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

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(54) **PRINT HEAD**

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(51) **LOC (9) Cl.** ..... **18-02**

(52) **U.S. Cl.** ..... **D18/56**

(58) **Field of Classification Search** ..... D18/56;  
347/86-87

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,121,329	A	6/1992	Crump	
5,255,988	A *	10/1993	Yamamoto	D18/56
5,303,141	A	4/1994	Batchelder et al.	
5,312,224	A	5/1994	Batchelder et al.	
5,340,433	A	8/1994	Crump	
D354,982	S *	1/1995	Akahane et al.	D18/56
5,426,722	A	6/1995	Batchelder	
5,503,785	A	4/1996	Crump et al.	
D377,047	S *	12/1996	Ishizawa et al.	D18/56
5,653,925	A	8/1997	Batchelder	
5,738,817	A	4/1998	Danforth et al.	
5,764,521	A	6/1998	Batchelder et al.	
5,866,058	A	2/1999	Batchelder et al.	
5,939,008	A	8/1999	Comb et al.	
5,968,561	A	10/1999	Batchelder et al.	
6,004,124	A	12/1999	Swanson et al.	
6,022,207	A	2/2000	Dahlin et al.	
6,028,410	A	2/2000	Leavitt et al.	
6,054,077	A	4/2000	Comb et al.	
D424,103	S *	5/2000	Eckard et al.	D18/56
6,067,480	A	5/2000	Stuffle et al.	
6,070,107	A	5/2000	Lombardi et al.	
6,085,957	A	7/2000	Zinniel et al.	
6,129,872	A	10/2000	Jang	

6,149,267	A *	11/2000	Geissmann	347/87
6,228,923	B1	5/2001	Lombardi et al.	
D449,335	S *	10/2001	Giles et al.	D18/56
6,547,995	B1	4/2003	Comb	
6,629,011	B1	9/2003	Calderon et al.	
6,645,412	B2	11/2003	Priedeman, Jr.	

(Continued)

FOREIGN PATENT DOCUMENTS

WO WO-2009/088995 A1 7/2009

OTHER PUBLICATIONS

U.S. Appl. No. 12/612,329, filed Nov. 4, 2009, entitled "Ribbon Liquefier For Use In Extrusion-Based Digital Manufacturing Systems".

(Continued)

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(57) **CLAIM**

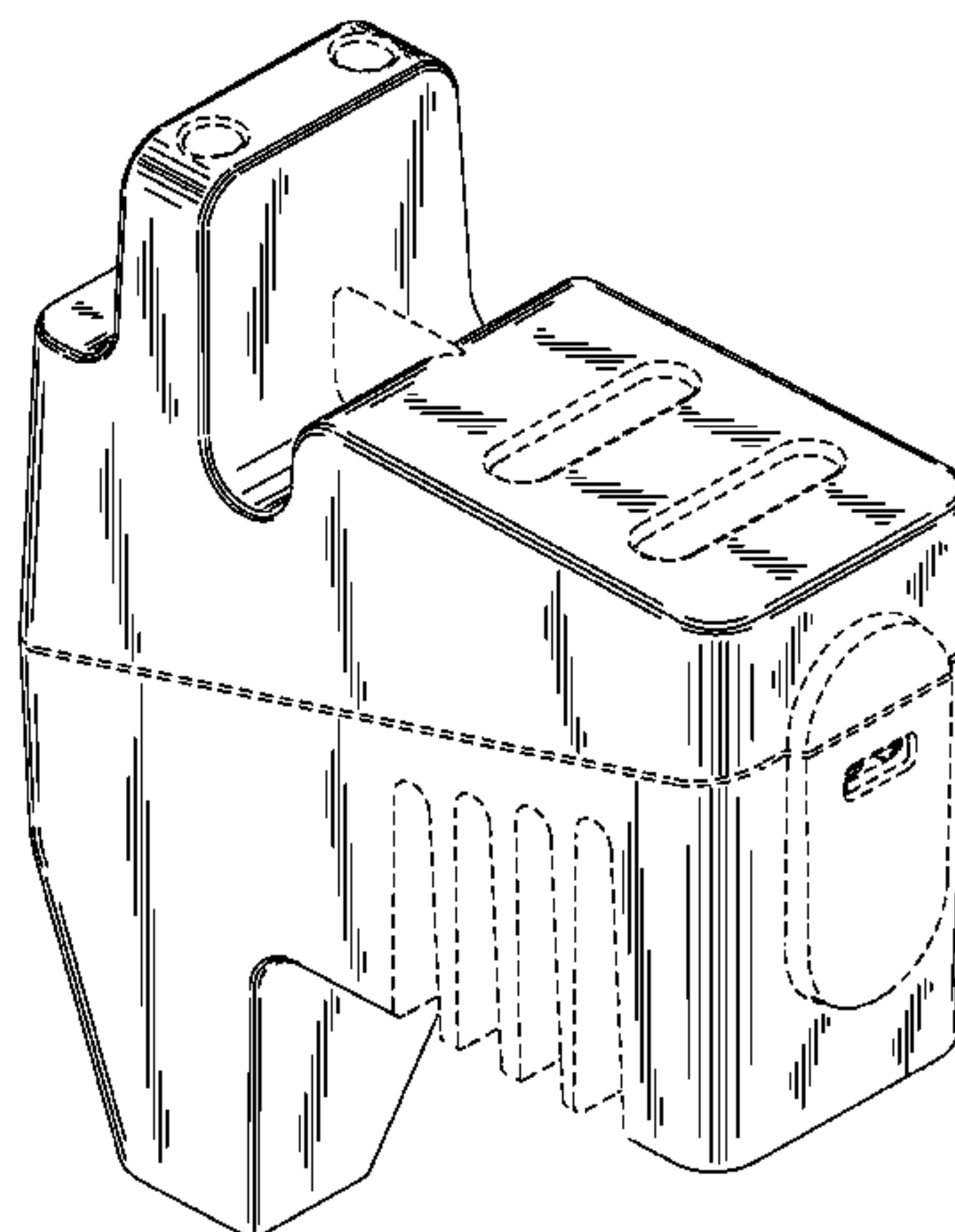
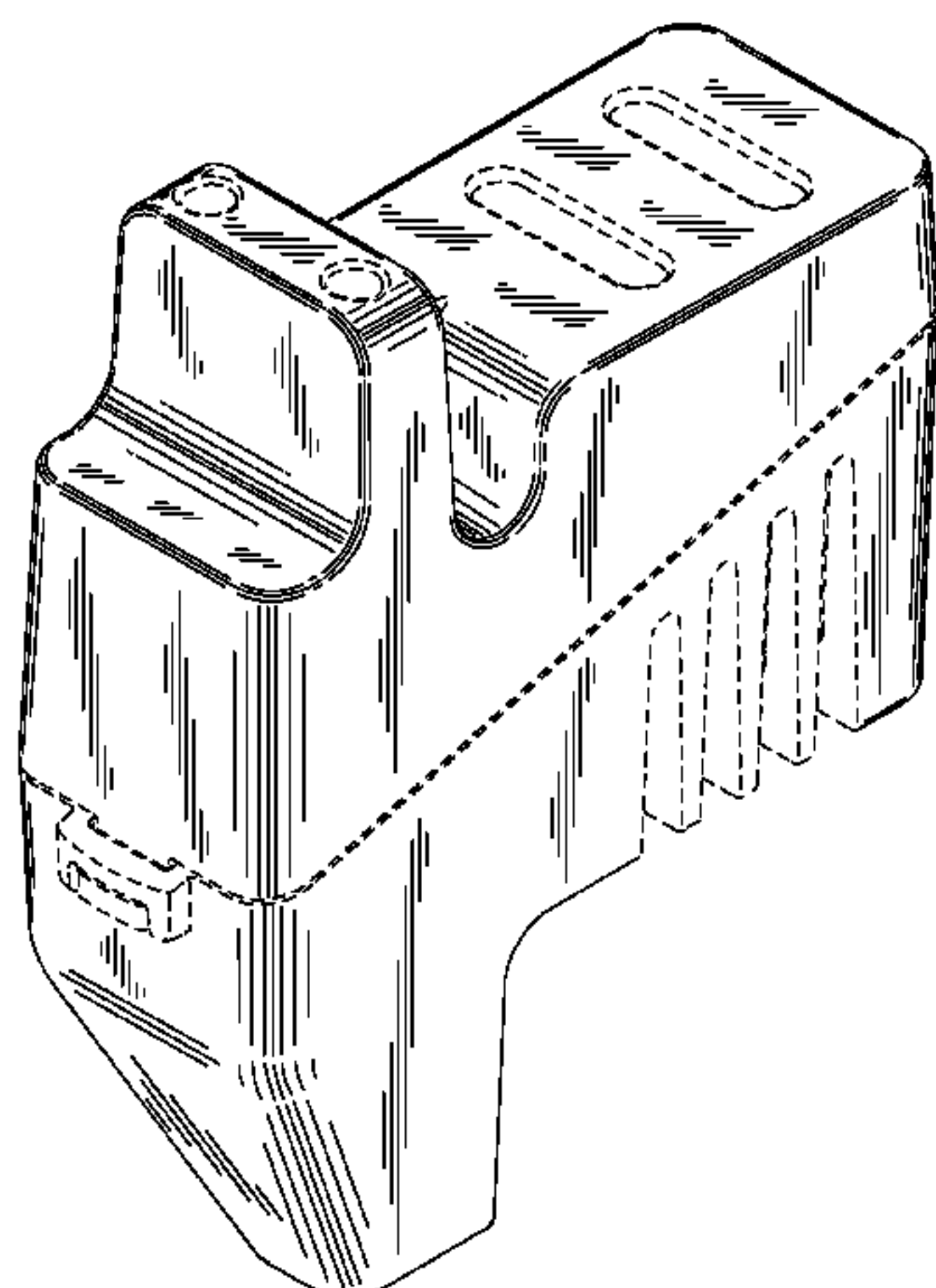
The ornamental design for a print head, as shown and described.

**DESCRIPTION**

FIG. 1 is a top front perspective view of a print head; FIG. 2 is a top rear perspective view thereof; FIG. 3 is a front view thereof; FIG. 4 is a rear view thereof; FIG. 5 is a right side view thereof; FIG. 6 is a left side view thereof; FIG. 7 is a top view thereof; and, FIG. 8 is a bottom view thereof.

The features shown in broken lines illustrate environmental subject matter only, and form no part of the claimed design. Features illustrated with dashed lines are not considered features of the invention being claimed, but rather illustrate an exemplary environment for the claimed features illustrated with solid lines.

**1 Claim, 6 Drawing Sheets**



U.S. PATENT DOCUMENTS

6,685,866 B2 2/2004 Swanson et al.  
 6,722,872 B1 4/2004 Swanson et al.  
 6,749,414 B1 6/2004 Hanson et al.  
 6,776,602 B2 8/2004 Swanson et al.  
 6,790,403 B1 9/2004 Priedeman, Jr. et al.  
 6,814,907 B1 11/2004 Comb  
 6,866,807 B2 3/2005 Comb et al.  
 6,869,559 B2 3/2005 Hopkins  
 6,923,634 B2 8/2005 Swanson et al.  
 6,998,087 B1 2/2006 Hanson et al.  
 D525,296 S \* 7/2006 Nakashima et al. .... D18/56  
 7,122,246 B2 10/2006 Comb et al.  
 7,169,337 B2 1/2007 Swanson et al.  
 7,172,715 B2 2/2007 Swanson et al.  
 D542,344 S \* 5/2007 Duby et al. .... D18/56  
 7,297,304 B2 11/2007 Swanson et al.  
 7,314,591 B2 1/2008 Priedeman, Jr.  
 7,384,255 B2 6/2008 LaBossiere et al.  
 D590,015 S \* 4/2009 Matsuba et al. .... D18/56  
 7,604,470 B2 10/2009 LaBossiere et al.  
 7,625,200 B2 12/2009 Leavitt  
 2005/0173838 A1 8/2005 Priedeman, Jr. et al.  
 2007/0228590 A1 10/2007 LaBossiere et al.  
 2007/0228592 A1 10/2007 Dunn et al.  
 2008/0169585 A1 7/2008 Zinniel  
 2009/0035405 A1 2/2009 Leavitt  
 2009/0263582 A1 10/2009 Batchelder  
 2009/0273122 A1 11/2009 Batchelder et al.  
 2009/0274540 A1 11/2009 Batchelder et al.  
 2010/0021580 A1 1/2010 Swanson et al.  
 2010/0096072 A1 4/2010 Hopkins et al.  
 2010/0096485 A1 4/2010 Taatjes et al.

2010/0096489 A1 4/2010 Taatjes et al.  
 2010/0100224 A1 4/2010 Comb et al.  
 2010/0283172 A1 11/2010 Swanson

OTHER PUBLICATIONS

U.S. Appl. No. 12/612,333, filed Nov. 4, 2009, entitled "Non-Cylindrical Filaments For Use In Extrusion-Based Digital Manufacturing Systems".  
 U.S. Appl. No. 12/612,342, filed Nov. 4, 2009, entitled "Consumable Materials Having Topographical Surface Patterns For Use In Extrusion-Based Digital Manufacturing Systems".  
 U.S. Appl. No. 12/622,042, filed Nov. 19, 2009, entitled "Consumable Materials Having Encoded Markings For Use With Direct Digital Manufacturing Systems".  
 U.S. Appl. No. 12/888,087, filed Sep. 22, 2010, entitled "Liquefier Assembly For Use In Extrusion-Based Additive Manufacturing Systems".  
 U.S. Appl. No. 12/888,098, filed Sep. 22, 2010, entitled Method For Building Three-Dimensional Models With Extrusion-Based Additive Manufacturing Systems.  
 U.S. Appl. No. 12/949,898, filed Nov. 19, 2010, entitled "Encoded Consumable Materials and Sensor Assemblies For Use In Additive Manufacturing Systems".  
 U.S. Appl. No. 61/312,737, filed Mar. 11, 2010, entitled "Incremental Optical Encoder".  
 U.S. Appl. No. 12/841,341, filed Jul. 22, 2010, entitled "Multiple-Zone Liquefier Assembly for Extrusion-Based Additive Manufacturing Systems", pp. 1-21.  
 U.S. Appl. No. 12/888,098, filed Sep. 22, 2010, entitled "Method for Building Three-Dimensional Models with Extrusion-Based Additive Manufacturing Systems", pp. 1-30.

\* cited by examiner

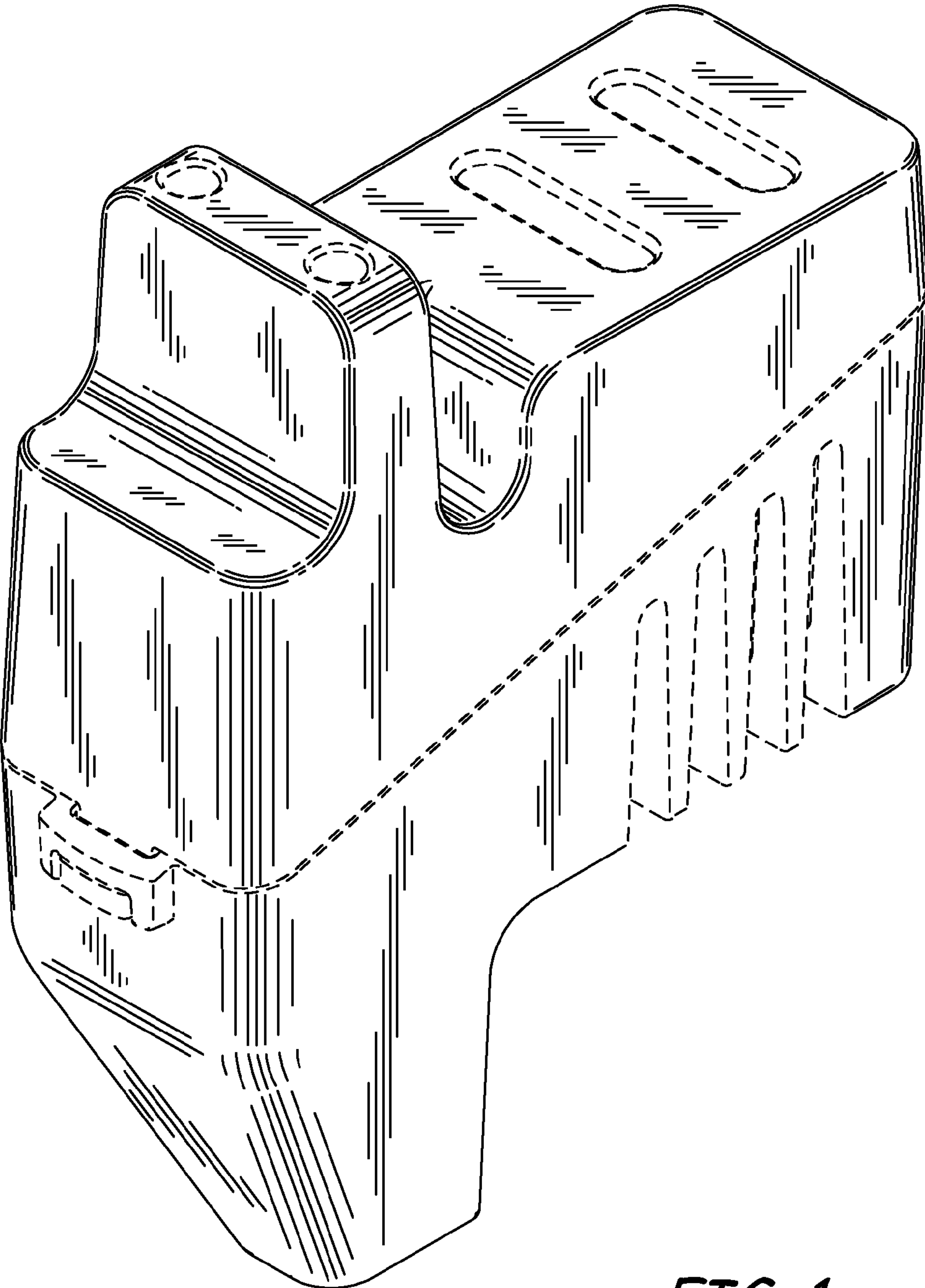
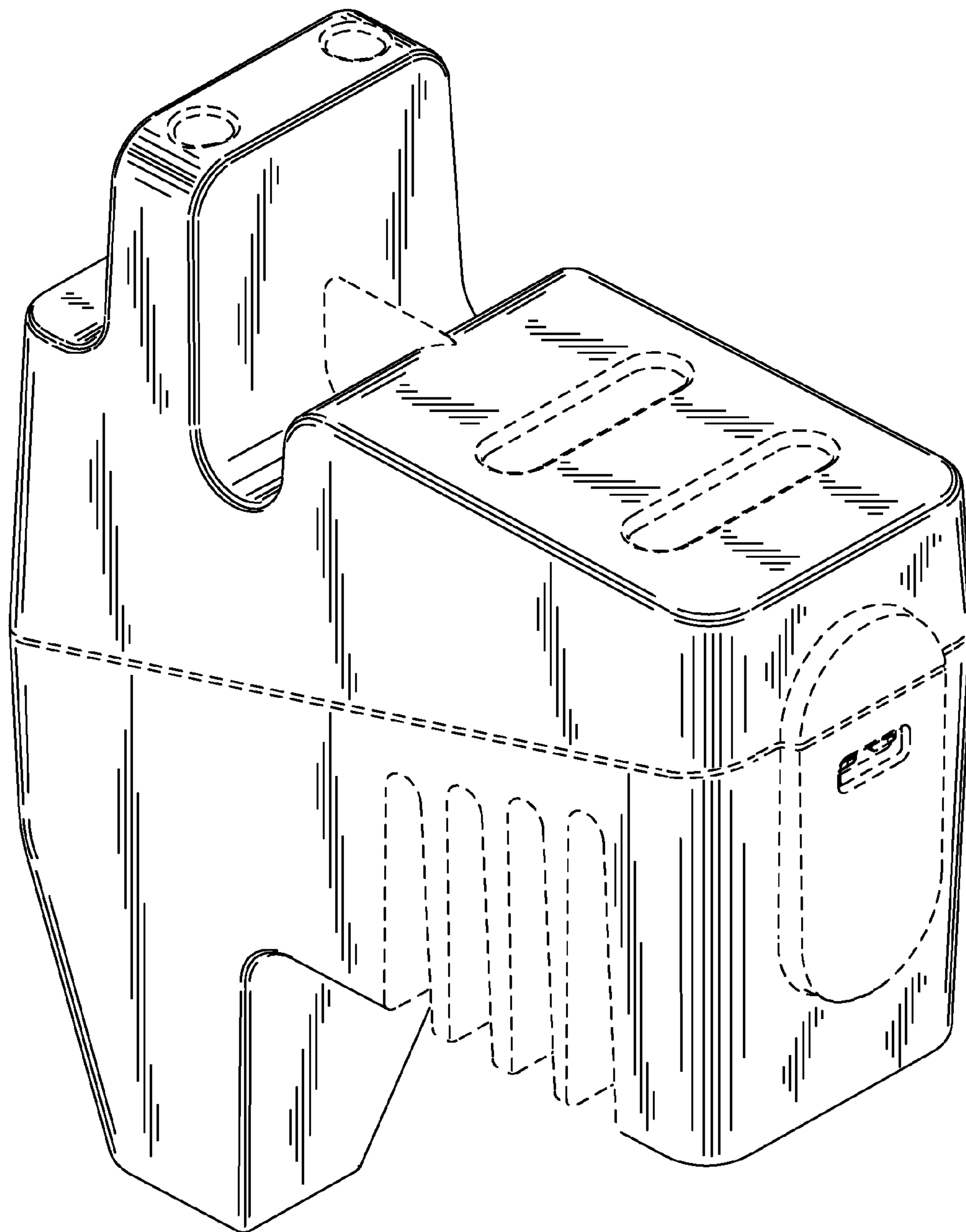
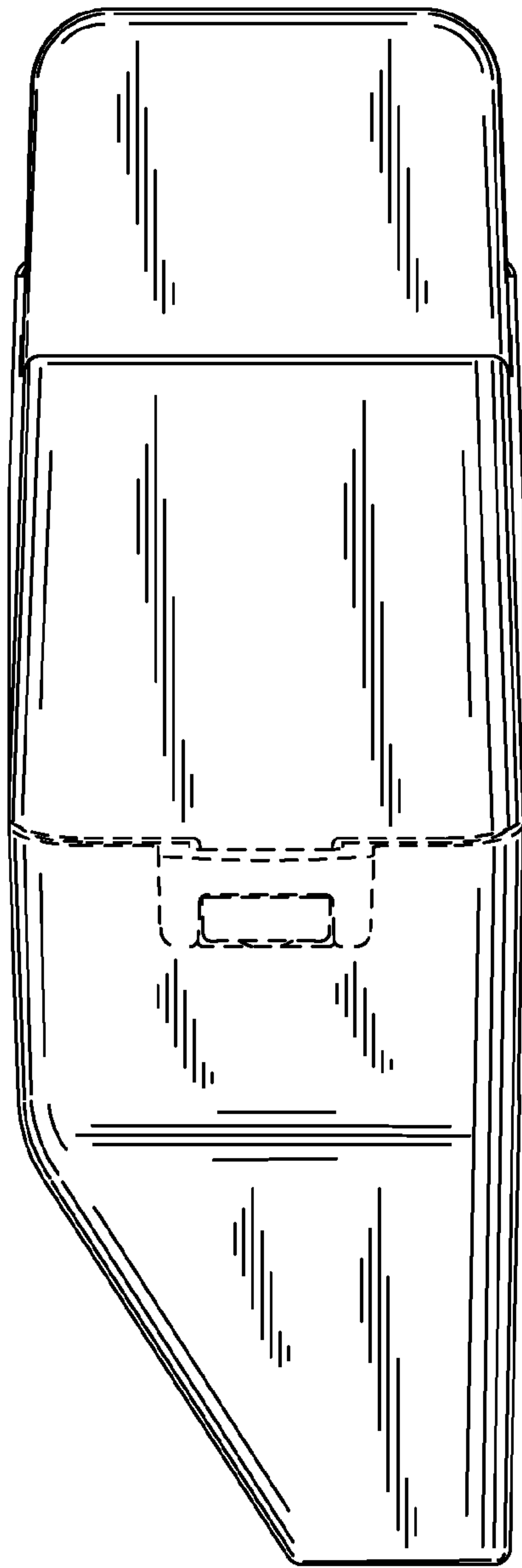


FIG. 1

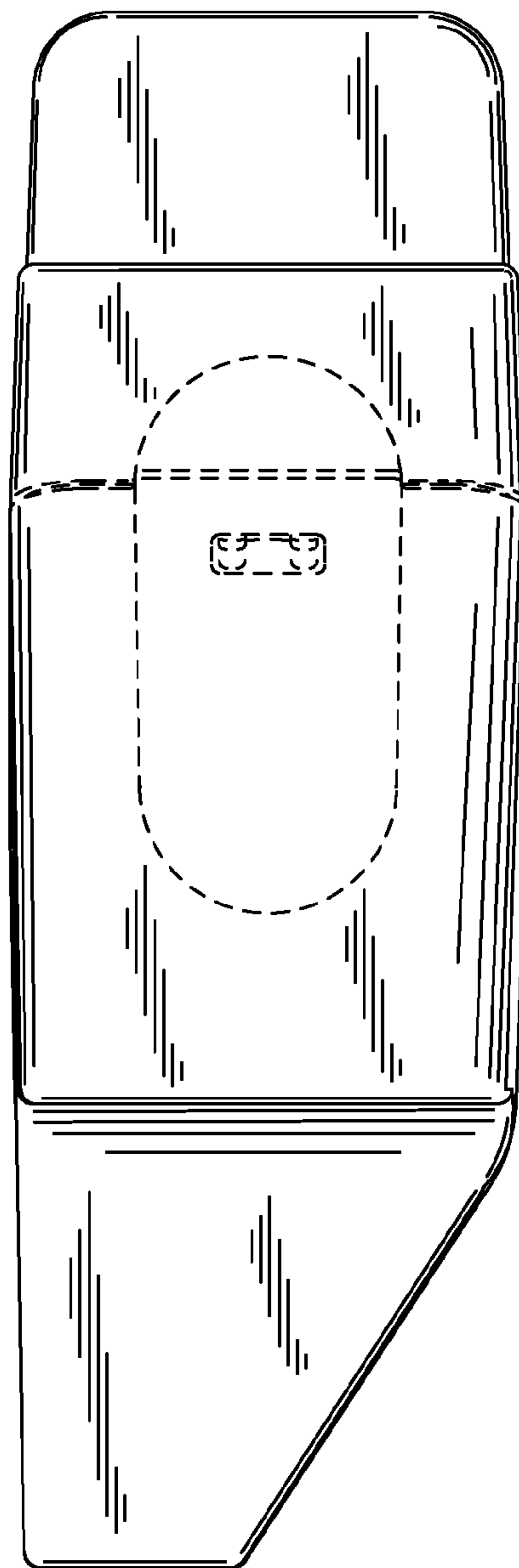




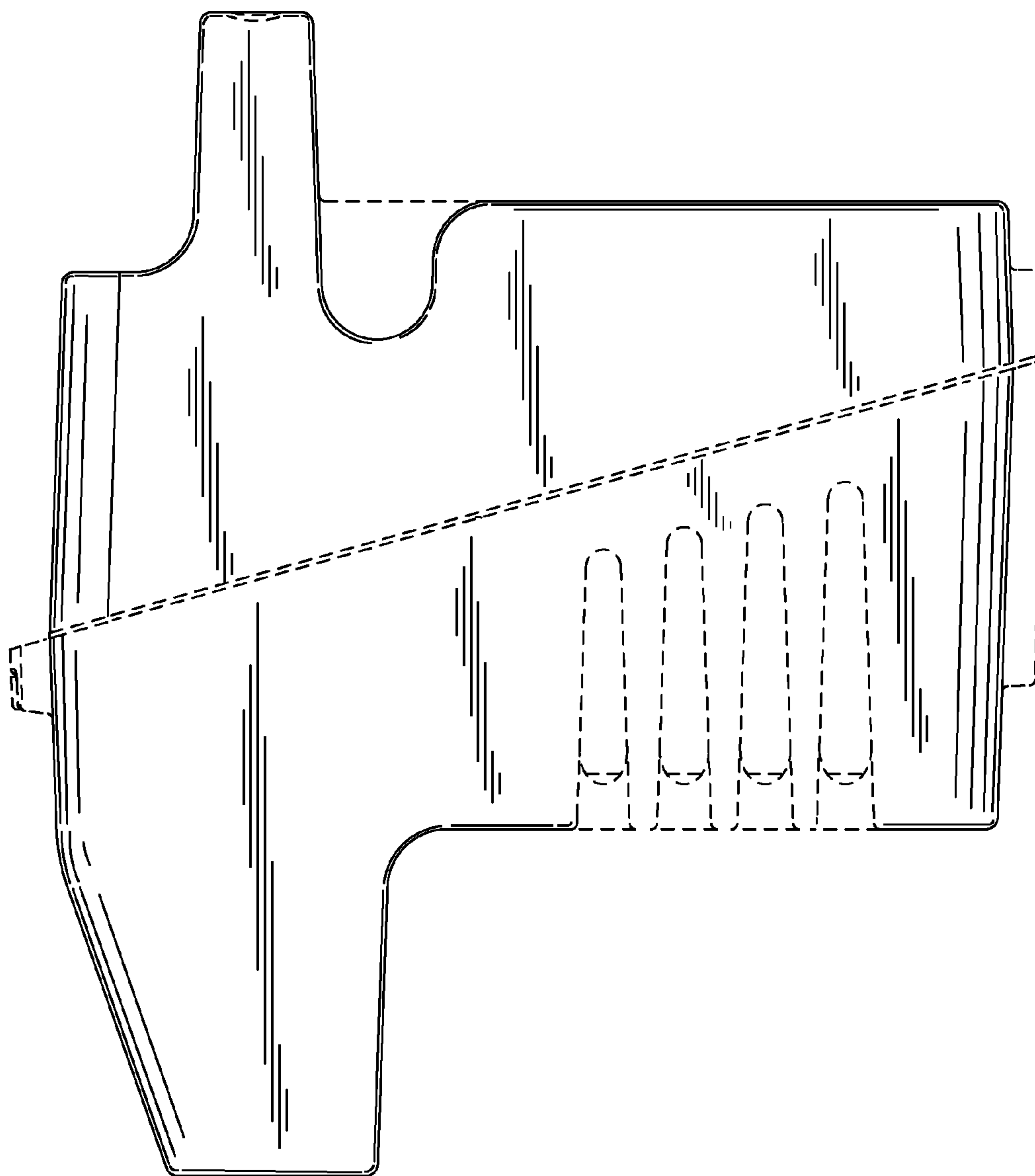
*FIG. 2*



*FIG. 3*



*FIG. 4*



*FIG. 5*

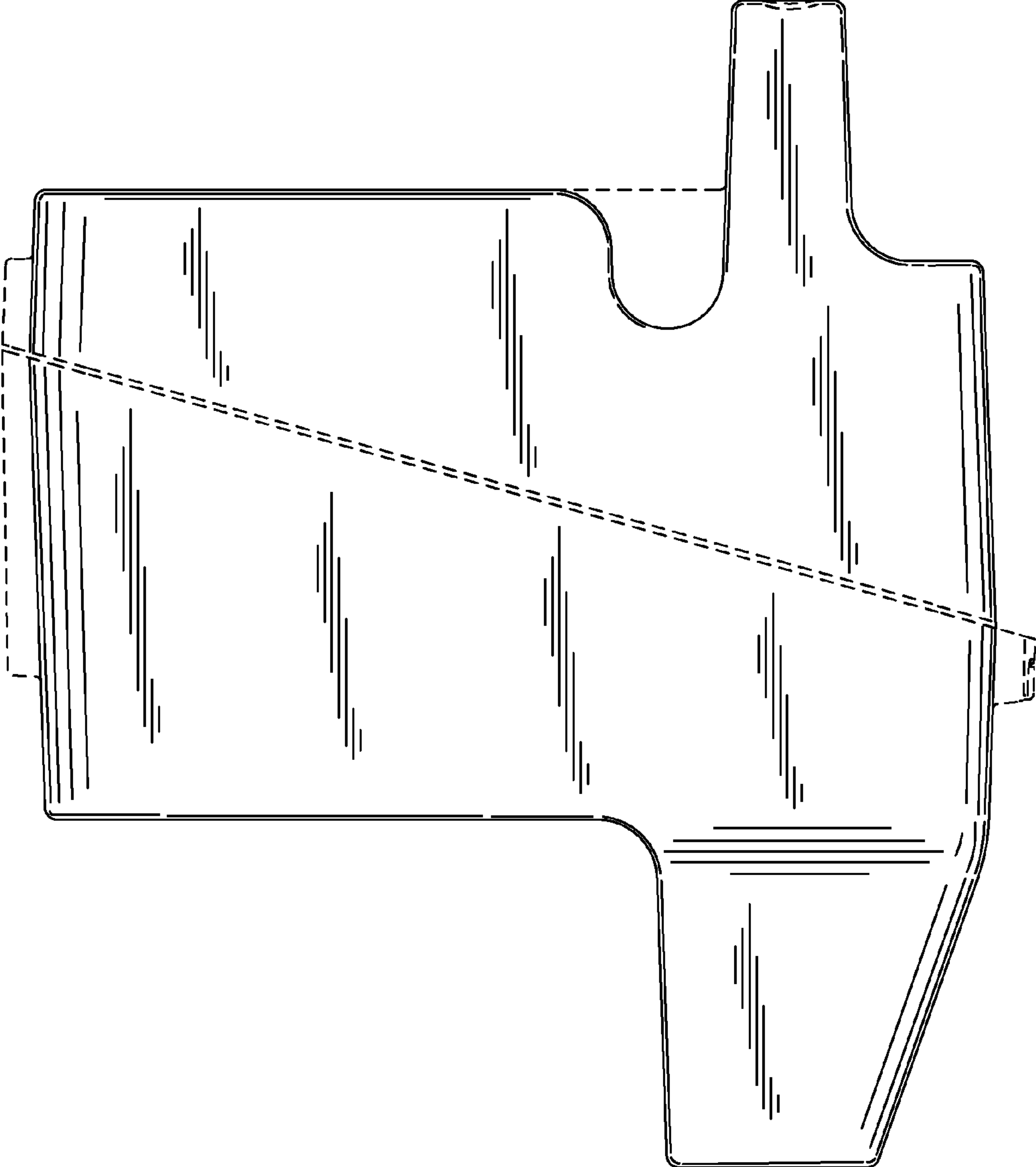
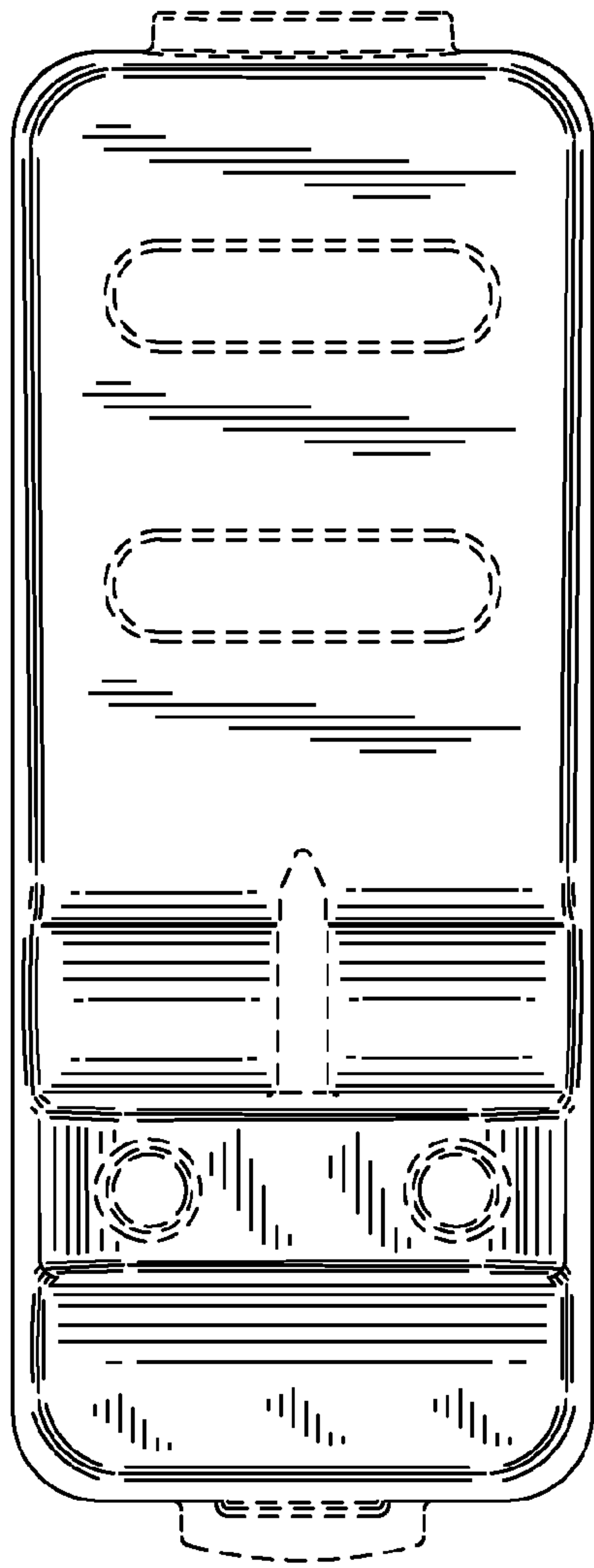
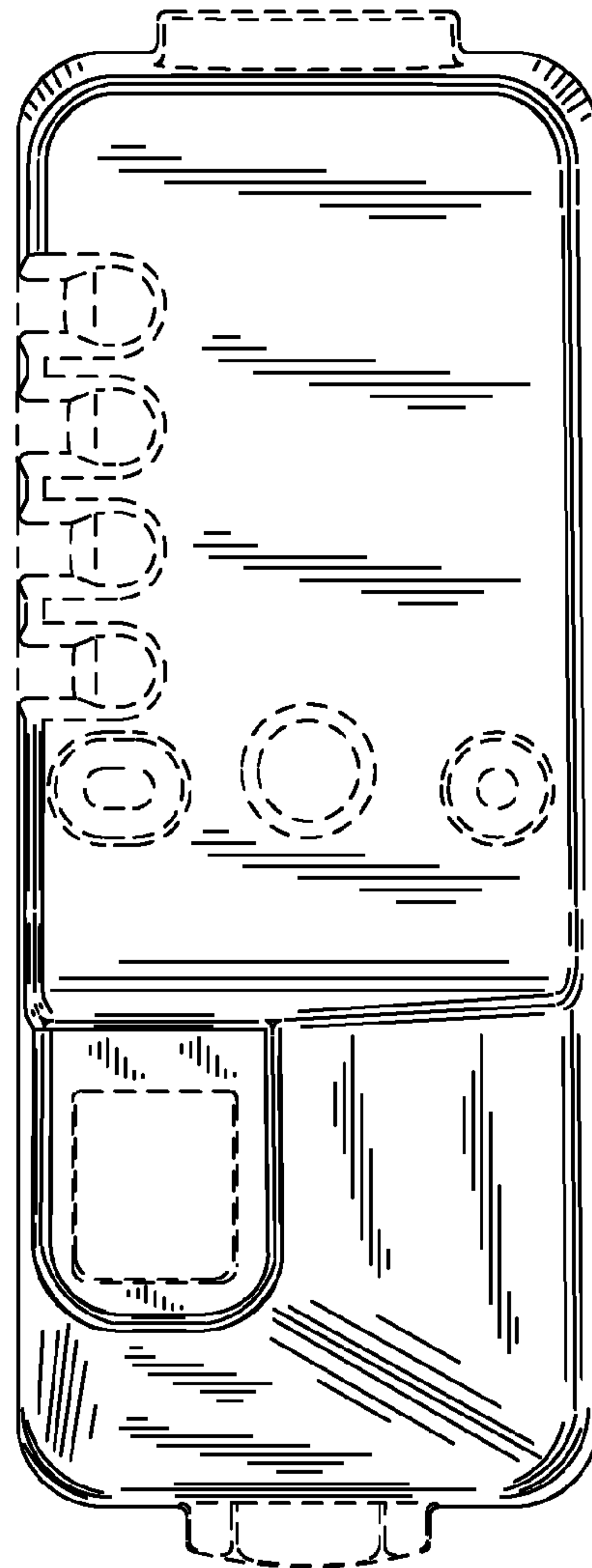


FIG. 6



*FIG. 7*



*FIG. 8*