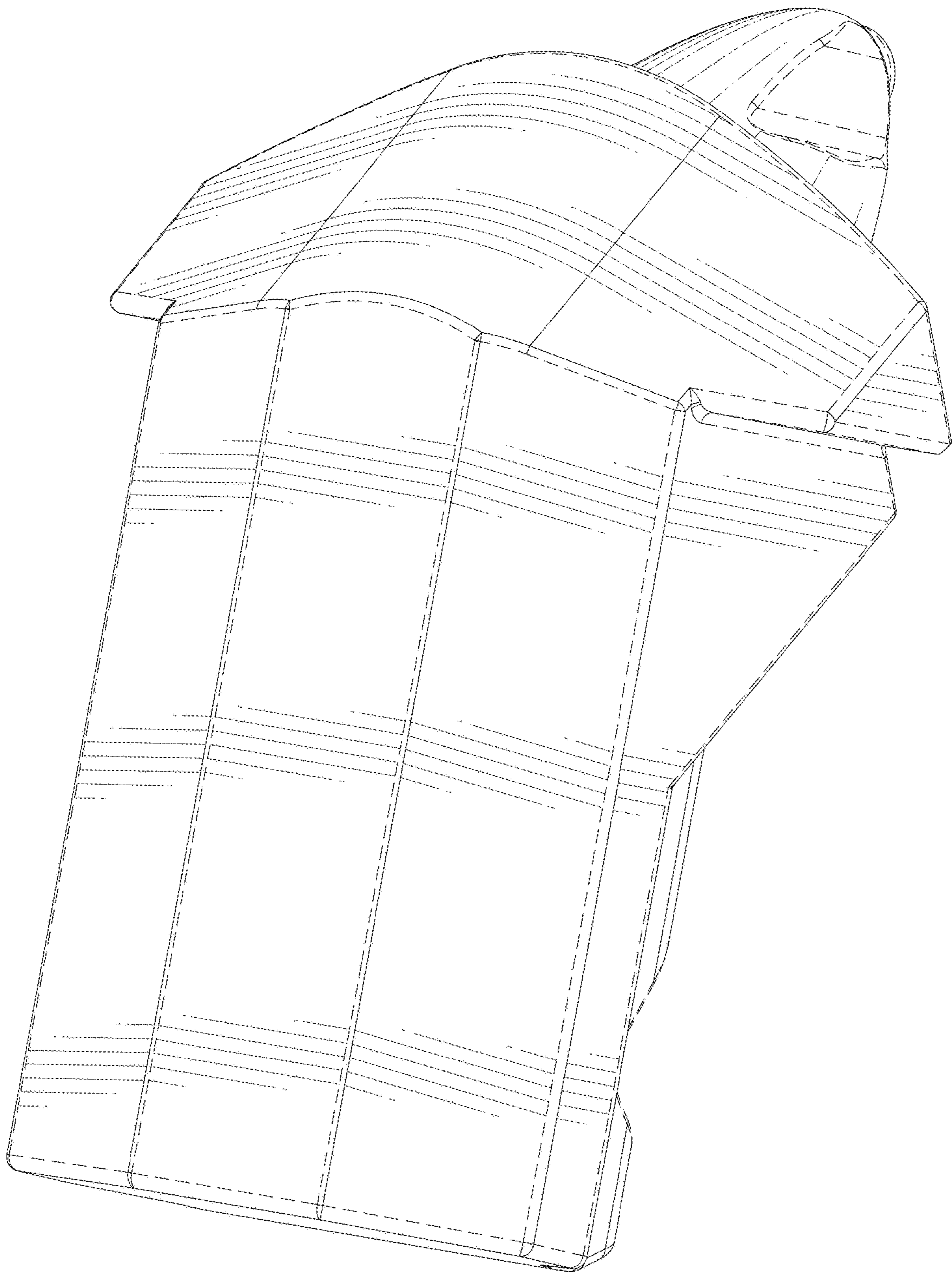


Fig. 3

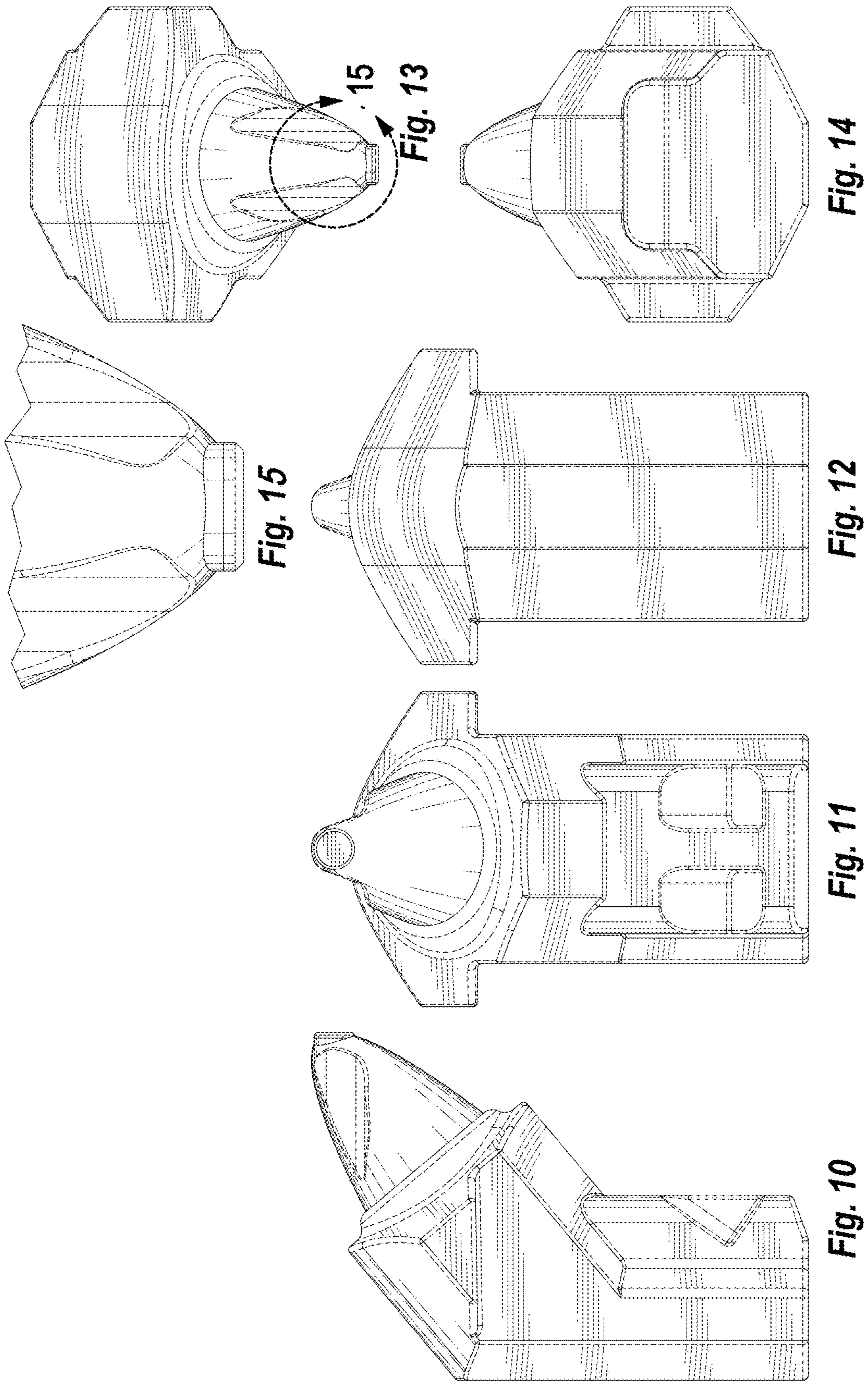


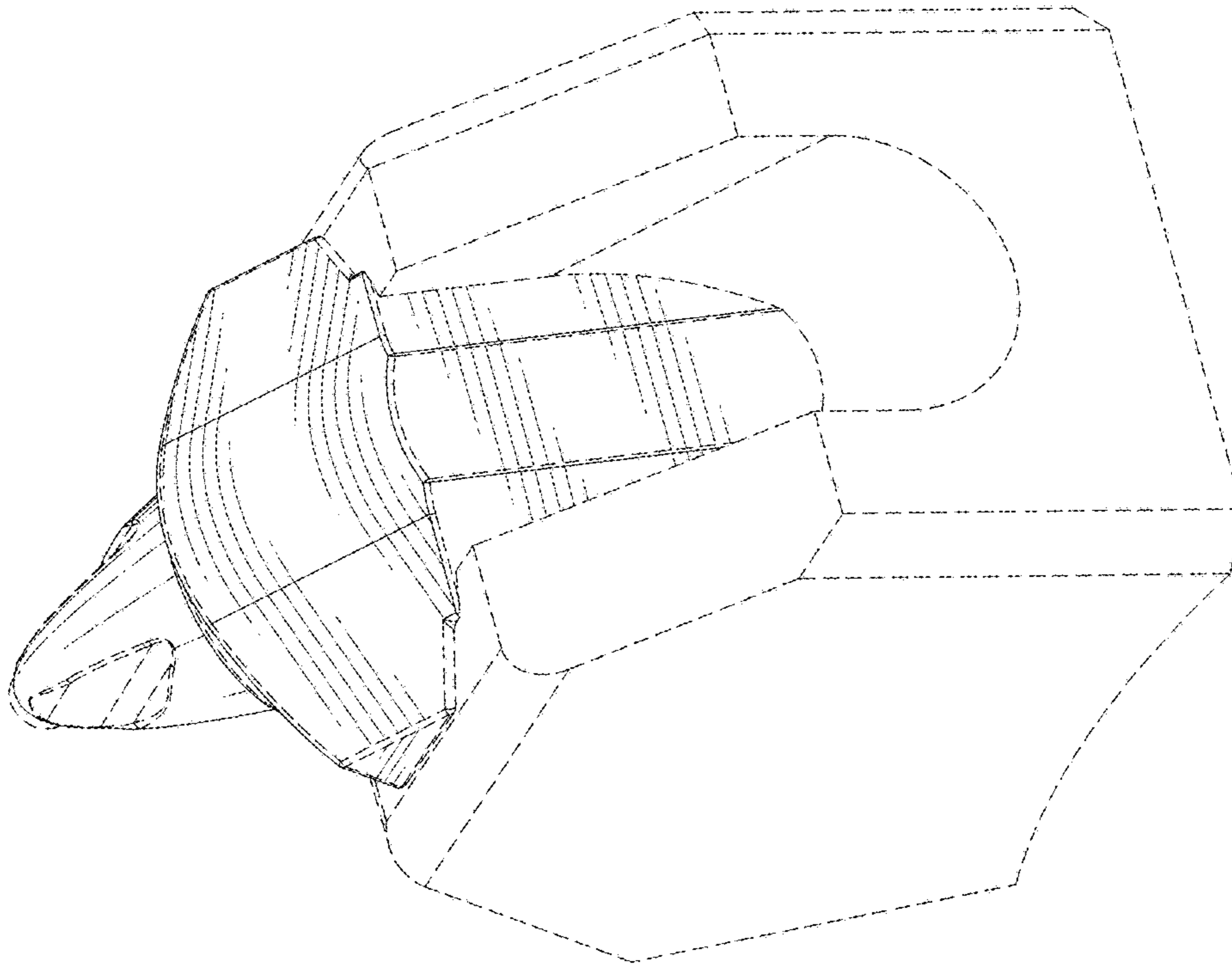
**Fig. 8**



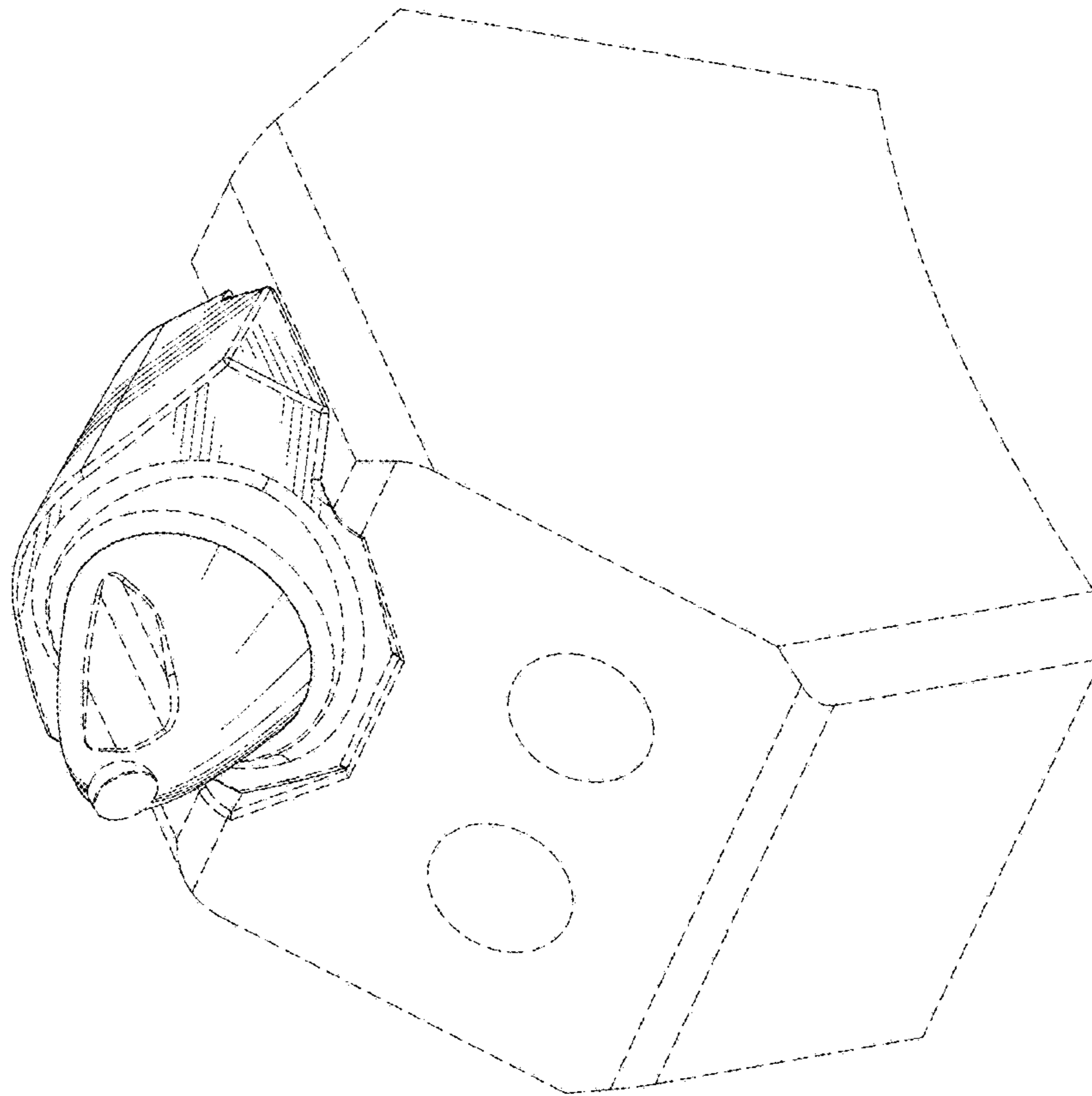
**Fig. 9**



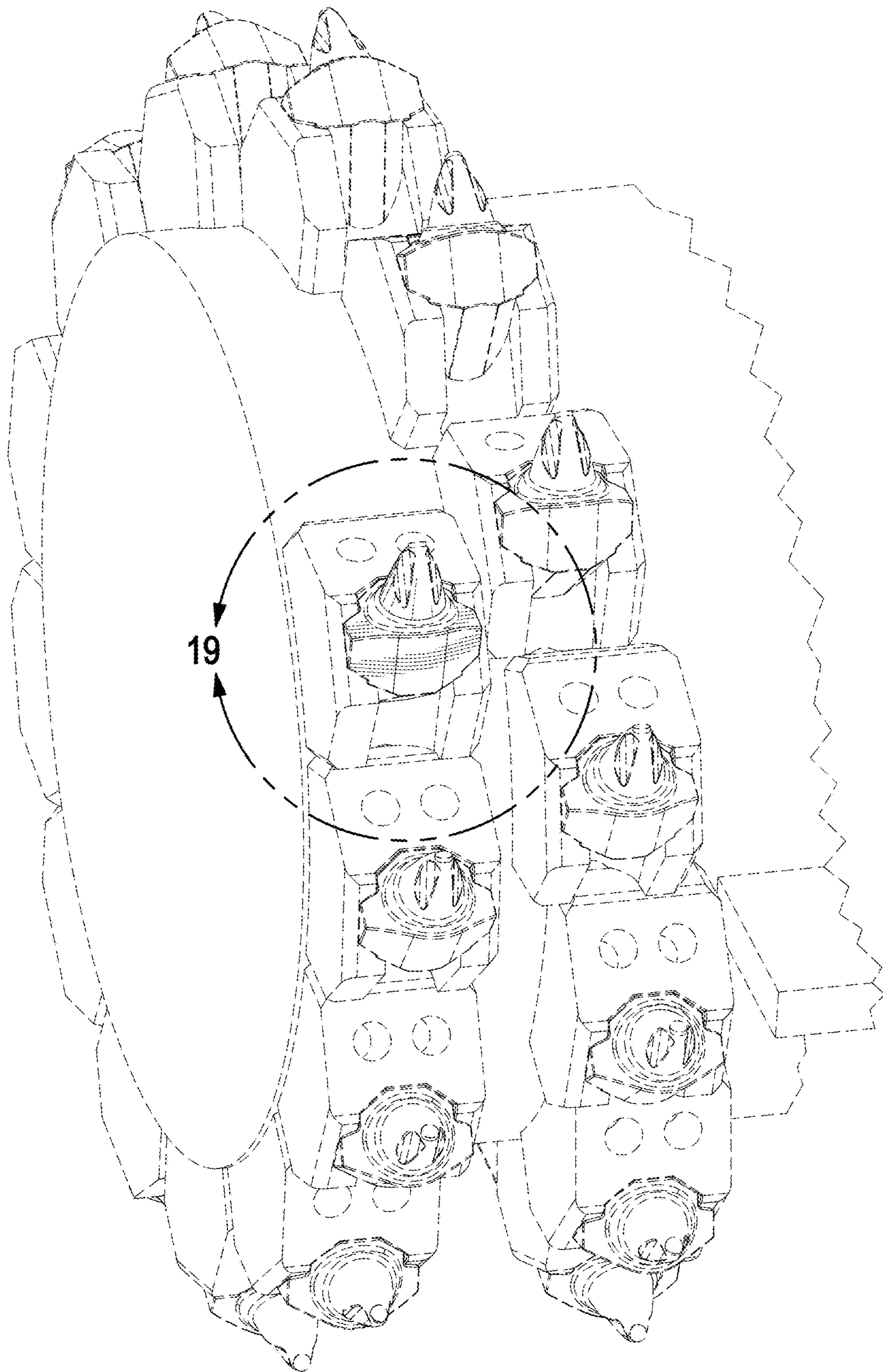




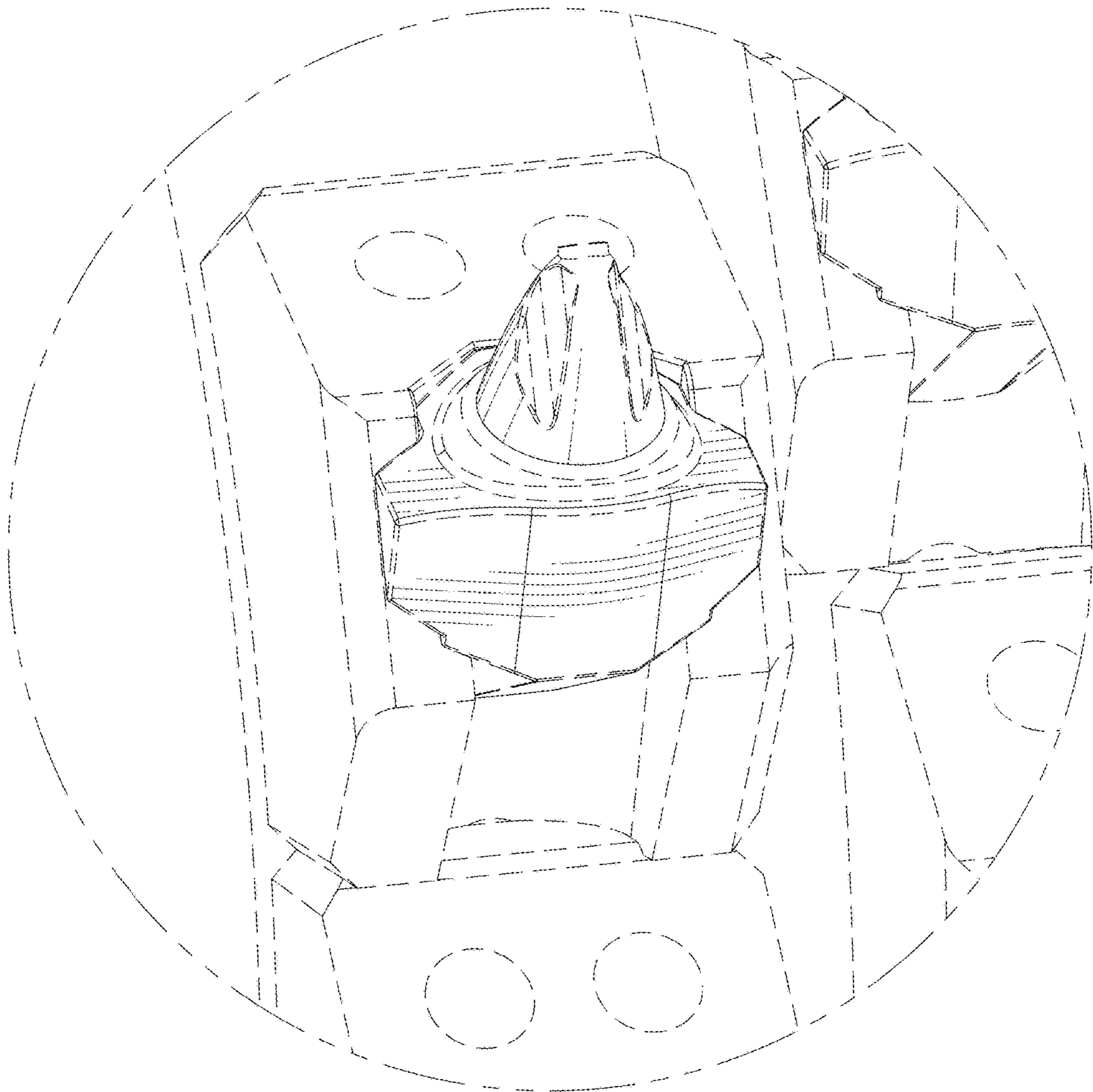
**Fig. 16**



**Fig. 17**



**Fig. 18**



**Fig. 19**