



US00D847696S

(12) **United States Design Patent** (10) **Patent No.:** **US D847,696 S**
Carlini (45) **Date of Patent:** **** May 7, 2019**

(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.: **29/592,803**

(22) Filed: **Feb. 2, 2017**

(51) **LOC (11) 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.		
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	Vanderlinde	E02D 5/808 405/244
D242,442	S *	11/1976	Garrison	D12/114

(Continued)

FOREIGN PATENT DOCUMENTS

CA	2195295	8/1997
DE	19921148	9/2000

(Continued)

OTHER PUBLICATIONS

2pcs M3 x L50mm Left and Right Threaded Tie Rod Push Rods, posted at ebay, posting date Jul. 30, 2015. [site visited Jun. 29, 2018]
URL: <https://www.ebay.com/itm/2pcs-M3-x-L50mm-Left-and-Right-Threaded-Tie-Rod-Push-Rods-US-TH016-04312/171823537025?hash=item28017b1b81:g:ZYIAAOSweW5Vejo> (Year: 2015).*

(Continued)

Primary Examiner — Kevin K Rudzinski

Assistant Examiner — Kathleen L Jones

(74) *Attorney, Agent, or Firm* — John V. Daniluck;
Bingham Greenebaum Doll 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;

FIG. 2 is a front elevational view of the tie rod connector of FIG. 1;

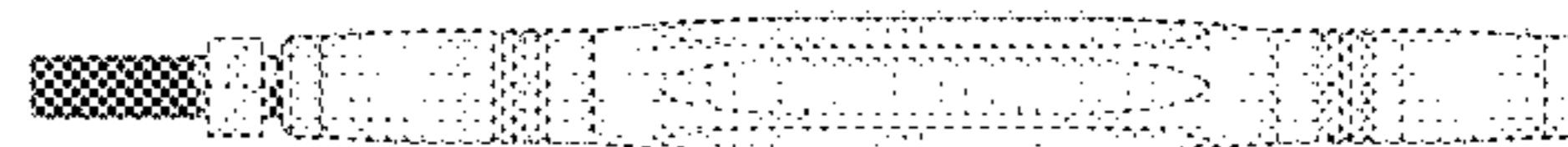
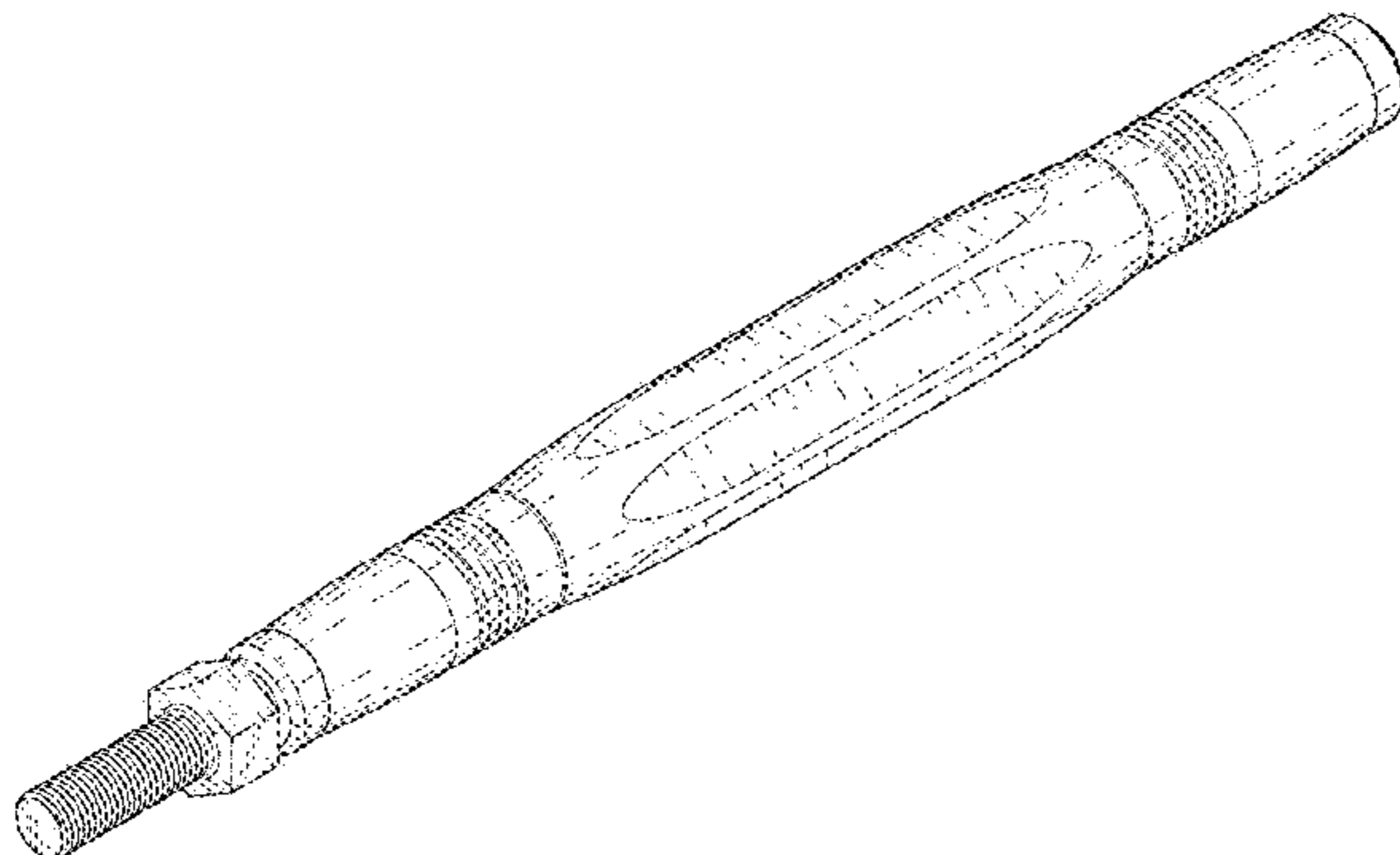
FIG. 3 is a top plan view of the tie rod connector of FIG. 1; FIG. 4 is a left end view of the tie rod connector of FIG. 1; FIG. 5 is a cross sectional view of the tie rod connector of FIG. 1 taken through line 5-5 of FIG. 2;

FIG. 6 is a right 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.

In the drawings, the broken lines and the corresponding circular interior region of FIG. 6 depict environmental subject matter only that forms no part of the claim.

1 Claim, 4 Drawing Sheets



(56)

References Cited

U.S. PATENT DOCUMENTS

4,902,158 A * 2/1990 Broszat B62D 7/20
403/290
5,116,159 A 5/1992 Kern, Jr. et al.
5,529,316 A * 6/1996 Mattila B62D 7/16
280/93.51
5,997,208 A 12/1999 Urbach et al.
D435,236 S * 12/2000 Hanlon D12/159
6,902,341 B1 * 6/2005 Rauschert F16C 11/0623
403/301
D546,735 S 7/2007 Hahne et al.
D553,545 S * 10/2007 Nygren D12/159
D566,630 S * 4/2008 Ortiz D12/159
D620,847 S * 8/2010 Andrews D12/159
D624,855 S 10/2010 Hsu
D658,097 S * 4/2012 Choquette D12/162
D672,694 S 12/2012 Cooper, Sr. et al.
D714,926 S 10/2014 Allen et al.
D820,769 S * 6/2018 Winter D12/400
2003/0133745 A1 7/2003 Molenaar
2008/0272568 A1 * 11/2008 Matschl B62K 5/01
280/89
2009/0238636 A1 9/2009 Howe et al.
2015/0167744 A1 * 6/2015 Yoo F16C 35/047
384/456

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>.*
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).*
Lemforder Tie Rod Linkage, posted at texalmart, posting date not available. [site visited Jun. 29, 2018] [Available from internet] URL : <<https://www.texalmart.xyz/lemf%E3%96rder-tie-rod-linkage-fits-bmw-5-series-525d-xdrive-530d-xdrive-p-18591.htm>>.*
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).*

* cited by examiner

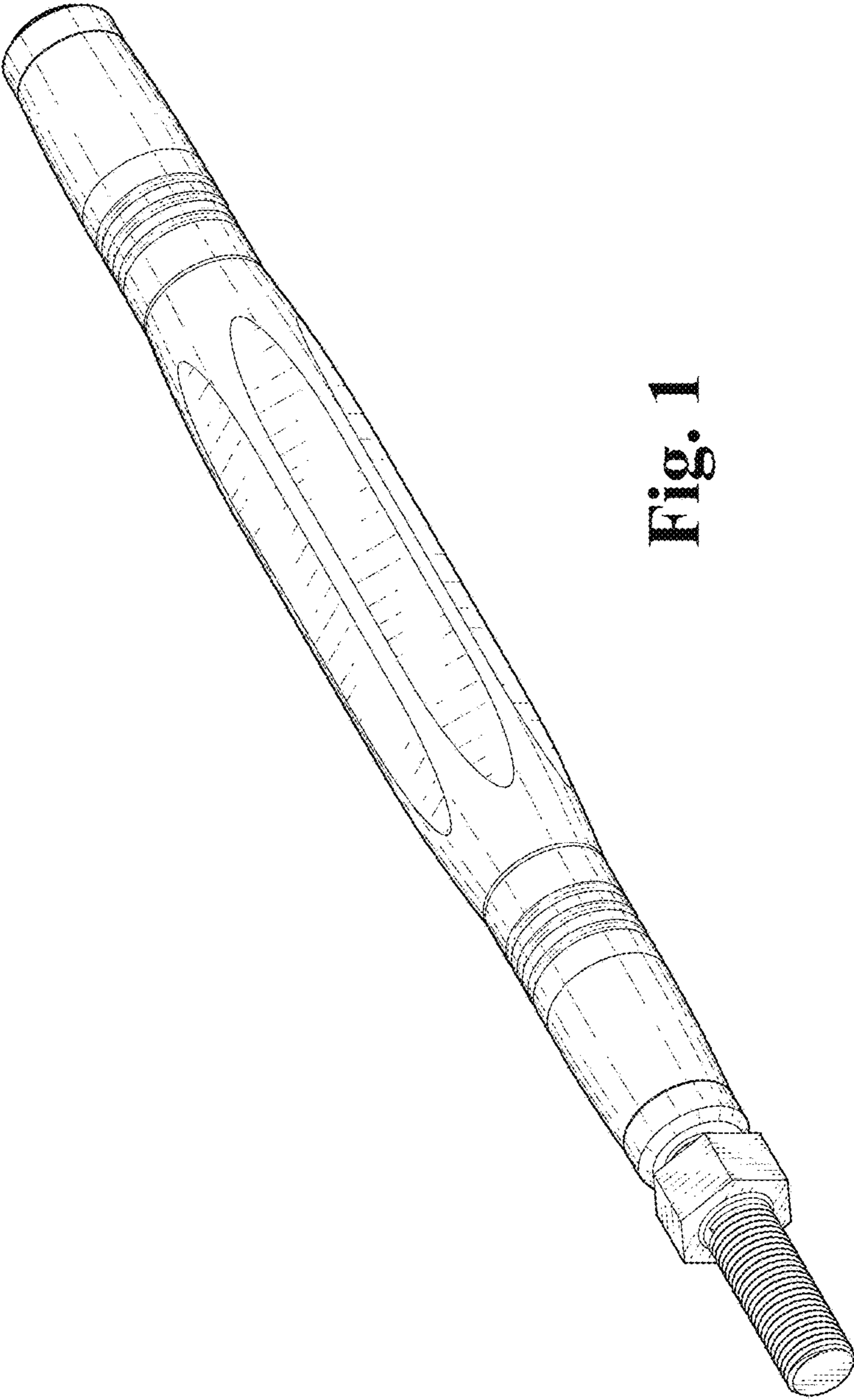


Fig. 1

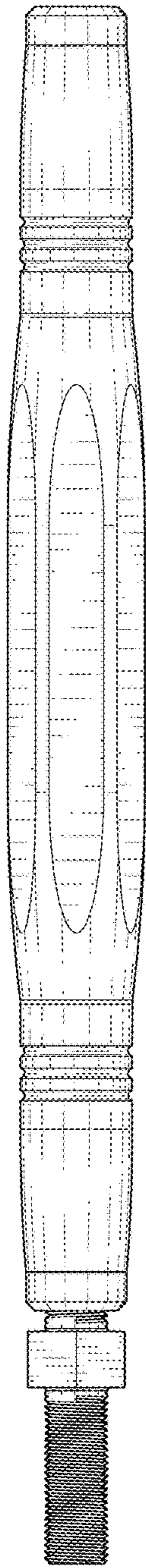


Fig. 3

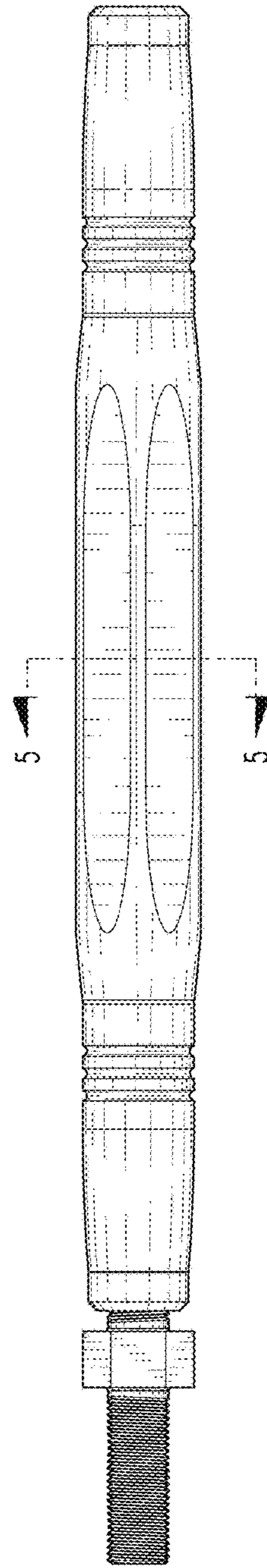


Fig. 2

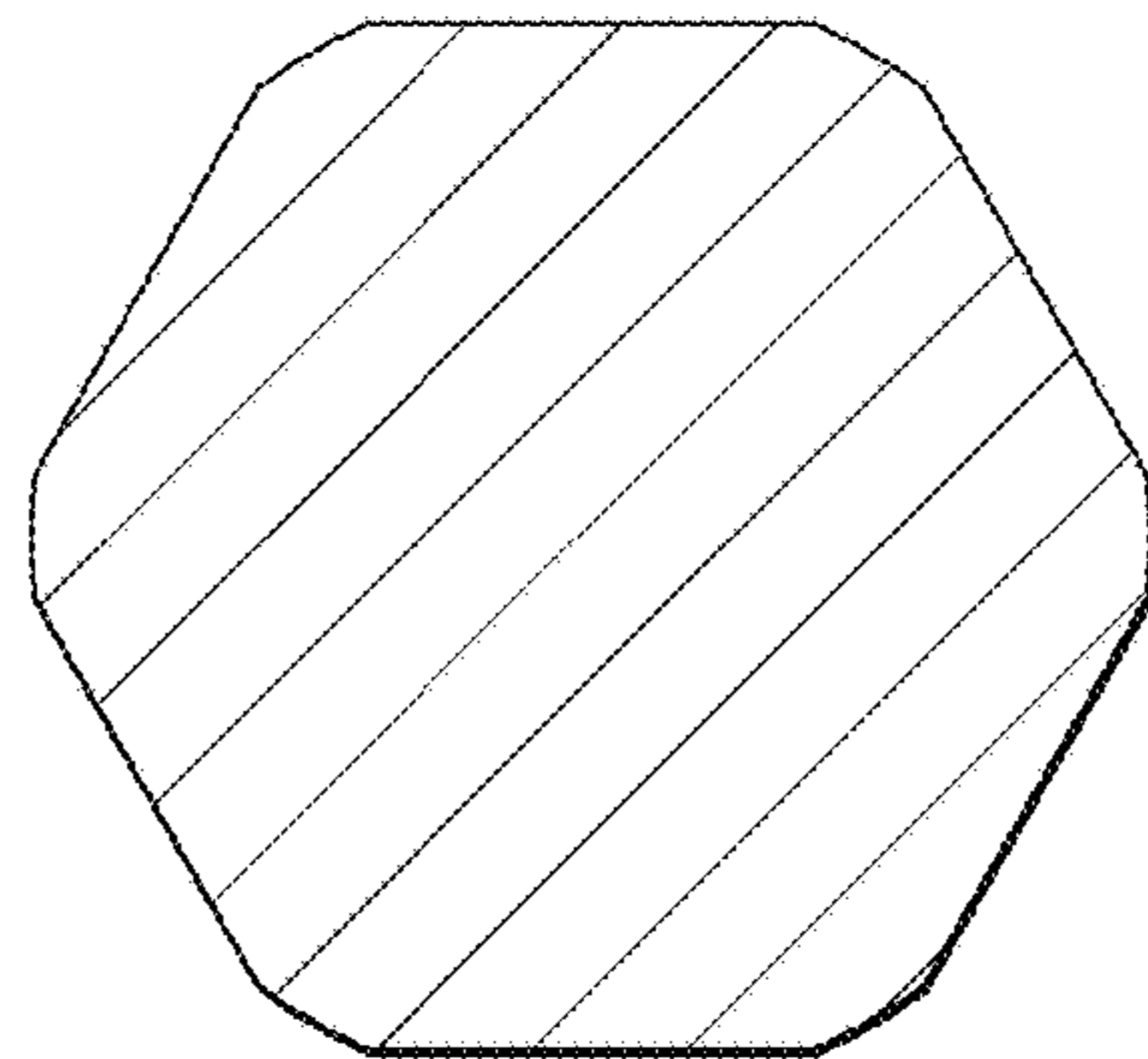


Fig. 5

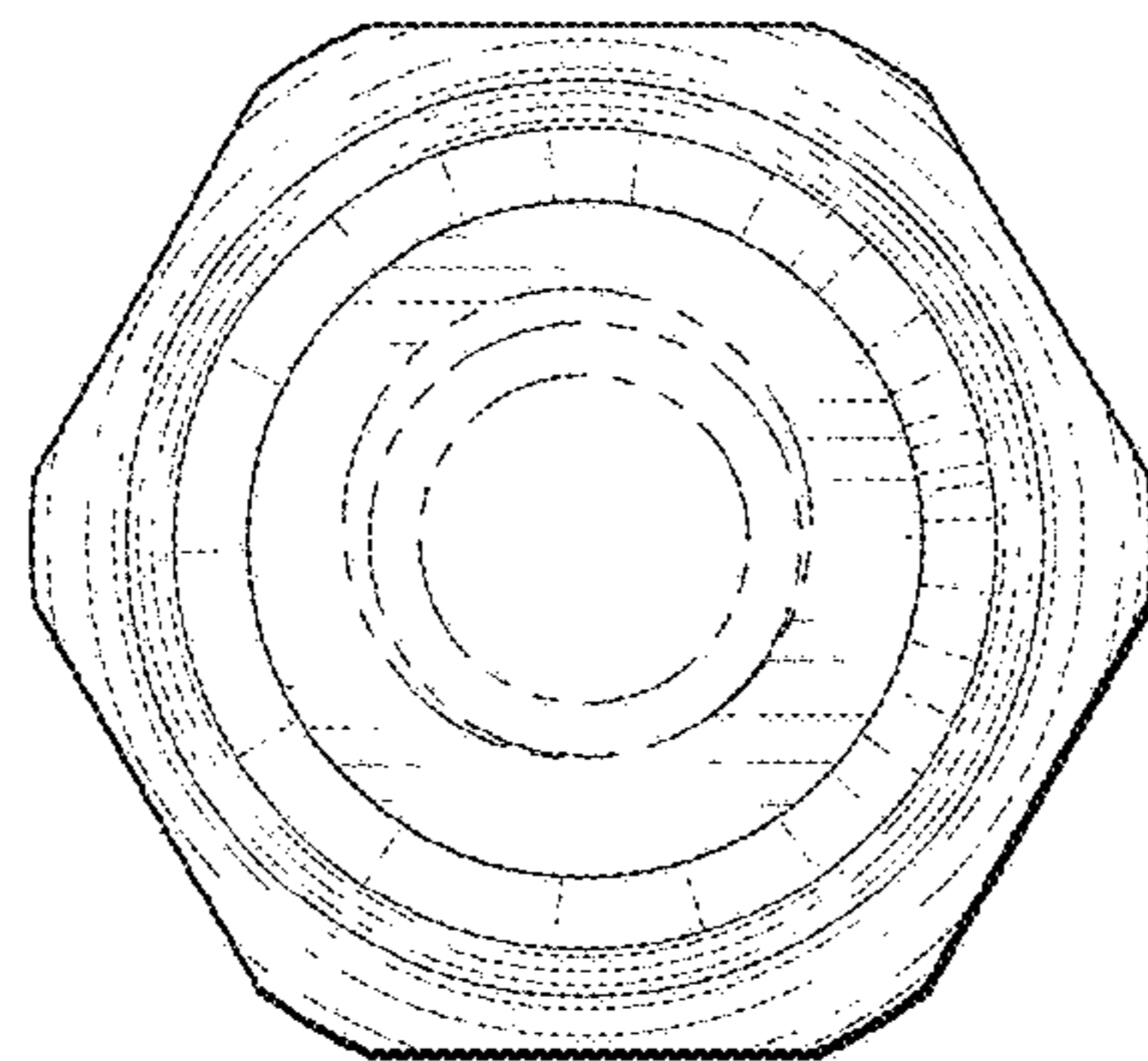


Fig. 6

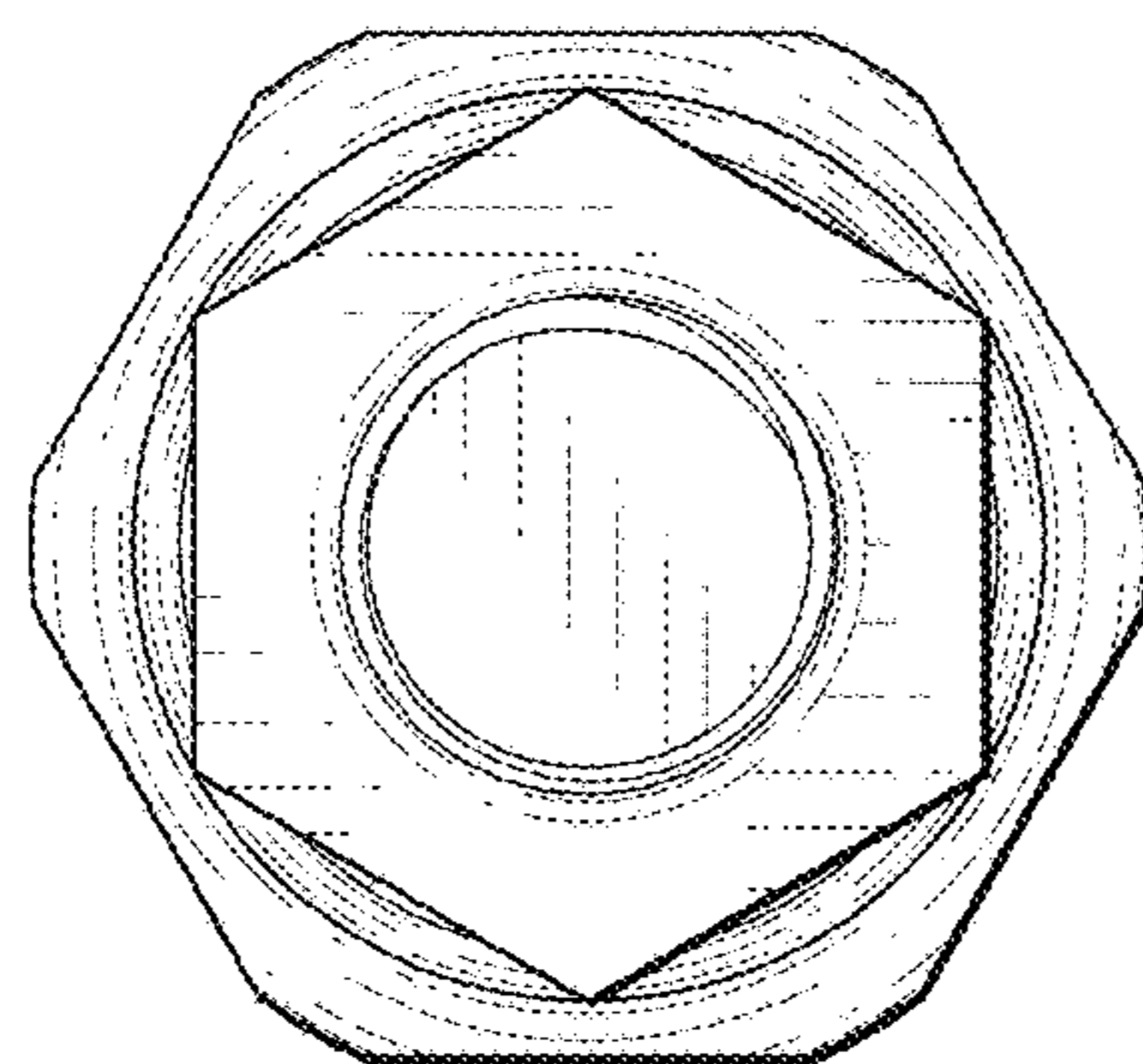


Fig. 4

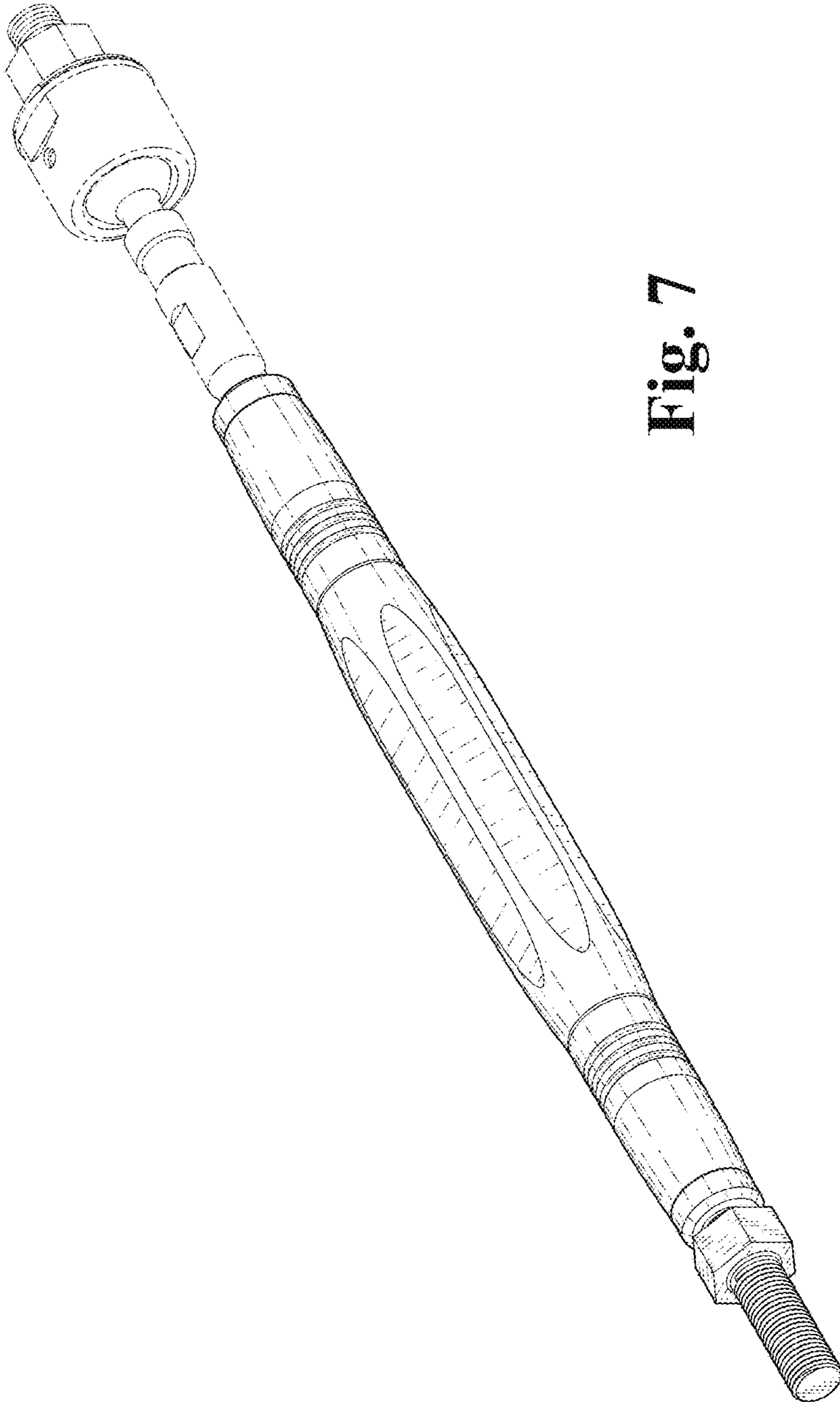


Fig. 7