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

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(54) **LINER FOR AN ENGINE BLOCK**
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6,732,698 B1 * 5/2004 Bedwell C22C 37/00
148/612
7,726,273 B2 6/2010 Azevedo et al.
D631,542 S * 1/2011 DeGross D24/129
9,534,559 B2 1/2017 Donahue
10,480,499 B2 11/2019 Hebrard et al.
11,174,813 B1 * 11/2021 Bochart F02F 7/0085
2006/0219192 A1 * 10/2006 Rasmussen F02F 1/004
123/41.84
2007/0227475 A1 10/2007 Hiramitsu et al.

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(Continued)

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

FOREIGN PATENT DOCUMENTS

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DE 19847865 C2 8/2000
JP 2006233761 A 9/2006

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(51) **LOC (14) Cl.** **15-01**

Primary Examiner — Ania Aman

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

(74) *Attorney, Agent, or Firm* — Oblon, McClelland, Maier & Neustadt, LLP

USPC **D15/5**

(58) **Field of Classification Search**

(57) **CLAIM**

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CPC F16J 10/04; F02F 1/004; F02F 11/005
See application file for complete search history.

The ornamental design for a liner for an engine block, as shown and described.

DESCRIPTION

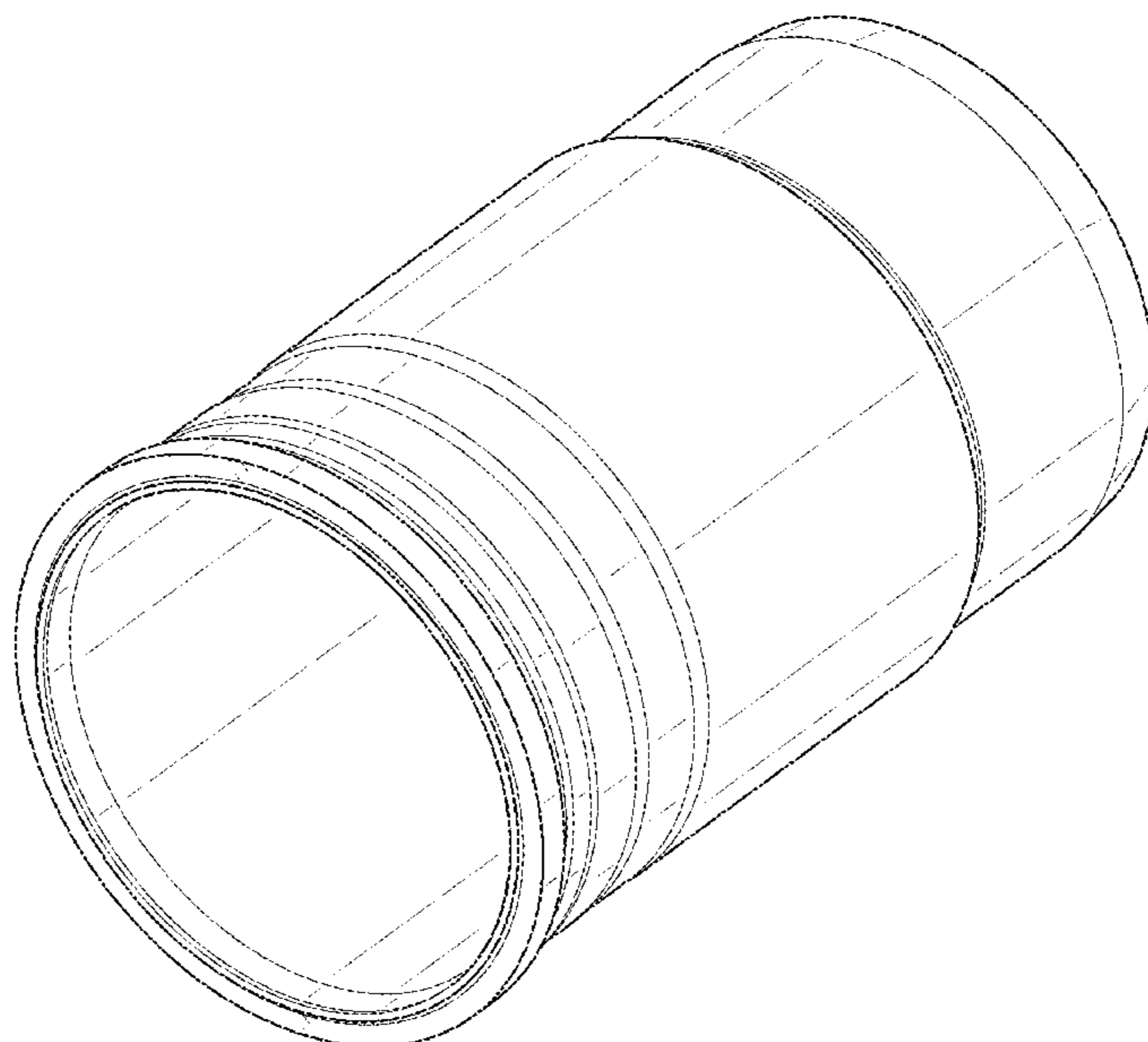
(56) **References Cited**

U.S. PATENT DOCUMENTS

3,882,842 A 5/1975 Bailey et al.
3,903,951 A * 9/1975 Kaneko B22D 15/02
123/193.2
4,305,348 A 12/1981 Martin
4,385,595 A * 5/1983 Shaw F02F 1/16
123/193.2
4,399,783 A * 8/1983 Hauser, Jr. F16J 10/04
123/193.2
4,413,597 A * 11/1983 Stang F02F 1/163
123/669
5,165,367 A * 11/1992 Morris F02F 1/163
123/41.84
5,676,096 A 10/1997 Nishi et al.
6,328,001 B1 12/2001 Kirtley et al.

FIG. 1 is a top, front perspective view of a liner for an engine block according to our design;
FIG. 2 is a front elevational view thereof, a rear elevational view thereof being a mirror image of the front elevational view, and left and right elevational views thereof being the same as the front and rear elevational views, respectively;
FIG. 3 is a top plan view thereof;
FIG. 4 is a bottom plan view thereof; and,
FIG. 5 is a cross-sectional view along line 5-5 of FIG. 3, a cross-sectional view opposite the cross-sectional view along the line 5-5 being a mirror image thereof.
The broken line in FIG. 3 represents a cross-sectional identifier and forms no part of the claimed design.

1 Claim, 5 Drawing Sheets



(56)

References Cited

U.S. PATENT DOCUMENTS

2008/0035081 A1* 2/2008 Ruble F02F 1/16
 123/41.84
 2010/0206261 A1* 8/2010 Berghian F02F 1/16
 123/193.2
 2011/0016711 A1* 1/2011 Simpson F02F 1/004
 29/888.061
 2012/0118055 A1* 5/2012 Keister G01M 15/02
 73/116.02
 2014/0325840 A1* 11/2014 Morgan B23B 47/34
 29/888.061
 2016/0047331 A1* 2/2016 Graham B23P 19/042
 123/193.2
 2016/0053707 A1 2/2016 Batta
 2018/0066601 A1* 3/2018 Sharma F02F 1/163
 2019/0003415 A1* 1/2019 Becker F16J 10/04
 2020/0248645 A1 8/2020 Bochart
 2021/0062750 A1* 3/2021 Reding F02F 1/12
 2021/0254578 A1* 8/2021 Chen F02F 7/007
 2021/0270204 A1* 9/2021 Svensson F02B 3/06
 2022/0106923 A1* 4/2022 Zhang F02F 1/242

FOREIGN PATENT DOCUMENTS

JP 5300285 B2 9/2013
 JP 6528736 B2 6/2019
 WO WO-2021126943 A1* 6/2021 F02F 1/004

* cited by examiner

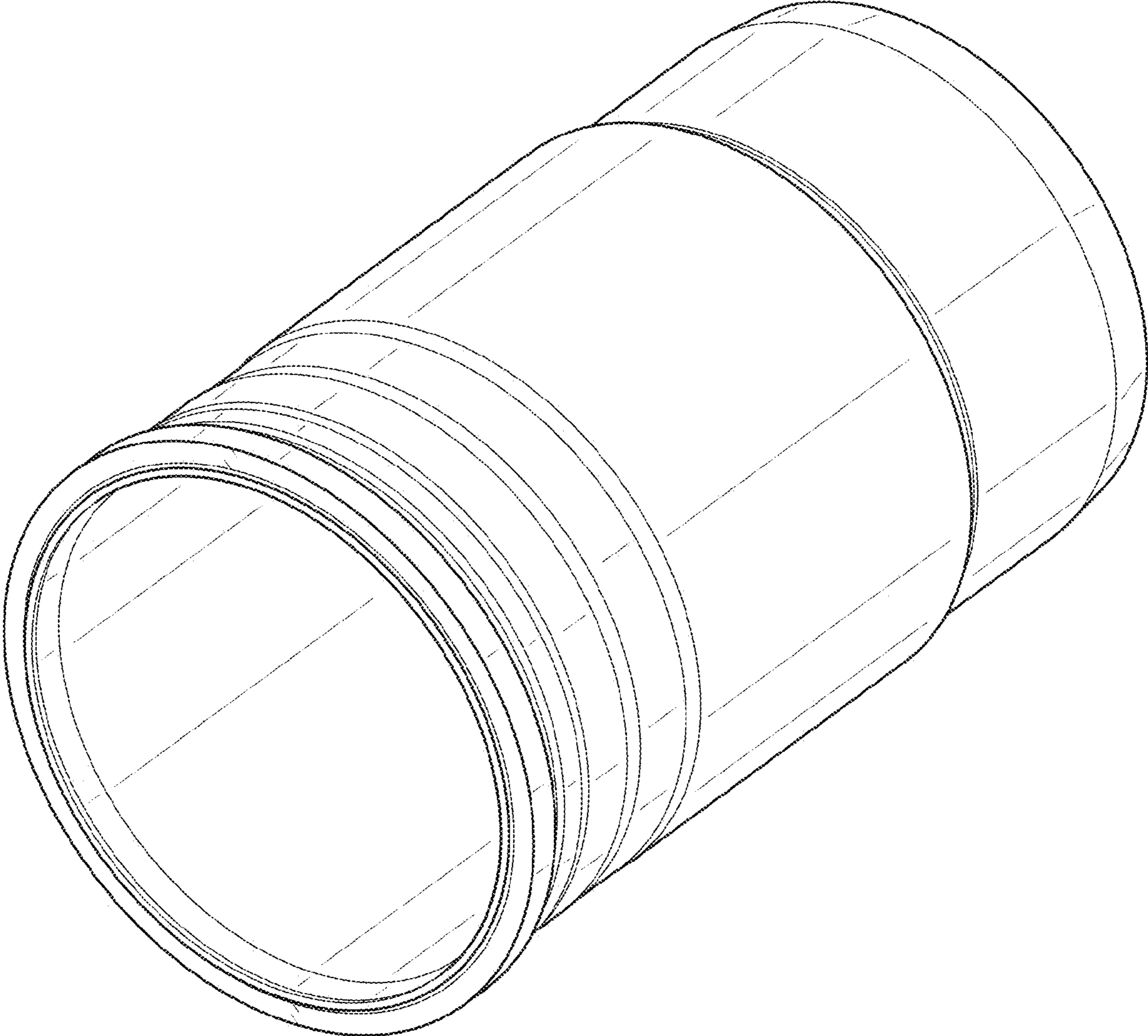


FIG. 1

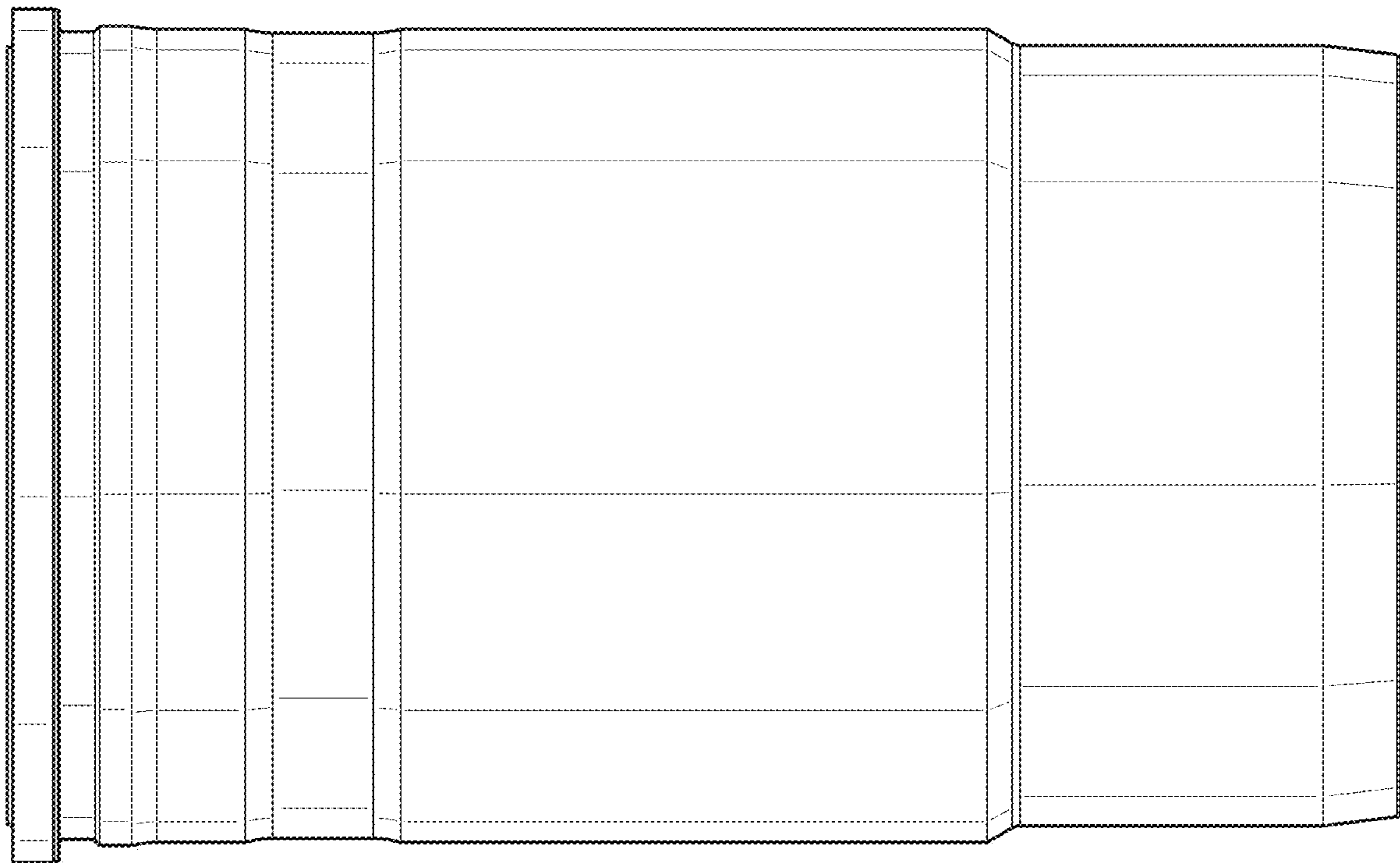


FIG. 2

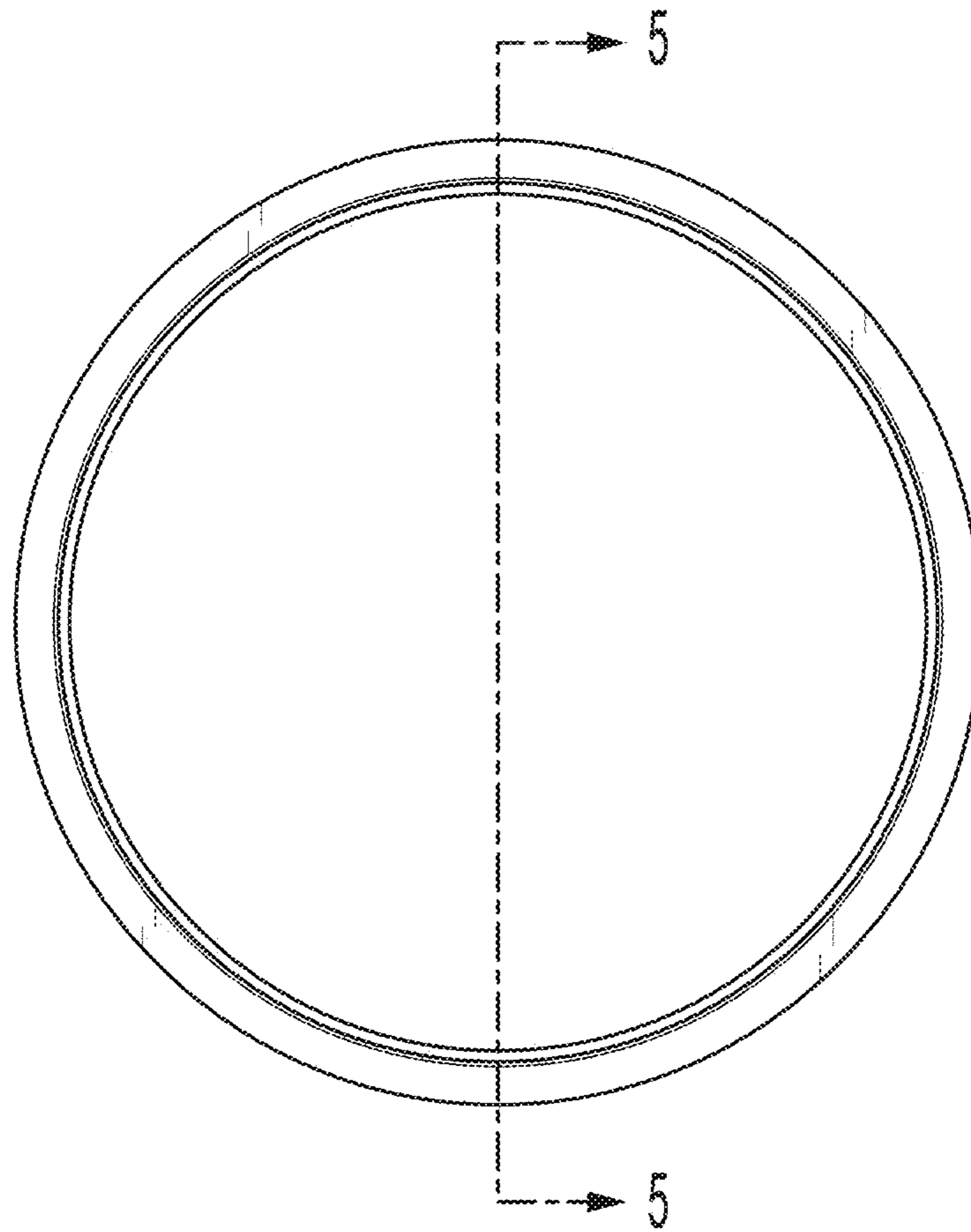


FIG. 3

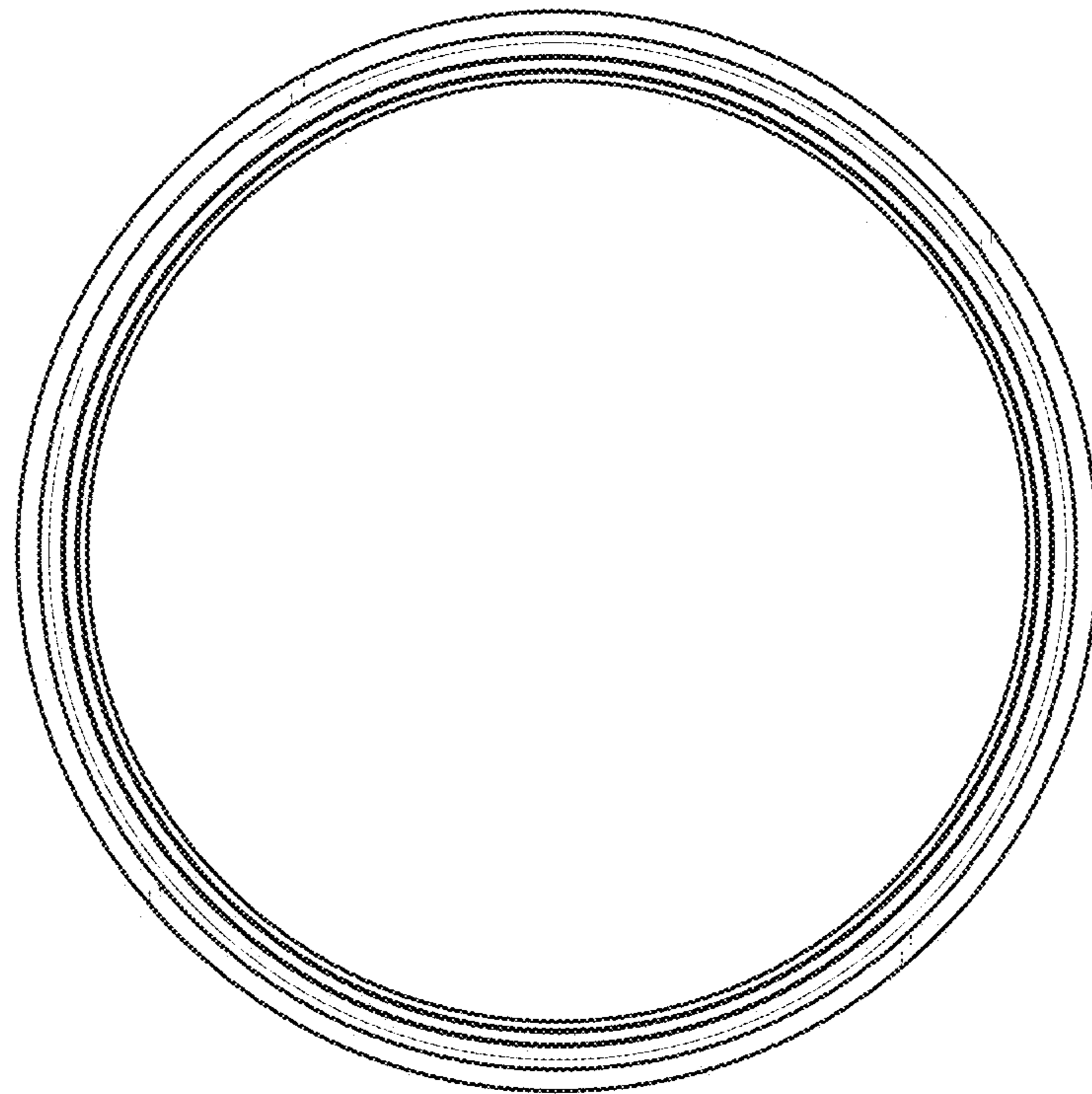


FIG. 4

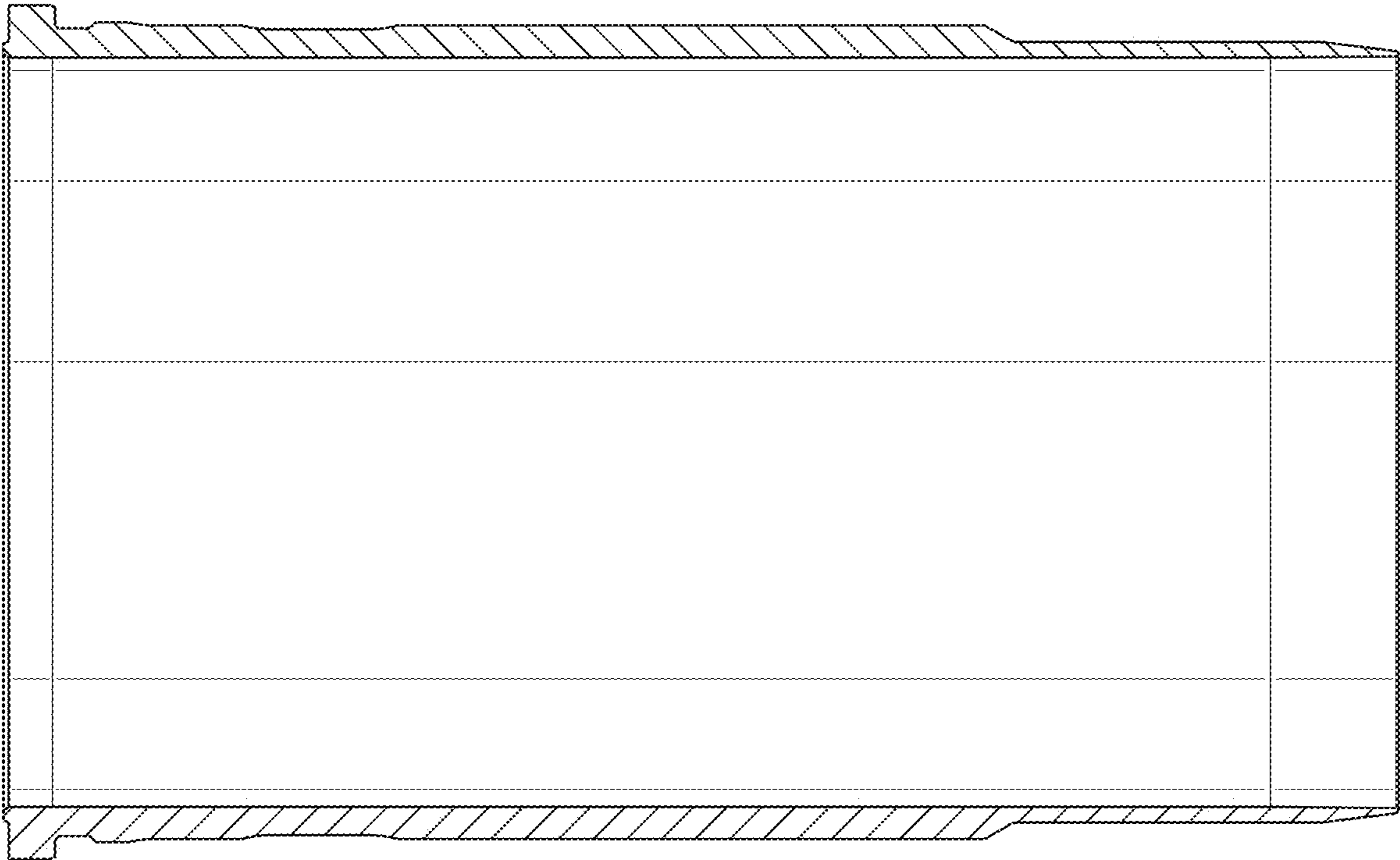


FIG. 5