US00D798846S

(12) United States Design Patent

Chang et al.

(10) Patent No.: US D798,846 S
(45) Date of Patent: ** Oct. 3, 2017

(54) **ANTENNA ASSEMBLY**

(71) Applicant: **Airgain, Incorporated**, San Diego, CA (US)

(72) Inventors: **Wei Chang**, Zhang Jia Gang (CN); **Jindan Zhao**, Zhang Jia Gang (CN); **Xiangjie Bian**, Zhang Jia Gang (CN)

(73) Assignee: **Airgain Incorporated**, San Diego, CA (US)

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

(21) Appl. No.: **29/509,424**

(22) Filed: **Nov. 17, 2014**

(51) **LOC (10) Cl.** **14-03**

(52) **U.S. Cl.**
USPC **D14/230**

(58) **Field of Classification Search**
USPC D14/230, 231, 232, 233, 234, 235, 236, D14/237, 238, 138, 299, 358, 240; D12/42, 43
CPC H01Q 7/00; H01Q 13/10; H01Q 9/285; H01Q 9/26; H01Q 19/30; H01Q 19/12; H01Q 1/38; H01Q 1/36; H01Q 1/42; H01Q 1/242; H01Q 1/243; H01Q 1/2266; H01Q 1/20; H01Q 1/08; H01Q 1/1235; H01Q 15/161; H01Q 15/162
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

7,061,437 B2 6/2006 Lin et al.
7,148,849 B2 12/2006 Lin
7,215,296 B2 5/2007 Abramov et al.
D546,821 S 7/2007 Oliver
D549,696 S 8/2007 Oshima et al.
7,333,067 B2 2/2008 Hung et al.
7,336,959 B2 2/2008 Khitrik et al.
D573,589 S 7/2008 Montgomery et al.
7,405,704 B1 7/2008 Lin et al.
D582,400 S * 12/2008 Takisawa D14/230
7,477,195 B2 1/2009 Vance
(Continued)

Primary Examiner — Karen S Acker
Assistant Examiner — Jerry Hsu
(74) *Attorney, Agent, or Firm* — Clause Eight IPS; Michael Catania

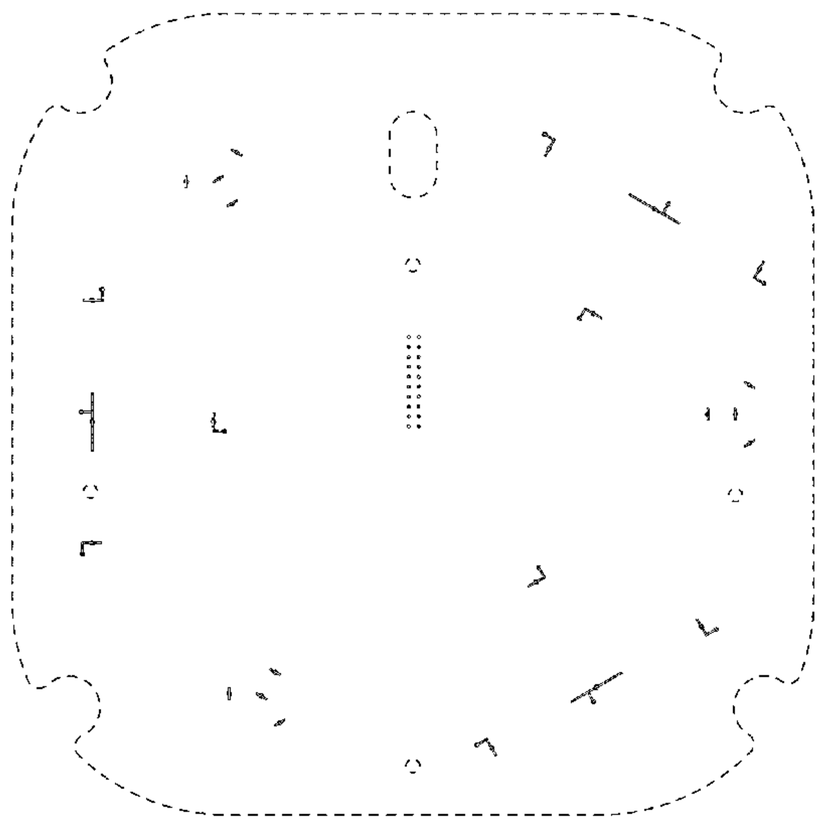
(57) **CLAIM**

The ornamental design for an antenna assembly, as shown and described.

DESCRIPTION

FIG. **1** is a top plan view of an antenna.
FIG. **2** is a side elevation view of the antenna of FIG. **1**.
FIG. **3** is a bottom plan view of the antenna of FIG. **1**.
FIG. **4** is an exploded perspective view of the antenna of FIG. **1**.
FIG. **5** is an isolated isometric view of a first antenna element of the design shown in FIGS. **1-4**.
FIG. **6** is an isolated front elevation view thereof.
FIG. **7** is an isolated side elevation view thereof.
FIG. **8** is an isolated bottom view thereof.
FIG. **9** is an isolated isometric view of a second antenna element of the design shown in FIGS. **1-4**.
FIG. **10** is an isolated front elevation view thereof.
FIG. **11** is an isolated side elevation view thereof.
FIG. **12** is an isolated bottom plan view thereof.
FIG. **13** is an isolated isometric view of a third antenna element of the design shown in FIGS. **1-4**.
FIG. **14** is an isolated front elevation view thereof.
FIG. **15** is an isolated side elevation view thereof.
FIG. **16** is an isolated side elevation view thereof; and,
FIG. **17** is an isolated top plan view of the antenna connector element of the design.
The broken lines illustrate environment that forms no part of the claimed design.

1 Claim, 6 Drawing Sheets



(56) **References Cited**

U.S. PATENT DOCUMENTS

7,498,987	B2 *	3/2009	Svigelj	H01Q 1/38 343/700 MS
D592,195	S	5/2009	Wu et al.	
7,570,215	B2	8/2009	Abramov et al.	
D599,334	S	9/2009	Chiang	
D606,053	S	12/2009	Wu et al.	
D607,442	S	1/2010	Su et al.	
D608,769	S	1/2010	Bufe	
D612,368	S	3/2010	Yang et al.	
7,705,783	B2	4/2010	Rao et al.	
7,729,662	B2	6/2010	Abramov et al.	
D621,819	S	8/2010	Tsai et al.	
7,843,390	B2	11/2010	Liu	
D633,483	S	3/2011	Su et al.	
D635,127	S	3/2011	Tsai et al.	
7,907,971	B2	3/2011	Salo et al.	
7,911,402	B2 *	3/2011	Rowson	H01Q 1/243 343/700 MS
D635,560	S	4/2011	Tsai et al.	
D635,963	S	4/2011	Podduturi	
D635,964	S	4/2011	Podduturi	
D635,965	S	4/2011	Mi et al.	
D636,382	S	4/2011	Podduturi	
7,965,242	B2	6/2011	Abramov et al.	
D649,962	S	12/2011	Tseng et al.	
D651,198	S	12/2011	Mi et al.	
D654,059	S	2/2012	Mi et al.	
D654,060	S	2/2012	Ko et al.	
D658,639	S	5/2012	Huang et al.	
D659,129	S	5/2012	Mi et al.	
D659,685	S	5/2012	Huang et al.	
D659,688	S	5/2012	Huang et al.	
8,175,036	B2	5/2012	Visuri et al.	
8,184,601	B2	5/2012	Abramov et al.	
D662,916	S	7/2012	Huang et al.	
8,248,970	B2	8/2012	Abramov et al.	
D671,097	S	11/2012	Mi et al.	
8,310,402	B2	11/2012	Yang	
D676,429	S	2/2013	Gosalia et al.	
D678,255	S	3/2013	Ko et al.	
8,423,084	B2	4/2013	Abramov et al.	
D684,565	S	6/2013	Wei	
D685,352	S	7/2013	Wei	
D685,772	S	7/2013	Zheng et al.	
D686,600	S	7/2013	Yang	
8,482,471	B2 *	7/2013	Su	H01Q 7/00 343/700 MS
D689,474	S	9/2013	Yang et al.	
D692,870	S	11/2013	He	
D694,738	S	12/2013	Yang	
D695,279	S	12/2013	Yang et al.	
D695,280	S	12/2013	Yang et al.	
D703,195	S	4/2014	Zheng	
D703,196	S	4/2014	Zheng	
D706,247	S	6/2014	Zheng et al.	
D706,750	S	6/2014	Bringuir	
D706,751	S	6/2014	Chang et al.	
D708,602	S	7/2014	Gosalia et al.	
D709,053	S	7/2014	Chang et al.	
D710,832	S	8/2014	Yang	
D710,833	S	8/2014	Zheng et al.	
8,854,265	B1	10/2014	Yang et al.	
D716,775	S	11/2014	Bidermann	
D733,104	S *	6/2015	Yang	D14/230
9,077,077	B2 *	7/2015	Wong	H01Q 1/243
D754,108	S *	4/2016	Yang	D14/230
2002/0003499	A1	1/2002	Kouam et al.	
2004/0222936	A1	11/2004	Hung et al.	
2005/0073462	A1	4/2005	Lin et al.	
2005/0190108	A1	9/2005	Lin et al.	
2005/0237258	A1 *	10/2005	Abramov	H01Q 3/24 343/834
2006/0044196	A1 *	3/2006	Grant	H01Q 1/3275 343/713
2006/0208900	A1	9/2006	Tavassoli Hozouri	
2007/0030203	A1	2/2007	Tsai et al.	
2008/0150829	A1	6/2008	Lin et al.	
2009/0002244	A1	1/2009	Woo	
2009/0058739	A1	3/2009	Konishi	
2009/0135072	A1	5/2009	Ke et al.	
2009/0262028	A1	10/2009	Mumbru et al.	
2010/0188297	A1	7/2010	Chen et al.	
2010/0309067	A1	12/2010	Tsou et al.	
2011/0006950	A1	1/2011	Park et al.	
2012/0038514	A1	2/2012	Bang	
2012/0229348	A1	9/2012	Chiang	
2012/0242546	A1	9/2012	Hu et al.	
2012/0287000	A1 *	11/2012	Ando	H01Q 21/08 343/700 MS
2013/0176177	A1 *	7/2013	Cetiner	H01Q 19/005 343/700 MS
2014/0210687	A1 *	7/2014	Chiu	H01Q 1/2283 343/872

* cited by examiner

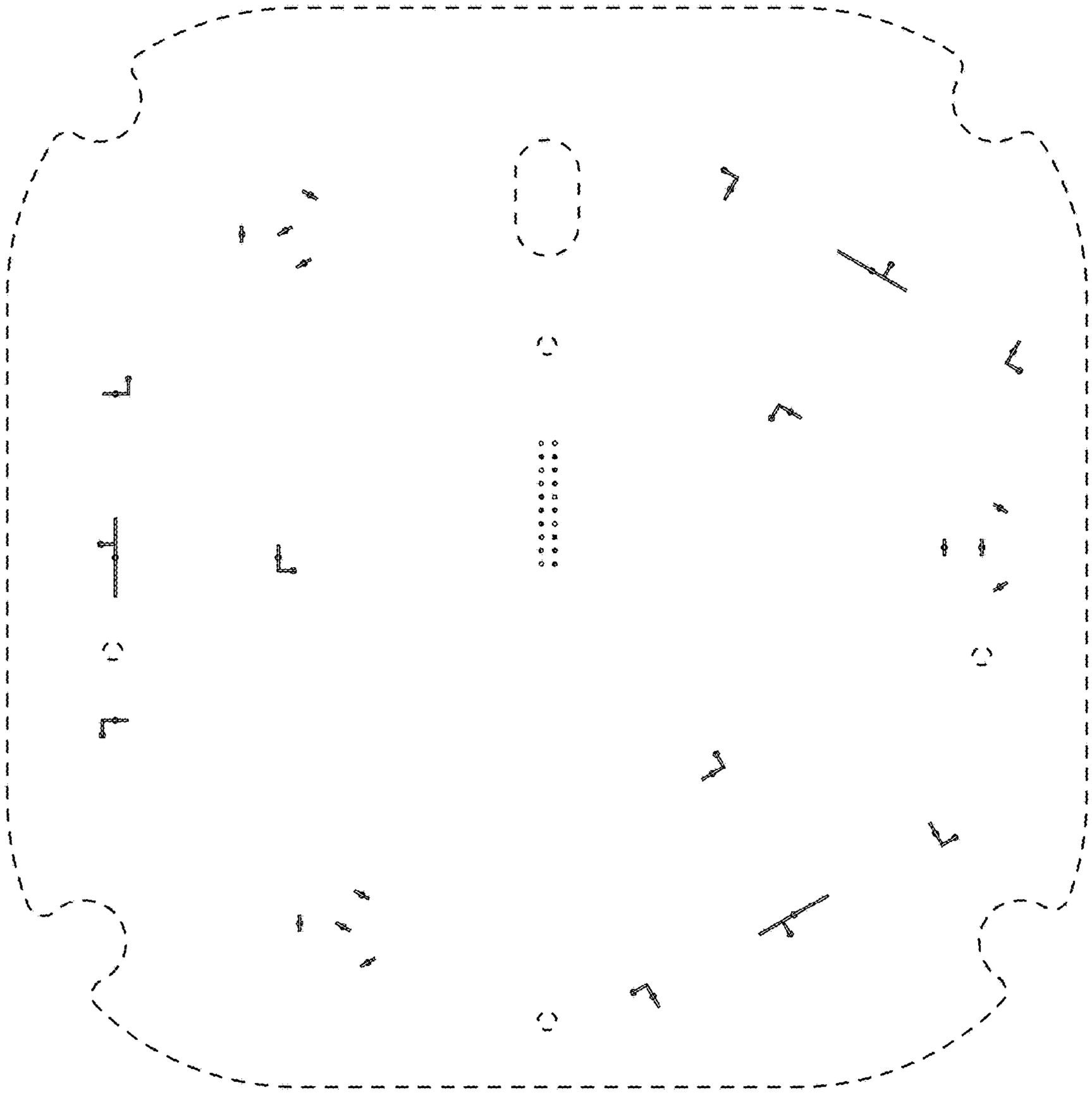


FIG. 1

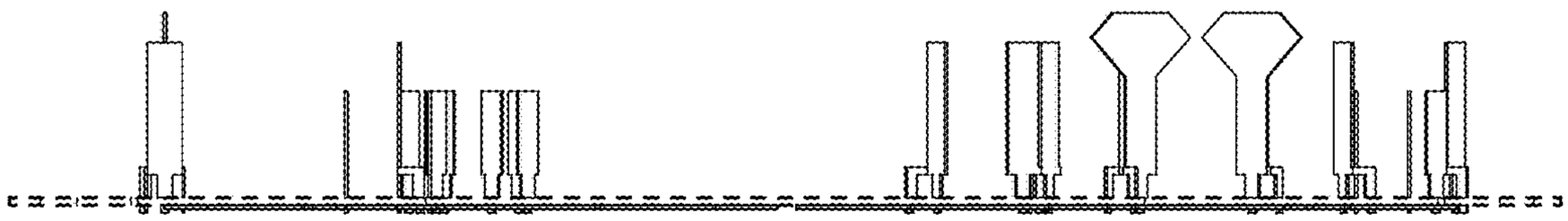


FIG. 2

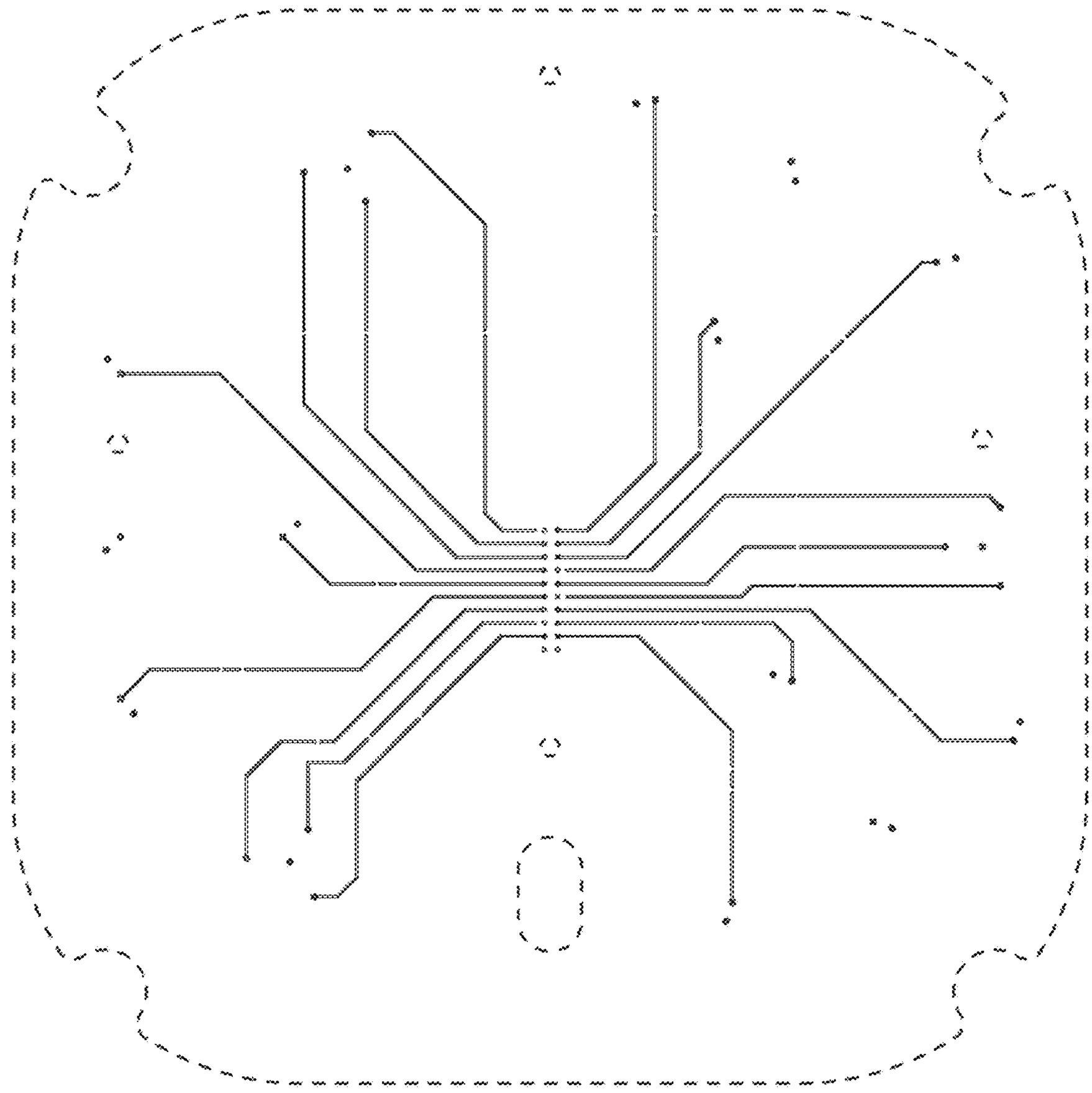


FIG. 3

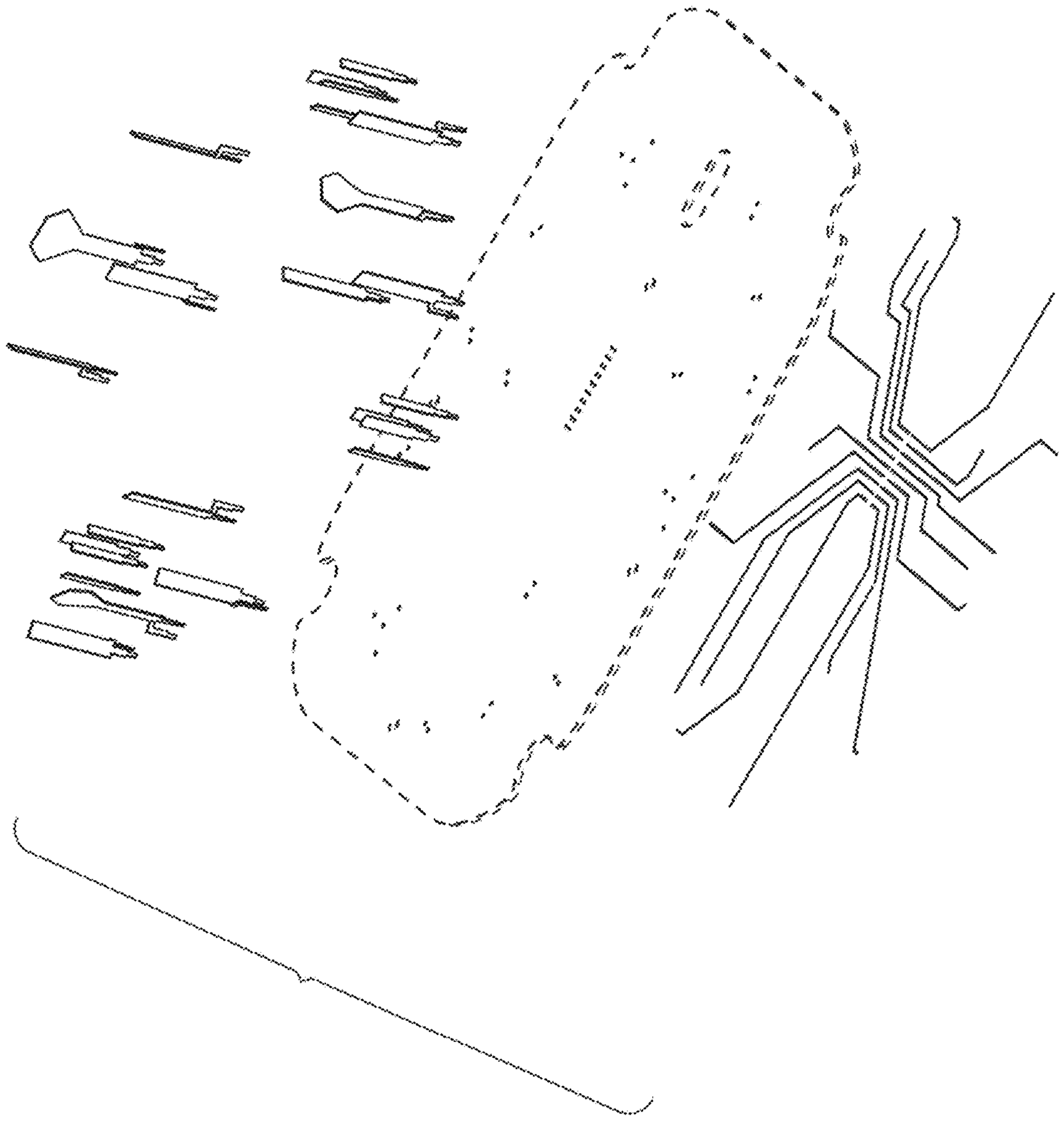


FIG. 4

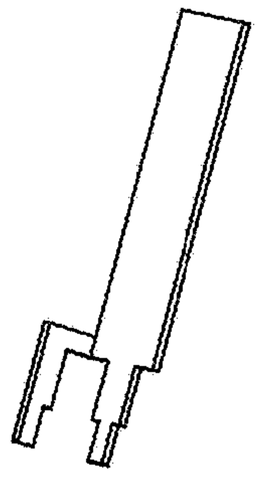


FIG. 5

FIG. 6

FIG. 7

FIG. 8

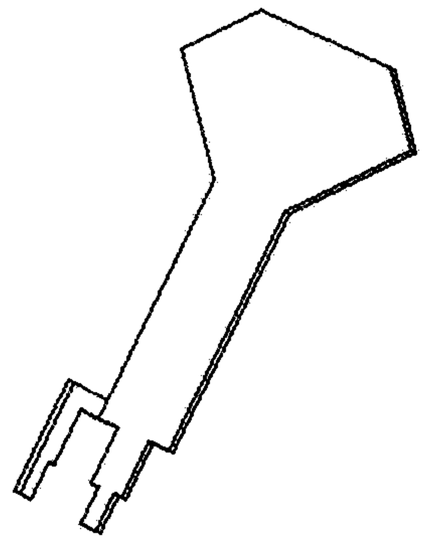


FIG. 9

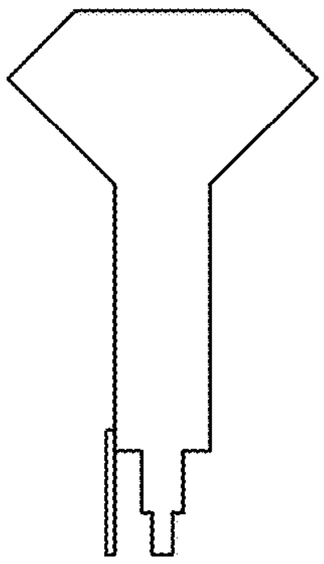


FIG. 10

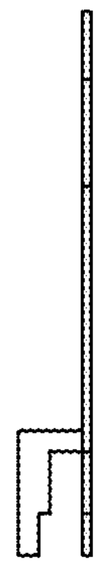


FIG. 11

FIG. 12

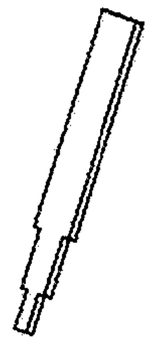


FIG. 13

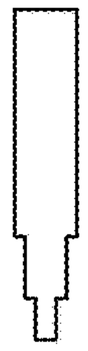


FIG. 14

FIG. 15

FIG. 16

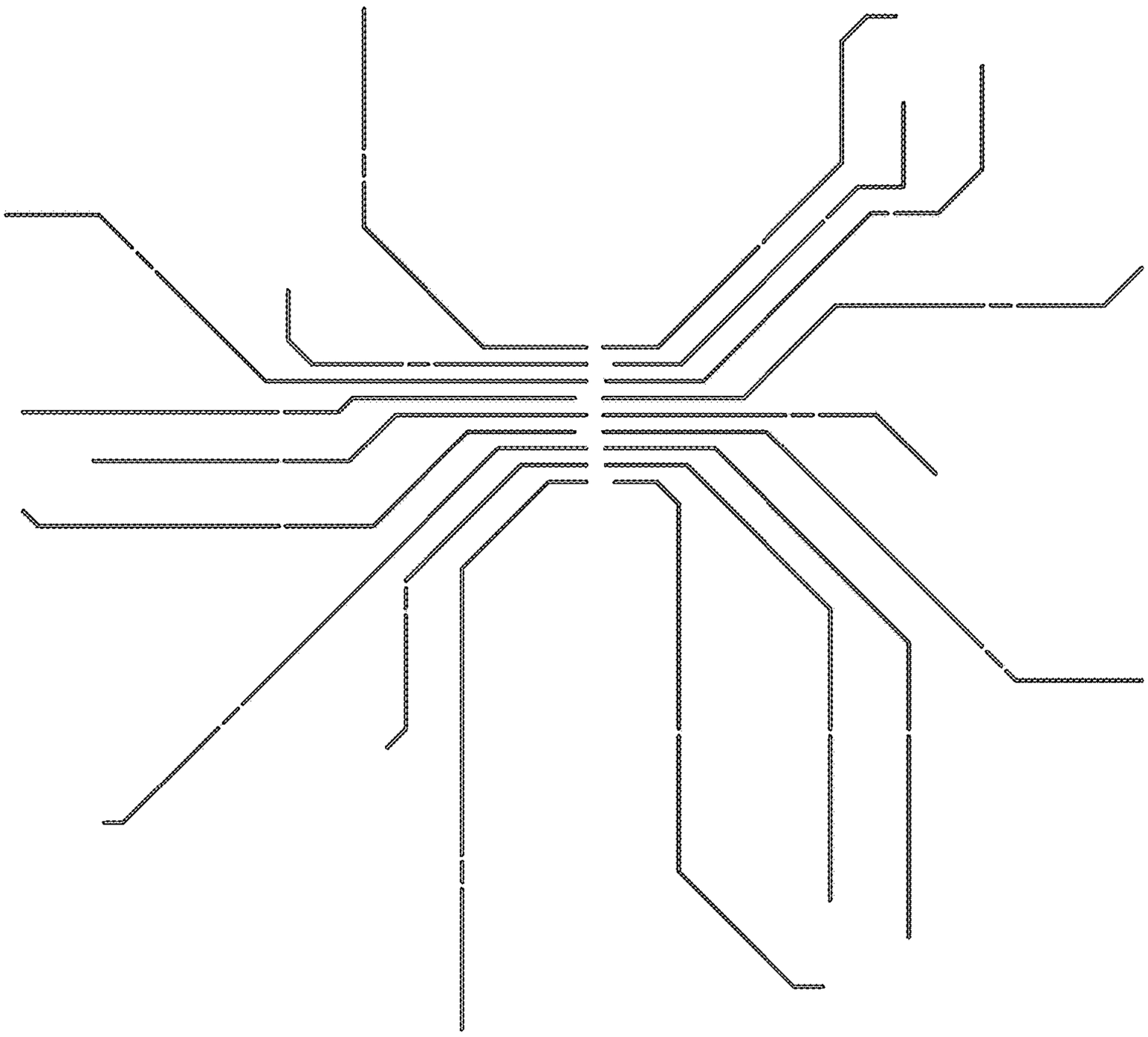


FIG. 17