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United States Patent [19]

Shimazu

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[54] **OUTER TUBE FOR USE IN A SEMICONDUCTOR WAFER HEAT PROCESSING APPARATUS**

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[73] Assignee: **Tokyo Electron Limited**, Tokyo-to, Japan

[**] Term: **14 Years**

[21] Appl. No.: **82,978**

[22] Filed: **Feb. 2, 1998**

[30] **Foreign Application Priority Data**

Aug. 20, 1997 [JP] Japan 9-65095

[51] **LOC (6) Cl.** **13-03**
[52] **U.S. Cl.** **D13/182**
[58] **Field of Search** D13/182; D15/144, D15/144.1, 199; 414/935–941, 217, 147; 437/247, 946

[56] **References Cited**

U.S. PATENT DOCUMENTS

4,587,689	5/1986	Lee	414/935 X
5,046,909	9/1991	Murdoch	414/935 X
5,314,574	5/1994	Takahashi	414/935 X
5,320,218	6/1994	Yamashita et al.	414/935 X
5,407,449	4/1995	Zinger	414/935 X
5,516,732	5/1996	Flegal	414/935 X
5,518,360	5/1996	Toda et al.	414/935 X
5,536,128	7/1996	Shimoyashiro et al.	414/935 X
5,658,115	8/1997	Yamazaki et al.	414/935 X
5,752,796	5/1998	Muka	414/935 X

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[57] **CLAIM**

I claim the ornamental design for an outertube for use in a semiconductor wafer heat processing apparatus, as shown and described.

DESCRIPTION

FIG. **1** a perspective view of a outertube for use in a semiconductor wafer heat processing apparatus;
FIG. **2** a front elevational view thereof;
FIG. **3** a top plan view thereof;
FIG. **4** a bottom plan view thereof; and,
FIG. **5** a cross-sectional view taken along line V-V in FIG. **3** .

1 Claim, 2 Drawing Sheets

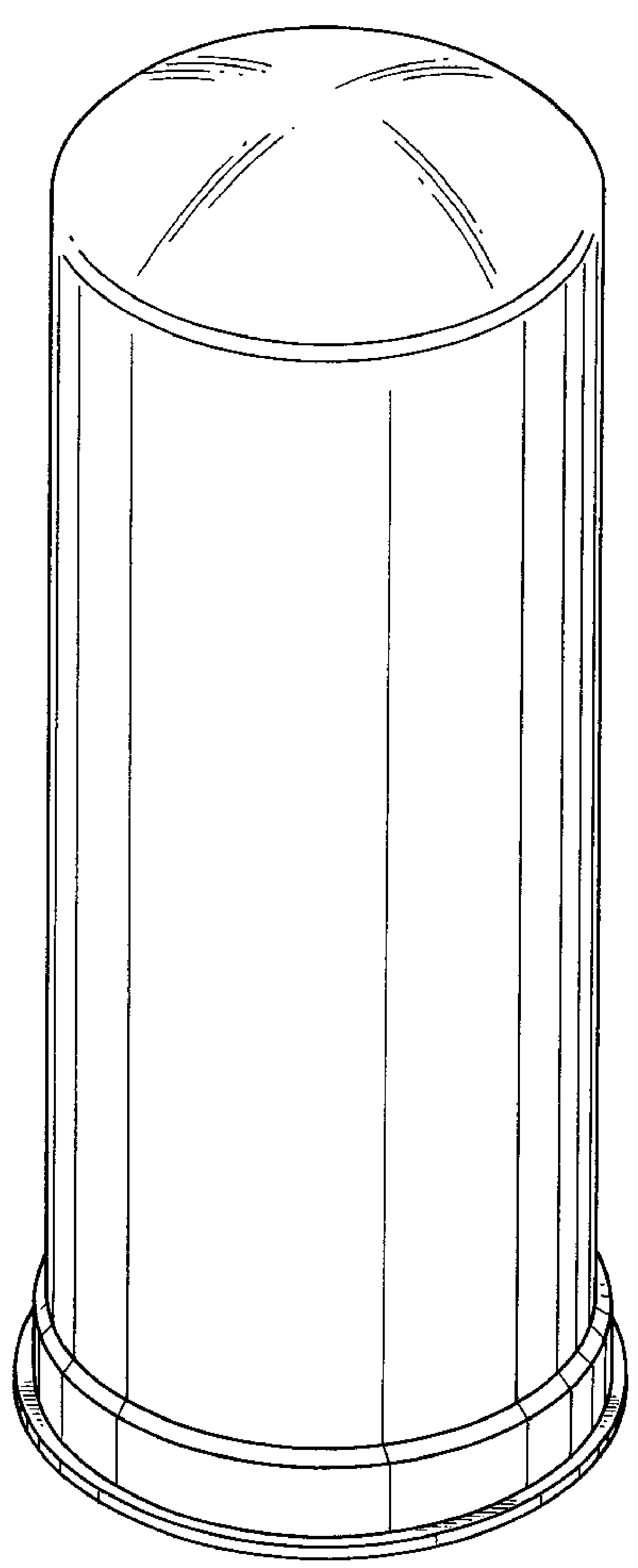

FIG. 1

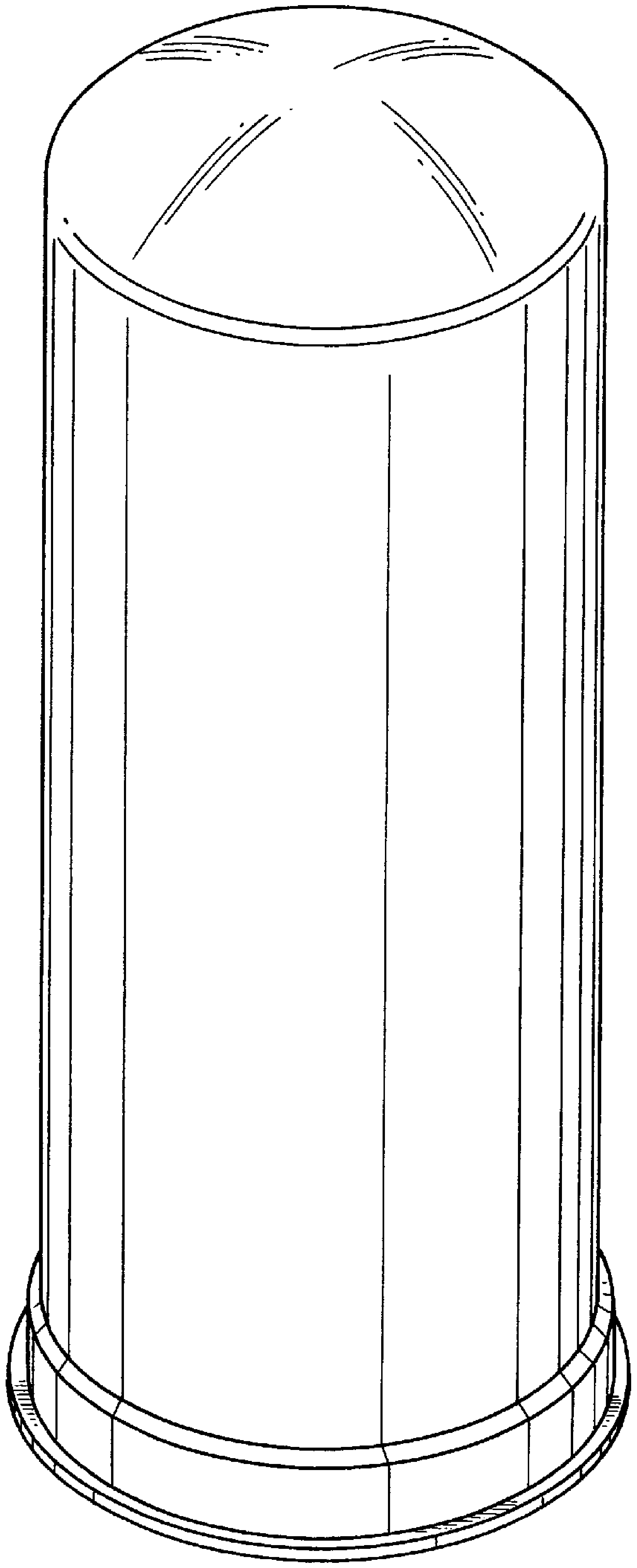

FIG. 2

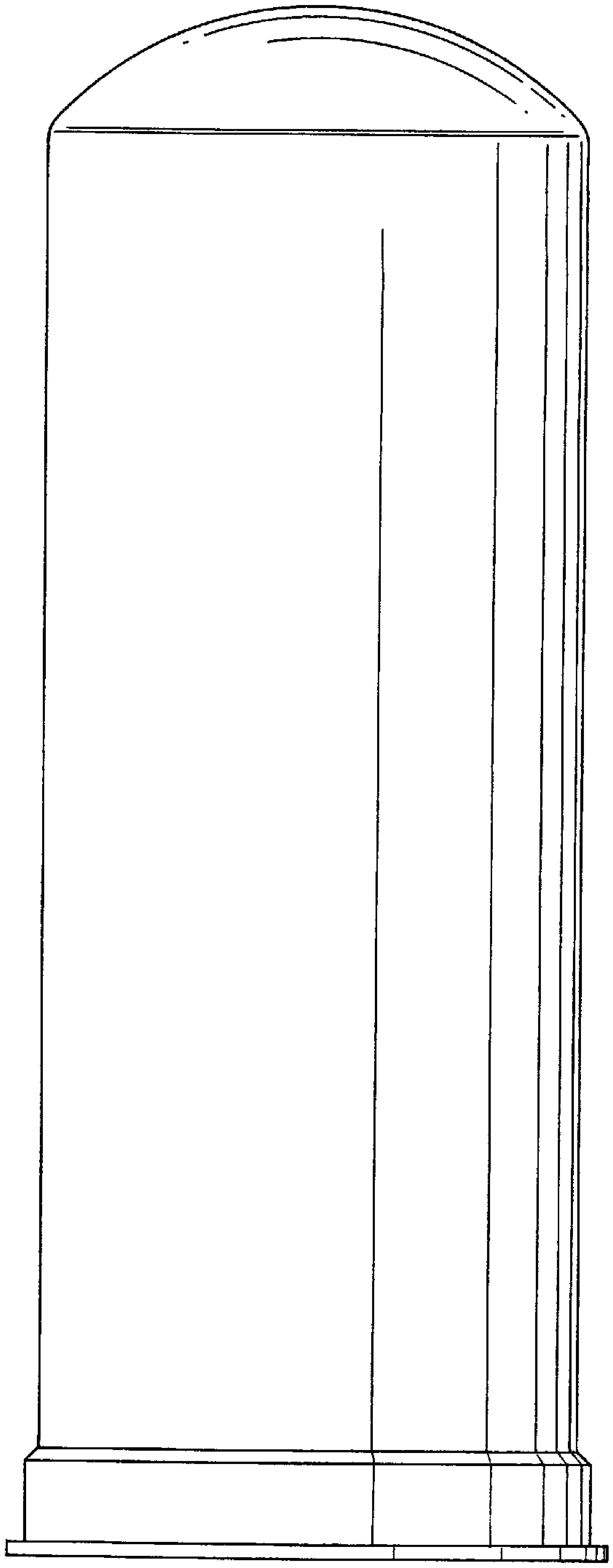

FIG. 3

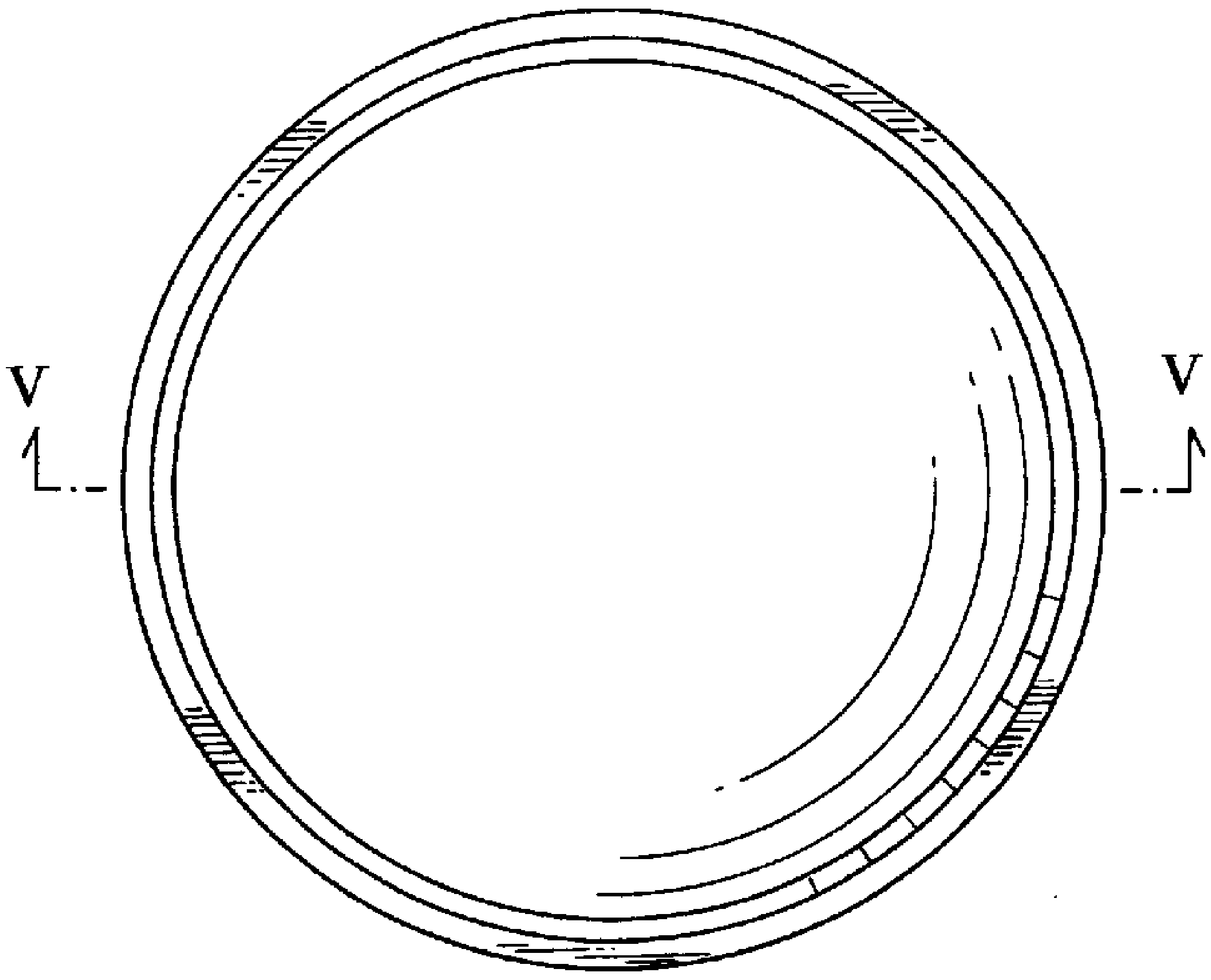

FIG. 4

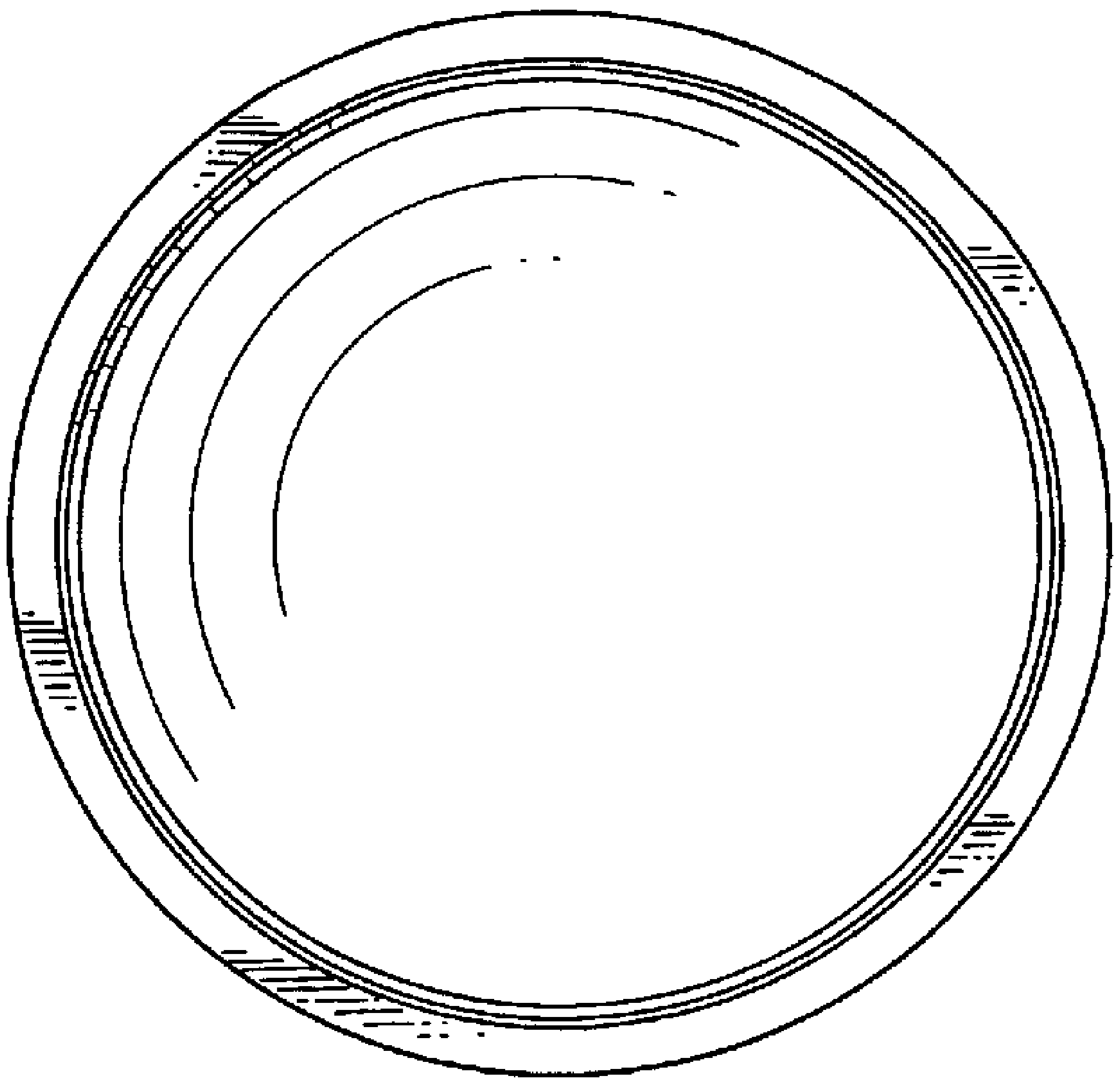

FIG. 5