



US00D799031S

(12) **United States Design Patent** (10) **Patent No.:** **US D799,031 S**  
**Barrett et al.** (45) **Date of Patent:** **\*\* Oct. 3, 2017**

(54) **BLOOD FLOW CHAMBER WITH DIRECTIONAL ARROW**

D296,530 S 7/1988 Nowacki et al.  
4,784,768 A 11/1988 Mathieu  
4,881,413 A 11/1989 Georgi et al.  
(Continued)

(71) Applicant: **Fresenius Medical Care Holdings, Inc.**, Waltham, MA (US)

FOREIGN PATENT DOCUMENTS

(72) Inventors: **Louis L. Barrett**, West Point, UT (US);  
**Perry N. Law**, Kaysville, UT (US);  
**Jorge Perez**, Reynosa (MX); **Chris Chau**, Mission, TX (US)

EP 0 274 178 A1 7/1988  
EP 0 467 805 A1 1/1992  
(Continued)

(73) Assignee: **Fresenius Medical Care Holdings, Inc.**, Waltham, MA (US)

OTHER PUBLICATIONS

Blood Chamber 2001.

(Continued)

(\*\*) Term: **15 Years**

*Primary Examiner* — Richelle G Shelton

(21) Appl. No.: **29/538,924**

(74) *Attorney, Agent, or Firm* — Leydig, Voit & Mayer, Ltd.

(22) Filed: **Sep. 9, 2015**

(57) **CLAIM**

(51) **LOC (10) Cl.** ..... **24-99**

The ornamental design for a blood flow chamber with directional arrow, as shown and described.

(52) **U.S. Cl.**

**DESCRIPTION**

USPC ..... **D24/129**

(58) **Field of Classification Search**

USPC ..... D24/129, 169; D10/81

CPC ..... A61B 5/1455; A61B 5/14557; A61M

2205/3306; A61M 2230/30

See application file for complete search history.

FIG. 1 is a perspective view of a blood flow chamber with directional arrow showing our new design;

FIG. 2 is a top plan view of the blood flow chamber with directional arrow of FIG. 1;

FIG. 3 is a bottom plan view of the blood flow chamber with directional arrow of FIG. 1;

FIG. 4 is a side elevation view of the blood flow chamber with directional arrow of FIG. 1;

FIG. 5 is one end elevation view of the blood flow chamber with directional arrow of FIG. 1; and,

FIG. 6 is another end elevation view of the blood flow chamber with directional arrow of FIG. 1.

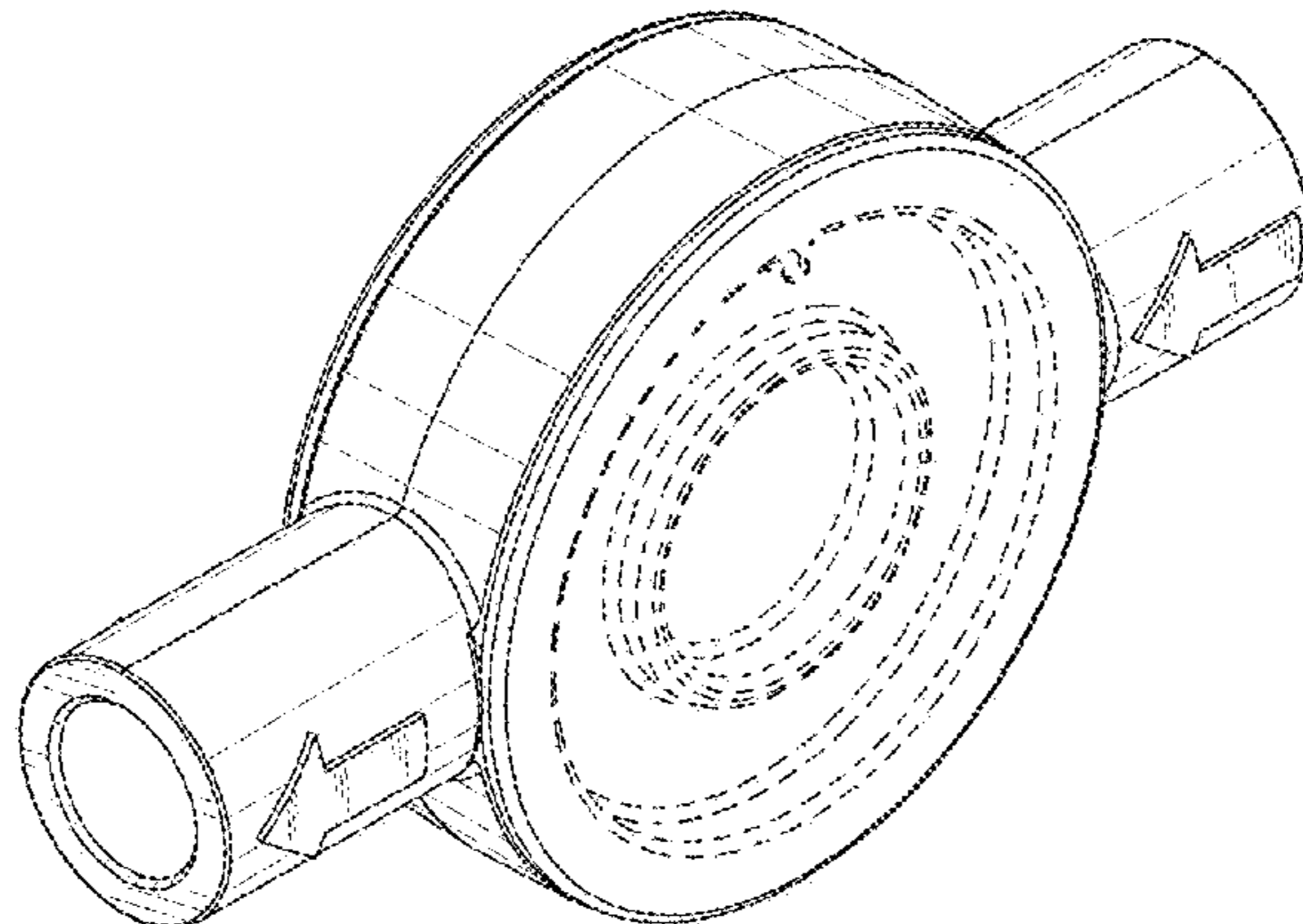
Features illustrated in broken lines in the Figures form no part of the claimed design, and broken lines immediately adjacent the shaded areas represent the bounds of the claimed design.

(56) **References Cited**

U.S. PATENT DOCUMENTS

D206,714 S 1/1967 Badkar  
D212,218 S 9/1968 Norton  
3,580,683 A 5/1971 Schulkind  
3,728,032 A 4/1973 Noll  
3,740,156 A 6/1973 Heigl et al.  
D239,021 S \* 3/1976 D'Alo ..... D24/129  
4,243,883 A 1/1981 Schwarzmann  
D259,278 S 5/1981 McCaw et al.  
D270,281 S 8/1983 Andersen et al.  
4,444,498 A 4/1984 Heinemann

**1 Claim, 3 Drawing Sheets**



(56)

## References Cited

## U.S. PATENT DOCUMENTS

4,936,993 A 6/1990 Nomura  
 5,073,171 A 12/1991 Eaton  
 5,171,456 A 12/1992 Hwang et al.  
 D335,096 S 4/1993 Marsh  
 5,222,948 A 6/1993 Austin et al.  
 D337,157 S \* 7/1993 Ortiz ..... D24/110  
 5,231,464 A 7/1993 Ichimura et al.  
 5,247,434 A 9/1993 Peterson et al.  
 D345,707 S 4/1994 Alister  
 5,312,535 A 5/1994 Waska et al.  
 2,357,238 A 8/1994 Trimble  
 5,351,686 A 10/1994 Steuer et al.  
 5,366,630 A 11/1994 Chevallet  
 5,372,136 A 12/1994 Steuer et al.  
 5,456,253 A 10/1995 Steuer et al.  
 5,458,566 A 10/1995 Herrig et al.  
 5,476,764 A 12/1995 Bitensky  
 D380,262 S 6/1997 Van Funderburk et al.  
 5,670,050 A 9/1997 Brose et al.  
 5,674,390 A 10/1997 Matthews et al.  
 5,676,644 A 10/1997 Toavs et al.  
 5,729,333 A 3/1998 Osten et al.  
 5,730,712 A 3/1998 Falkvall et al.  
 5,762,805 A 6/1998 Truitt et al.  
 5,769,815 A 6/1998 Utterberg  
 5,792,052 A 8/1998 Isaacson et al.  
 D409,750 S 5/1999 Hacker  
 D410,086 S 5/1999 Hacker et al.  
 6,018,673 A 1/2000 Chin et al.  
 6,069,687 A 5/2000 Briggs  
 6,090,061 A 7/2000 Steuer et al.  
 6,284,131 B1 9/2001 Hogard et al.  
 6,284,142 B1 9/2001 Muller  
 6,510,330 B1 1/2003 Enejder  
 6,554,788 B1 4/2003 Hunley et al.  
 6,746,415 B1 6/2004 Steuer et al.  
 6,784,820 B1 8/2004 Casakegno et al.  
 7,018,353 B2 3/2006 Hunley et al.  
 D518,573 S 4/2006 French  
 7,247,143 B2 7/2007 Law et al.  
 7,671,974 B2 3/2010 O'Mahony et al.  
 D623,302 S \* 9/2010 Barrett ..... D24/169  
 D625,824 S 10/2010 Brackett et al.  
 D630,536 S \* 1/2011 Pettit ..... D10/96  
 D654,999 S \* 2/2012 Barrett ..... D24/129  
 8,133,194 B2 3/2012 Szamoadalvi et al.  
 8,287,739 B2 10/2012 Barrett et al.  
 8,315,682 B2 11/2012 Such et al.  
 8,328,748 B2 12/2012 Law et al.  
 8,333,724 B2 12/2012 Barrett et al.  
 D684,695 S 6/2013 Green et al.  
 D684,697 S 6/2013 Green et al.  
 8,517,968 B2 8/2013 Barrett et al.  
 D698,440 S 1/2014 Lombardi et al.  
 D698,919 S \* 2/2014 Schwarz ..... D24/130  
 D725,261 S 3/2015 Barrett et al.  
 9,002,655 B2 4/2015 Bene  
 D739,774 S 9/2015 Bene  
 D757,934 S \* 5/2016 Barrett ..... D24/129  
 D758,222 S \* 6/2016 Uchiumi ..... D10/81  
 2001/0016699 A1 8/2001 Burbank et al.  
 2001/0021817 A1 9/2001 Brugger et al.  
 2001/0037079 A1 11/2001 Burbank et al.  
 2001/0041892 A1 11/2001 Burbank et al.  
 2002/0103453 A1 8/2002 Burbank et al.  
 2002/0147423 A1 10/2002 Burbank et al.  
 2003/0009123 A1 1/2003 Brugger et al.  
 2003/0045784 A1 3/2003 Palatnik et al.  
 2003/0070969 A1 4/2003 Muller et al.  
 2003/0097087 A1 5/2003 Gura  
 2003/0143116 A1 7/2003 Zheng et al.  
 2003/0196949 A1 10/2003 Sunohara et al.  
 2003/0210390 A1 11/2003 O'Mahoney et al.  
 2003/0212316 A1 11/2003 Leiden et al.  
 2004/0087845 A1 5/2004 Katarow et al.

2005/0094127 A1 5/2005 O'Mahony et al.  
 2006/0033331 A1 \* 2/2006 Ziman ..... A61M 39/10  
 285/330  
 2006/0036185 A1 2/2006 Lewicke et al.  
 2006/0144776 A1 7/2006 Mishkin et al.  
 2006/0226079 A1 10/2006 Mori et al.  
 2006/0290625 A1 12/2006 Sugimoto  
 2007/0100219 A1 5/2007 Sweutzer et al.  
 2007/0149871 A1 6/2007 Sarussi et al.  
 2007/0179433 A1 8/2007 Jonsson et al.  
 2008/0081970 A1 4/2008 Boyce et al.  
 2008/0129047 A1 6/2008 Blivet et al.  
 2008/0300570 A1 12/2008 Fowles et al.  
 2009/0054751 A1 2/2009 Babashan et al.  
 2009/0247850 A1 10/2009 Porges  
 2010/0004518 A1 1/2010 Vo et al.  
 2010/0110416 A1 5/2010 Barrett et al.  
 2010/0113891 A1 5/2010 Barrett et al.  
 2010/0168531 A1 7/2010 Shaltis et al.  
 2011/0004082 A1 1/2011 Poeze et al.  
 2011/0022077 A1 1/2011 Green et al.  
 2011/0160679 A1 6/2011 Okiyama et al.  
 2012/0059234 A1 \* 3/2012 Barrett ..... A61B 5/14557  
 600/326  
 2012/0120384 A1 5/2012 Barrett et al.  
 2012/0154789 A1 6/2012 Barrett et al.  
 2013/0030348 A1 \* 1/2013 Lauer ..... A61M 5/1407  
 604/6.16

## FOREIGN PATENT DOCUMENTS

EP 0 990 444 A2 4/2000  
 GB 1583 023 A 1/1981  
 JP 09-229847 9/1997  
 JP 2009-216711 9/2009  
 WO WO 93/06456 A1 4/1993  
 WO WO 93/06774 A1 4/1993  
 WO WO 94/27495 A1 12/1994  
 WO WO 98/37801 A1 9/1998  
 WO WO 00/33053 A1 6/2000  
 WO WO 01/87151 A2 11/2001  
 WO WO 01/93944 A1 12/2001  
 WO WO 02/078783 10/2002

## OTHER PUBLICATIONS

CL Photo 2000.  
 Blood Chamber Instruction Sheet, 2001.  
 Barrett, et al., "Effects of CPD and K2EDTA Preservatives on Blood Sample Hematocrit", *Asaio Abstract Submission Information, 45<sup>th</sup> Annual Conference*, San Diego, Jun. 3-5, 1999.  
 Crit-Line Hematocrit Accuracy Hema Metrics, vol. 1, *Tech Note No. 11 (Rev D.)*, pp. 1-4, Feb. 24, 2003.  
 Office action for co-pending Canadian Patent Application No. 2,742,794, including the original claims as filed.  
 Office action for co-pending Canadian Patent Application No. 2,742,619, dated Aug. 5, 2013.  
 Official Action for co-pending European Patent Application No. 755 533.4 dated Apr. 16, 2013.  
 Official Action for co-pending European Patent Application No. 11 754 974.1 dated Apr. 16, 2013.  
 Written Opinion for International Patent Application No. PCT/US2011/061273.  
 International Search Report for PCT/US2012/026637, Jun. 6, 2012.  
 Written Opinion for PCT/US2012/026637, Jun. 6, 2012.  
 Sacker-Berstein, et al., "How Should Diuretic-Refractory Volume-Overloaded Heart Failure Patients Be Managed?", *The Journal of Invasive Cardiology*, vol. 15., No. 10 (Oct. 2003), pp. 585-590, retrieved from [http://www.medscape.com/viewarticle/463509\\_print](http://www.medscape.com/viewarticle/463509_print) on Mar. 11, 2013, pp. 1-11.  
 Jaski, Brian E., M.D., "Peripherally Inserted Venous Ultrafiltration for Rapid Treatment of Volume Overloaded Patients", *Journal of Cardiac Failure*, vol. 9., No. 3., (Jun. 2003), pp. 227-231.

(56)

**References Cited**

## OTHER PUBLICATIONS

Steuer, et al., "Optical Measurement of Hematocrit and Other Biological Constituents in Renal Therapy", *Advances in Renal Replacement Therapy*, vol. 6., No. 3, (Jul. 1999), pp. 217-224.

Gardner, "Exponential Smoothing: the State of Art", *Journal of Forecasting*, vol. 4., 1985, pp. 1-28.

Baum, "An Introduction to Modern Econometrics Using Strata", *StataCorp., LP*, 2006, Chapter 9 Panel-data models", pp. 219-245.  
International Search Report for International PCT/US2009/057964, dated Jun. 18, 2010.

Logman, Dirren H., et al., Abstract—"Altitude Correction for Hemoglobin", *European Journal of Clinical Nutrition*, (Believed to be no longer in publication).

Cohen, et al., "Hemoglobin Correction Factors for Estimating the Prevalence of Iron Deficiency Anemia in Pregnant Women Residing at High Altitudes in Bolivia", retrieved from [http://www.scielo.php?script=sci\\_arttext&pid=S1020-49891999001100004](http://www.scielo.php?script=sci_arttext&pid=S1020-49891999001100004) on Jun. 19, 2009, (12 pages).

Zhang, S., Ph.D., et al., "Hematocrit Measurement Error Due to Time Dependence of Hematocrit for EDTA-Preserved Blood Samples", *ASN 36 Annual Meeting & Scientific Exposition*, retrieved from <http://www.call2abstracts.com/ams/main/finalpreview>, site visited Jun. 25, 2003.

ScienceStockroom Flow Through Cuvette, 14 pages..

International Search Report of International Application No. PCT/US2011/061273, Mar. 13, 2012.

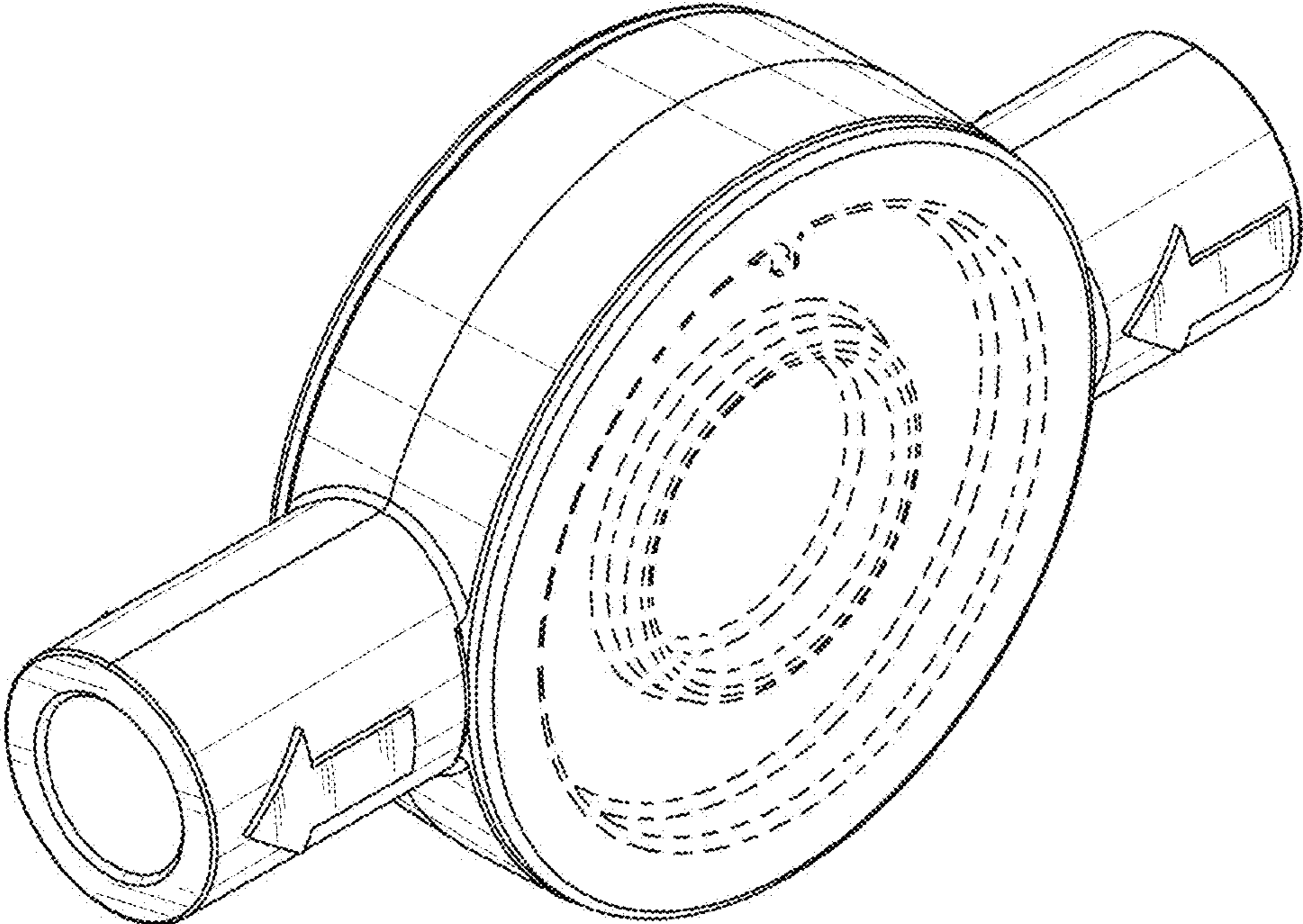
Barrett, "Effects of CPD and K<sub>3</sub> EDTA Preservatives on Blood Sample Hematocrit", *Abstract Submission, ASIAO, 45<sup>th</sup> Annual Conference*, San Diego, Jun. 1999.

Official Action for European Patent Application No. 11801888.6, dated Apr. 9, 2015.

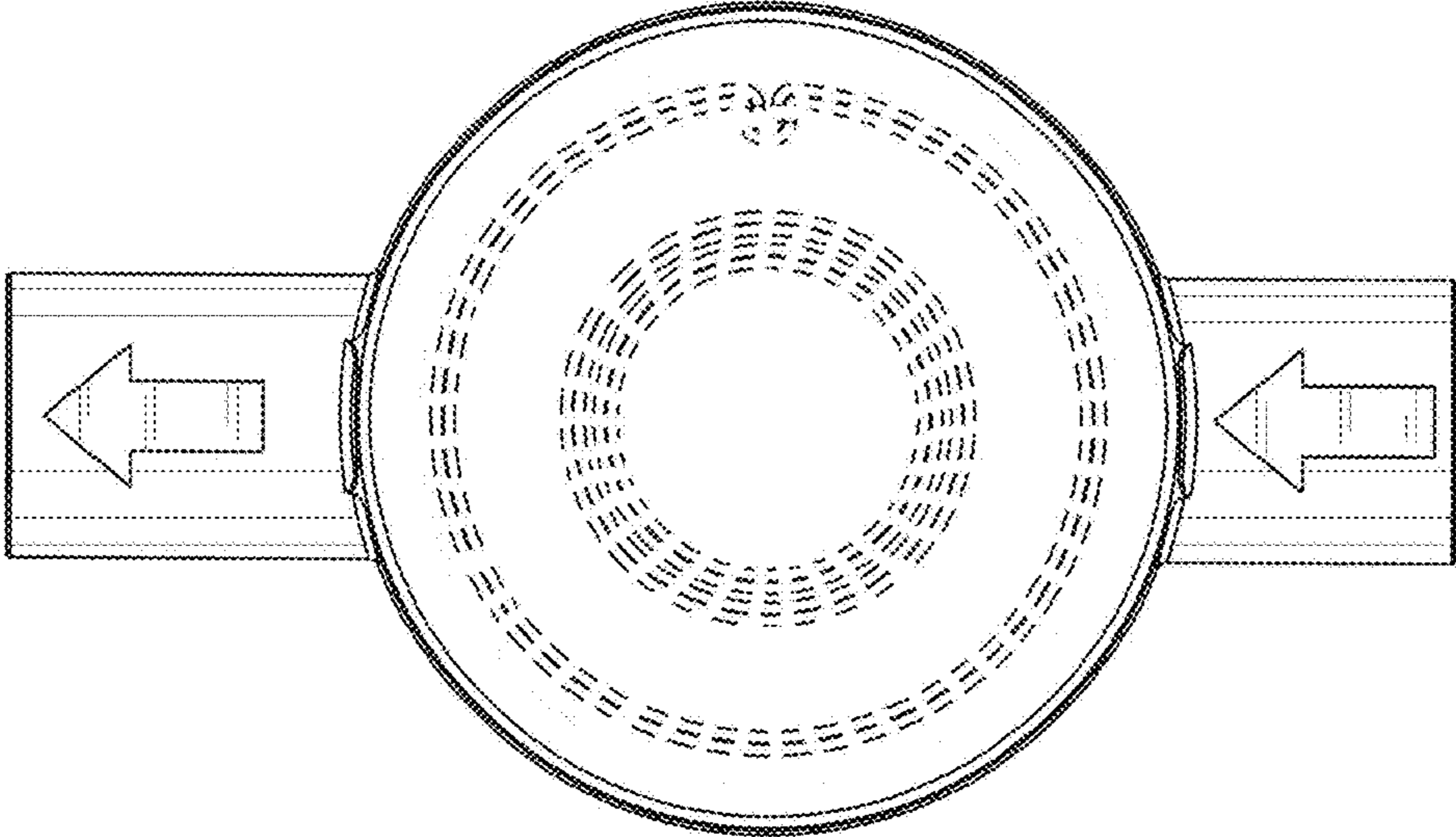
Office Action for Chinese Patent Application No. 201280010099.2, dated Apr. 22, 2015.

Chinese Office Action for Chinese Patent Application No. 201180042991.4, dated Jan. 19, 2015 (9 pages).

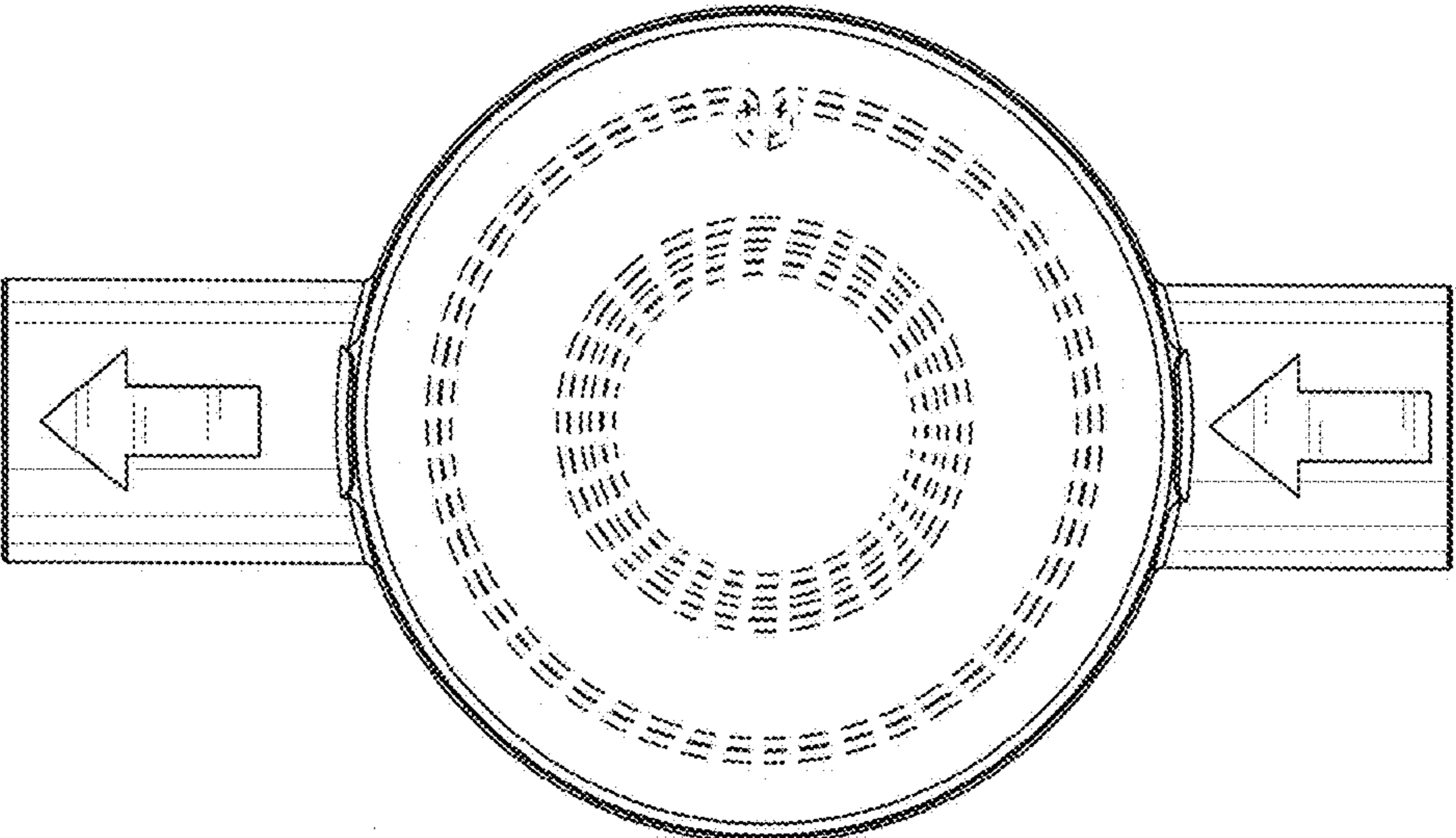
\* cited by examiner



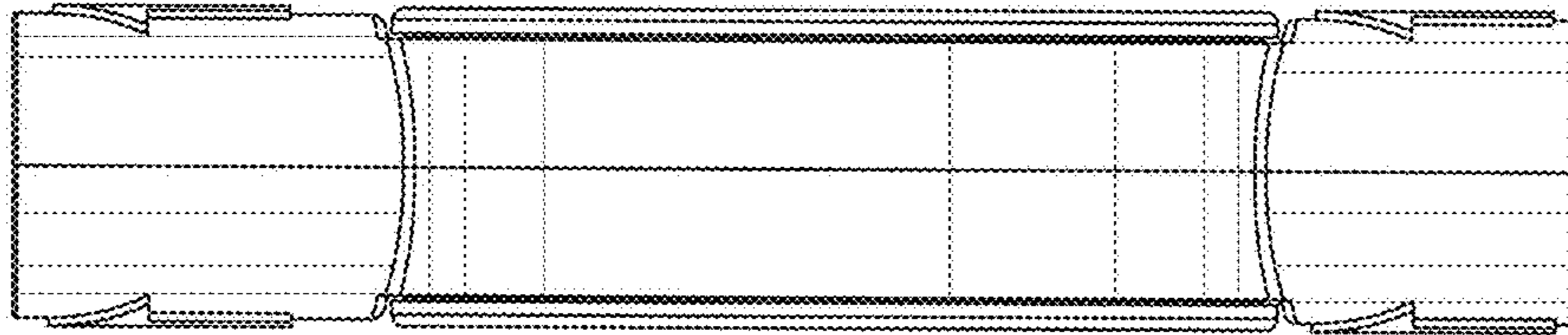
**FIG. 1**



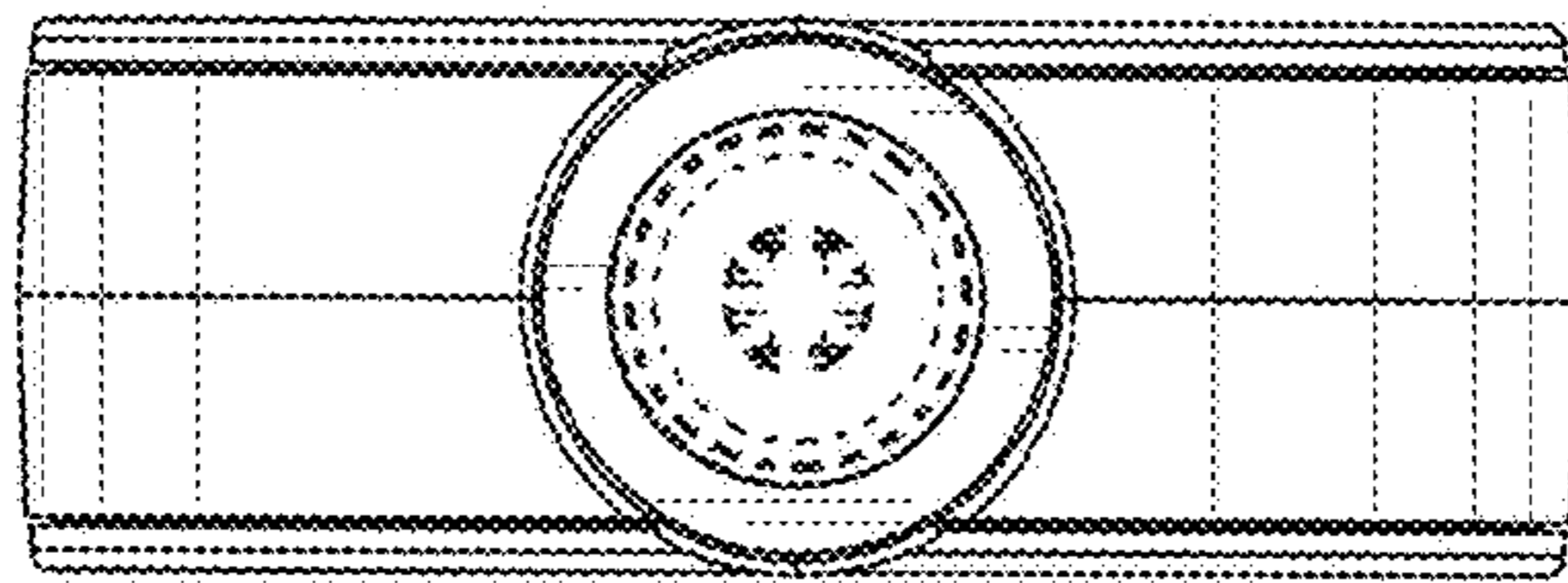
**FIG. 2**



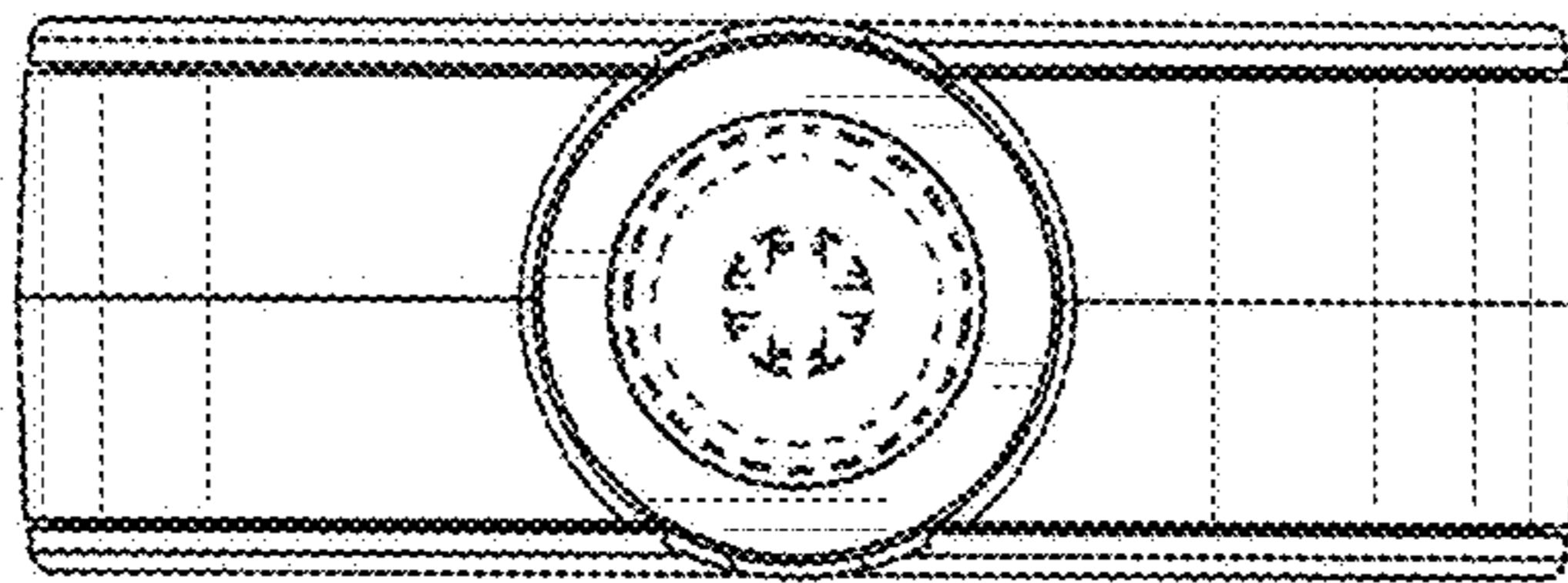
**FIG. 3**



**FIG. 4**



**FIG. 5**



**FIG. 6**