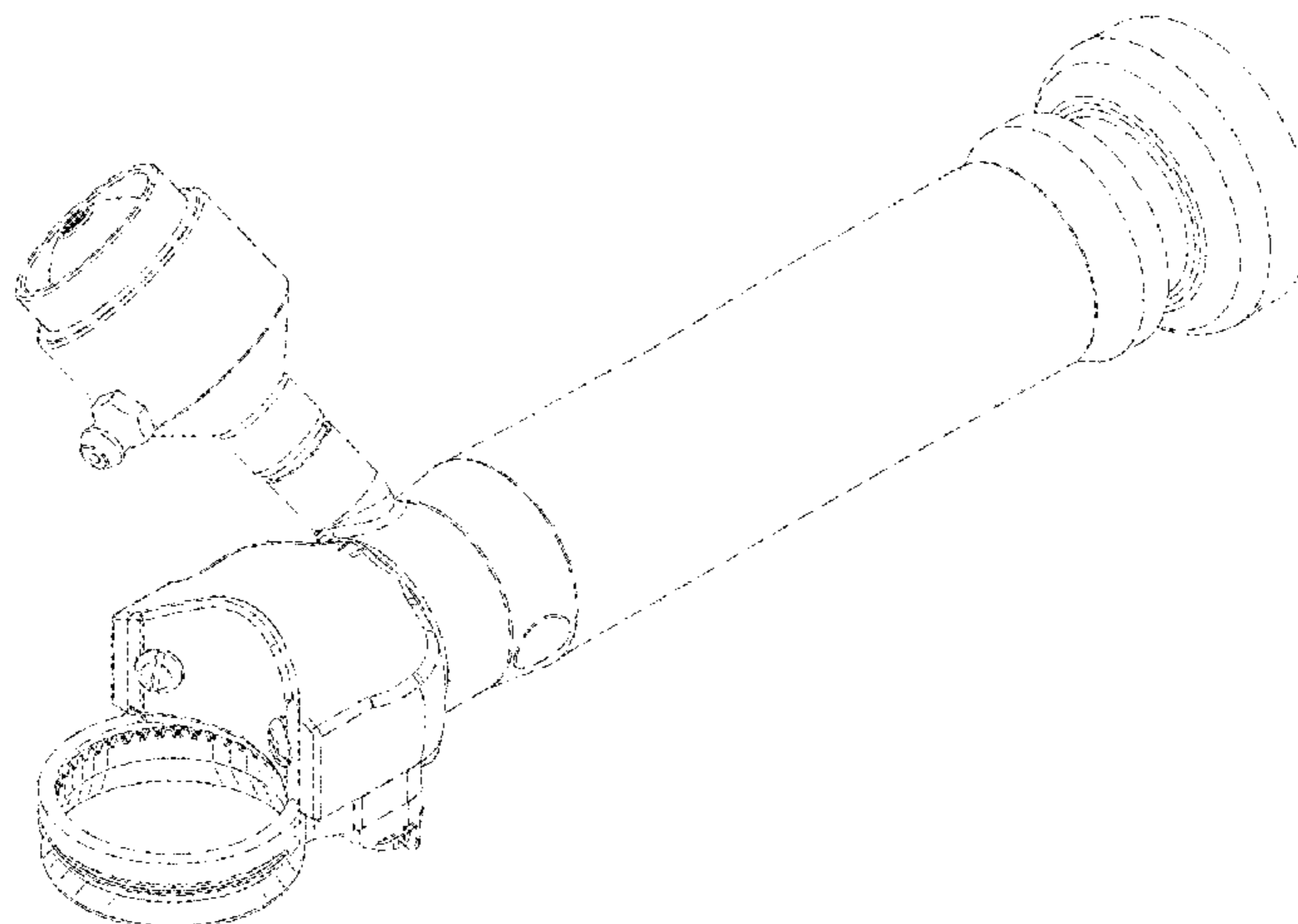




US00D973115S

(12) **United States Design Patent** (10) **Patent No.:** **US D973,115 S**
Whited (45) **Date of Patent:** **** Dec. 20, 2022**

- (54) **ANNULAR BLADE** 3,461,557 A 8/1969 Behring
 3,503,294 A * 3/1970 Henigan B23D 49/003
 83/618
- (71) Applicant: **Bettcher Industries, Inc.**, Birmingham, OH (US) 3,512,519 A 5/1970 Hall
 3,592,519 A 7/1971 Martin
 3,688,403 A 9/1972 Bettcher
- (72) Inventor: **Jeffrey A. Whited**, Richfield, OH (US) 3,816,875 A 6/1974 Duncan et al.
 3,852,882 A 12/1974 Bettcher
- (73) Assignee: **Bettcher Industries, Inc.**, Birmingham, OH (US) 4,082,232 A 4/1978 Brewer
 4,170,063 A 10/1979 Bettcher
 4,178,683 A 12/1979 Bettcher
 4,198,750 A 4/1980 Bettcher
 4,236,531 A 12/1980 McCullough
 4,267,759 A 5/1981 Sullivan et al.
- (**) Term: **15 Years** 4,326,361 A 4/1982 McGill
 4,336,651 A 6/1982 Caro
- (21) Appl. No.: **29/674,824** 4,363,170 A 12/1982 McCullough
 4,418,591 A 12/1983 Astle
 4,439,924 A 4/1984 Bettcher
 4,492,027 A 1/1985 Bettcher
 4,494,311 A 1/1985 McCullough
 4,509,261 A 4/1985 Bettcher
 4,516,323 A 5/1985 Bettcher
 4,575,937 A 3/1986 McCullough
 4,575,938 A 3/1986 McCullough
 4,590,576 A 5/1986 Elpiner
 4,590,676 A 5/1986 Bettcher
 4,609,227 A 9/1986 Wild et al.
 4,637,140 A 1/1987 Bettcher
 4,829,860 A 5/1989 VanderPol
 4,854,046 A 8/1989 Decker et al.
 4,858,321 A 8/1989 McCullough
 4,865,473 A 9/1989 De Vito
 4,909,640 A 3/1990 Nakanishi
 4,942,665 A 7/1990 McCullough
 5,031,323 A 7/1991 Honsa et al.
 5,033,876 A 7/1991 Kraus
 5,048,190 A * 9/1991 Aurness B23D 49/006
 30/299
- (56) **References Cited**
- U.S. PATENT DOCUMENTS
- 803,368 A * 10/1905 Smith B27F 5/12
 144/81
- 1,220,345 A 3/1917 Koster
 1,374,988 A 4/1921 Cooper
 1,476,345 A 12/1923 McGee
 1,966,266 A 7/1934 Skelly
 2,266,888 A 12/1941 McCurdy et al.
 2,656,012 A 10/1953 Thorpe
 2,827,657 A 3/1958 Bettcher
 3,024,532 A 3/1962 Bettcher
 3,150,409 A 9/1964 Wilcox
 RE25,947 E 12/1965 Bettcher
 3,269,010 A 8/1966 Bettcher
 3,349,485 A 10/1967 Bettcher
- 5,071,264 A 12/1991 Franke et al.
 5,099,721 A 3/1992 Decker et al.
 5,230,154 A 7/1993 Decker et al.
 5,331,877 A 7/1994 Ishii
 5,419,619 A 5/1995 Lew
 5,484,331 A 1/1996 Buhlke
 5,499,492 A 3/1996 Jameson
 5,522,142 A 6/1996 Whited
 5,529,532 A 6/1996 Desrosiers
 5,582,041 A 12/1996 Spiess
 5,664,332 A 9/1997 Whited
 5,692,307 A 12/1997 Whited
 5,743,659 A 4/1998 Stewart
 5,749,661 A 5/1998 Moller



US D973,115 S

Page 2

5,761,817	A	6/1998	Whited et al.	2006/0211966	A1	9/2006	Hatton et al.
5,797,189	A *	8/1998	Gilbert B23D 49/003	2007/0283573	A1	12/2007	Levsen
			144/363	2007/0283574	A1	12/2007	Levsen
5,836,701	A	11/1998	Vranish	2008/0022537	A1	1/2008	Clarke et al.
5,860,218	A *	1/1999	Vinciguerra B23D 49/003	2008/0078158	A1	4/2008	Reist
			30/392	2008/0098605	A1	5/2008	Whited et al.
5,867,913	A *	2/1999	Pettigrew B23D 49/003	2008/0149360	A1 *	6/2008	Dinh H02G 3/123
			144/363				174/58
5,940,972	A	8/1999	Baris et al.	2009/0227192	A1	9/2009	Luthi et al.
5,971,413	A	10/1999	El-Kassouf	2010/0101097	A1	4/2010	Thien
D438,219	S *	2/2001	Brutscher D15/139	2010/0111460	A1	5/2010	Albrecht
6,247,847	B1	6/2001	Lob	2010/0170097	A1	7/2010	Levsen
6,364,086	B1	4/2002	Blaurock et al.	2011/0185580	A1	8/2011	Whited
6,604,288	B2	8/2003	Whited et al.	2011/0247220	A1	10/2011	Whited et al.
6,615,494	B2	9/2003	Long et al.	2012/0011980	A1	1/2012	Kroger
6,634,257	B2	10/2003	Long et al.	2012/0030952	A1	2/2012	Levsen
6,655,033	B2	12/2003	Hermann et al.	2013/0025134	A1	1/2013	Mascari et al.
6,662,452	B2	12/2003	Whited	2013/0025136	A1	1/2013	Whited et al.
6,665,940	B2	12/2003	Sanders et al.	2013/0025137	A1	1/2013	Whited et al.
6,694,649	B2	2/2004	Whited et al.	2013/0025138	A1	1/2013	Whited et al.
6,751,872	B1	6/2004	Whited et al.	2013/0025139	A1	1/2013	Whited et al.
6,769,184	B1	8/2004	Whited	2013/0104404	A1	5/2013	Levsen
6,857,191	B2	2/2005	Whited	2013/0185944	A1	7/2013	Thompson et al.
6,938,348	B2	9/2005	Roncaglia	2013/0243358	A1	9/2013	Stork et al.
6,978,548	B2	12/2005	Whited et al.	2013/0266250	A1	10/2013	Brown
7,000,325	B2	2/2006	Whited	2013/0326886	A1	12/2013	Levsen
7,107,887	B2	9/2006	Whited	2014/0074118	A1	3/2014	Esarey et al.
7,207,114	B2	4/2007	Rosu et al.	2014/0074120	A1	3/2014	Esarey et al.
7,340,840	B2	3/2008	Whited	2014/0224091	A1 *	8/2014	Sebhatu B23D 49/003
D588,175	S *	3/2009	Morton D15/139				83/620
7,670,212	B1	3/2010	Thompson et al.	2014/0338513	A1 *	11/2014	Burks B23D 49/003
8,074,363	B2	12/2011	Whited				83/745
8,303,191	B2	11/2012	Albrecht et al.	2015/0377289	A1	12/2015	Scheidel et al.
8,448,340	B2	5/2013	Whited	2016/0082612	A1	3/2016	Mascari et al.
8,505,207	B2	8/2013	Thien	2016/0279818	A1	9/2016	Whited
D697,384	S *	1/2014	Wackwitz D8/70	2016/0345996	A1	12/2016	Esarey et al.
8,661,692	B2	3/2014	Whited et al.	2017/0001252	A1 *	1/2017	Caroprese B23D 49/003
8,671,580	B2	3/2014	Whited	2017/0021514	A1	1/2017	Hall et al.
8,695,222	B2	4/2014	Whited et al.	2018/0162001	A1	6/2018	Whited
8,726,524	B2	5/2014	Whited et al.	2018/0162062	A1	6/2018	Whited et al.
D706,845	S *	6/2014	Richter D15/139	2018/0345514	A1	12/2018	Whited et al.
8,739,416	B2	6/2014	Mascari et al.				
8,745,881	B2	6/2014	Thompson et al.				
D708,650	S *	7/2014	Richter D15/139				
8,806,761	B2	8/2014	Whited et al.				
8,950,076	B2	2/2015	Whited et al.				
8,968,107	B2	3/2015	Rapp et al.				
D734,649	S *	7/2015	Wackwitz D8/70				
9,089,980	B2	7/2015	Whited et al.				
9,121,438	B2	9/2015	Mascari				
D741,137	S *	10/2015	Yang D8/70				
9,186,171	B2	11/2015	Esarey et al.				
9,211,650	B2	12/2015	Mascari et al.				
9,221,183	B2	12/2015	Whited et al.				
9,227,332	B2	1/2016	Thompson et al.				
9,265,263	B2	2/2016	Whited et al.				
9,358,623	B2 *	6/2016	Burks B23D 49/003				
9,364,962	B2	6/2016	Whited				
9,452,541	B2	9/2016	Mascari et al.				
9,475,203	B2	10/2016	Whited et al.				
9,522,473	B2	12/2016	Mascari et al.				
9,573,283	B2	2/2017	Thompson et al.				
9,579,810	B2	2/2017	Mascari				
9,592,076	B2	3/2017	Esarey et al.				
9,623,577	B2	4/2017	Whited et al.				
D789,428	S *	6/2017	Novak D15/139				
D790,941	S *	7/2017	Turner D8/70				
D790,942	S *	7/2017	Turner D8/70				
9,737,941	B2 *	8/2017	Turner B23D 61/18				
9,833,919	B2	12/2017	Mascari et al.				
2003/0070301	A1	4/2003	Hermann et al.				
2003/0084576	A1	5/2003	Whited et al.				
2003/0131482	A1	7/2003	Long et al.				
2003/0196333	A1	10/2003	Whited				
2004/0134326	A1	7/2004	Long et al.				
2005/0126015	A1	6/2005	Whited				
2005/0217119	A1	10/2005	Rapp				
2006/0037200	A1	2/2006	Rosu et al.				
2006/0137193	A1	6/2006	Whited				

FOREIGN PATENT DOCUMENTS

CA	2796222	10/2011
CA	2883924	3/2014
DE	19958802	7/2001
EP	0689905	1/1996
EP	0816026	1/1998
EP	1226907	7/2002
EP	1356902	10/2003
EP	1403012	8/2004
EP	1527853	5/2005
EP	1527854	5/2005
EP	1916075	4/2008
EP	2353805	8/2011
EP	2497366	9/2012
EP	2557935	6/2016
EP	2736684	1/2017
FR	1216947	4/1960
JP	2000052293	2/2000
WO	WO 2001/024977	4/2001
WO	WO 01/41980	6/2001
WO	WO 2008/107490	9/2008
WO	WO 2011/030057	10/2011
WO	WO 2013/016019	1/2013
WO	WO 2013/016021	1/2013
WO	WO 2013/016022	1/2013
WO	WO 2013/016024	1/2013
WO	WO 2013/016344	1/2013
WO	WO 2014/016020	1/2013
WO	WO 2014/039601	3/2014
WO	WO 2014/039609	3/2014
WO	WO 2014/159349	10/2014
WO	WO 2014/160043	10/2014

* cited by examiner

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(57) **CLAIM**

The ornamental design for an annular blade, as shown and described.

DESCRIPTION

FIG. 1 is a top perspective view of an annular blade in accordance to a first embodiment in the context of an exemplary rotary knife;
 FIG. 2 is a top perspective view of the annular blade independent of the exemplary rotary knife;
 FIG. 3 is a bottom perspective view thereof;
 FIG. 4 is a top plan view thereof;
 FIG. 5 is bottom plan view thereof;
 FIG. 6 is a front elevation thereof
 FIG. 7 is a rear elevation view thereof;
 FIG. 8 is a side elevation view thereof; and
 FIG. 9 is a cross-sectional view thereof taken along line 9-9 in FIG. 4.
 FIG. 10 is a top perspective view of an annular blade showing my new design in accordance to another embodiment in the context of an exemplary rotary knife;
 FIG. 11 is a top perspective view of the annular blade independent of the exemplary rotary knife
 FIG. 12 is a bottom perspective view thereof;
 FIG. 13 is a top plan view thereof;
 FIG. 14 is bottom plan view thereof;
 FIG. 15 is a front elevation view thereof;
 FIG. 16 is a rear elevation view thereof;
 FIG. 17 is a side elevation view thereof; and
 FIG. 18 is a cross-sectional view along line 18-18 of FIG. 13.
 FIG. 19 is a cross-sectional view along line 19-19 in FIG. 10.
 FIG. 20 is a top perspective view of an annular blade in accordance to a another embodiment in the context of an exemplary rotary knife;

FIG. 21 is a top perspective view of the annular blade independent of the exemplary rotary knife;
 FIG. 22 is a bottom perspective view thereof;
 FIG. 23 is a top plan view thereof;
 FIG. 24 is bottom plan view thereof;
 FIG. 25 is a front elevation view thereof;
 FIG. 26 is a rear elevation view thereof;
 FIG. 27 is a side elevation view thereof; and
 FIG. 28 is a cross-sectional view along line 28-28 in FIG. 23.
 FIG. 29 is a cross-sectional view along line 29-29 in FIG. 20
 FIG. 30 is a top perspective view of an annular blade in accordance to another embodiment in the context of an exemplary rotary knife;
 FIG. 31 is a top perspective view of the annular blade independent of the exemplary rotary knife;
 FIG. 32 is a bottom perspective view thereof;
 FIG. 33 is a top plan view thereof;
 FIG. 34 is bottom plan view thereof;
 FIG. 35 is a front elevation view thereof;
 FIG. 36 is a rear elevation view thereof;
 FIG. 37 is a side elevation view thereof;
 FIG. 38 is a cross-sectional view along line 38-38 in FIG. 33; and
 FIG. 39 is a cross-sectional view along line 39-39 in FIG. 30.
 FIG. 40 is a top perspective view of an annular blade in accordance to another embodiment in the context of an exemplary rotary knife;
 FIG. 41 is a top perspective view of the annular blade independent of the exemplary rotary knife;
 FIG. 42 is a bottom perspective view thereof;
 FIG. 43 is a top plan view thereof;
 FIG. 44 is bottom plan view thereof;
 FIG. 45 is a front elevation view thereof;
 FIG. 46 is a rear elevation view thereof;
 FIG. 47 is a side elevation view thereof; and,
 FIG. 48 is a cross-sectional view along line 48-48 in FIG. 43.
 The broken line showing of the rotary knife is provided for the purpose of illustrating environmental structure and forms no part of the claimed design.

1 Claim, 23 Drawing Sheets

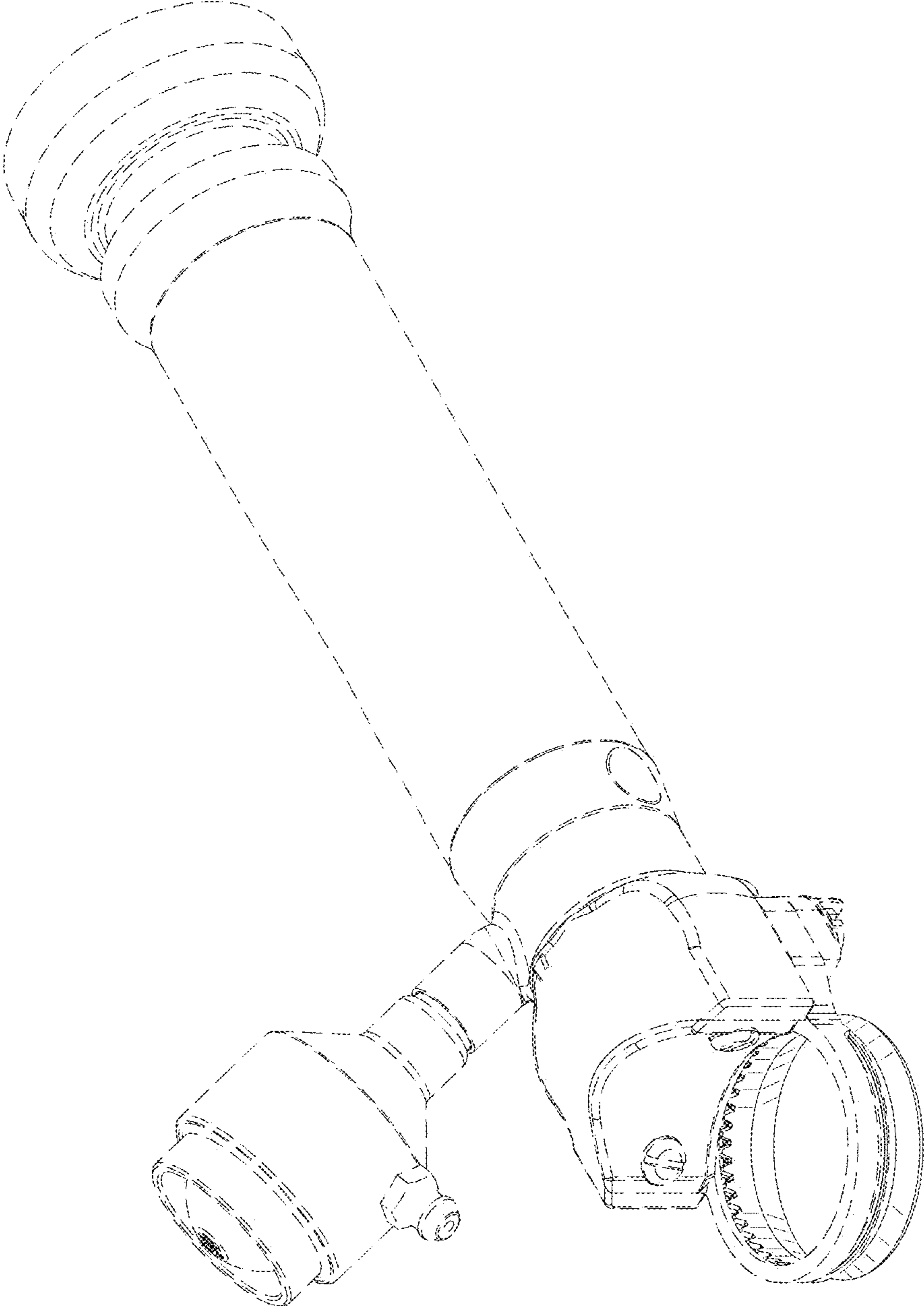


FIG. 1

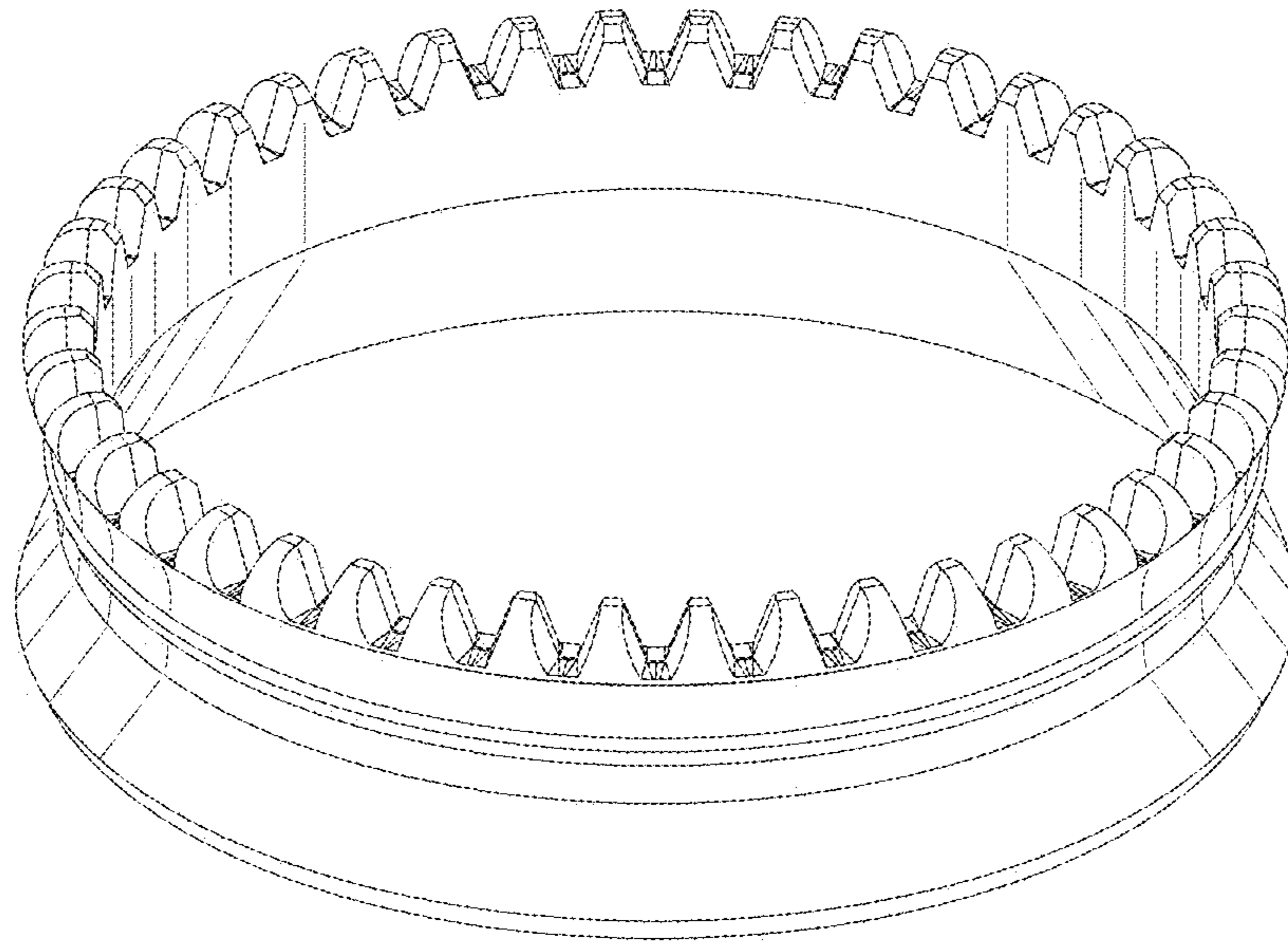


FIG. 2

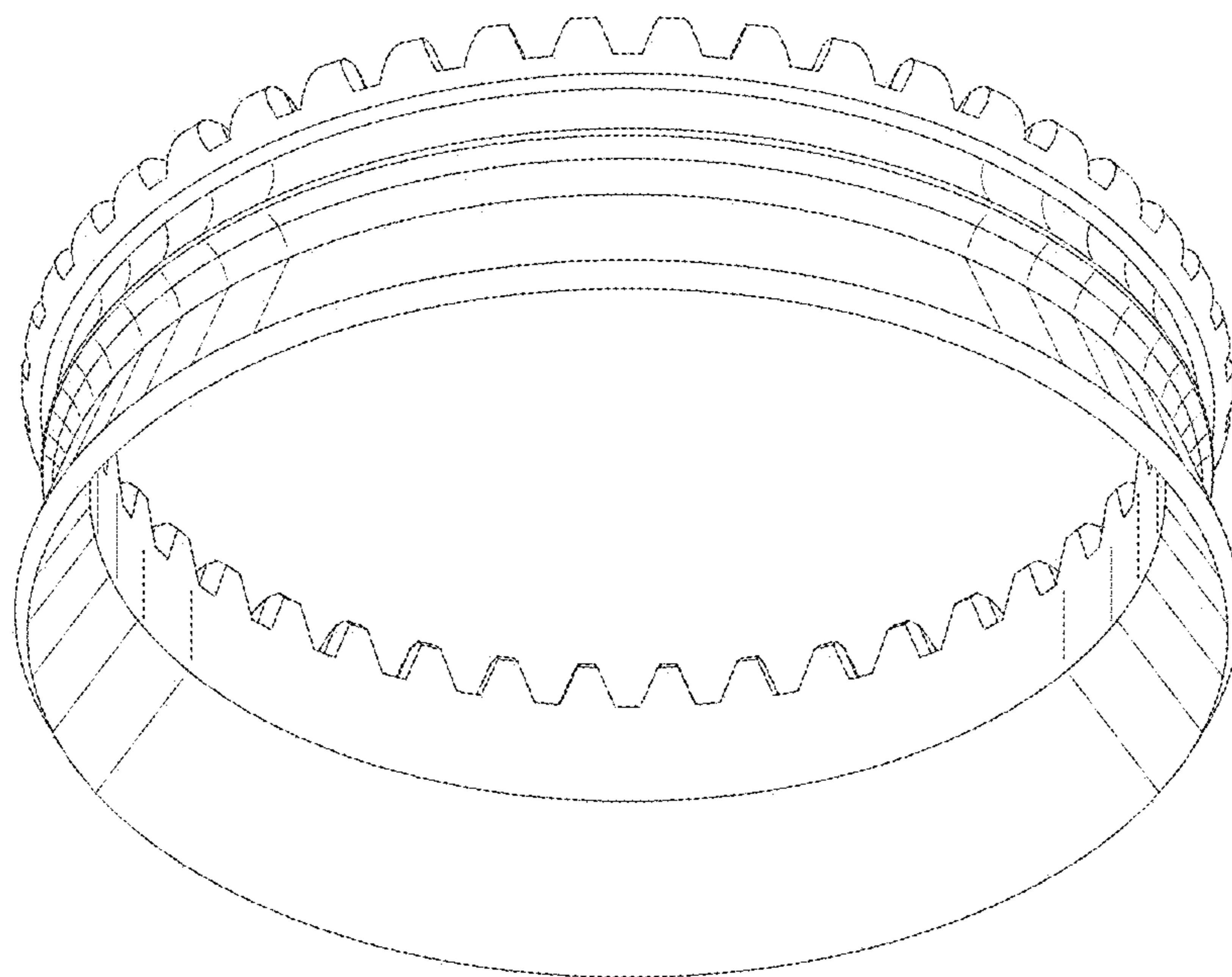


FIG. 3

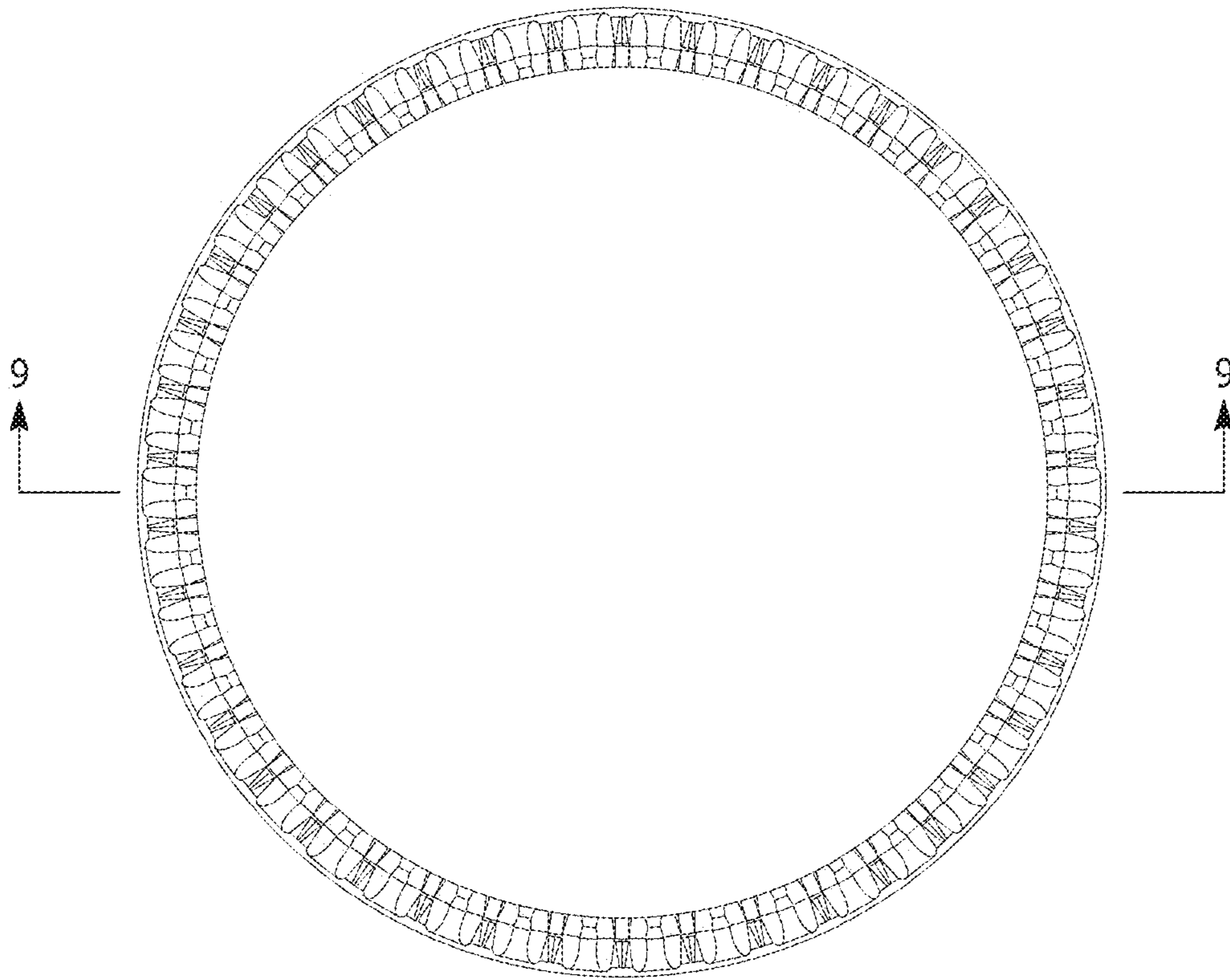


FIG. 4

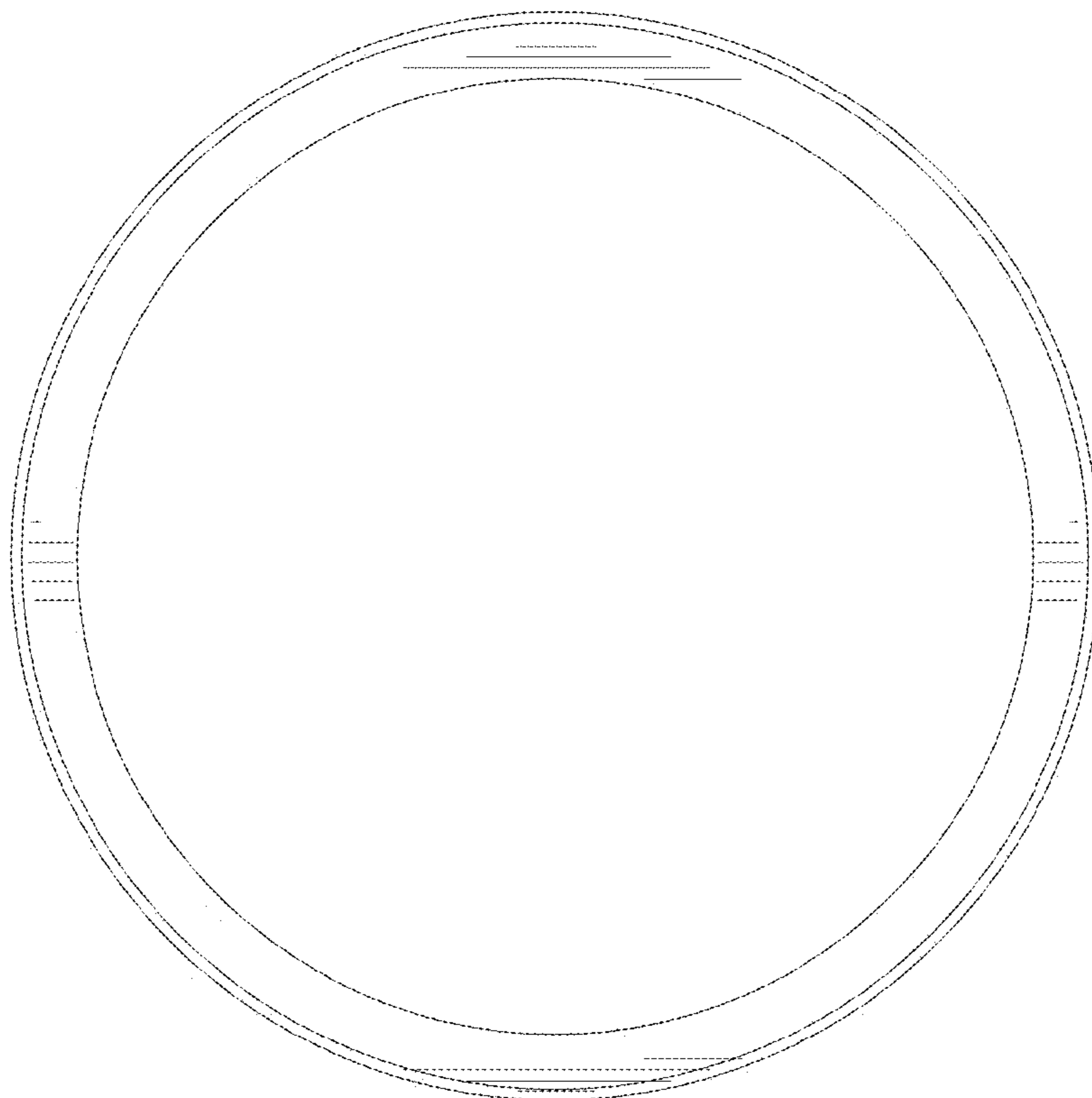


FIG. 5

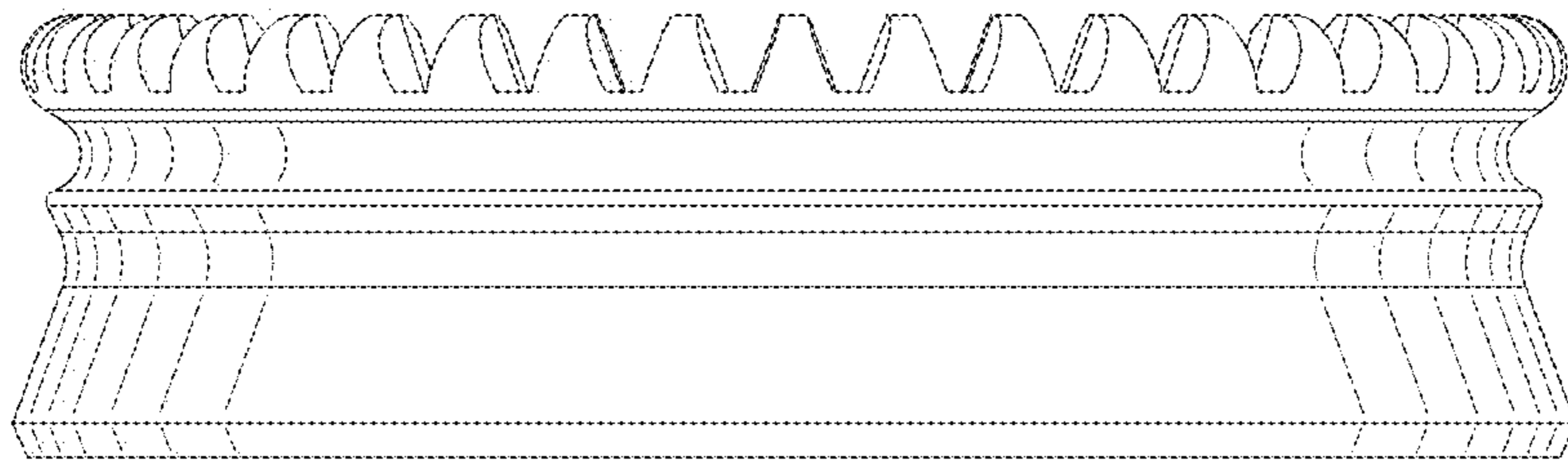


FIG. 6

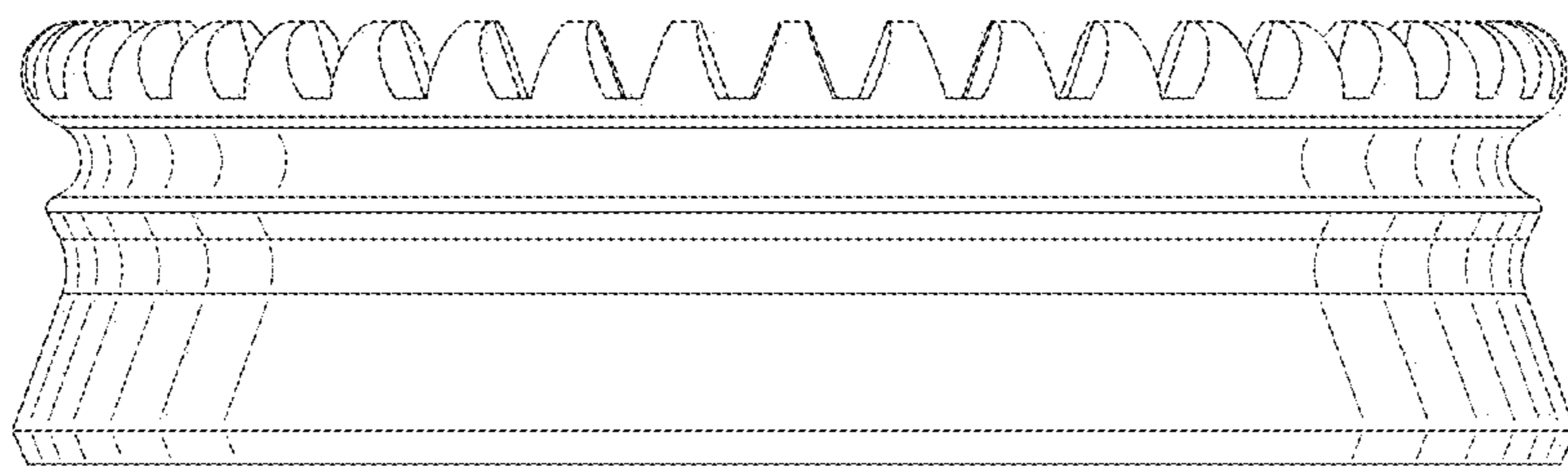


FIG. 7

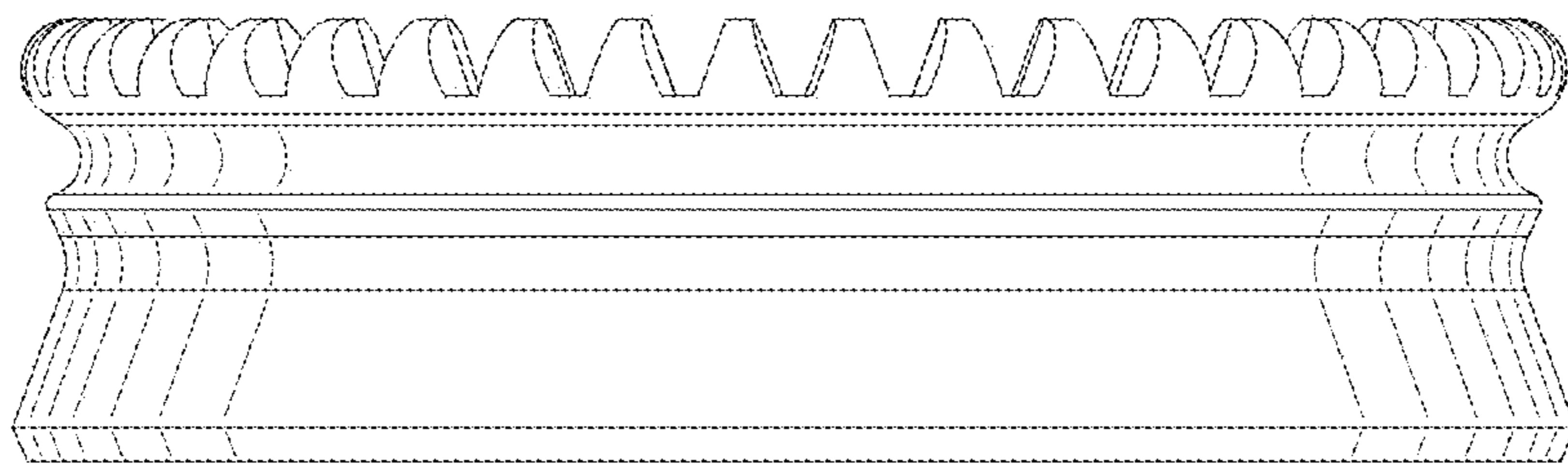


FIG. 8

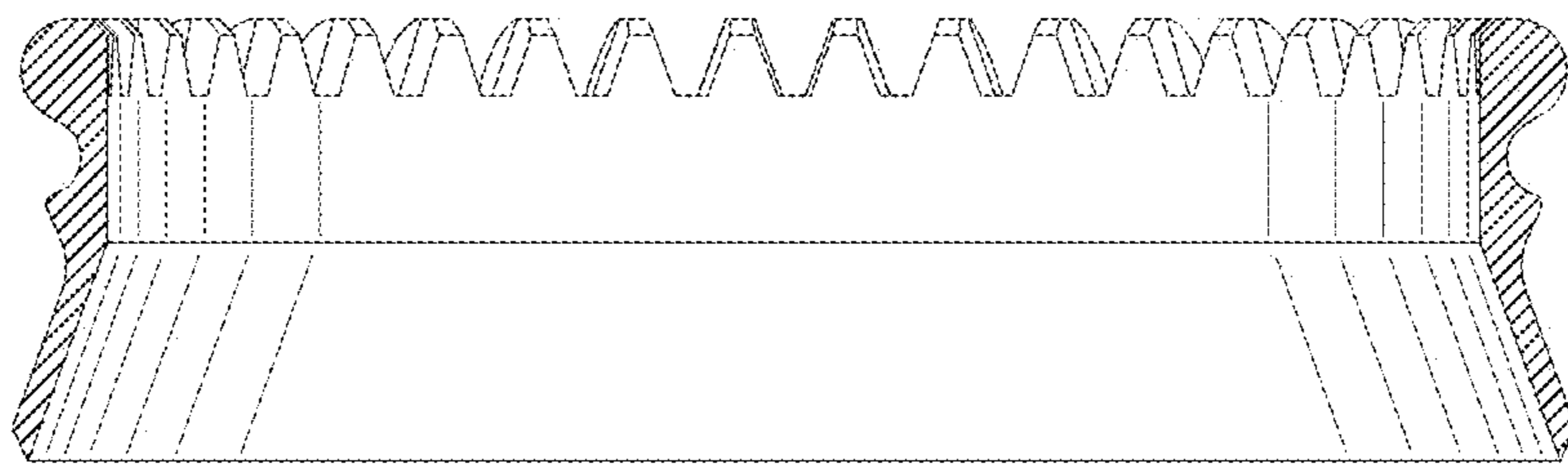


FIG. 9

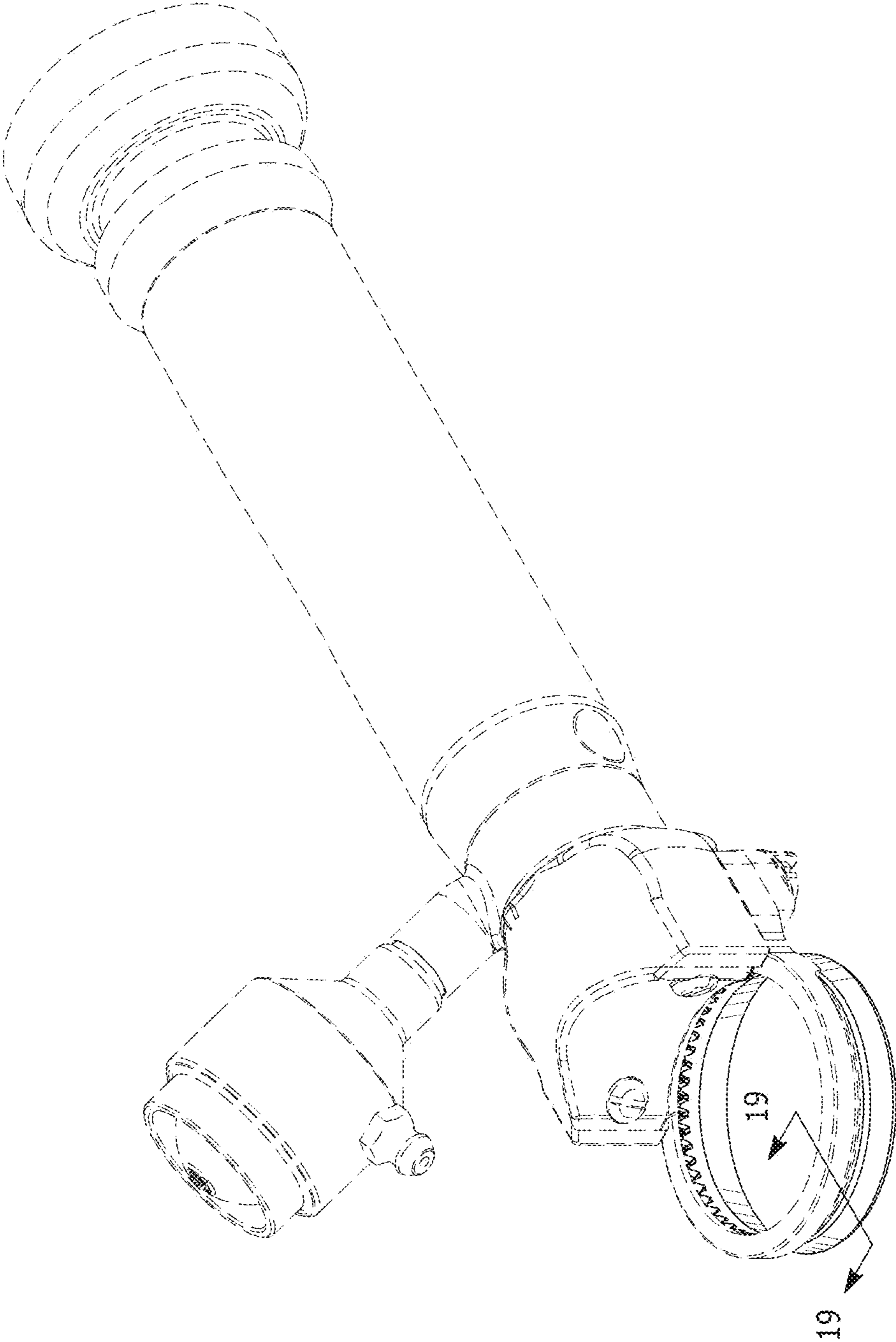


FIG. 10

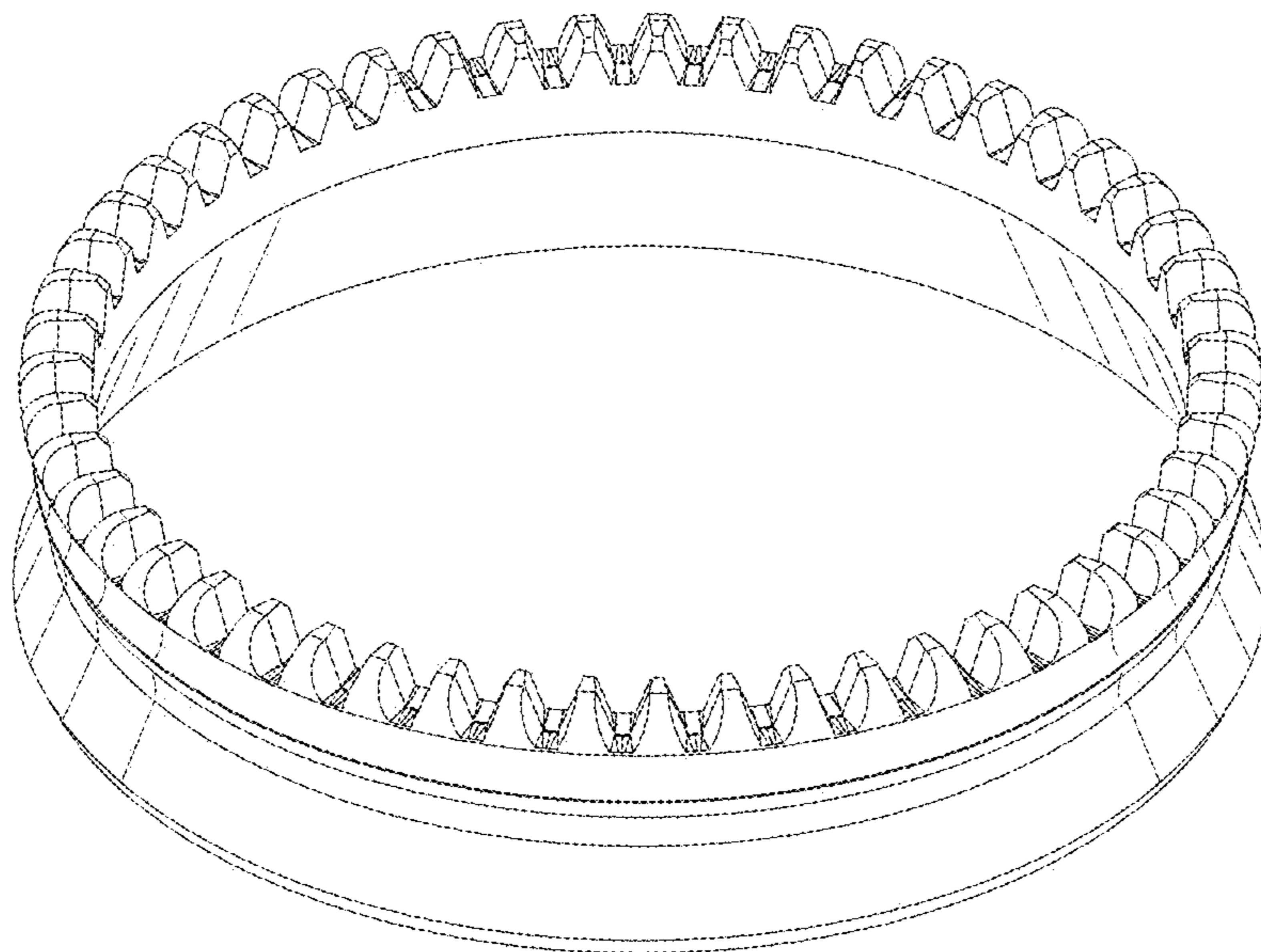


FIG. 11

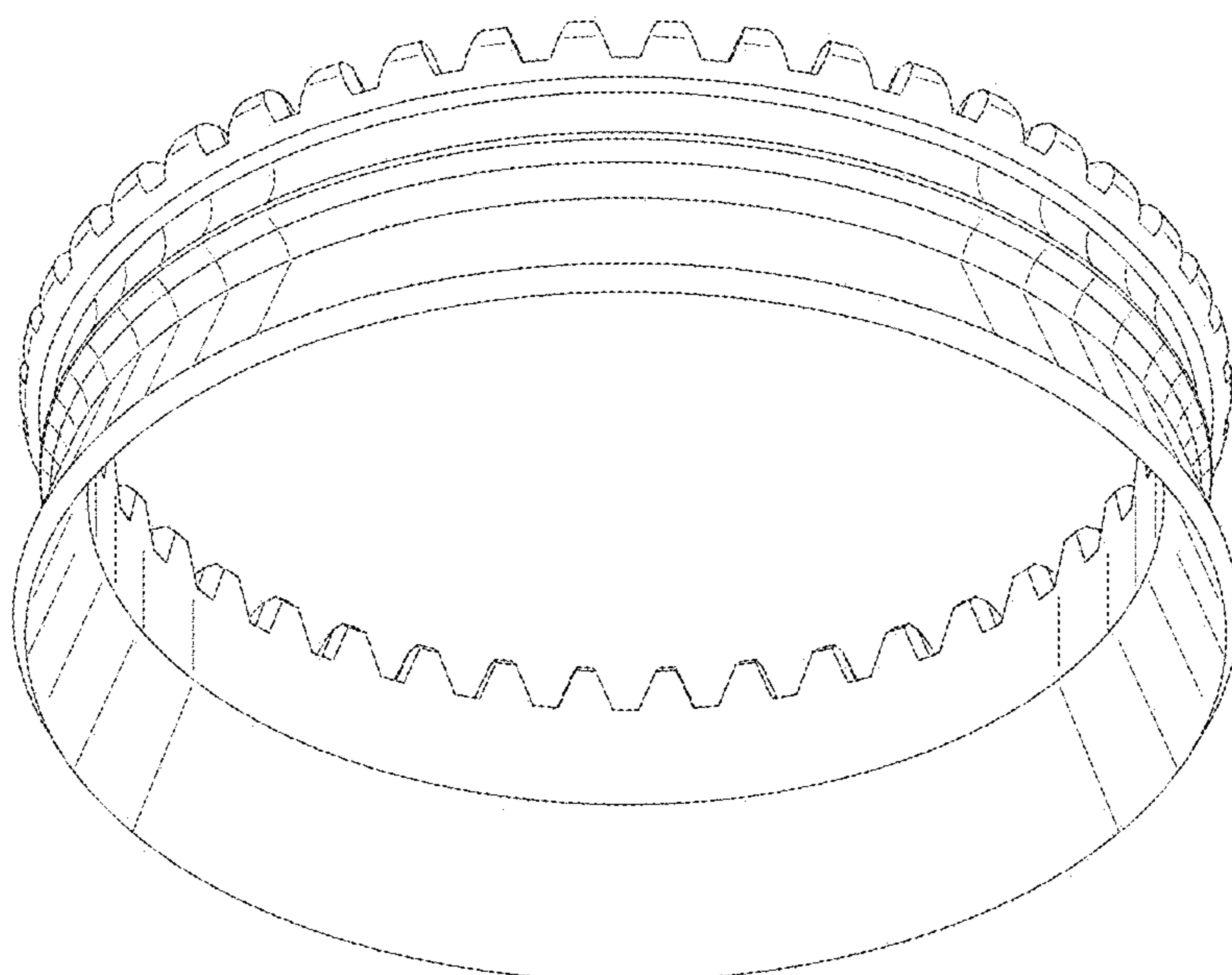


FIG. 12

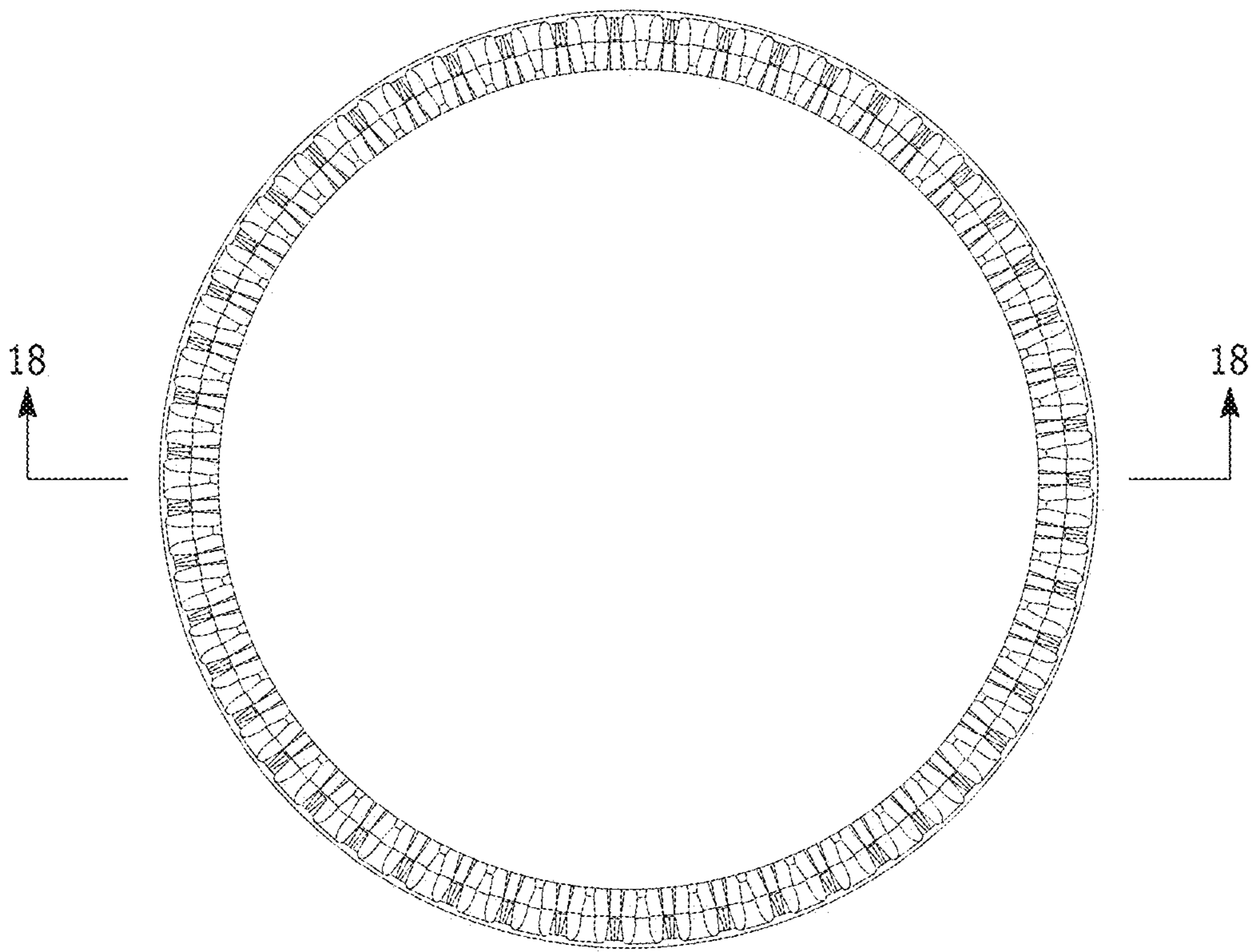


FIG. 13

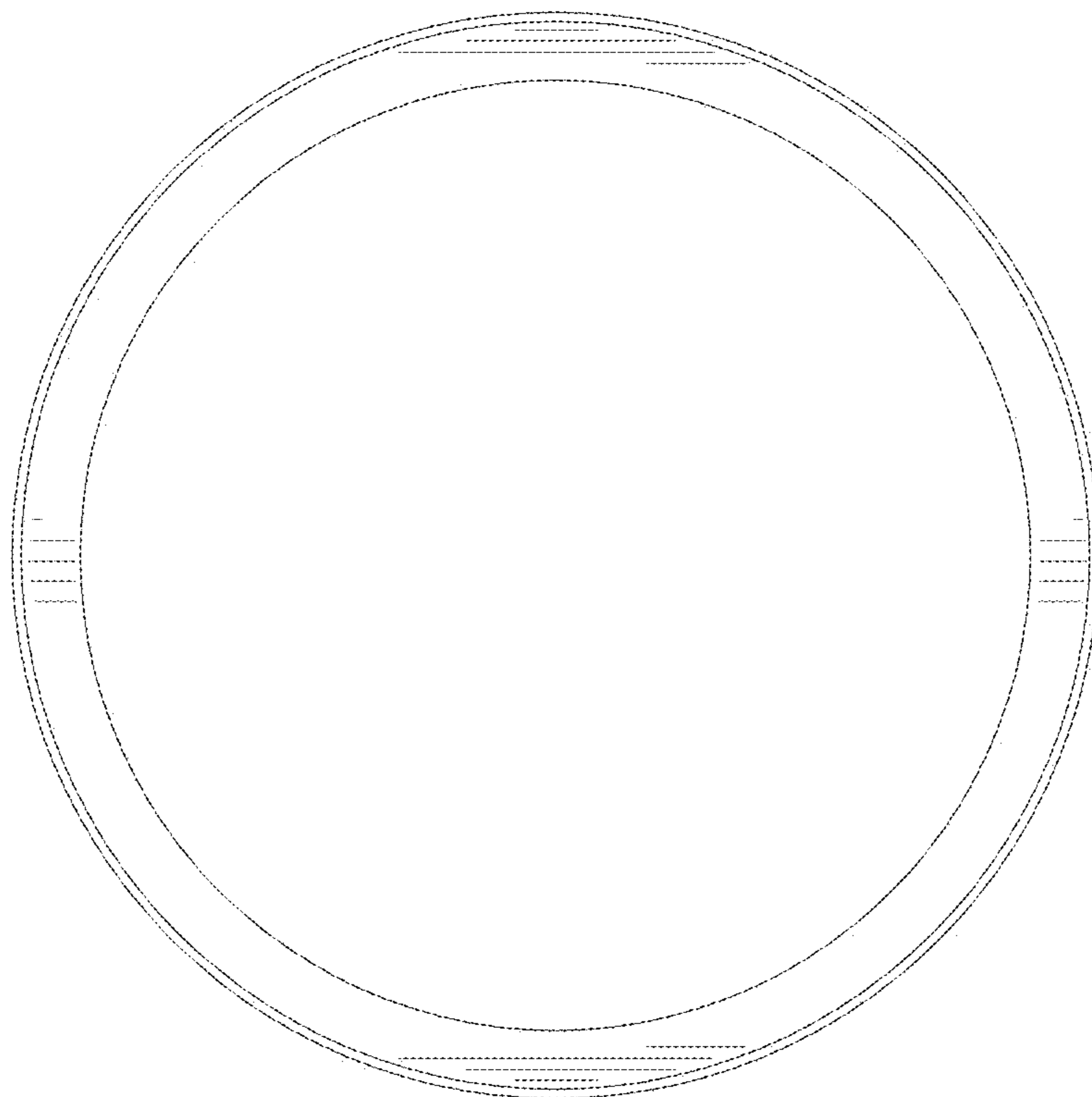


FIG. 14

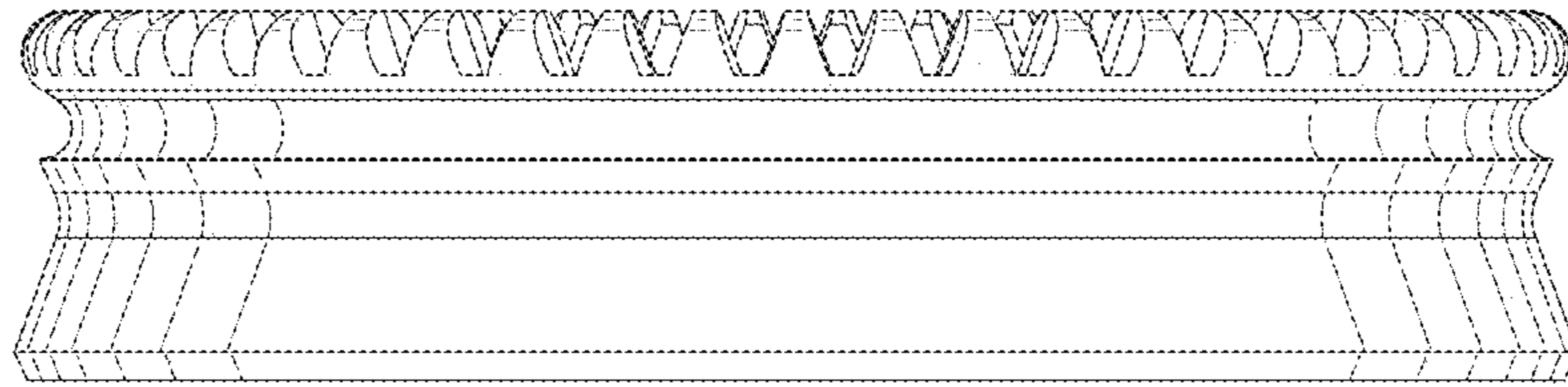


FIG. 15

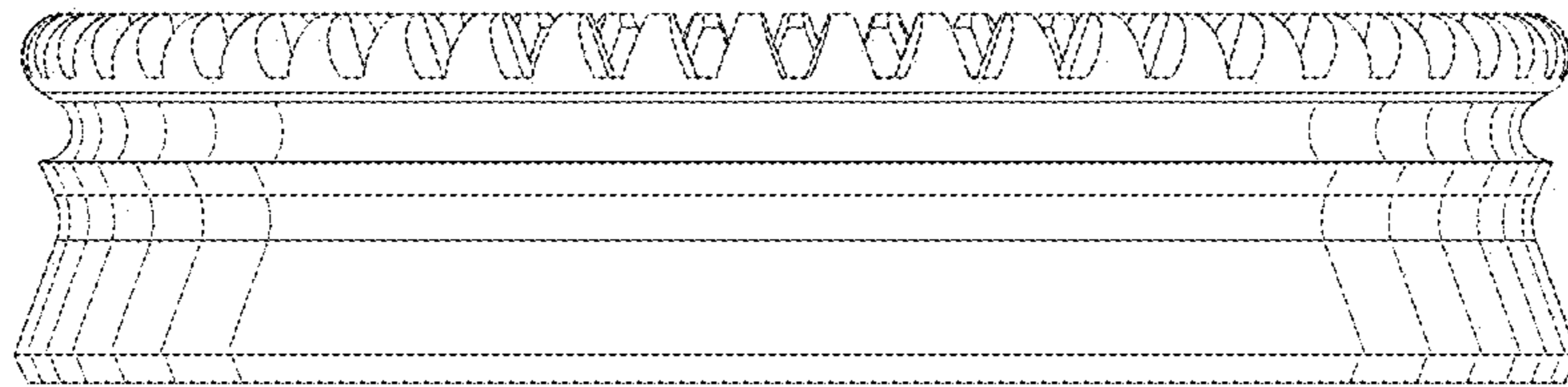


FIG. 16

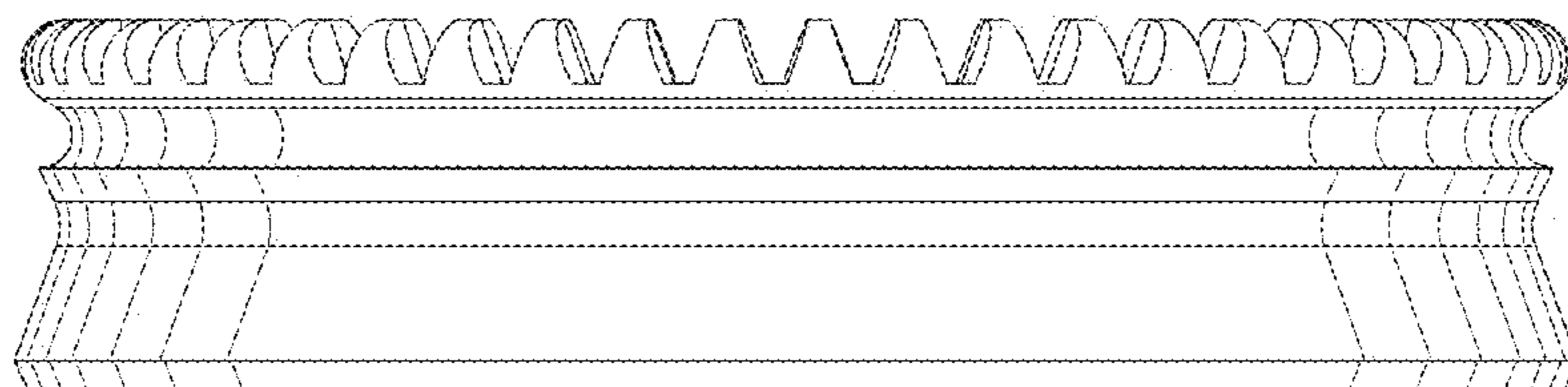


FIG. 17

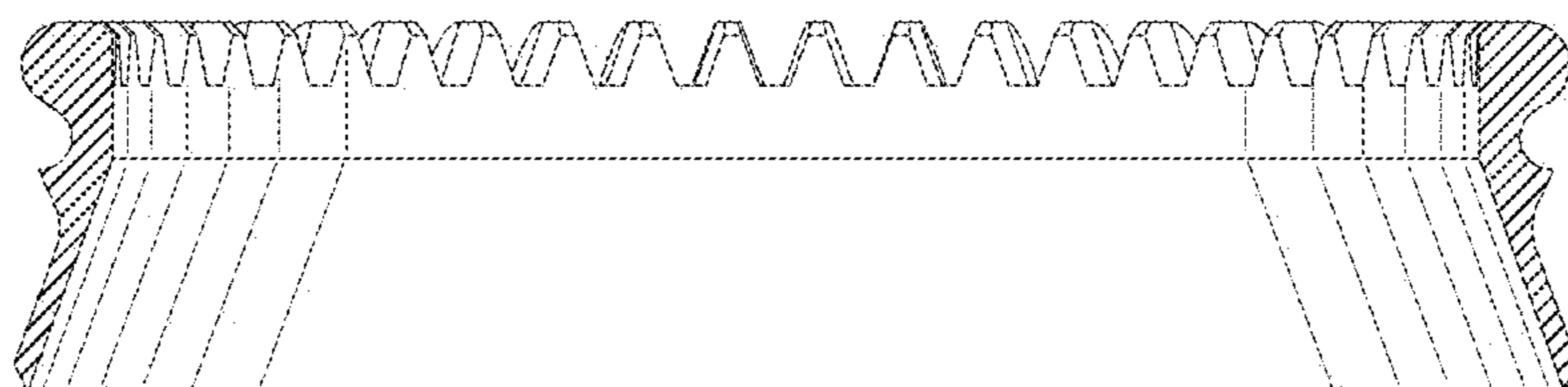


FIG. 18

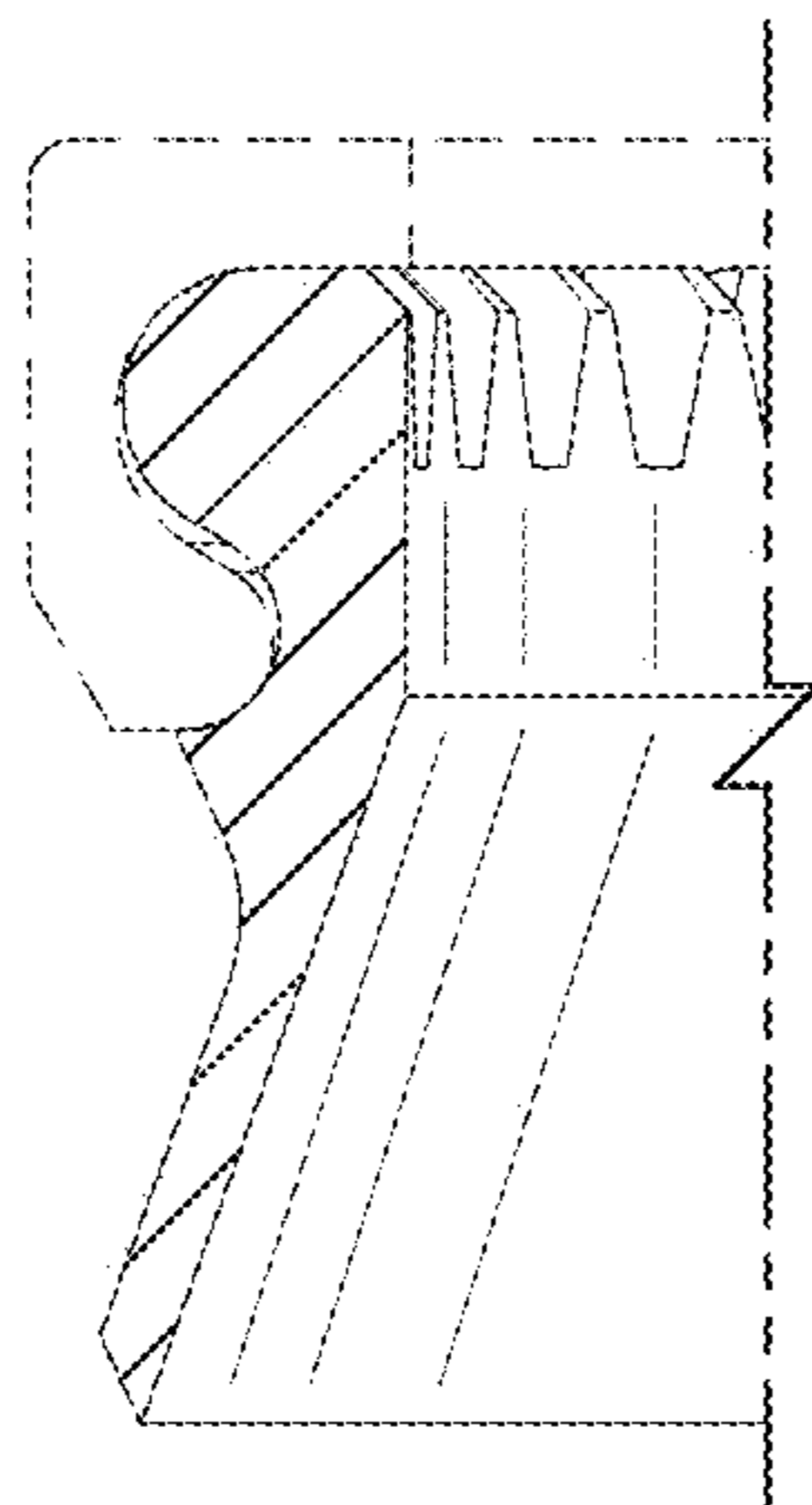


FIG. 19

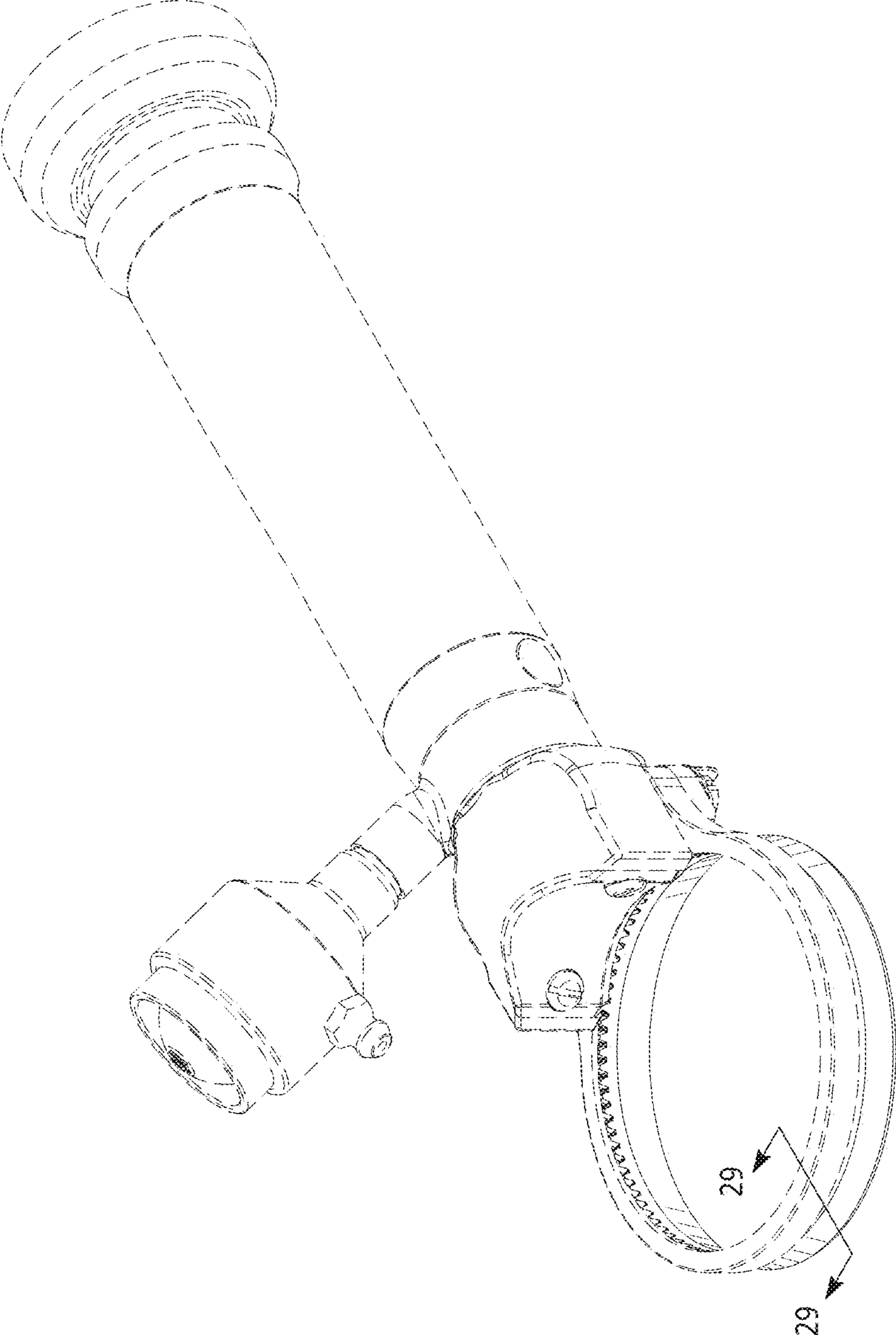


FIG. 20

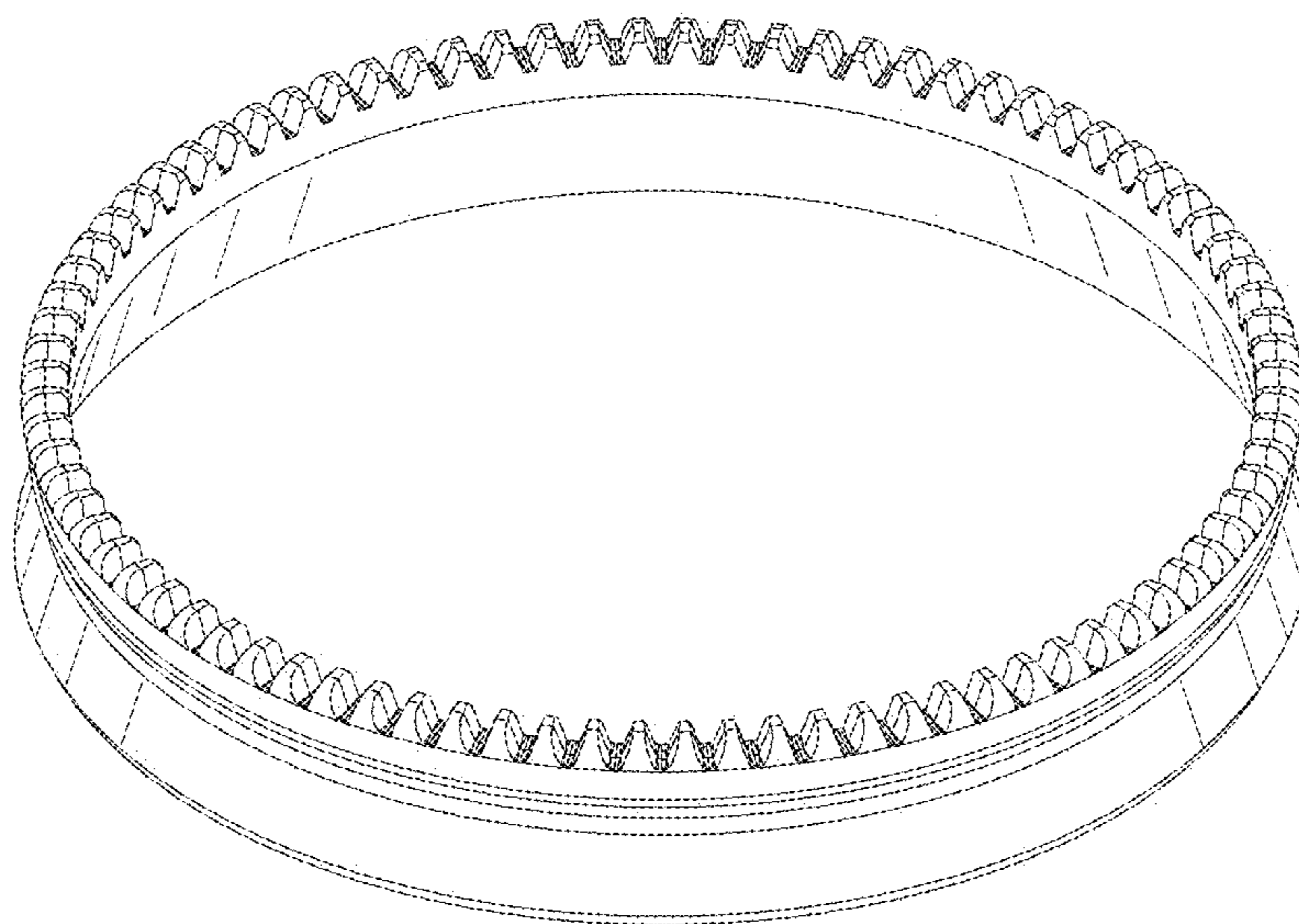


FIG. 21

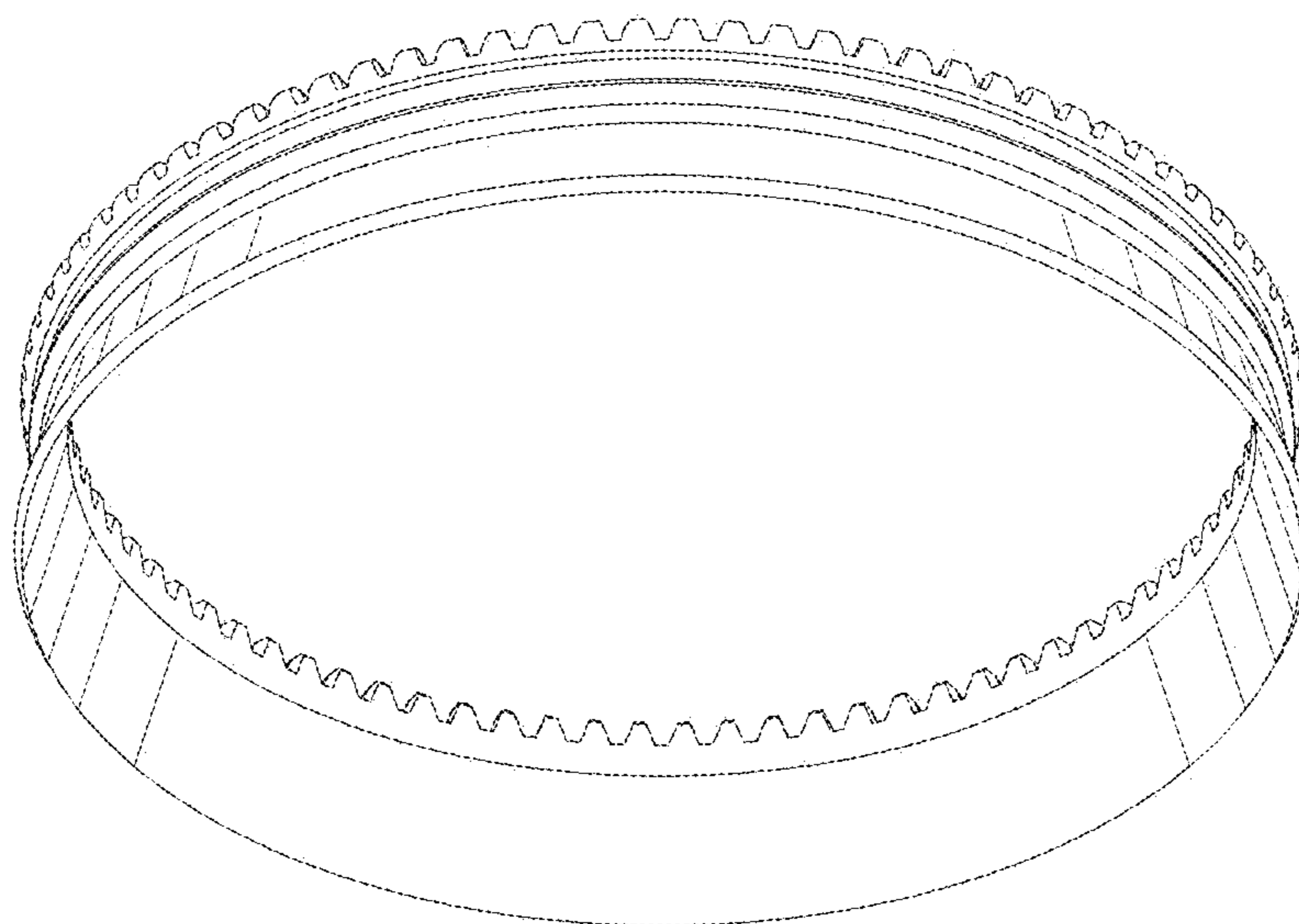


FIG. 22

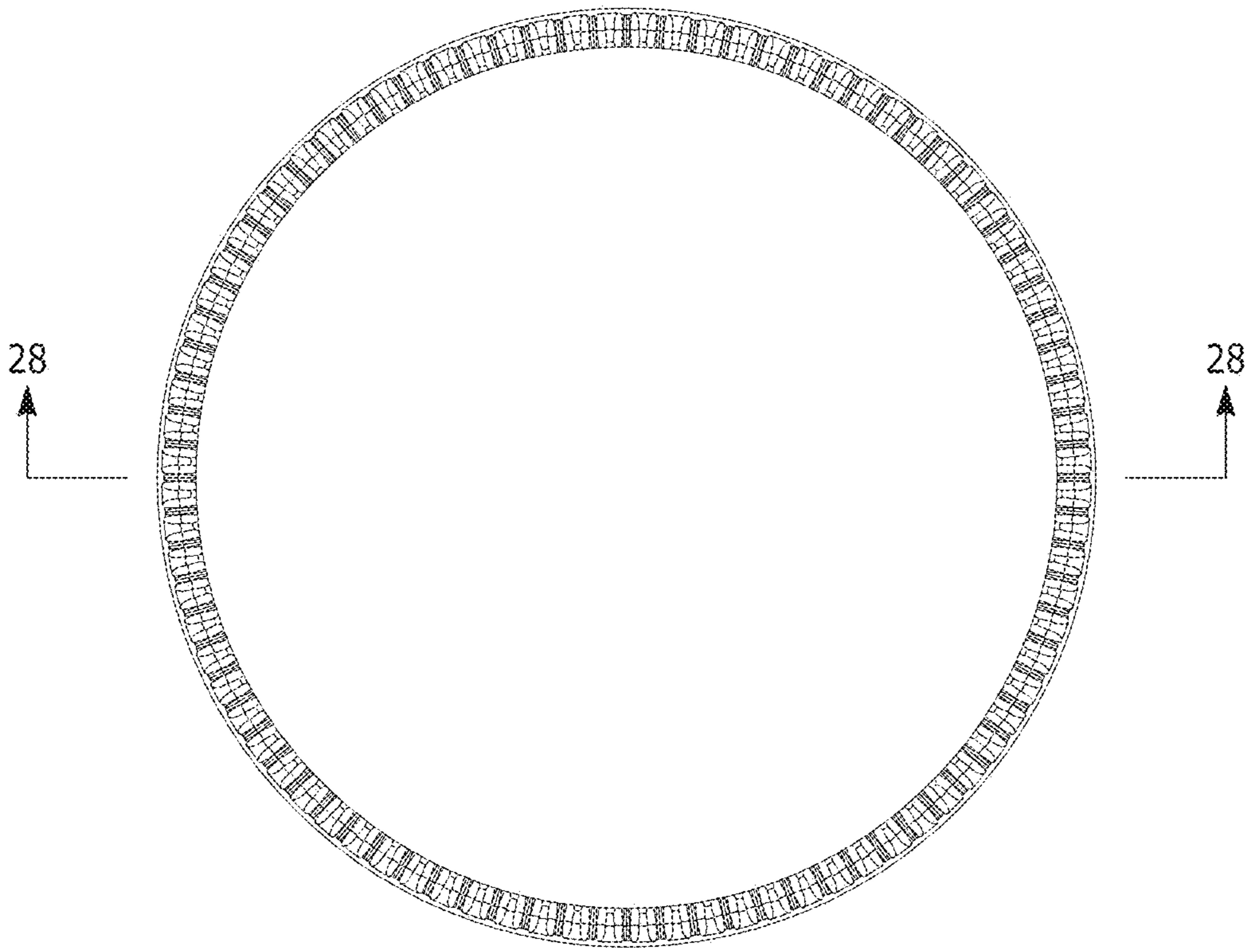


FIG. 23

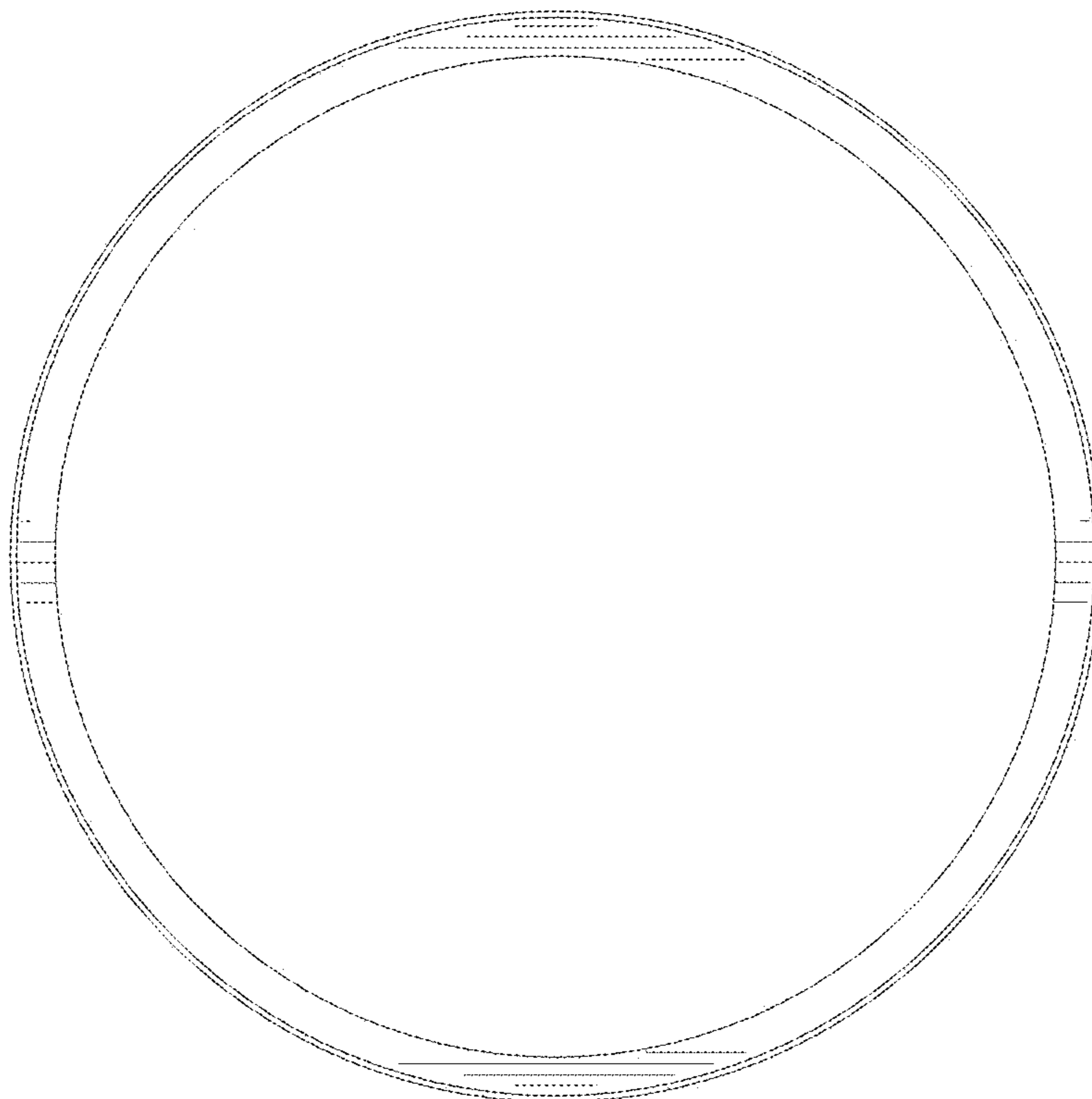


FIG. 24

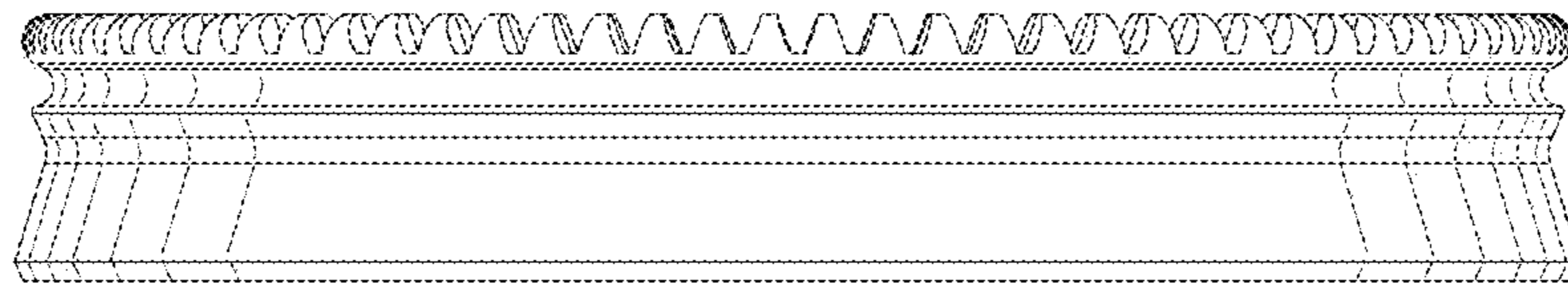


FIG. 25

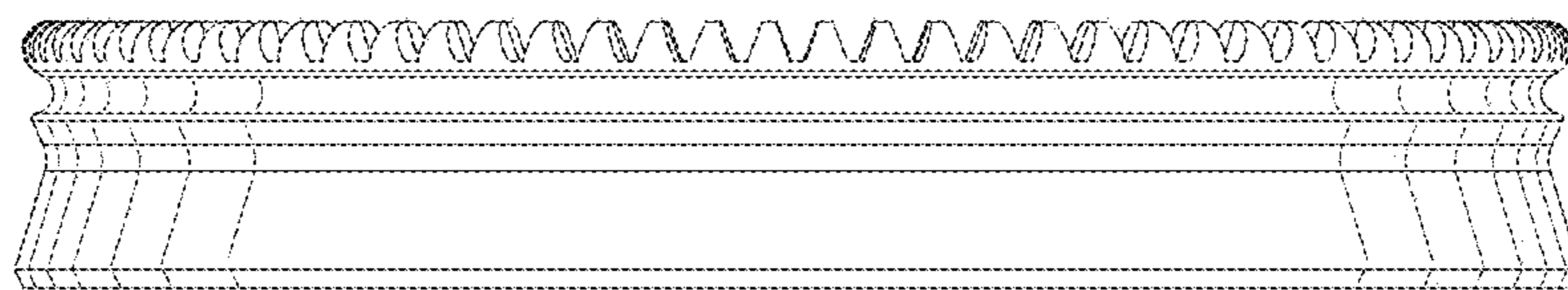


FIG. 26

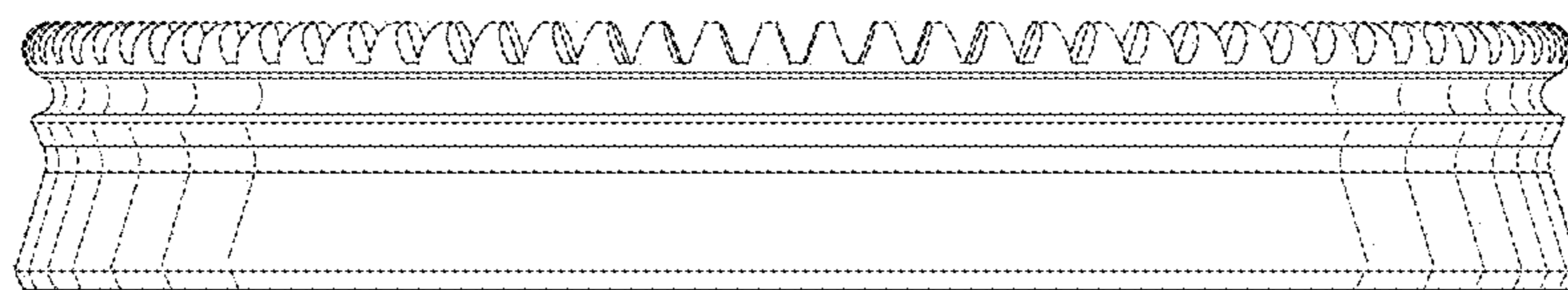


FIG. 27

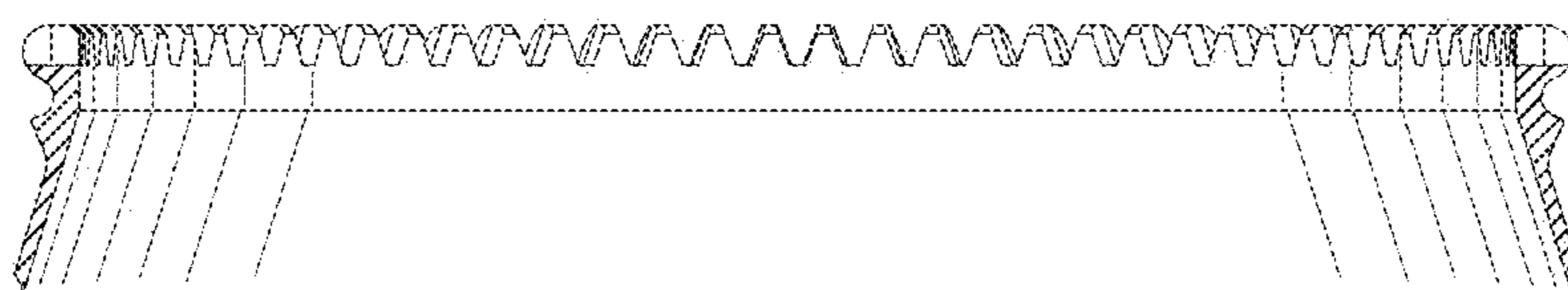


FIG. 28

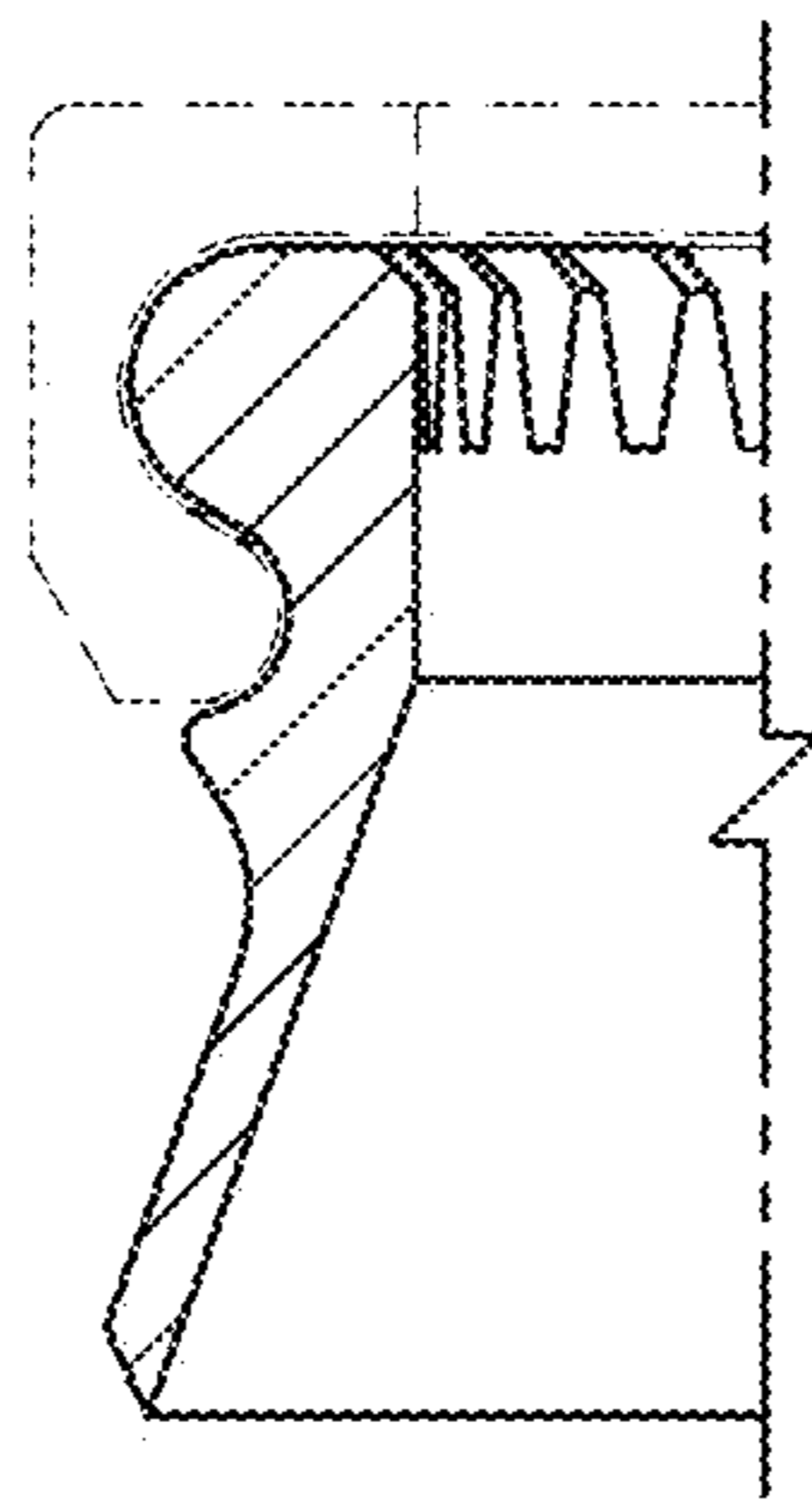


FIG. 29

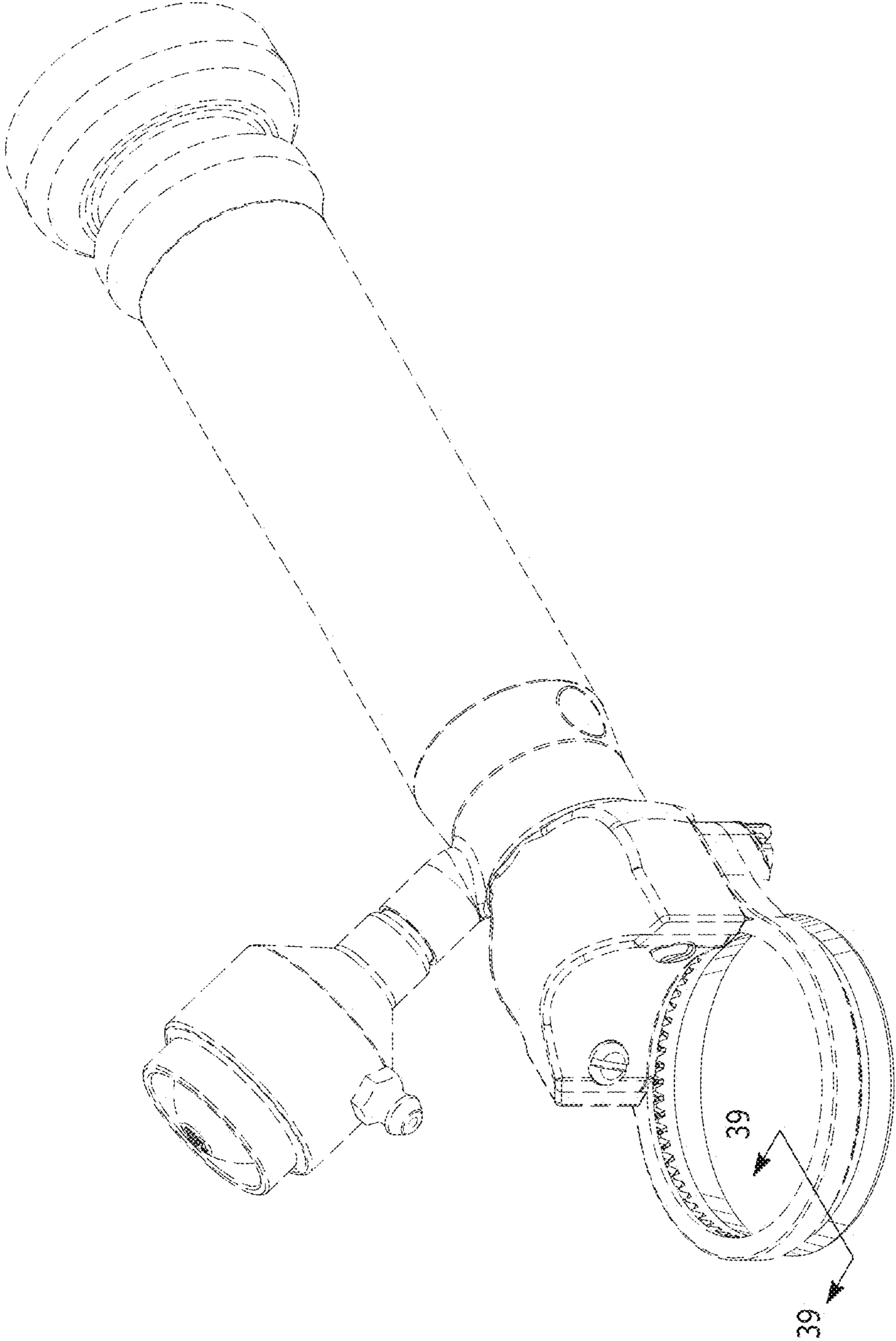


FIG. 30

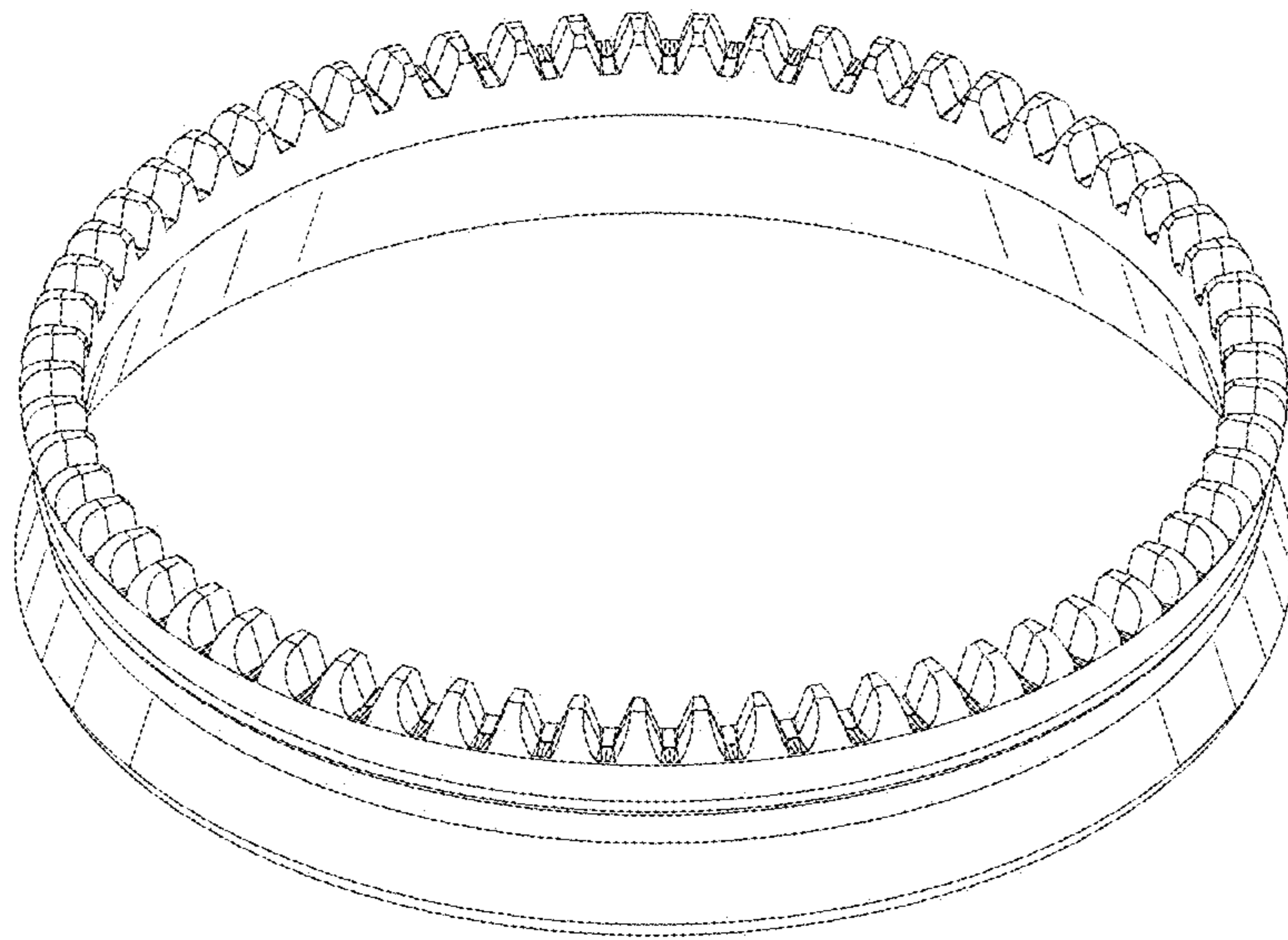


FIG. 31

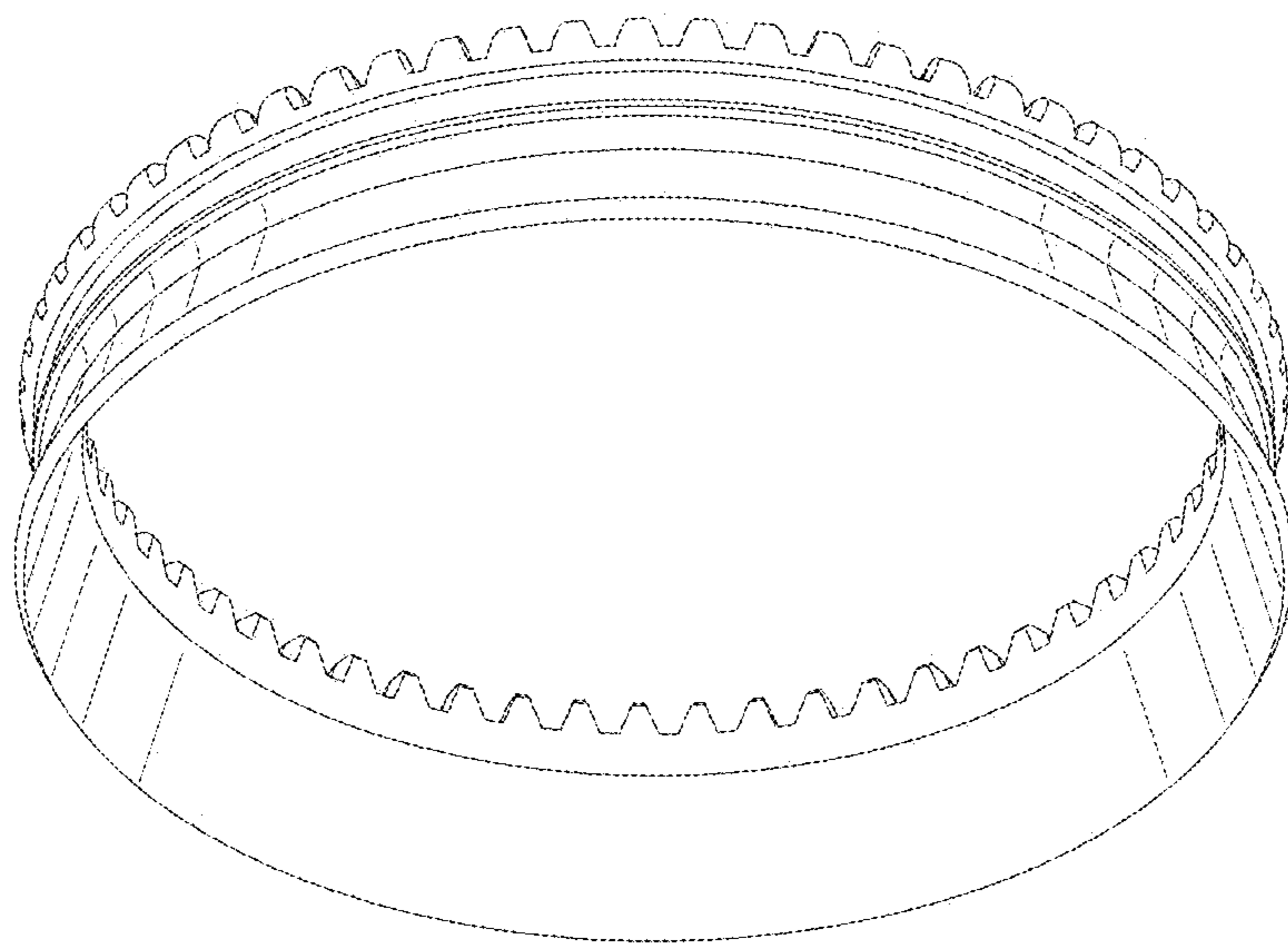


FIG. 32

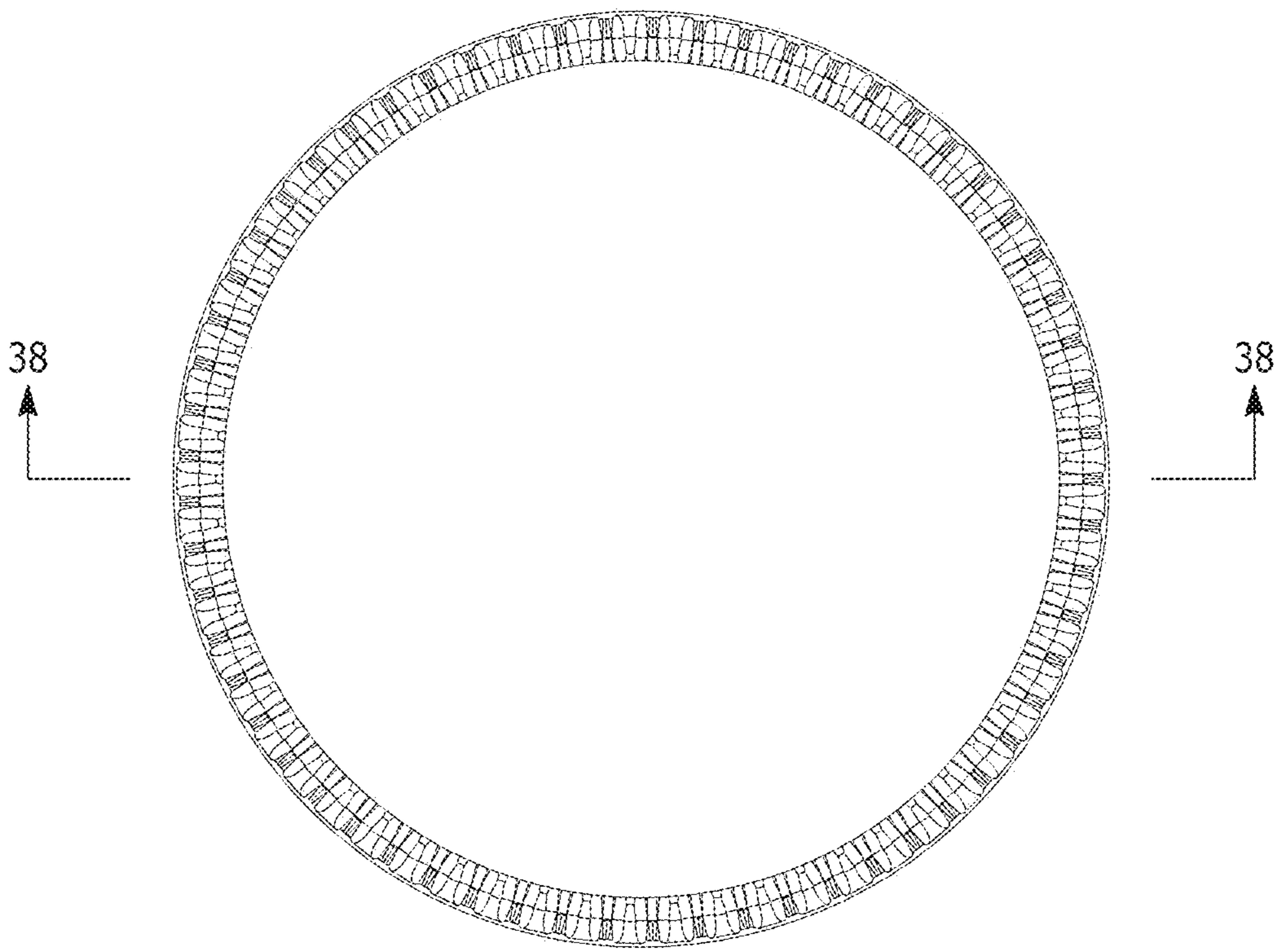


FIG. 33

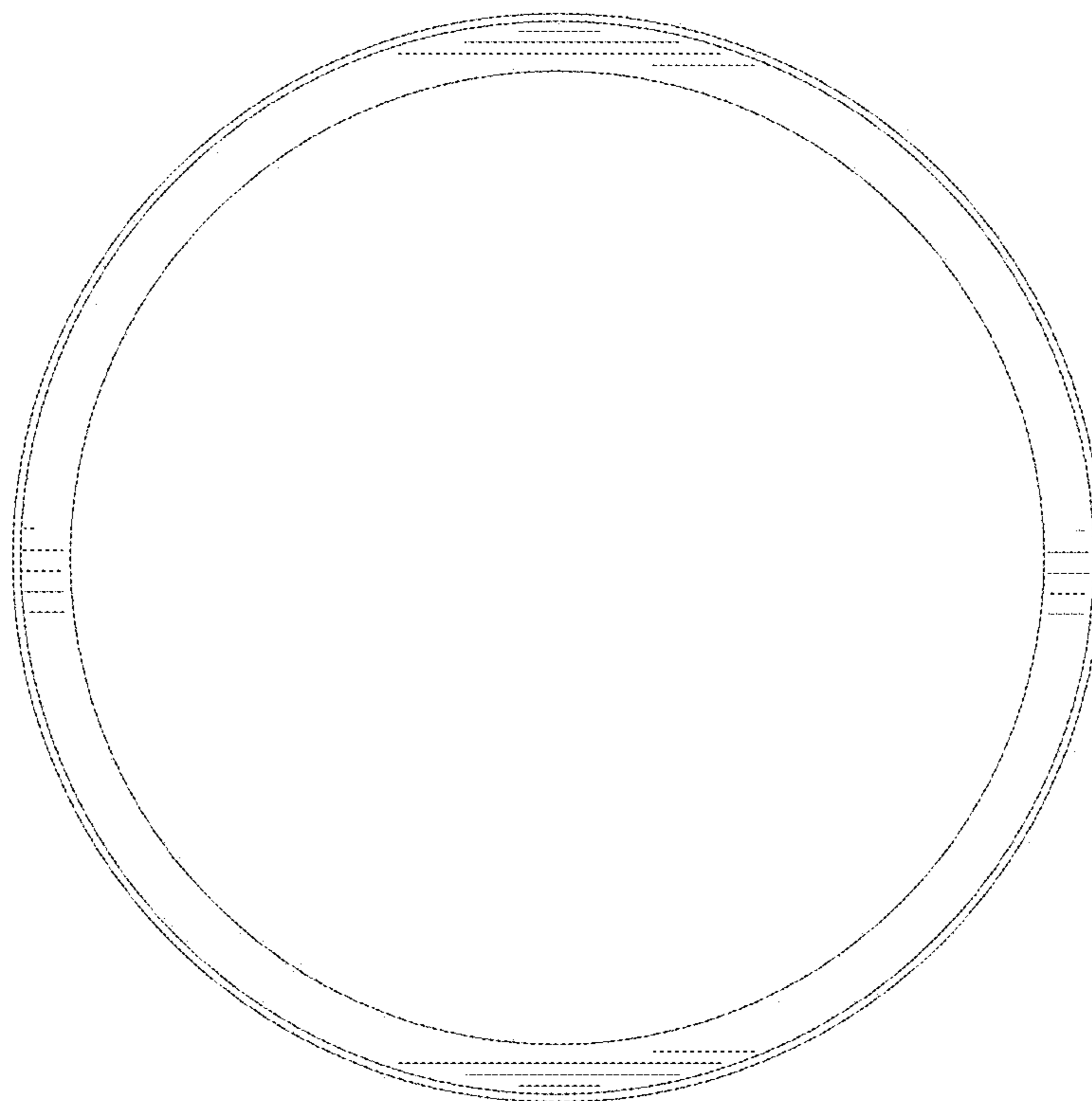


FIG. 34

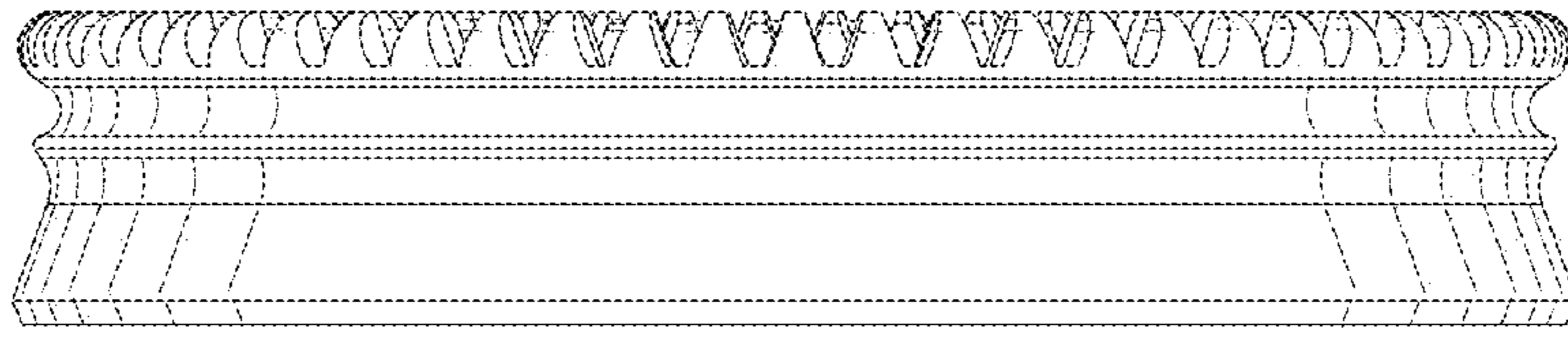


FIG. 35

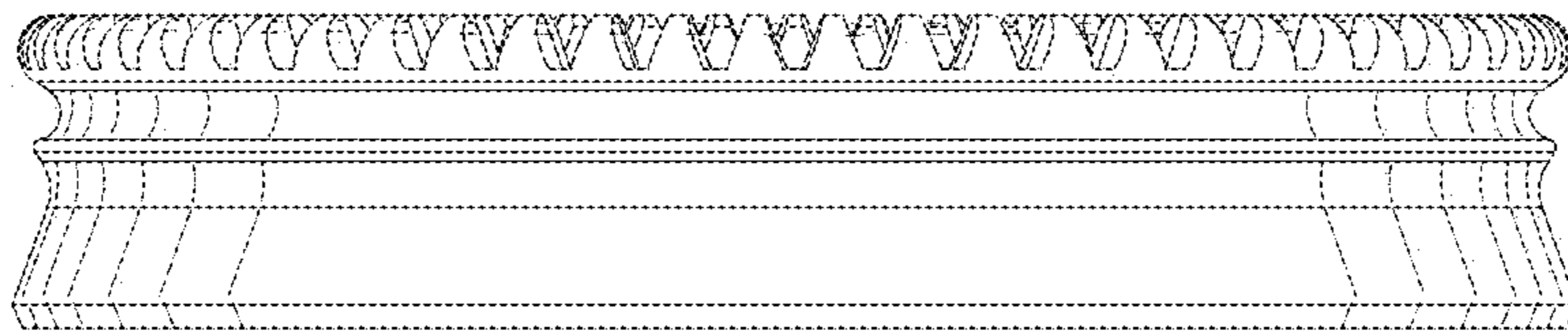


FIG. 36

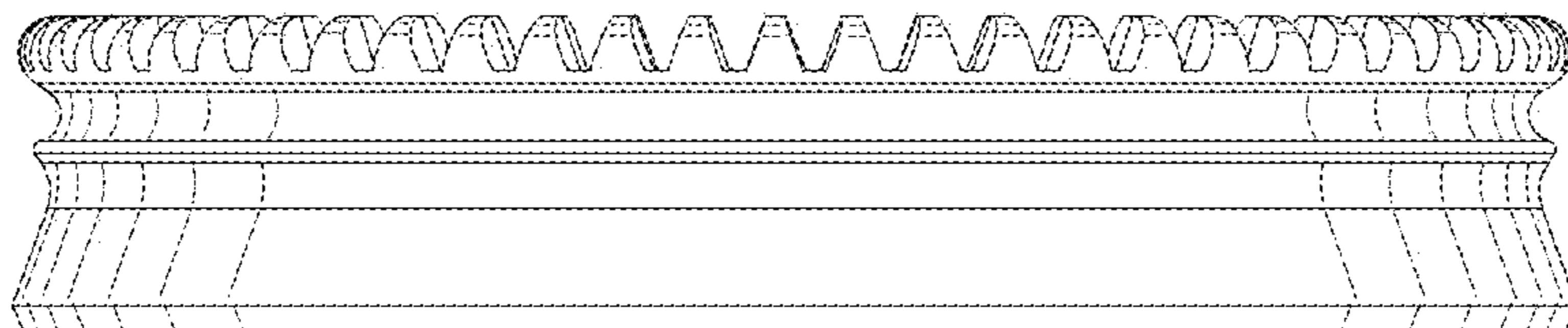


FIG. 37

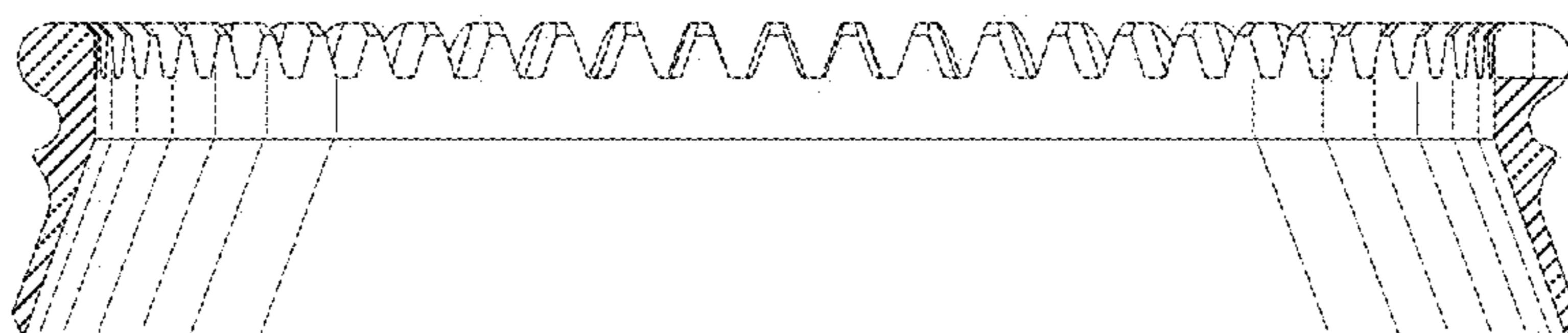


FIG. 38

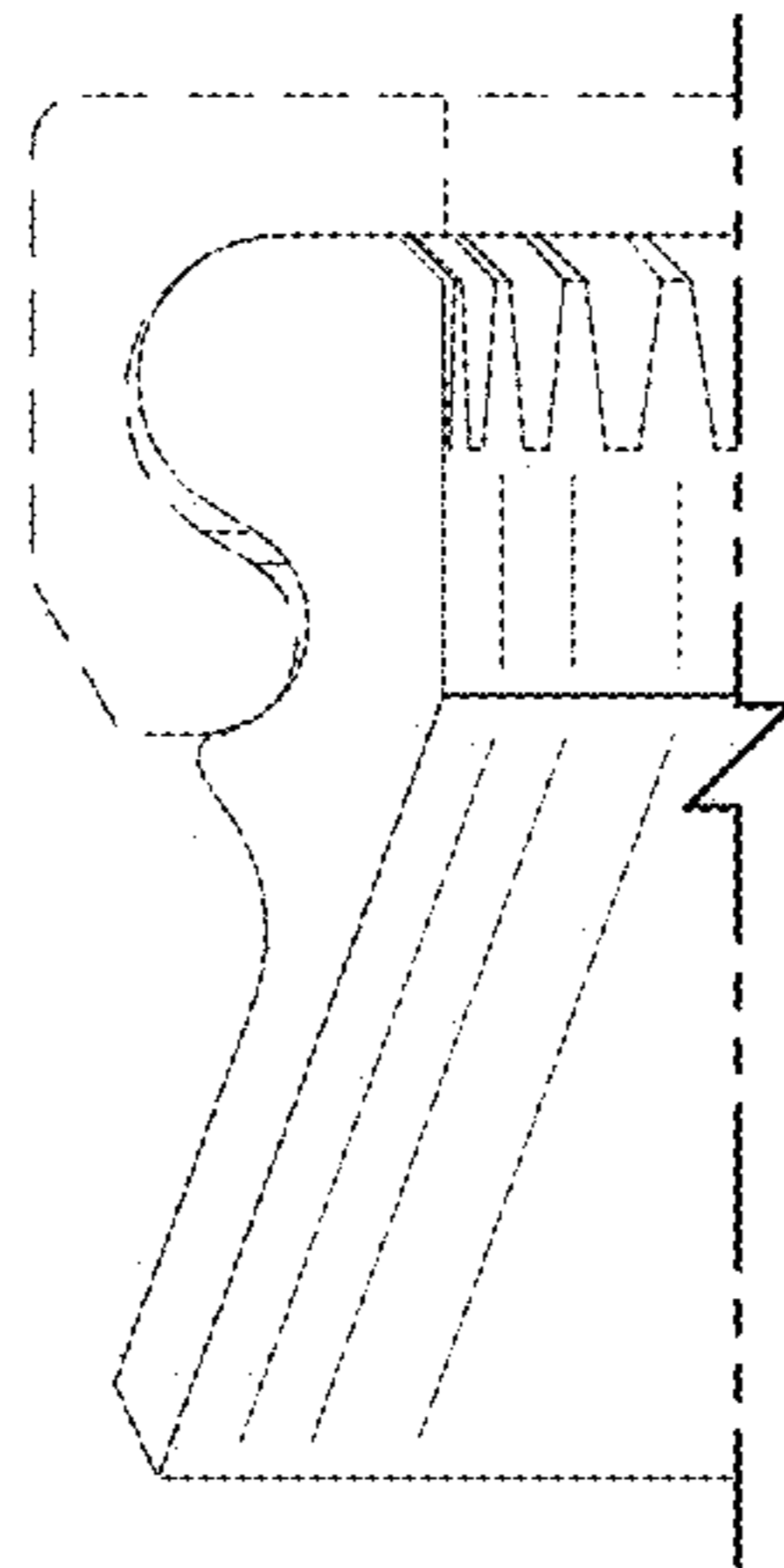


FIG. 39

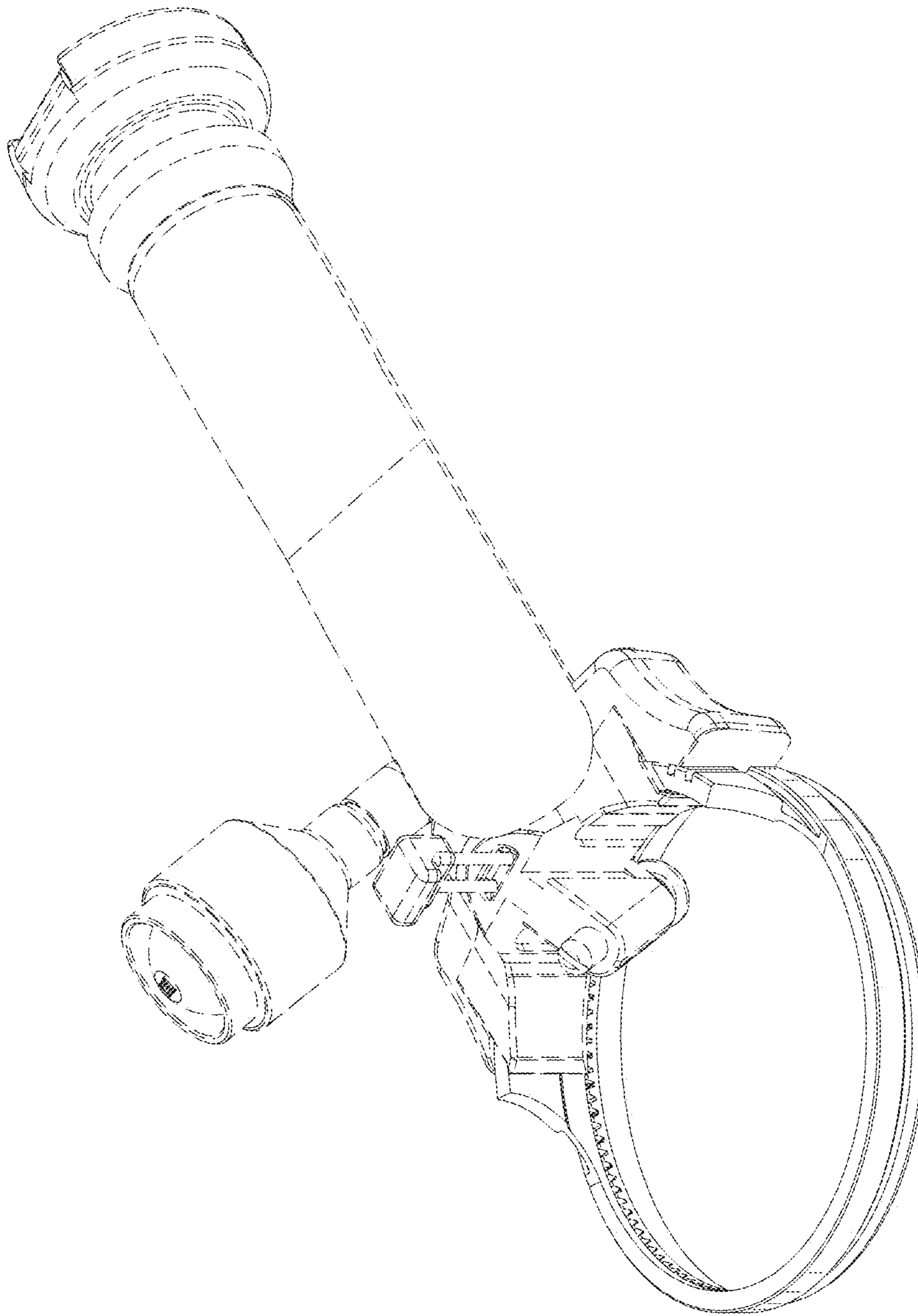


FIG. 40

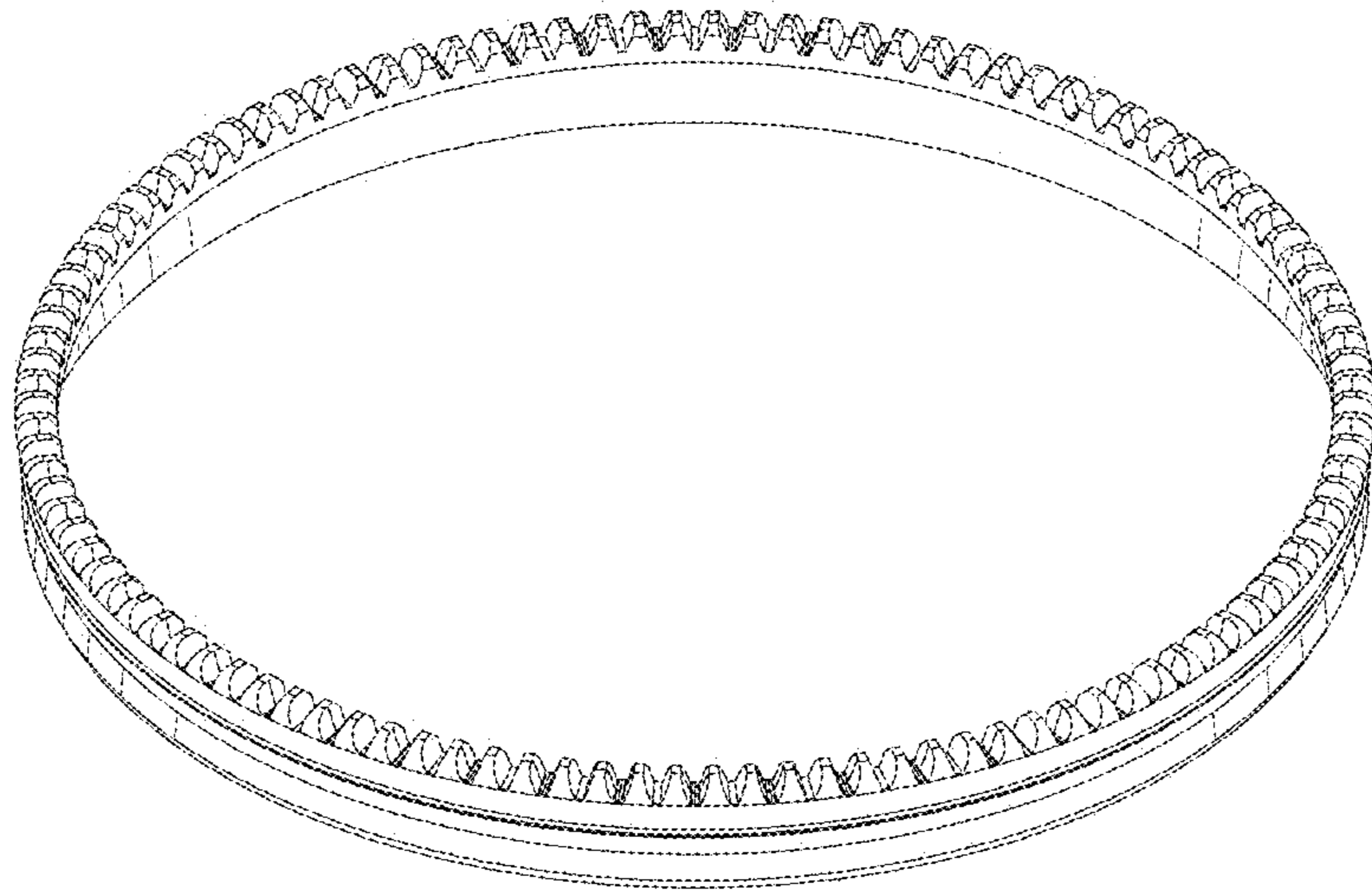


FIG. 41

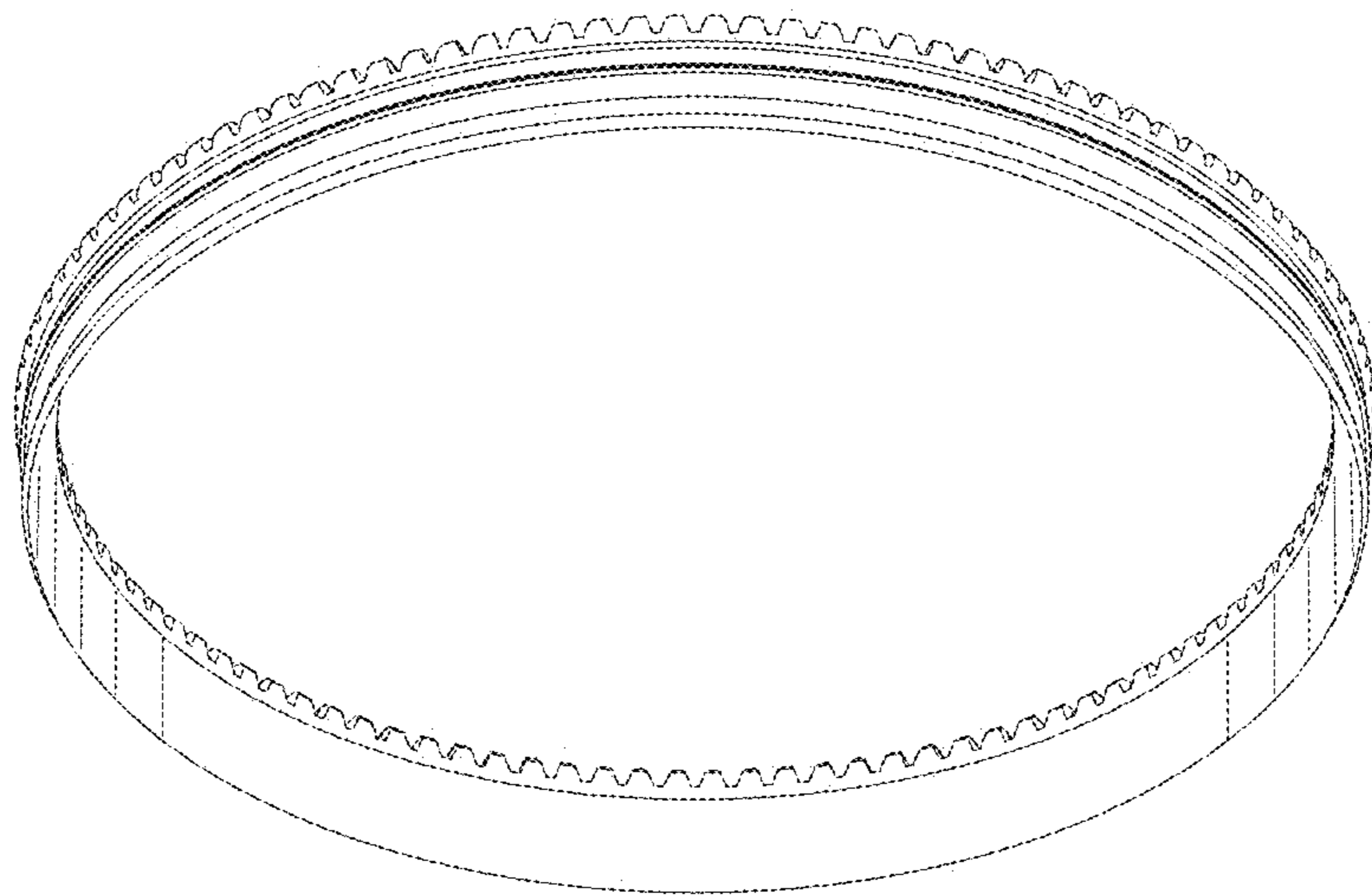


FIG. 42

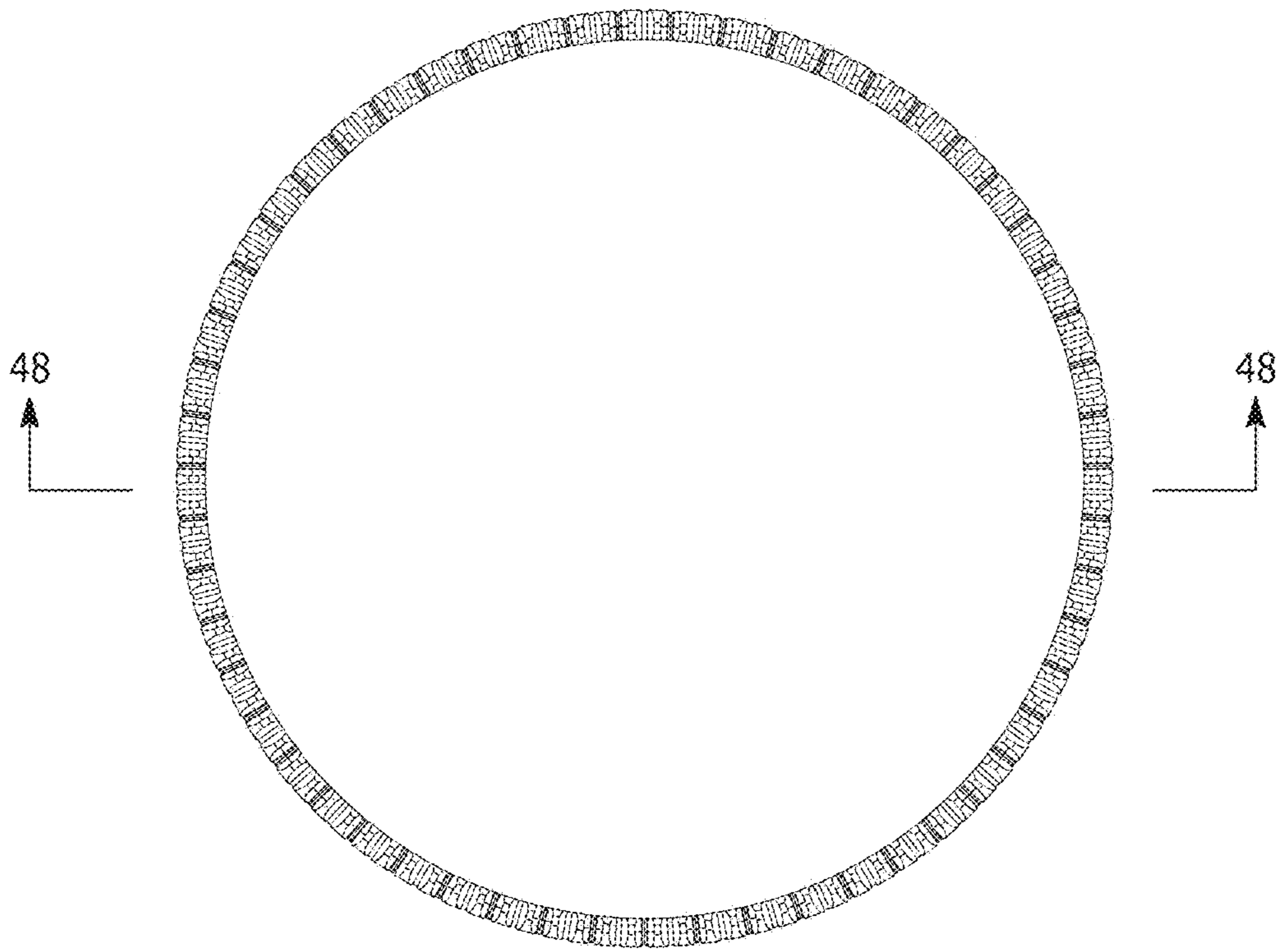


FIG. 43

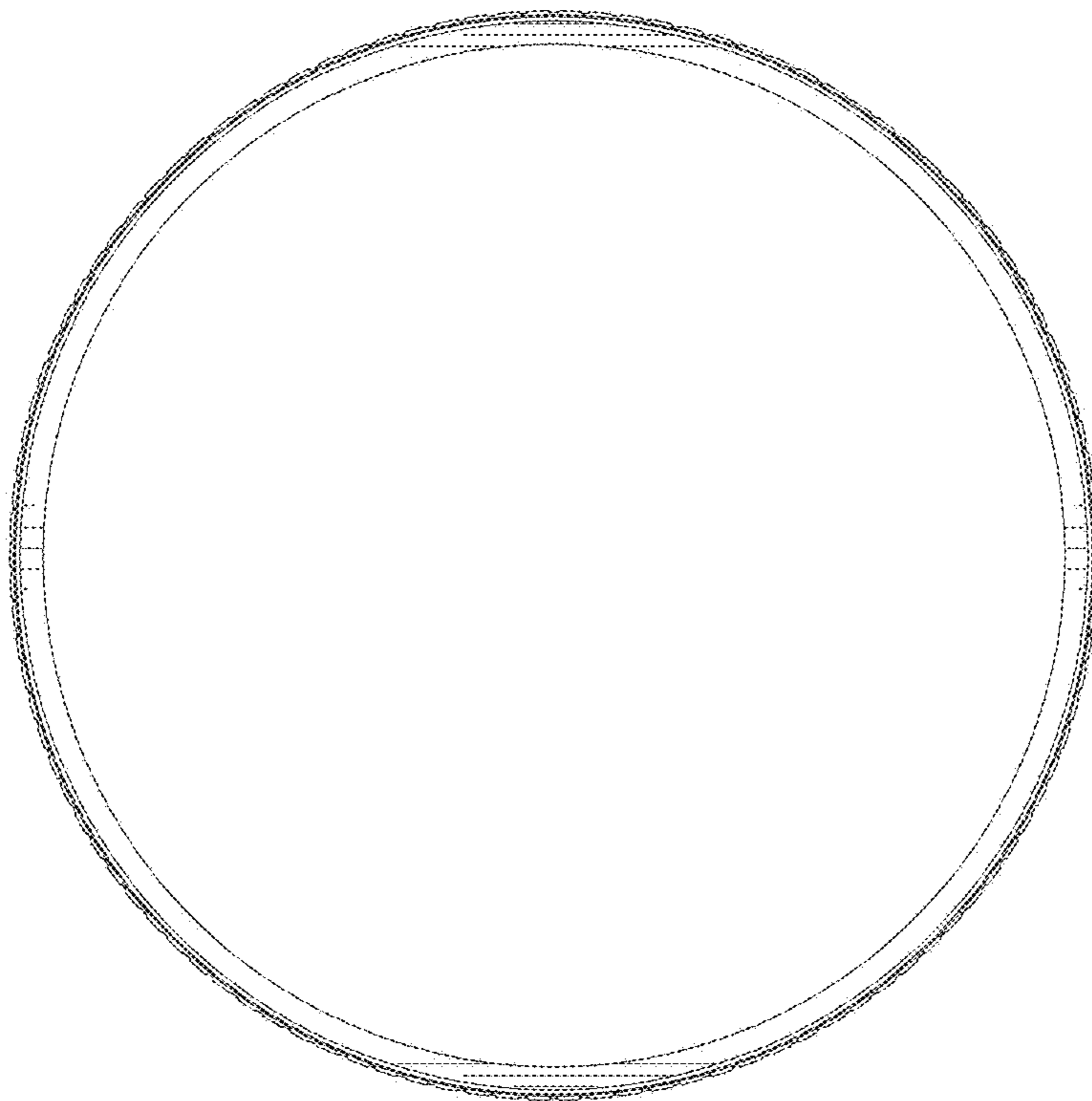


FIG. 44

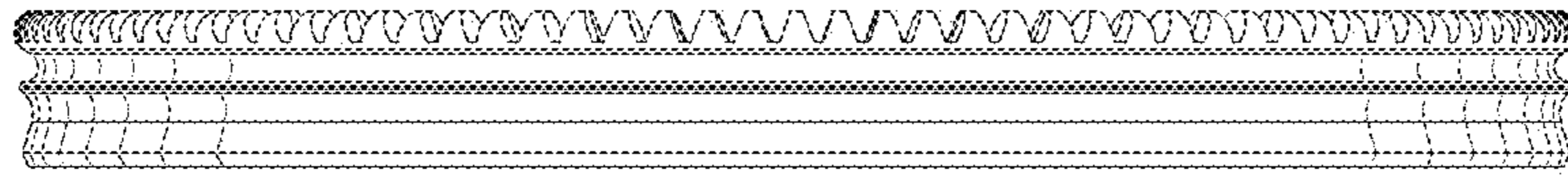


FIG. 45

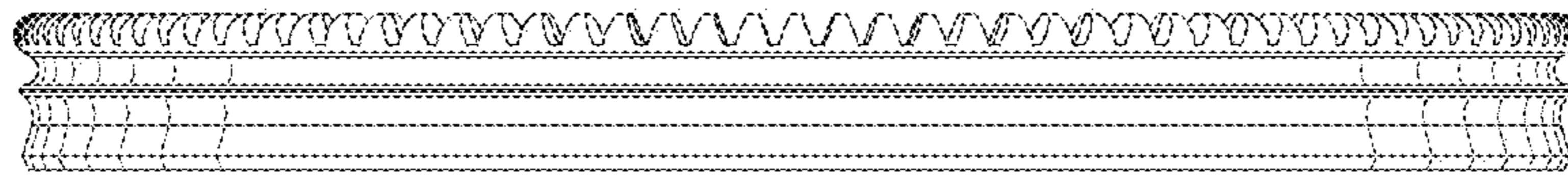


FIG. 46

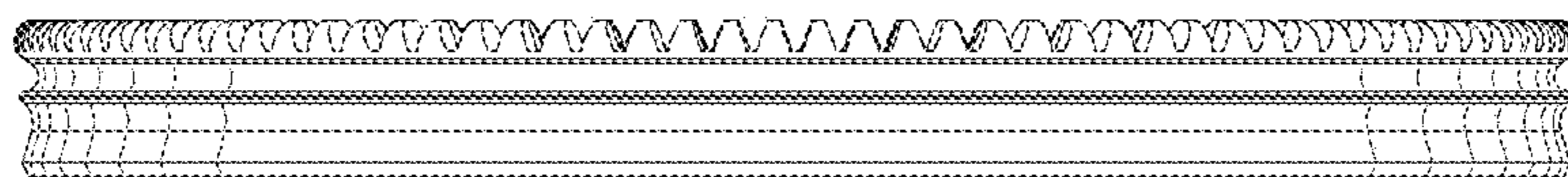


FIG. 47

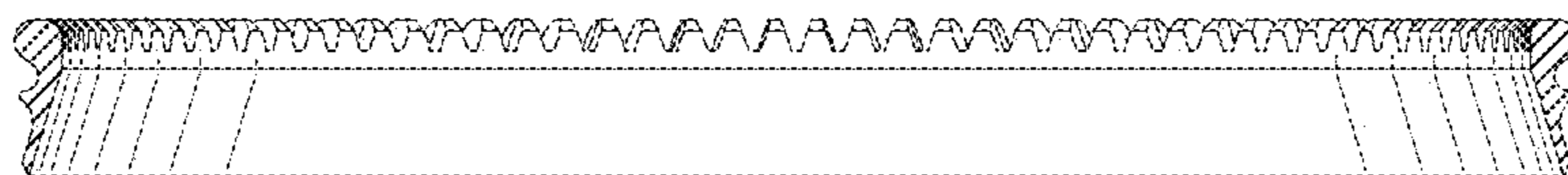


FIG. 48