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

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(54) **OMNIDIRECTIONAL MULTIBAND ANTENNA**

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

(58) **Field of Classification Search**  
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D12/43

CPC ..... H01Q 7/00; H01Q 13/10; H01Q 9/285;  
H01Q 19/30; H01Q 19/12; H01Q 1/38;  
H01Q 1/36; H04B 1/0475; H04B 1/034;  
H05K 11/00

See application file for complete search history.

(56) **References Cited**

**U.S. PATENT DOCUMENTS**

2,543,130	A *	2/1951	Robertson	.....	H01Q 15/14 342/6
2,936,453	A	5/1960	Coleman		
3,401,387	A	9/1968	Milligan et al.		
D275,673	S *	9/1984	Iino	.....	D14/230
D282,172	S *	1/1986	Mabuchi	.....	D14/233
D283,129	S *	3/1986	Fourcher	.....	D14/230

4,608,572	A	8/1986	Blakney et al.		
D361,767	S *	8/1995	Tinaphong	.....	D14/230
6,111,549	A *	8/2000	Feller	.....	H01Q 9/28 343/700 MS
6,268,834	B1 *	7/2001	Josypenko	.....	H01Q 13/04 343/727
6,486,849	B2 *	11/2002	Buckles	.....	H01Q 9/40 343/773
6,919,855	B2	7/2005	Hills		
7,548,202	B1 *	6/2009	Jennings	.....	F42C 13/04 342/418
D611,460	S *	3/2010	Chao	.....	D14/230
7,701,396	B2	4/2010	Cohen		
D623,633	S *	9/2010	Bliss	.....	D14/233
7,973,732	B2	7/2011	Cohen		
D713,392	S	9/2014	Podduturi		
8,976,069	B2	3/2015	Puente Baliarda et al.		
D775,612	S *	1/2017	Sano	.....	D14/230

(Continued)

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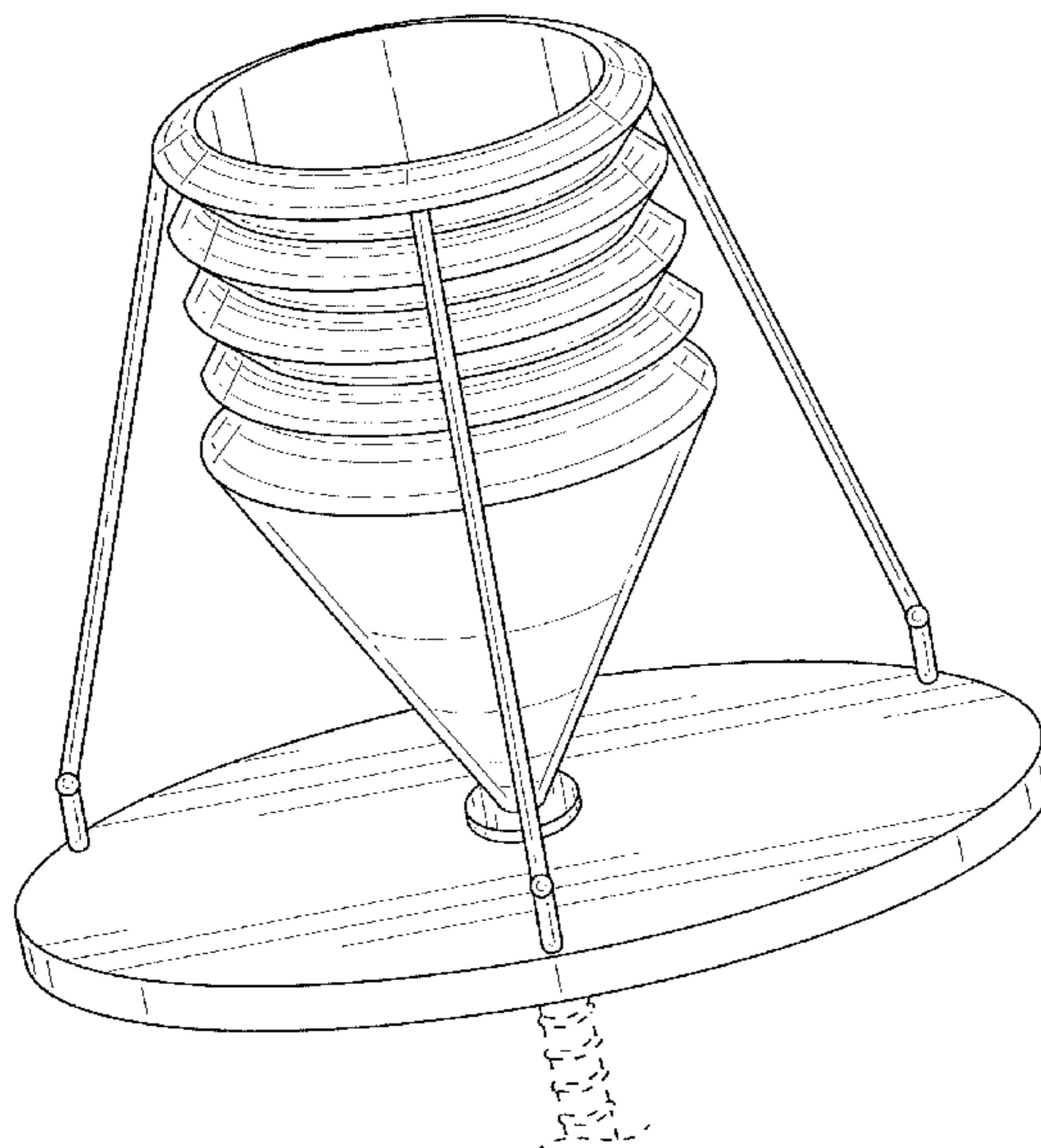
(57) **CLAIM**

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

**DESCRIPTION**

FIG. 1 is a front perspective view of an omnidirectional multiband antenna showing our new design; FIG. 2 is a rear perspective view thereof; FIG. 3 is a right side view thereof; FIG. 4 is a left side view thereof; FIG. 5 is a top view thereof; FIG. 6 is a bottom view thereof; FIG. 7 is front elevational view thereof; and, FIG. 8 is a rear elevational view thereof. The broken line showing of the coaxial cable in FIGS. 1-4 and 6-8 is for illustrative purposes only and forms no part of the claimed design.

**1 Claim, 8 Drawing Sheets**



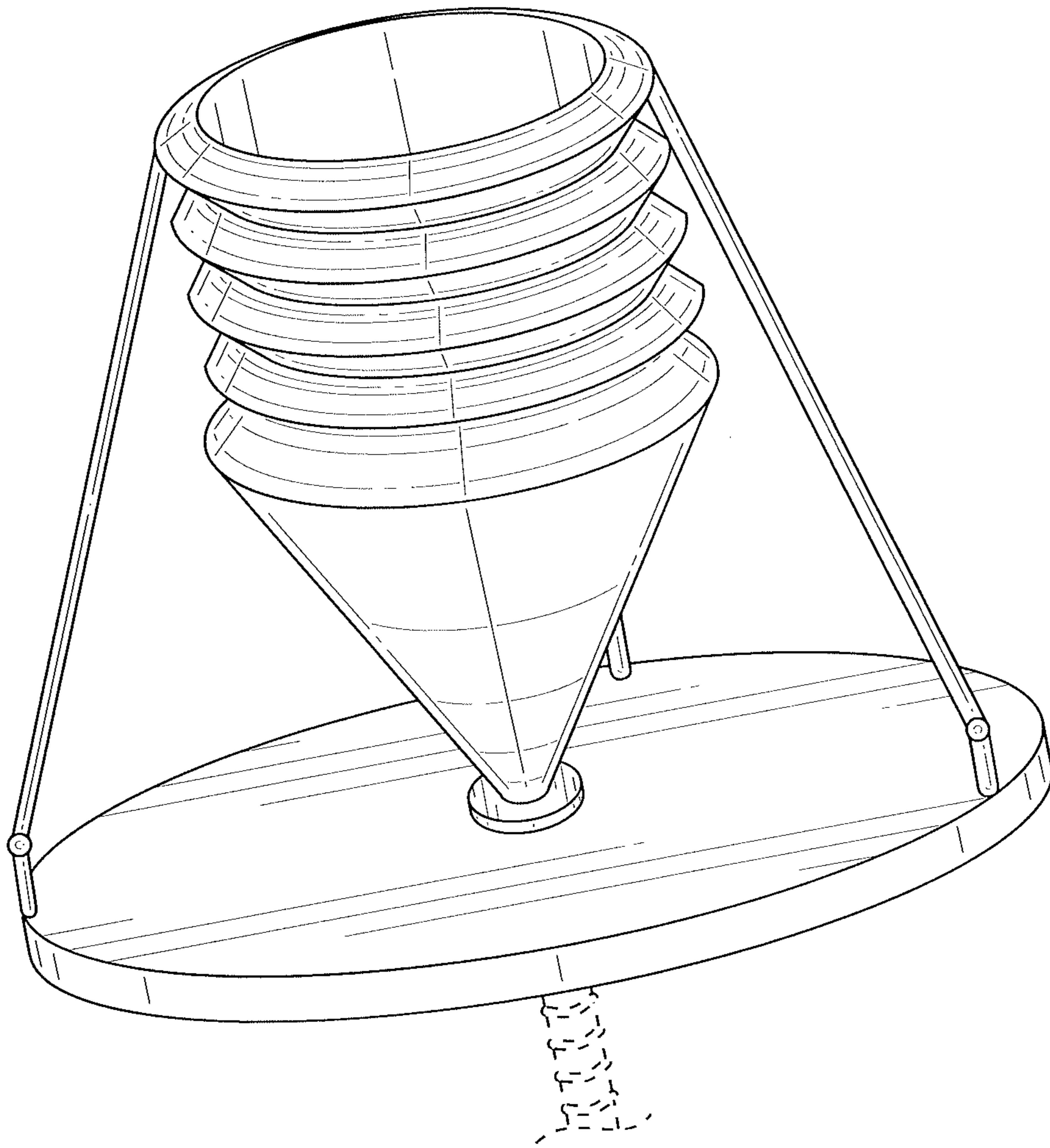
(56)

**References Cited**

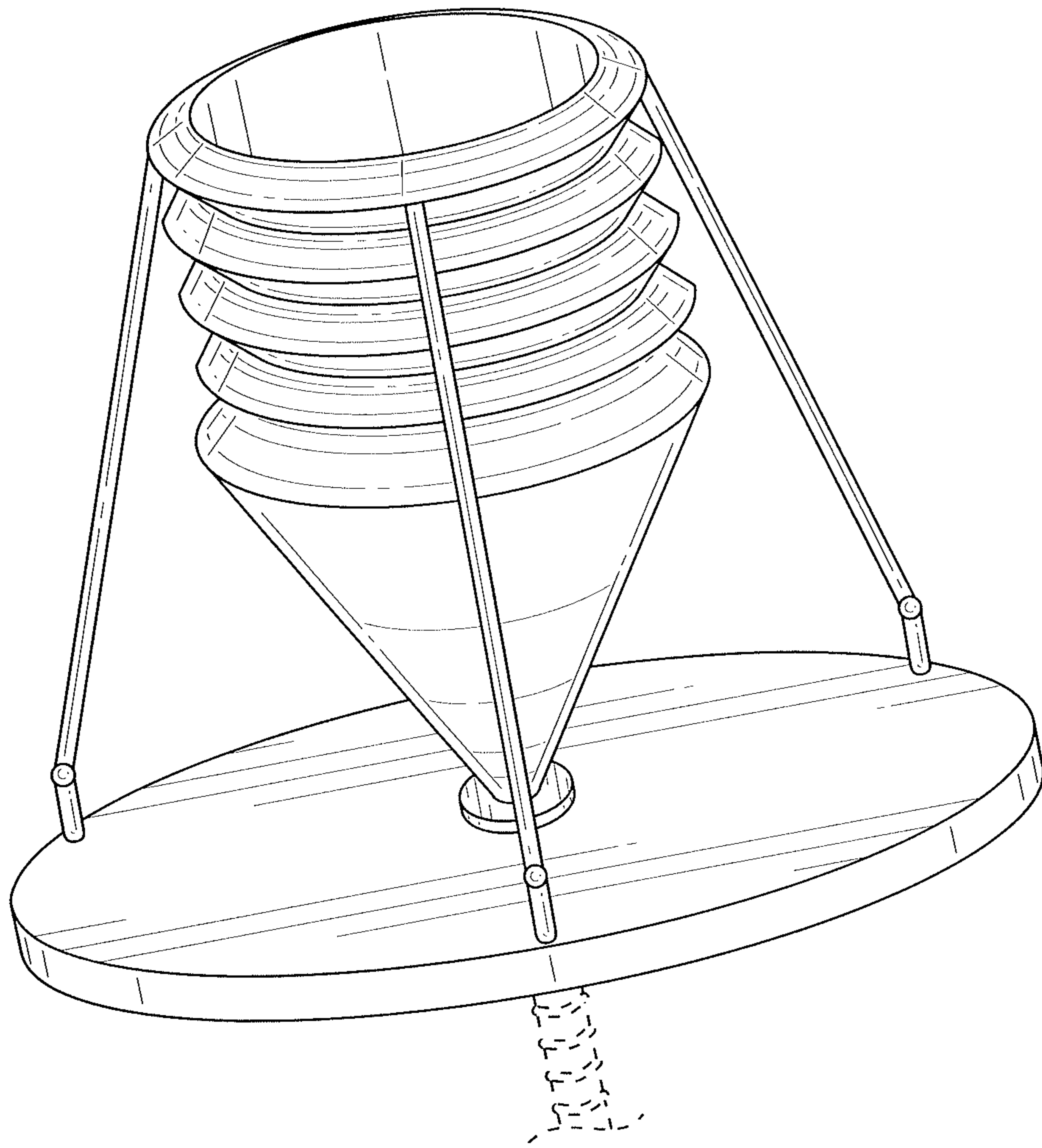
U.S. PATENT DOCUMENTS

D787,482	S *	5/2017	Jang .....	D14/230
D802,569	S *	11/2017	Zheng .....	D14/230
D829,696	S *	10/2018	Wallace .....	D14/233
10,411,357	B1 *	9/2019	Ashraf .....	H01Q 9/40
2005/0110649	A1 *	5/2005	Fredericks .....	B64D 47/06 340/815.45
2006/0012528	A1	1/2006	Hoshi et al.	
2006/0250315	A1	11/2006	Parsche	
2010/0085264	A1 *	4/2010	Du .....	H01Q 9/40 343/772
2010/0194646	A1	8/2010	Cohen	
2012/0068903	A1 *	3/2012	Thevenard .....	H01Q 3/247 343/795
2014/0203984	A1 *	7/2014	Nilsson .....	H01Q 1/42 343/774
2015/0255874	A1 *	9/2015	Hung .....	H01Q 9/40 343/786
2015/0280317	A1 *	10/2015	Morin .....	H01Q 9/28 343/795
2017/0025750	A1 *	1/2017	Su .....	H01Q 1/36
2019/0051990	A1 *	2/2019	Luo .....	H01Q 1/38

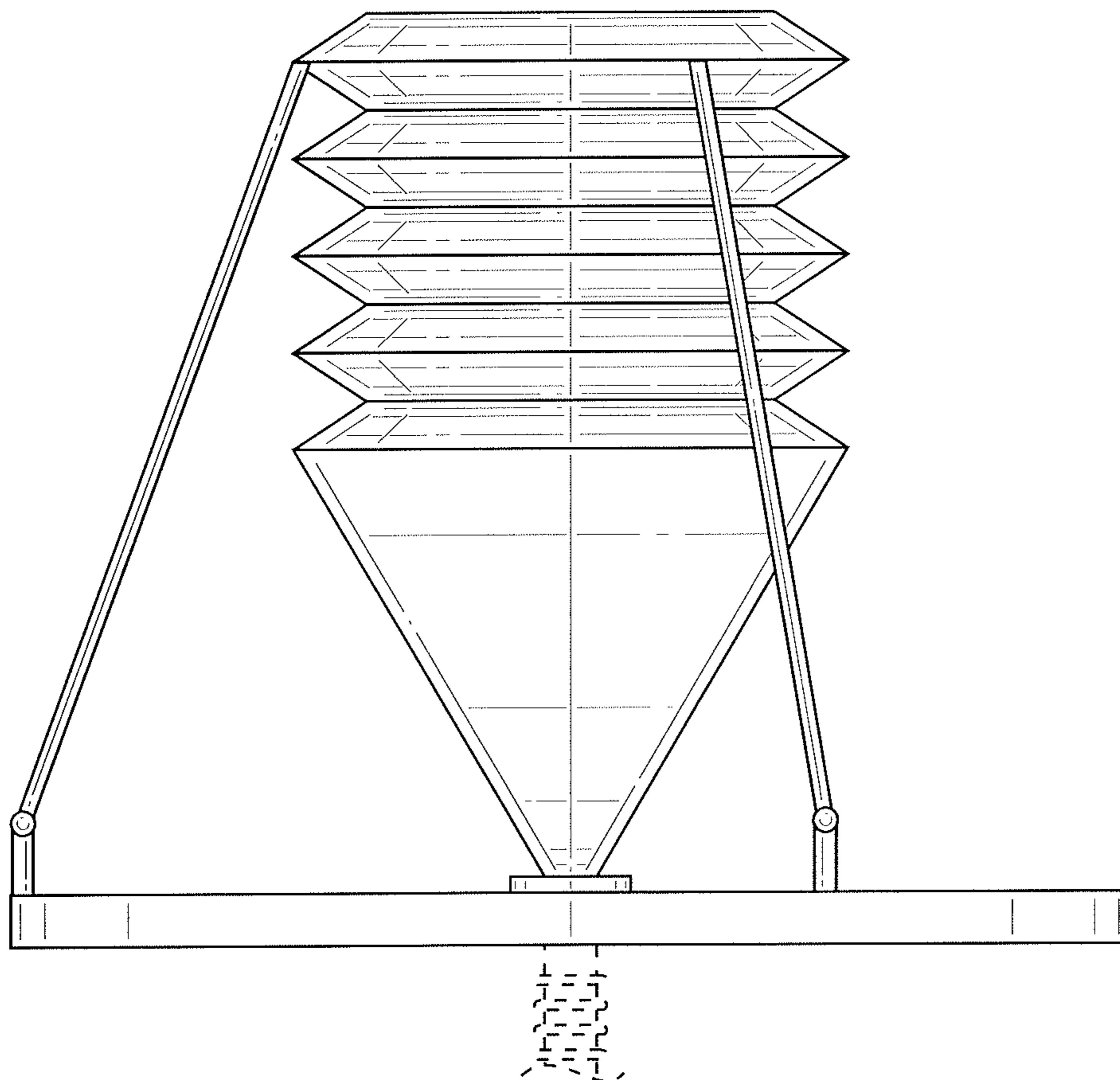
\* cited by examiner



**FIG. 1**

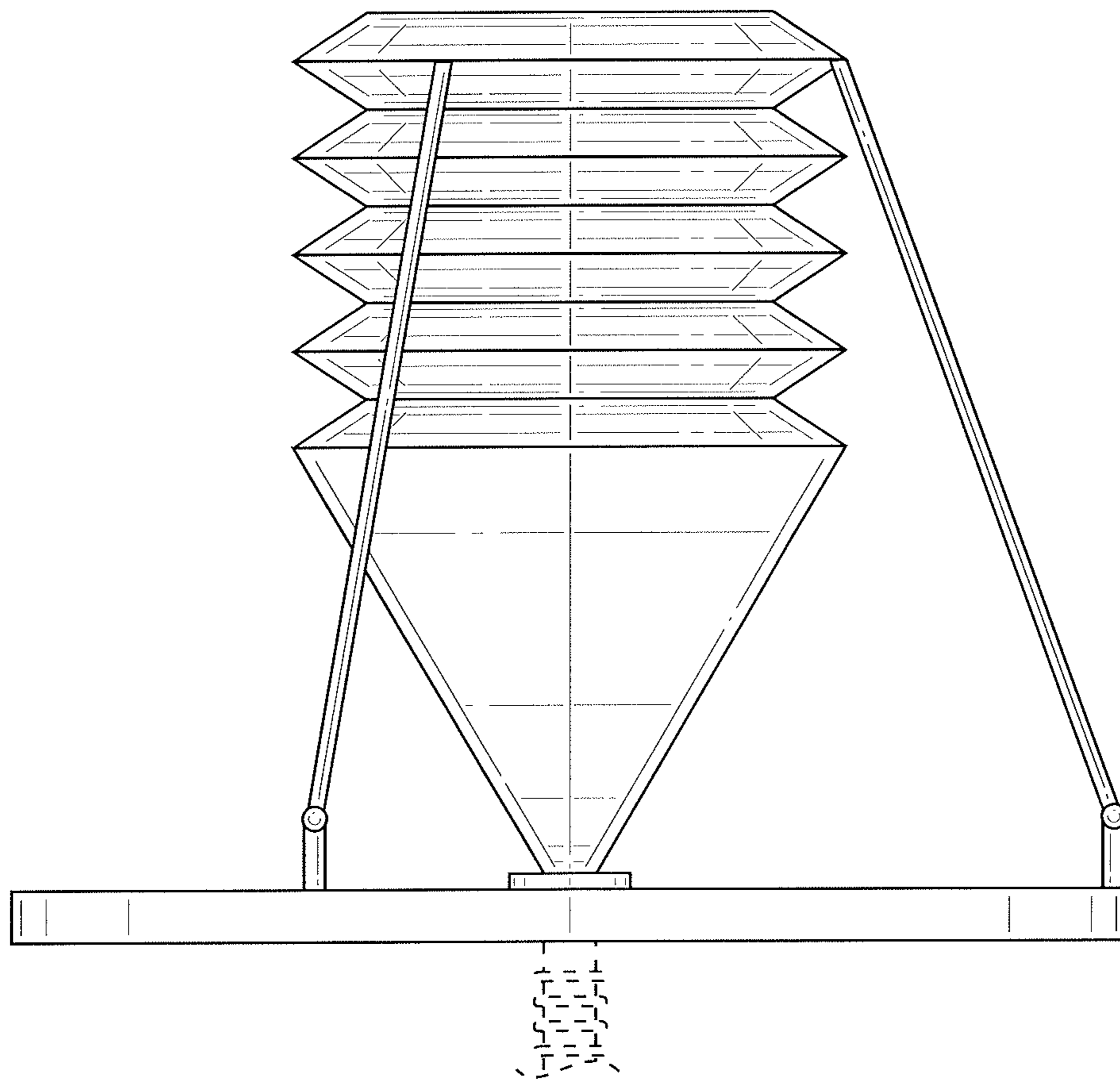


**FIG. 2**

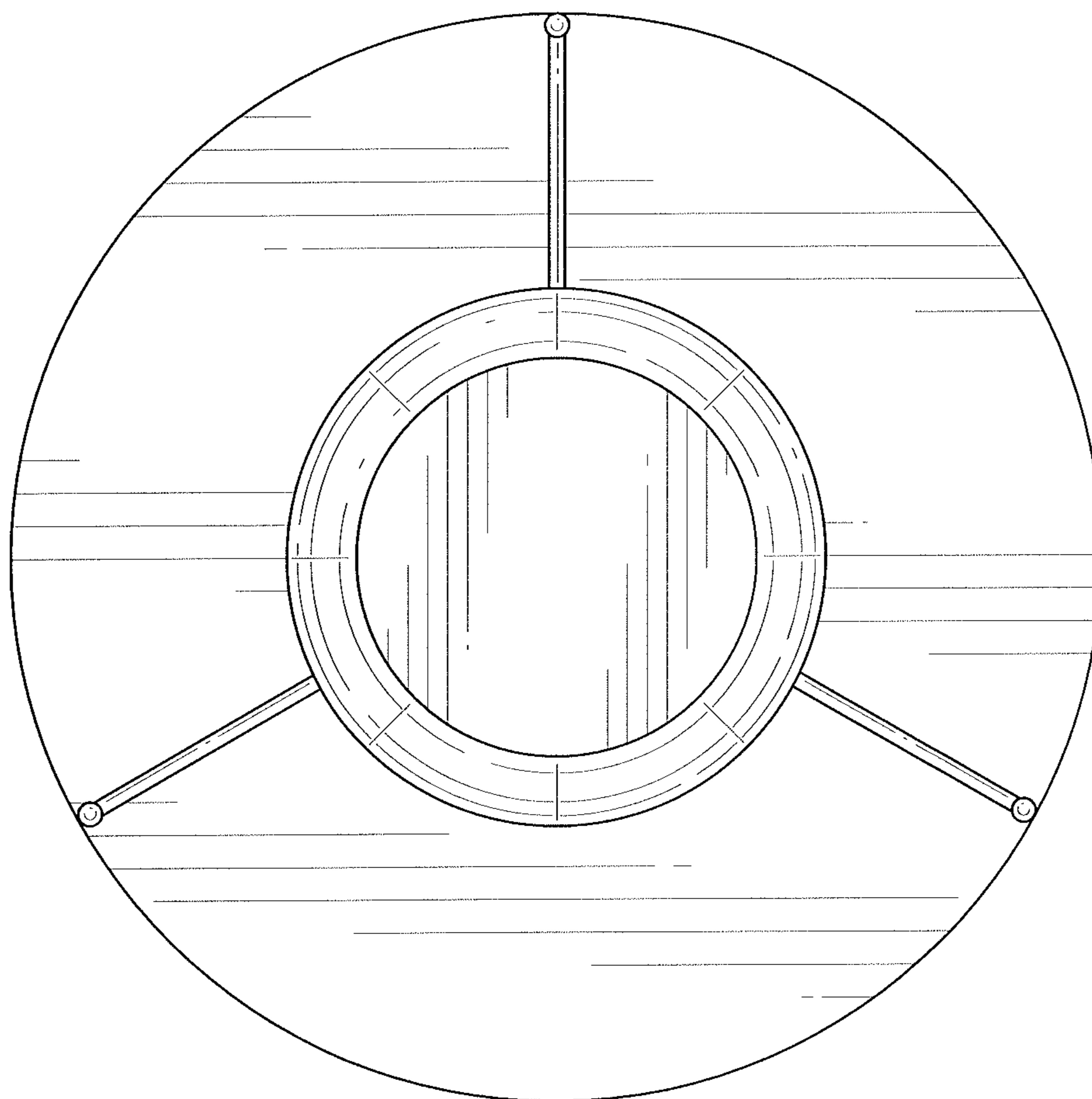


**FIG. 3**

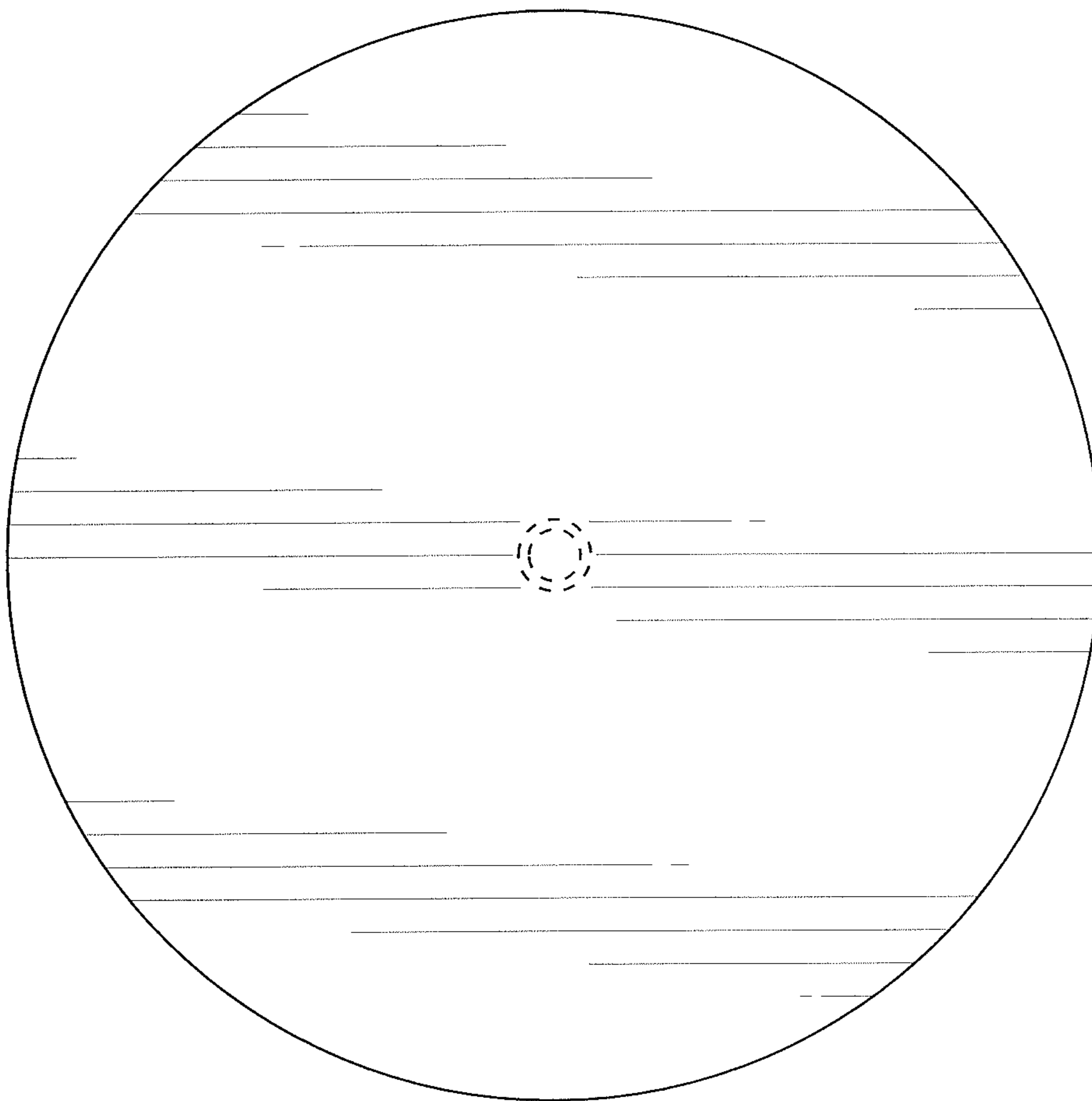




**FIG. 4**

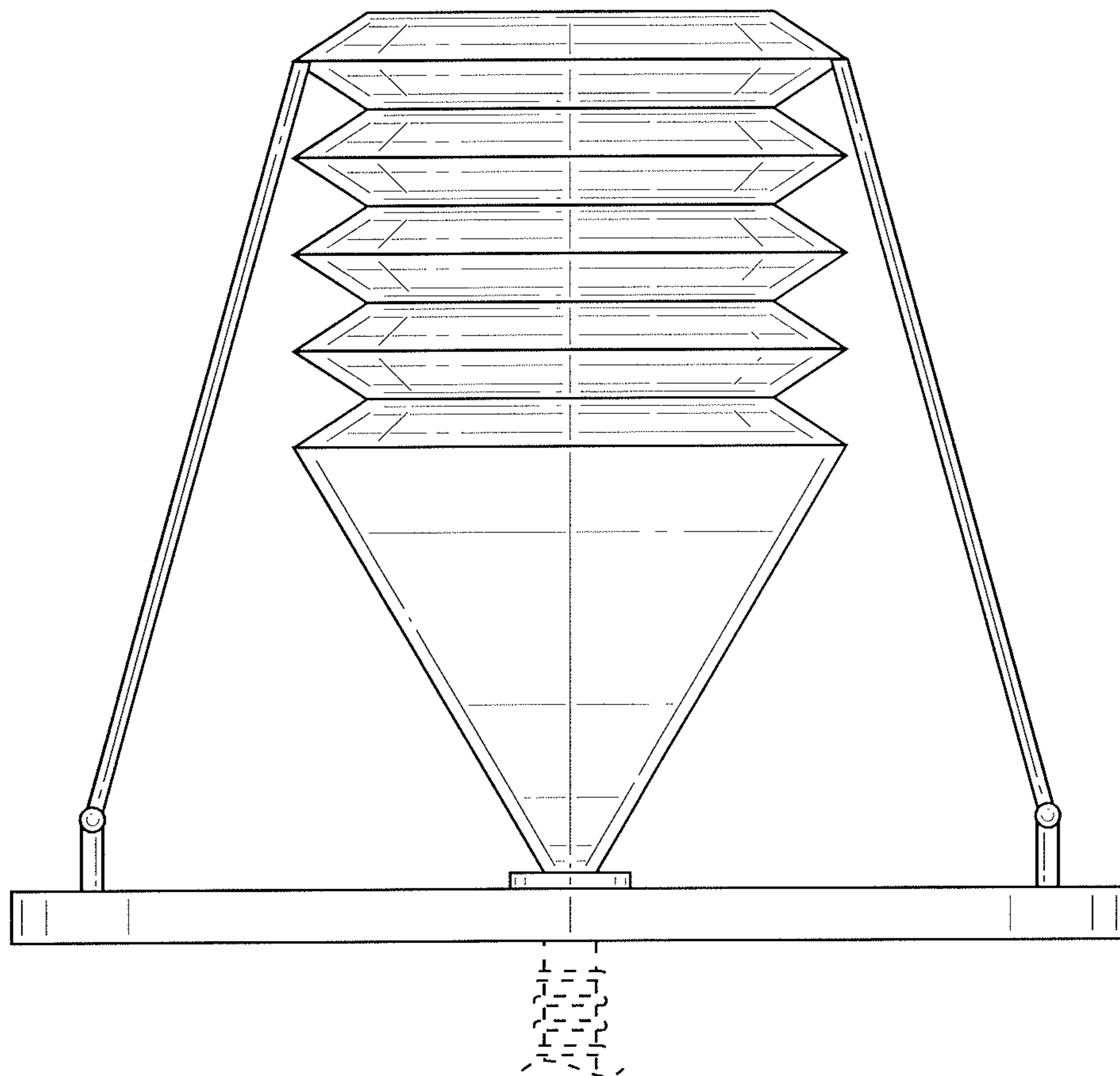


**FIG. 5**

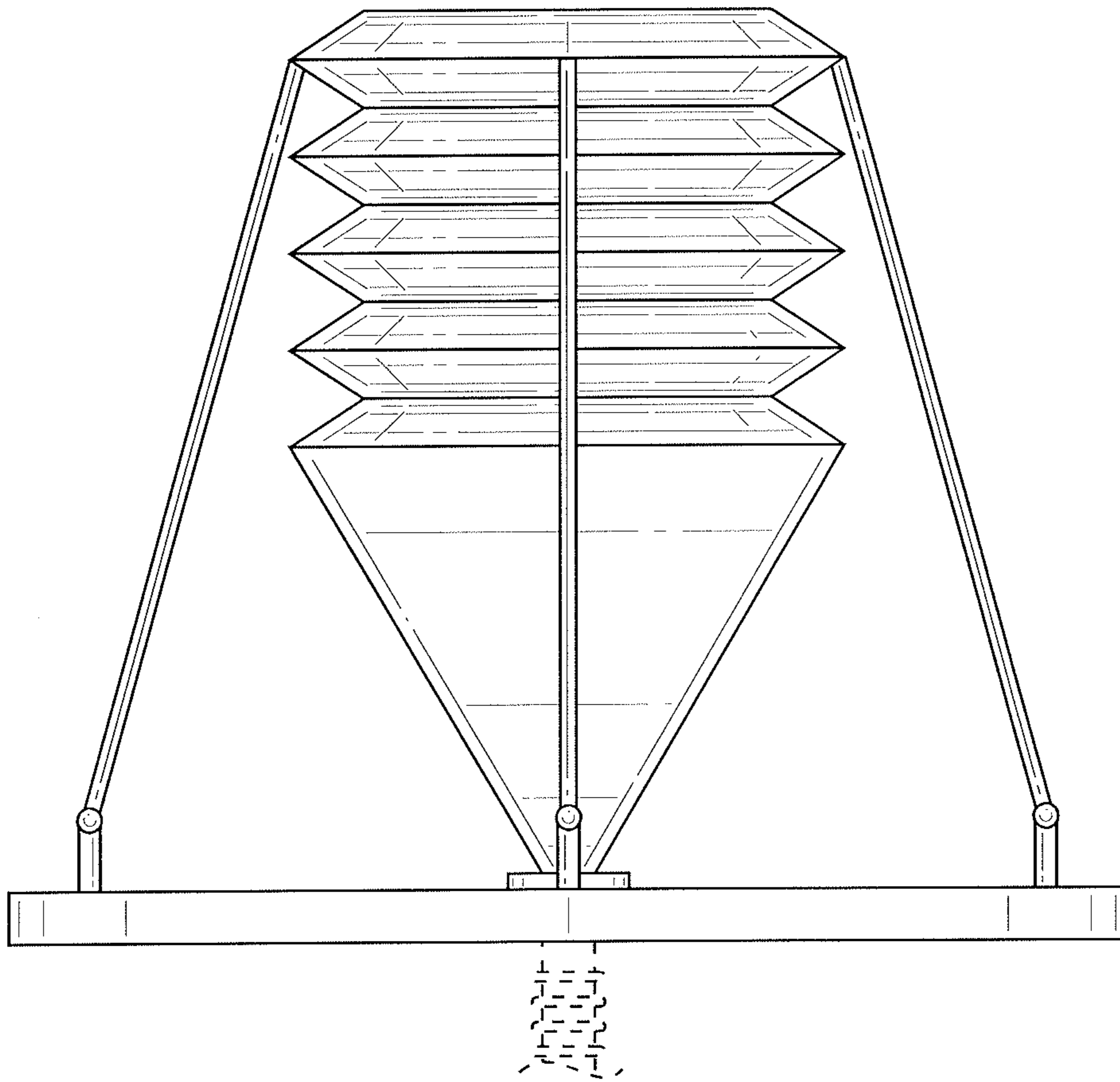


**FIG. 6**





**FIG. 7**



**FIG. 8**