

US00D891999S

(12) **United States Design Patent** (10) **Patent No.:** **US D891,999 S**
Carlini (45) **Date of Patent:** **** Aug. 4, 2020**

(54) **TIE ROD CONNECTOR**

(71) Applicant: **Aircraft Gear Corporation**, Loves Park, IL (US)
(72) Inventor: **Sean M. Carlini**, Rockford, IL (US)
(73) Assignee: **Aircraft Gear Corporation**, Loves Park, IL (US)

(**) Term: **15 Years**
(21) Appl. No.: **29/689,319**
(22) Filed: **Apr. 29, 2019**

Related U.S. Application Data

(62) Division of application No. 29/592,803, filed on Feb. 2, 2017, now Pat. No. Des. 847,696.
(51) **LOC (12) Cl.** **12-16**
(52) **U.S. Cl.**
USPC **D12/159**
(58) **Field of Classification Search**
USPC D12/159-162
CPC ... F16C 11/06; F16C 11/0619; F16C 11/0642;
F16C 11/0695
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

2,028,394 A * 1/1936 Kay B60B 35/04
301/124.1
3,103,377 A 9/1963 Scheublein, Jr. et al.
3,127,192 A 3/1964 Traugott et al.

(Continued)

FOREIGN PATENT DOCUMENTS

CA 2195295 8/1997
DE 19921148 9/2000

(Continued)

OTHER PUBLICATIONS

2pcs M3xL50mm Left and Right Threaded Tie Rod Push Rods, posted at ebay, posting date Jul. 30, 2015. [site visited Jun. 29, 2018] U RL: <https://www.ebay.com/itm/2pcs-M3-x-L50mm-Left-and-Right-Threaded-Tie-Rod-Push-Rods-US-THO 16-04312/171823537025?hash=item28017b1 b81 :g:ZYIAAOSweW5Vejj> (Year: 2015) Jul. 30, 2015.

(Continued)

Primary Examiner — Kevin K Rudzinski
Assistant Examiner — Kathleen L Jones
(74) *Attorney, Agent, or Firm* — John V. Daniluck;
Dentons Bingham Greenebaum LLP

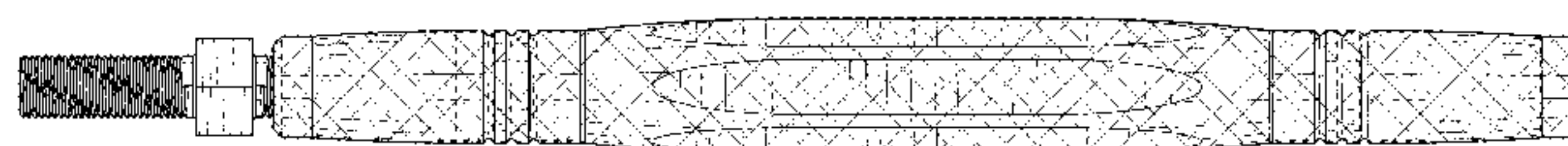
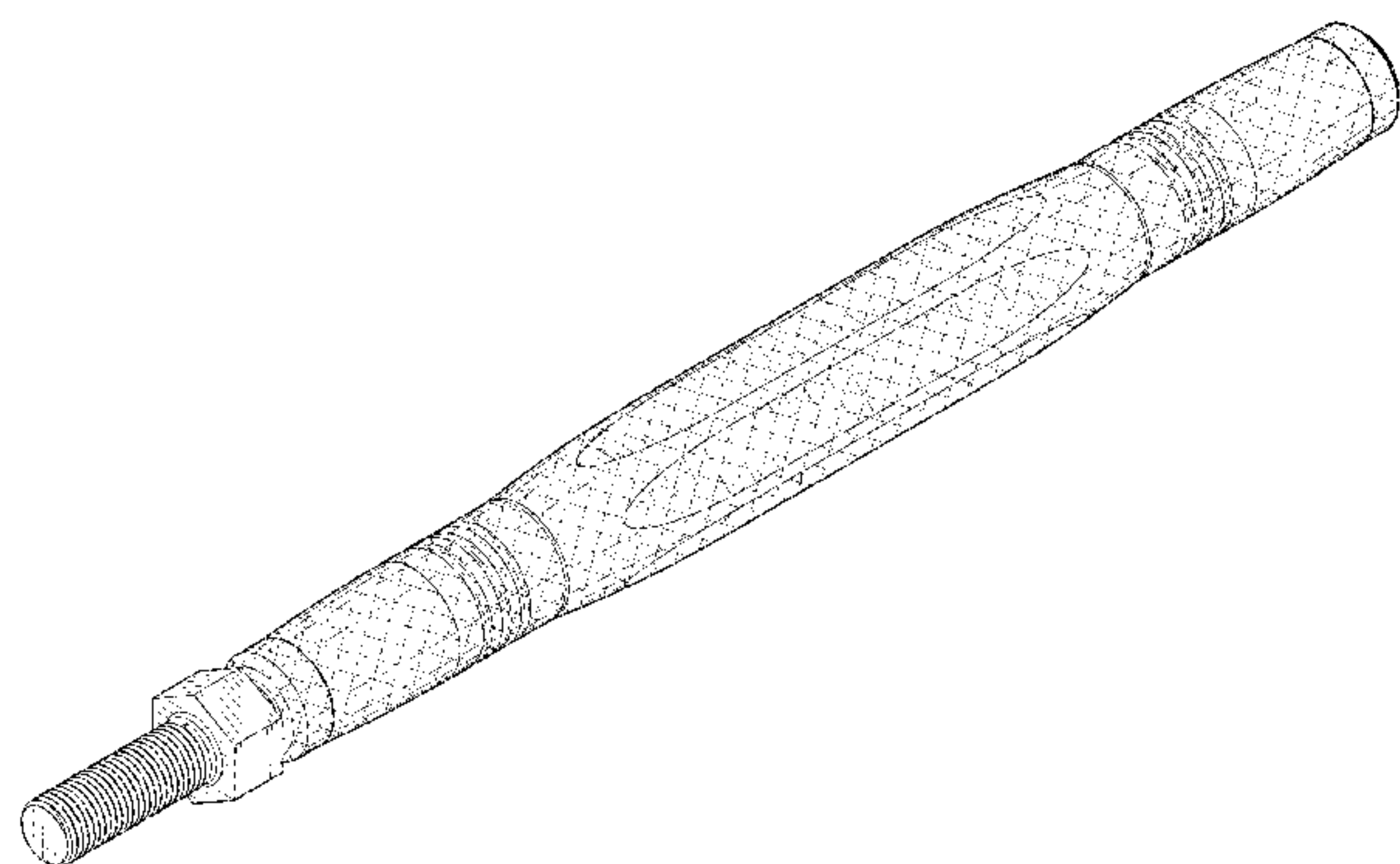
(57) **CLAIM**

The ornamental design for a tie rod connector, as shown and described.

DESCRIPTION

FIG. 1 is a left, front, and top perspective view of a tie rod connector showing my new design, where portions thereof are shown with cross hatching to indicate orange colored surfaces;
FIG. 2 is a front elevational view of the tie rod connector of FIG. 1;
FIG. 3 is a top plan view of the tie rod connector of FIG. 1;
FIG. 4 is a cross sectional view of the tie rod connector of FIG. 1 taken through line 4-4 of FIG. 2;
FIG. 5 is a right end view of the tie rod connector of FIG. 1, the broken lines and circular interior region forming no part of the claimed design;
FIG. 6 is a left end view of the tie rod connector of FIG. 1; and,
FIG. 7 is a left, front, and top perspective view of the tie rod connector of FIG. 1 with one environment being shown in dotted lines, the environment not forming any part of the claimed invention.

1 Claim, 4 Drawing Sheets



(56)

References Cited

U.S. PATENT DOCUMENTS

3,325,197 A 6/1967 Wehner
 3,389,928 A 6/1968 Wehner
 3,418,011 A 12/1968 Scheublein, Jr. et al.
 3,735,541 A 5/1973 Vanderlind
 D242,442 S * 11/1976 Garrison D12/114
 4,902,158 A 2/1990 Broszat et al.
 5,116,159 A 5/1992 Kern, Jr. et al.
 5,529,316 A 6/1996 Mattila
 5,997,208 A 12/1999 Urbach et al.
 D435,236 S 12/2000 Hanlon et al.
 6,902,341 B1 6/2005 Rauschert
 D545,246 S * 6/2007 Kroeker D12/159
 D546,735 S 7/2007 Hahne et al.
 D553,545 S 10/2007 Nygren
 D566,630 S 4/2008 Ortiz
 D569,313 S * 5/2008 Korner D12/159
 D620,847 S 8/2010 Andrews et al.
 D624,855 S 10/2010 Hsu
 D658,097 S 4/2012 Choquette
 D672,694 S 12/2012 Cooper, Sr. et al.
 D714,926 S 10/2014 Allen et al.
 D820,769 S 6/2018 Winter et al.
 D847,036 S * 4/2019 Carlini D12/159
 D847,696 S * 5/2019 Carlini D12/159
 10,371,313 B2 * 8/2019 McIntosh B64D 11/003
 10,414,434 B2 * 9/2019 Gordon B60G 3/20
 D862,305 S * 10/2019 Dolan D12/159
 2003/0133745 A1 7/2003 Molenaar
 2008/0272568 A1 11/2008 Matschl et al.
 2009/0238636 A1 9/2009 Howe et al.
 2015/0167744 A1 6/2015 Yoo et al.
 2016/0280037 A1 * 9/2016 Steinkamp B60G 21/0551
 2019/0202490 A1 * 7/2019 Miyake B62D 3/12

FOREIGN PATENT DOCUMENTS

EP 1473510 3/2004
 FR 813920 6/1937
 GB 891798 3/1962

GB 916341 1/1963
 GB 2077347 12/1981
 KR 20080052071 6/2008
 KR 1020130112445 10/2013

OTHER PUBLICATIONS

Aftermarket Right Driver Side OS Offside Steering, posted at noglstore, posting date not available. [site visited Jun. 29, 2018] URL: <https://www.noglstore.xyz/tie-rods-linkages-ends-c-1_2_92_1749/aftermarket-606940029-right-driver-side-os-offside-steering-tie-track-rod-end-p-13791.htm> 2018.
 Axial Rod: Test Results, posted at MOOG, posting date Sep. 11, 2016. [site visited Jun. 29, 2018] [Available from Internet] URL: <<http://www.moogparts.eu/support/light-vehicles/competitor-tests/axial-rod-test-results.html>> (Year: 2016) Sep. 11, 2016.
 Lemforder Tie Rod Linkage, posted at texallmall, posting date not available. [site visited Jun. 29, 2018] [Available from Internet] URL: <<https://www.texallmall.xyz/learnf%E3%96rder-tie-rod-linkage-fits-brnw-5-series-525d-xdrive-530d-xdrive-p-18591.htm>> 2018.
 Rear Tie Rod Set, posted at 034Motorsport, review posting date Oct. 2, 2017. [site visited Jun. 29, 2018] [Available from Internet] URL: <<https://store.034motorsport.com/rear-tie-rod-set-spherical-audi-small-chassis.html>> (Year: 2017) Oct. 2, 2017.
 U.S. Appl. No. 29/592,803, NF Office Action, 6 pages dated Jul. 11, 2018.
 U.S. Appl. No. 29/592,803, Applicant Response filed, 10 pgs dated Oct. 11, 2018.
 U.S. Appl. No. 29/592,803, Notice of Allowance, 7 pgs dated Dec. 12, 2018.
 Serial No. CA 176216, CIPO First Office Action, 2 pgs dated Feb. 27, 2018.
 Serial No. CA 176216, Response filed, 4 pgs dated May 23, 2018.

* cited by examiner

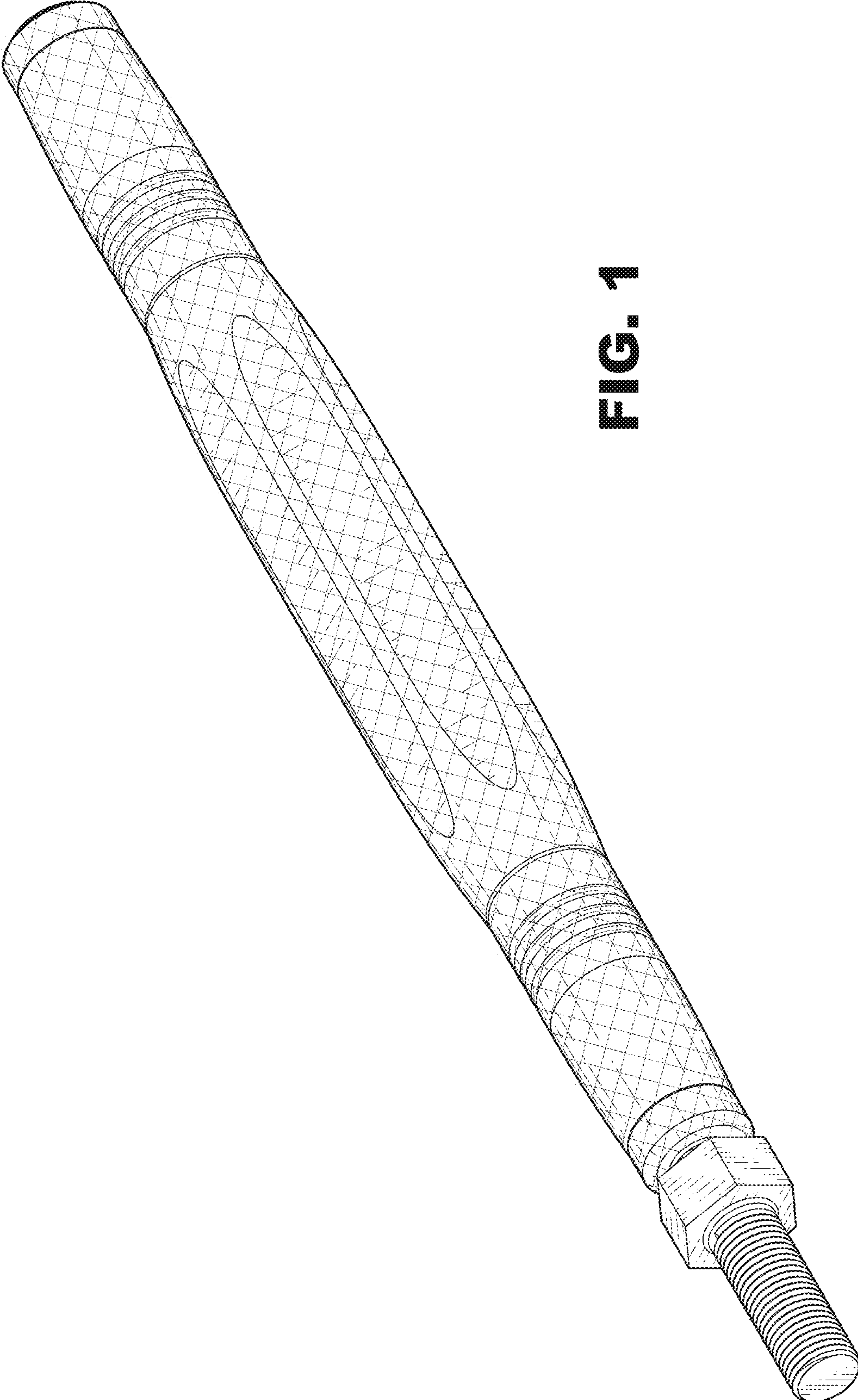


FIG. 1

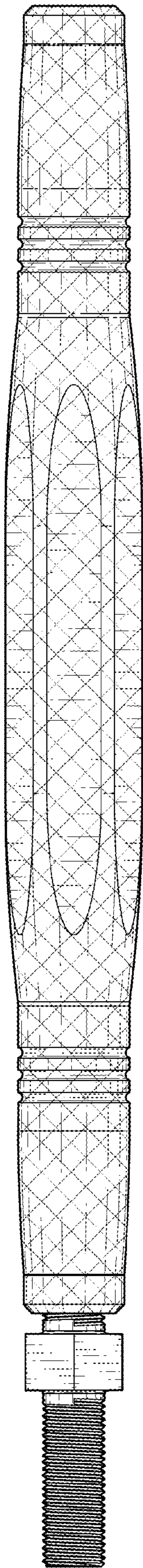


FIG. 3

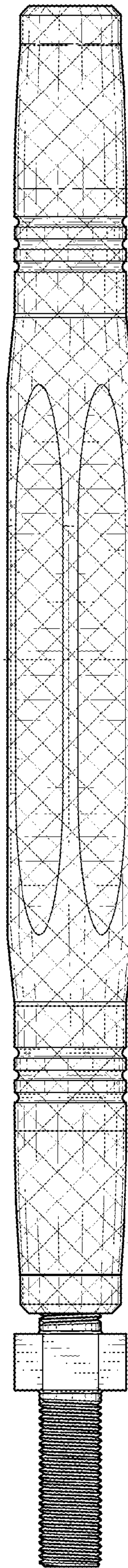


FIG. 2

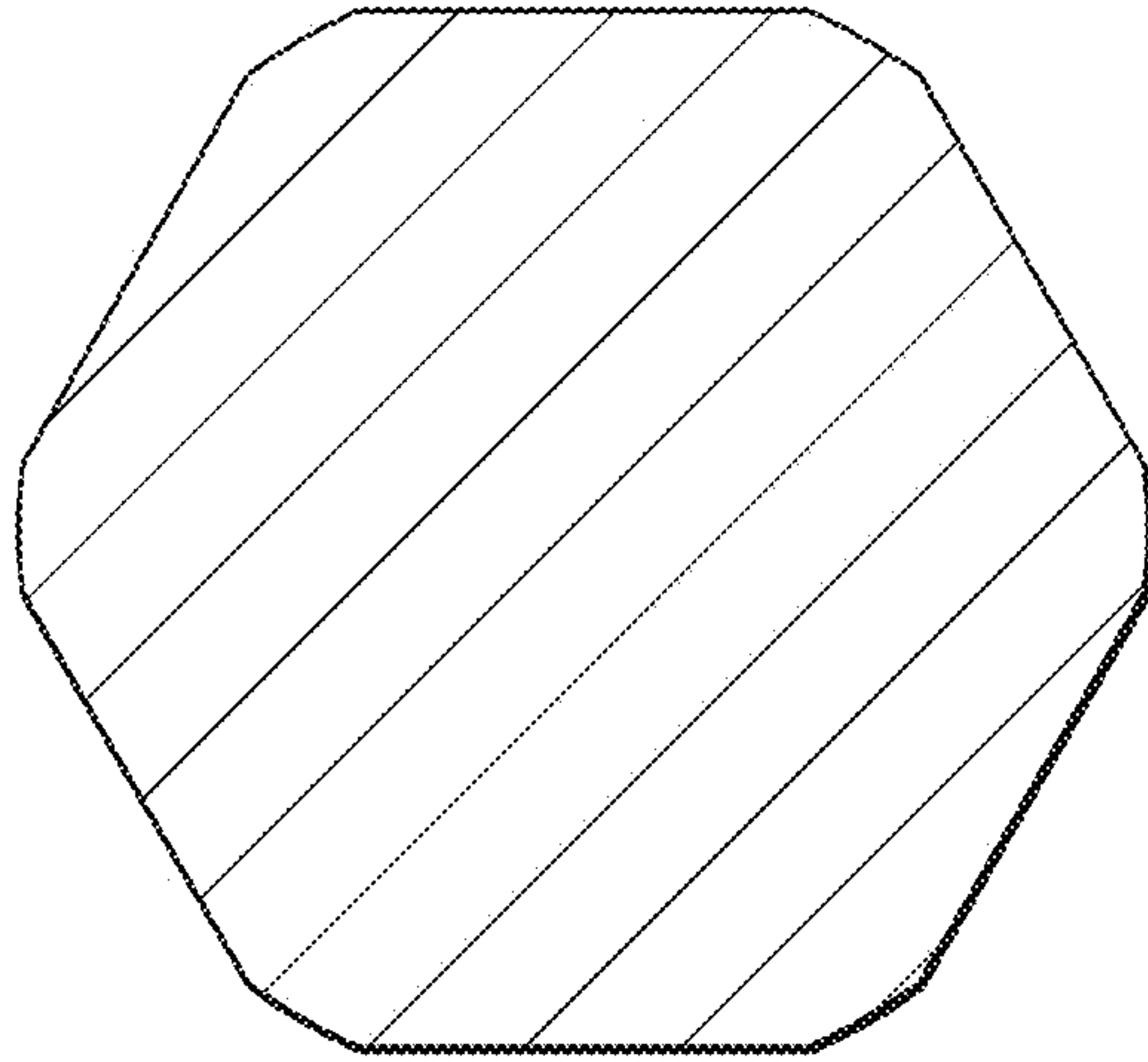


FIG. 4

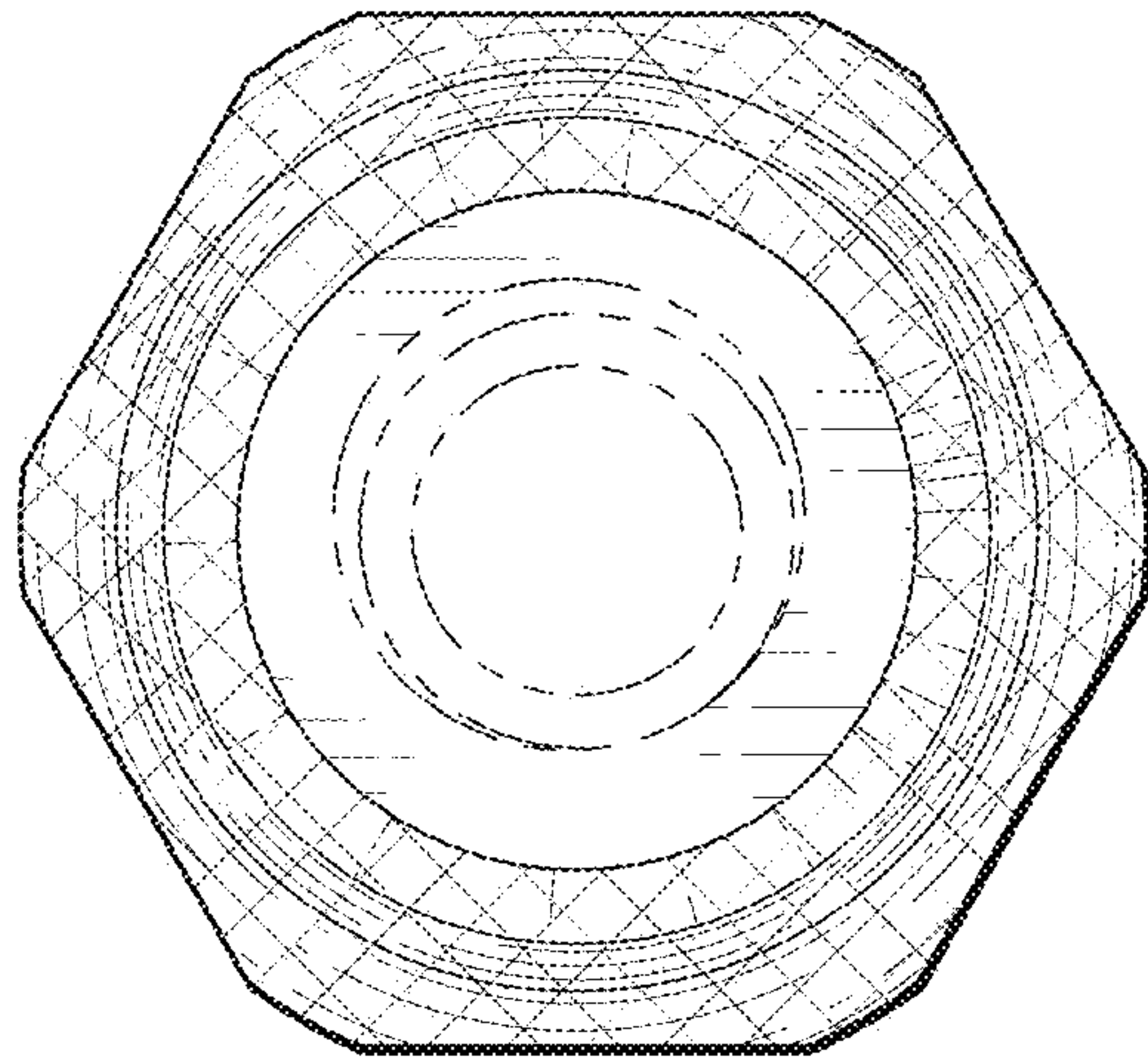


FIG. 5

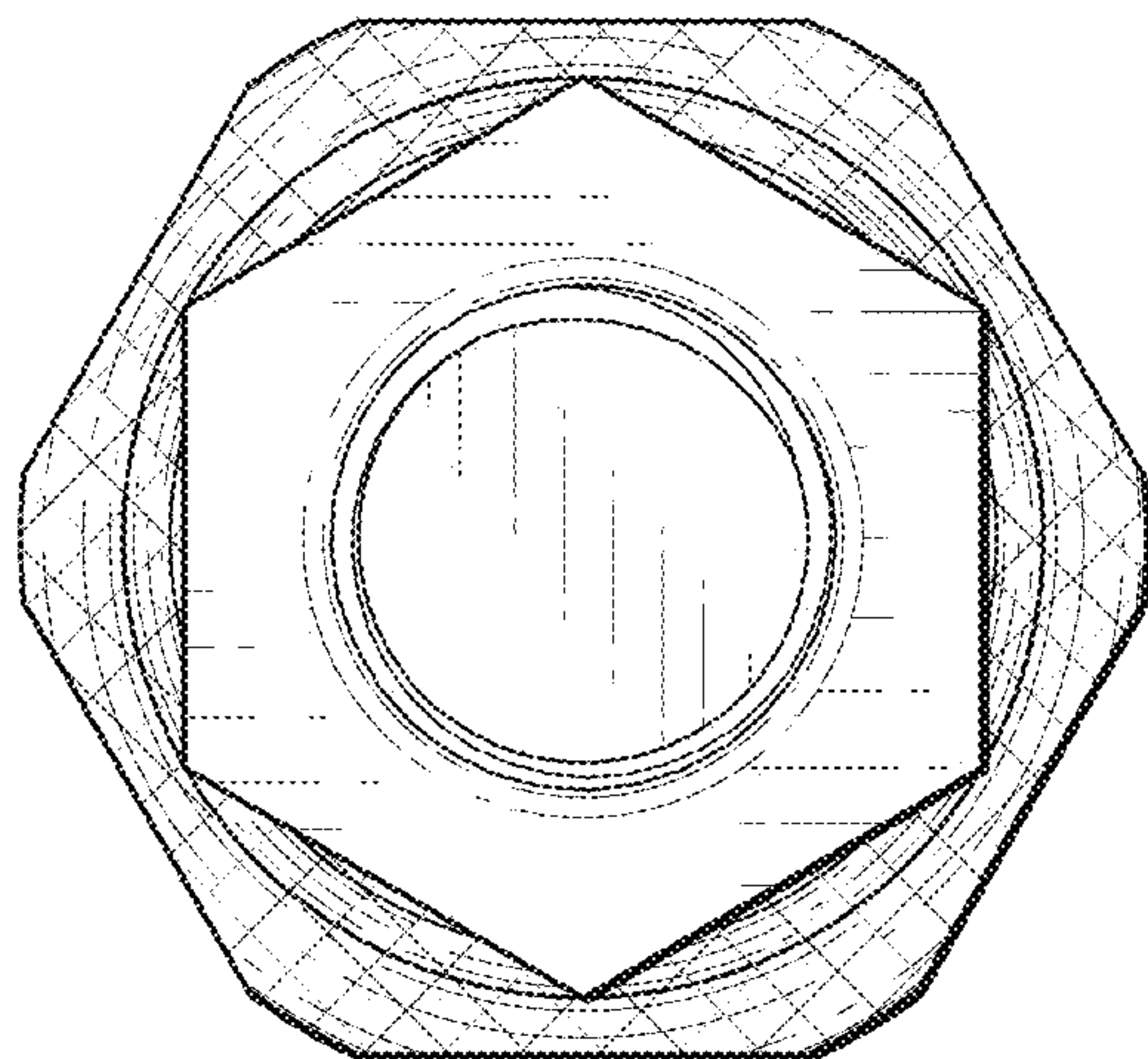


FIG. 6

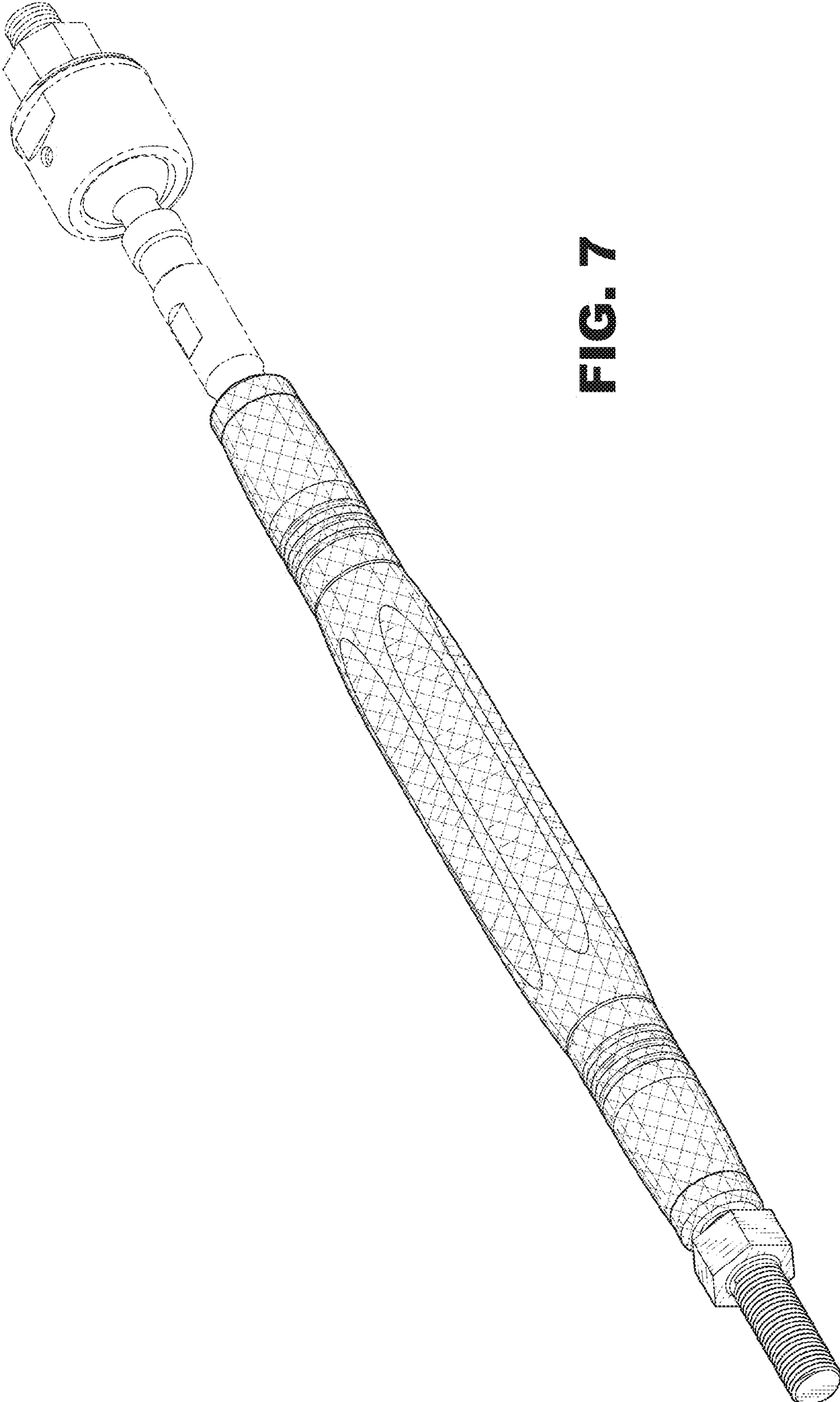


FIG. 7