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Sengupta et al.

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(54) **THREE-PORT HIGH PERFORMANCE MINI HOLLOW FIBER MEMBRANE CONTACTOR**

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

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(51) **LOC (8) Cl.** **13-03**

(52) **U.S. Cl.** **D13/151**; D13/133; D13/146

(58) **Field of Classification Search** D13/133, D13/146, 151-156, 184; D8/349, 352, 354, D8/387; D23/207, 209; 174/167, 152 R; 210/151, 188; 439/207, 252, 249, 933-934
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

3,228,877	A	1/1966	Mahon	
3,755,034	A	8/1973	Mahon et al.	
3,885,849	A *	5/1975	Bailey et al.	439/518
4,220,535	A	9/1980	Leonard	
4,664,681	A	5/1987	Anazawa et al.	
4,940,617	A	7/1990	Baurmeister	
5,186,832	A	2/1993	Mancusi et al.	
5,264,171	A	11/1993	Prasad et al.	

5,284,584	A	2/1994	Huang et al.	
5,352,361	A	10/1994	Prasad et al.	
D357,058	S *	4/1995	Engelhard	D23/209
5,449,457	A	9/1995	Prasad	
5,525,069	A *	6/1996	Roscizewski et al.	439/184
5,979,668	A *	11/1999	Kane et al.	210/446
D438,844	S *	3/2001	Meyer et al.	D13/155
6,207,053	B1 *	3/2001	Carroll et al.	210/500.23
D443,858	S *	6/2001	Treiger et al.	D13/133
D506,439	S *	6/2005	Wang	D13/133
2003/0009942	A1	1/2003	Amendola et al.	

* cited by examiner

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(57) **CLAIM**

The ornamental design for a three-port high performance mini hollow fiber membrane contactor, as shown and described.

DESCRIPTION

FIG. 1 is a perspective view of a three-port high performance mini hollow fiber membrane contactor showing our new design;

FIG. 2 is first side elevational view thereof;

FIG. 3 is a second side elevational view thereof;

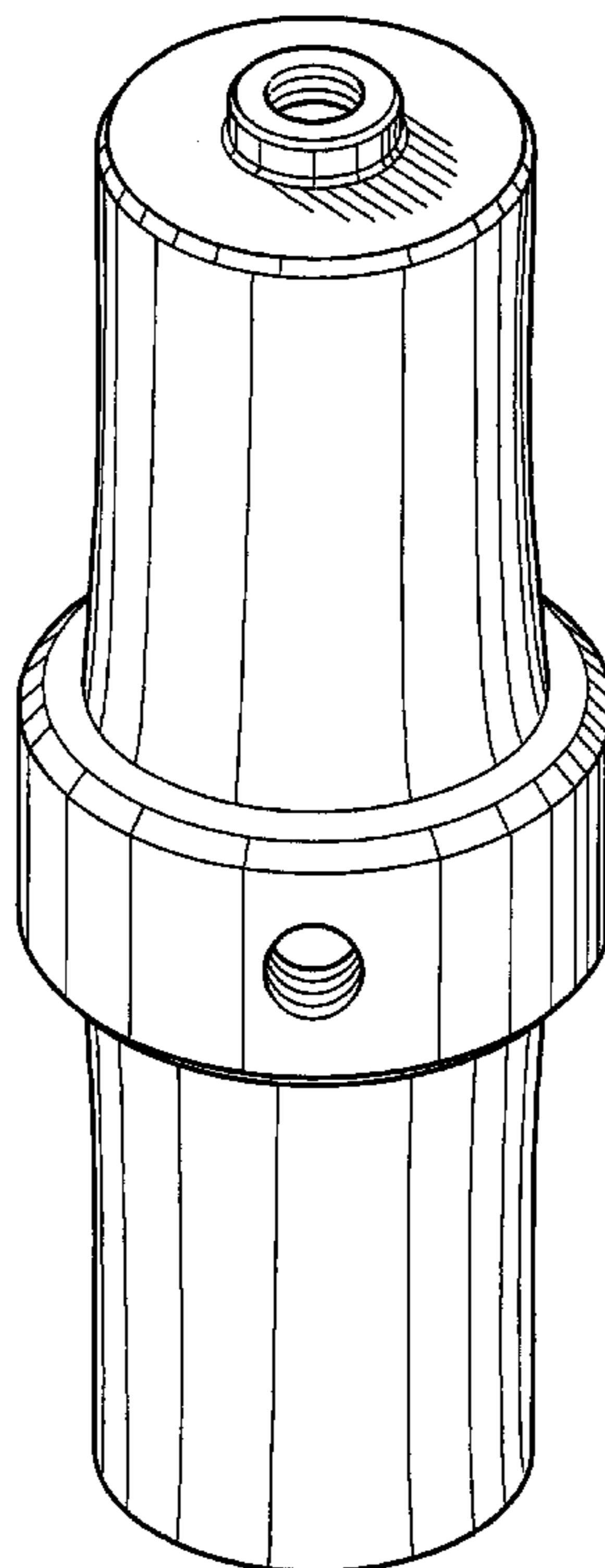
FIG. 4 is a third side elevational view thereof;

FIG. 5 is a fourth side elevational view thereof;

FIG. 6 is a top plan view thereof; and,

FIG. 7 is a bottom plan view thereof.

1 Claim, 4 Drawing Sheets



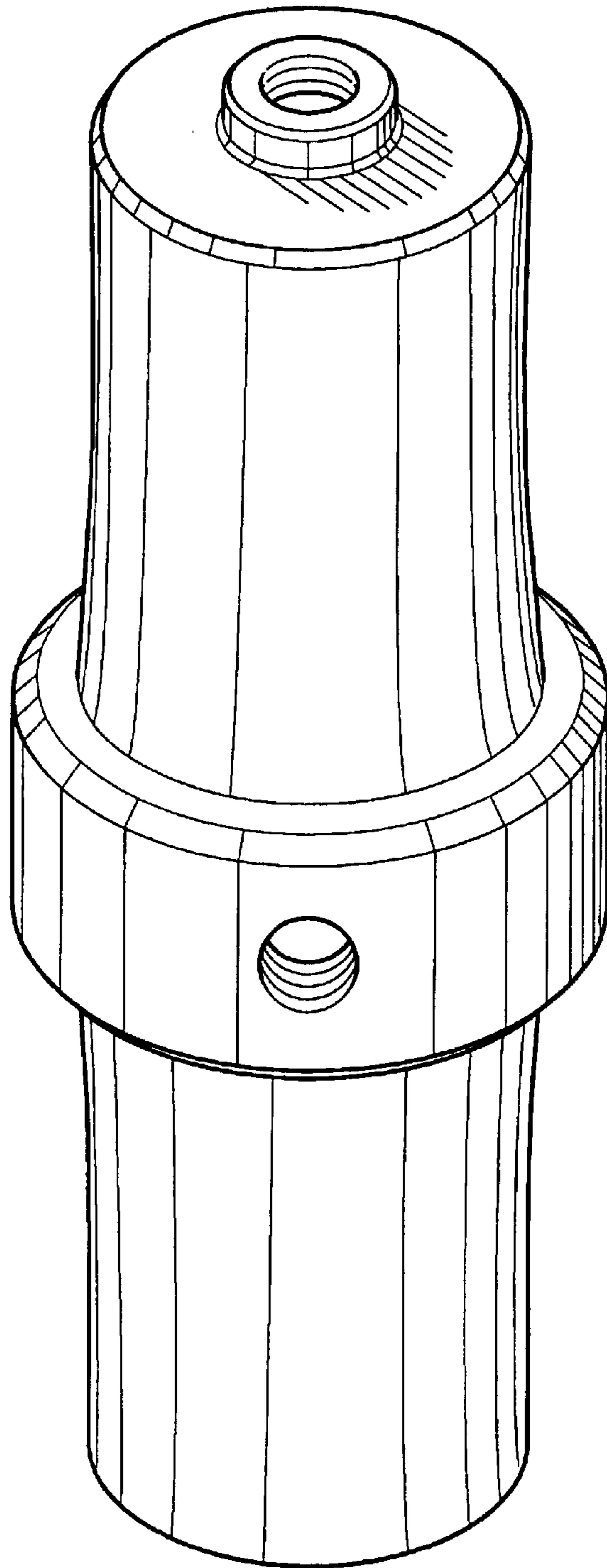


Fig. 1

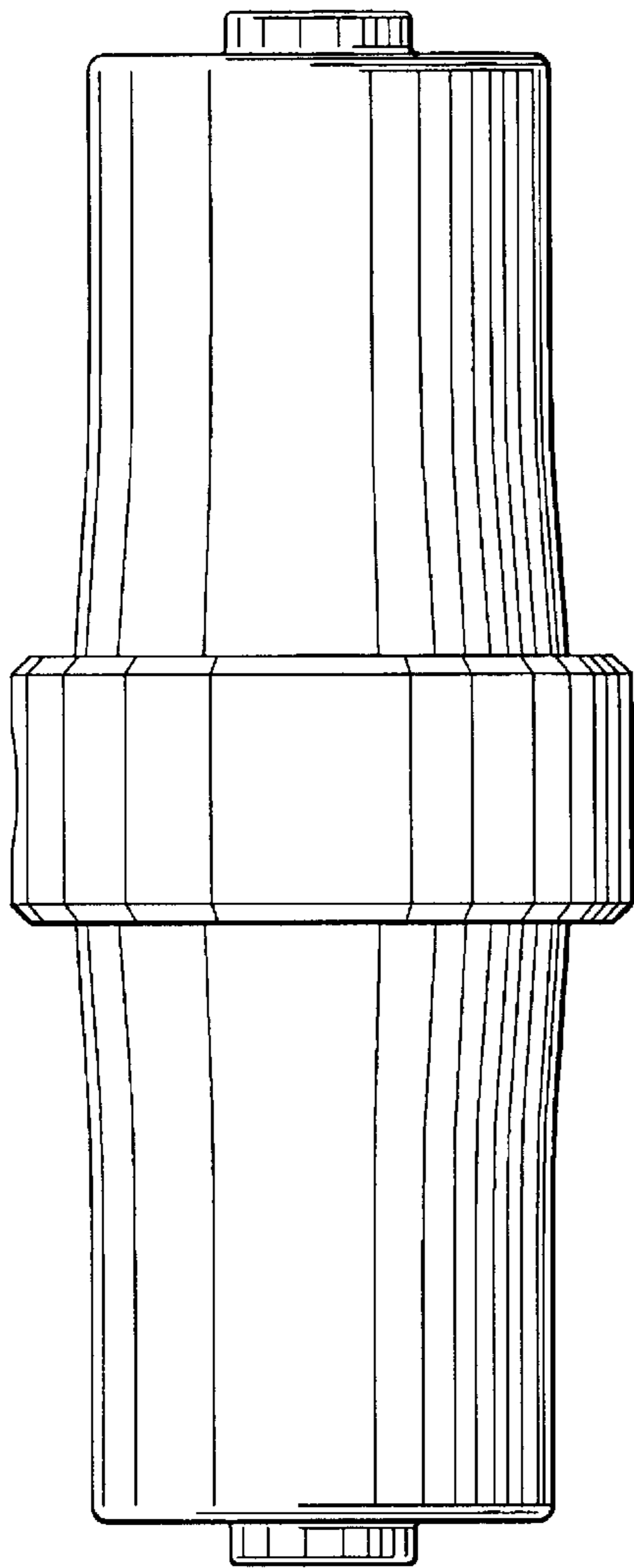


Fig. 2

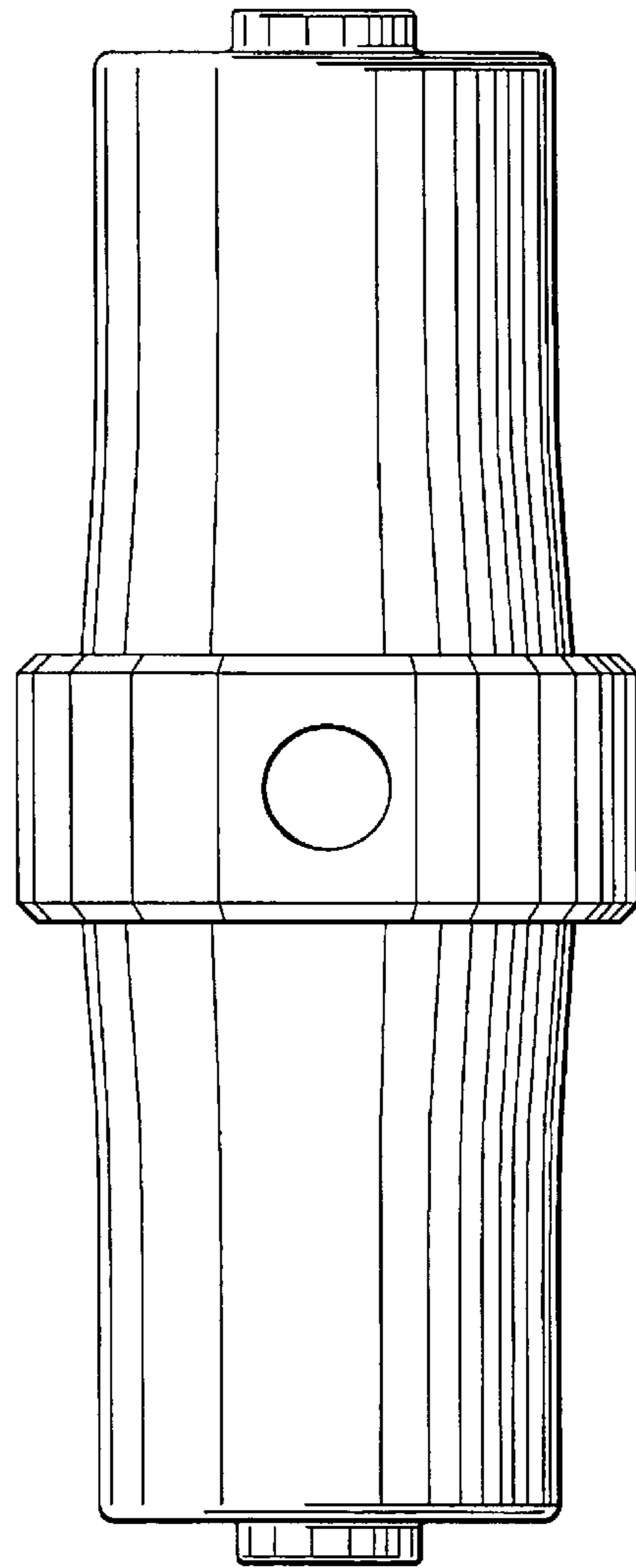


Fig. 3

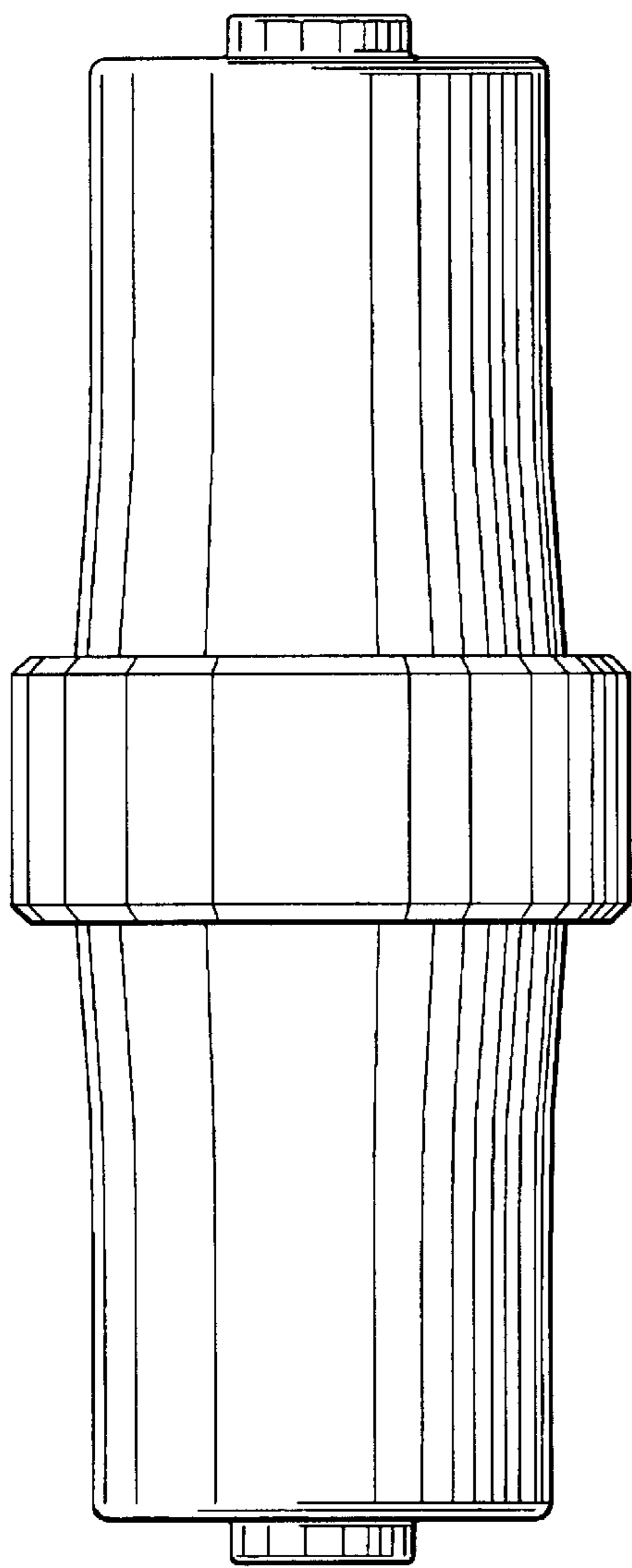


Fig. 4

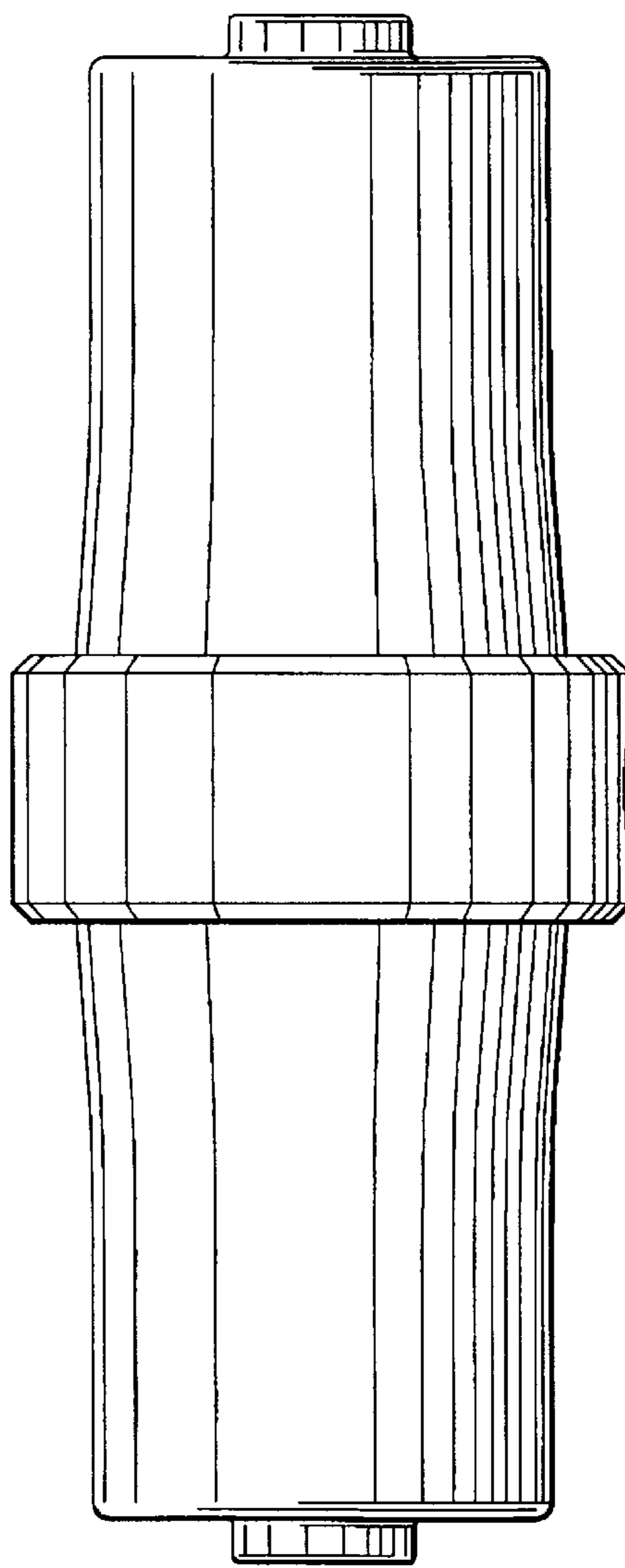


Fig. 5

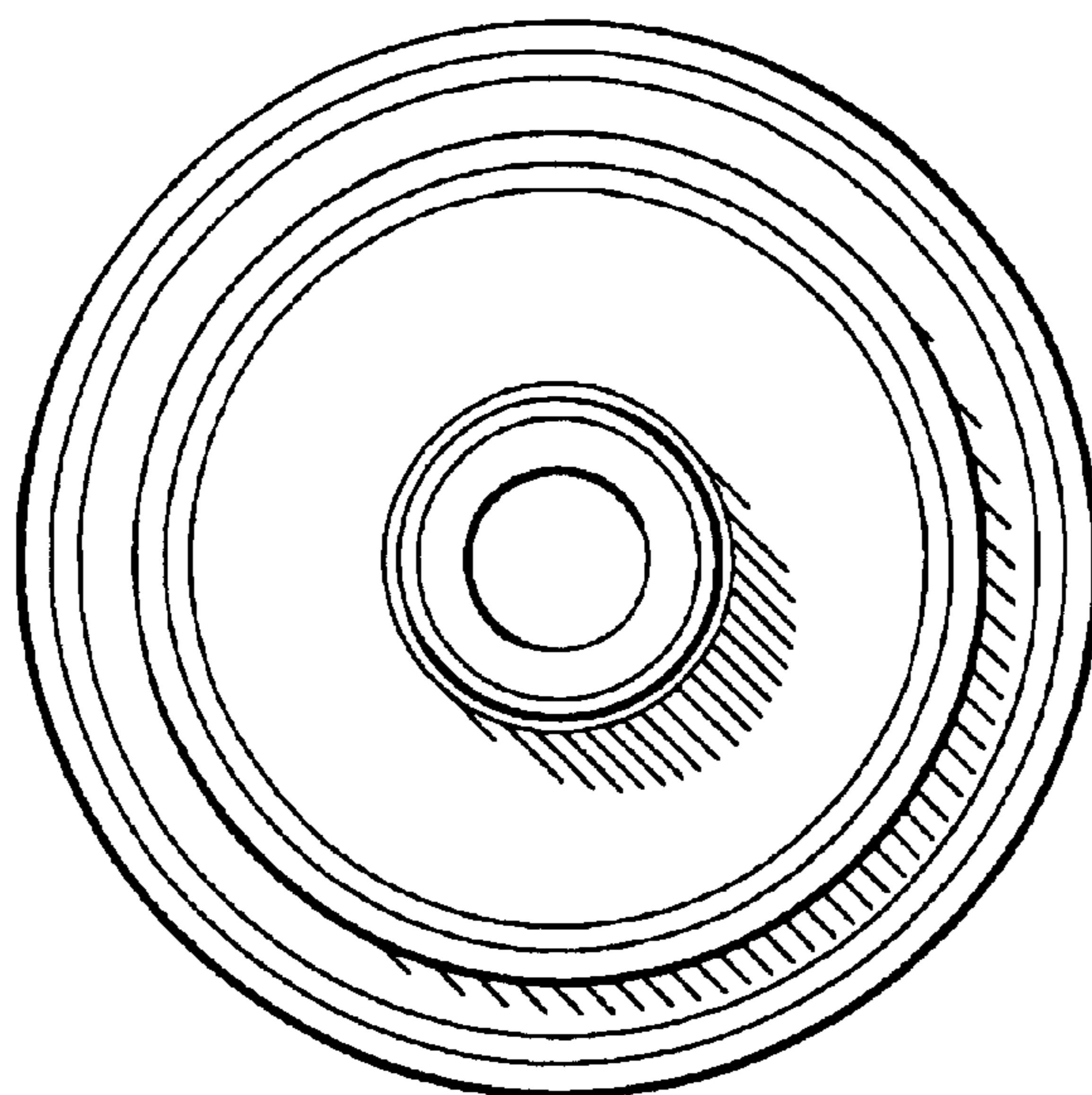


Fig. 6

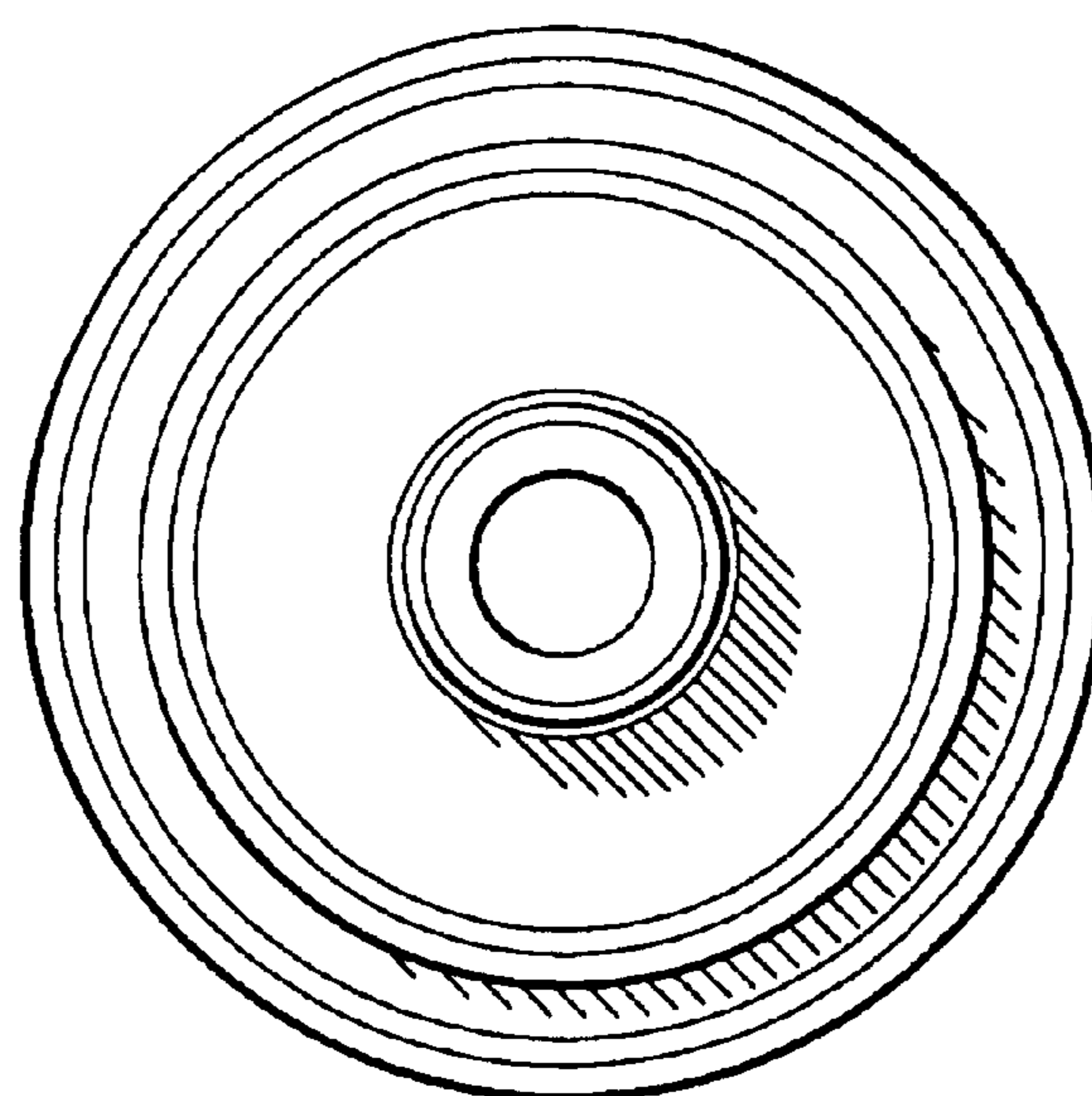


Fig. 7