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United States Design Patent

Zhuang

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(45)

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(54) LINEAR ACTUATOR

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USPC D13/118, 158, 162, 184; D15/1-5, 7, 9, D15/143, 148, 149
CPC B23Q 5/40; F16H 2025/2034; F16H 2025/2445; F16H 25/2204; F16H 25/24; F16C 29/005; H02K 7/06
See application file for complete search history.

(56) References Cited

U.S. PATENT DOCUMENTS

D318,055 S	7/1991	Tomlinson et al.	
D355,199 S	2/1995	Ousey	
D461,827 S	8/2002	Koebbe	
D482,707 S *	11/2003	Kowalski	D15/143
D522,028 S *	5/2006	Beadle	D15/143
D522,546 S *	6/2006	Beadle	D15/143
D522,547 S *	6/2006	Beadle	D15/143
D570,385 S *	6/2008	Chuo	D15/143
D624,101 S *	9/2010	Tseng	D15/143
D624,102 S *	9/2010	Tseng	D15/143
D646,310 S *	10/2011	Lan	D15/143
D656,975 S *	4/2012	Tseng	D15/143
D686,257 S *	7/2013	Wu	D15/143
D708,239 S *	7/2014	Lin	D15/143
D709,933 S *	7/2014	Wu	D15/143

9,074,659 B2 *	7/2015	Wu	F16H 1/125
9,228,647 B2 *	1/2016	Wu	F16H 25/20
D765,749 S *	9/2016	Wu	D15/143
D767,005 S *	9/2016	Wu	D15/143
(Continued)			

FOREIGN PATENT DOCUMENTS

CN	3358110	3/2004
TW	D156124	9/2013

OTHER PUBLICATIONS

TA20 Series, posted on timotion.com, no posted date given, no production date given, [online], [site visited Feb. 15, 2020], Available from Internet, URL: <https://www.timotion.com/en/product/detail/linear-actuators/ta20-series?upcls=1481269298&guid=1565189761> (Year: 2020).*

(Continued)

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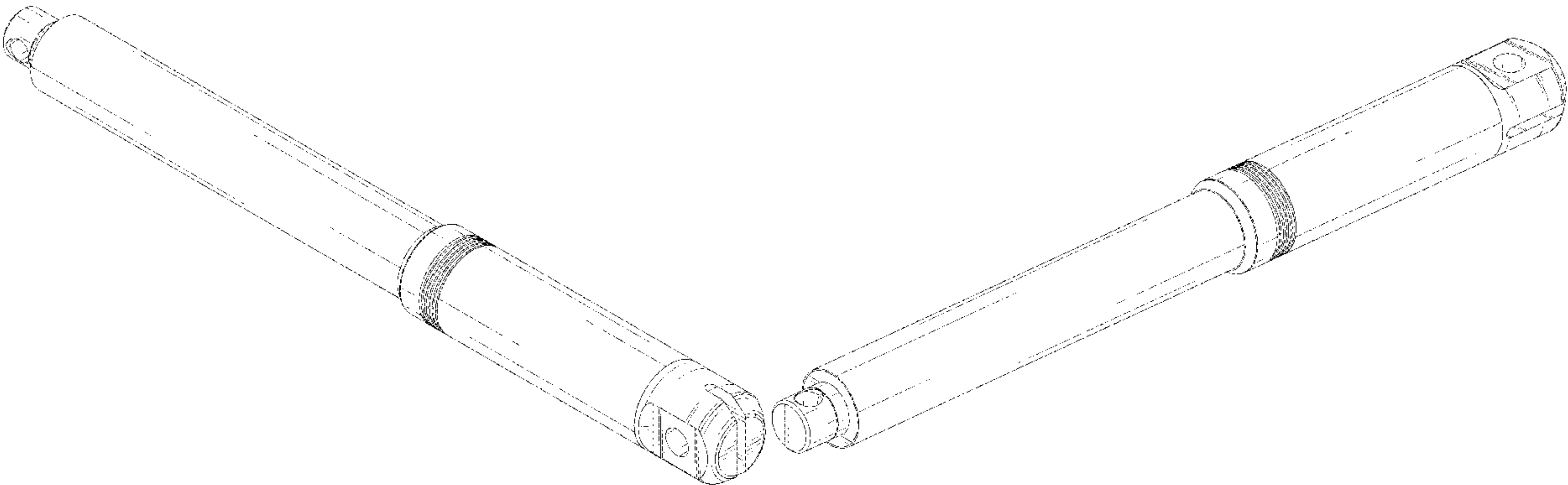
(57) CLAIM

The ornamental design for a linear actuator, as shown and described.

DESCRIPTION

FIG. 1 is a perspective view of a linear actuator showing my new design;
FIG. 2 is a front view thereof;
FIG. 3 is a rear view thereof;
FIG. 4 is a left side view thereof;
FIG. 5 is a right side view thereof;
FIG. 6 is a top view thereof;
FIG. 7 is a bottom view thereof; and,
FIG. 8 is second perspective view showing the linear actuator.

1 Claim, 8 Drawing Sheets



(56)

References Cited

U.S. PATENT DOCUMENTS

9,506,542 B2 * 11/2016 Wu F16H 25/20
D776,728 S * 1/2017 Wu D15/143
D776,729 S * 1/2017 Wu D15/143
9,677,651 B2 * 6/2017 Wu F16H 25/20
D792,490 S * 7/2017 Lin D15/143
D792,491 S * 7/2017 Lin D15/143
D792,492 S * 7/2017 Lin D15/143
D800,195 S * 10/2017 Lin D15/148
D809,038 S * 1/2018 Zhuang D15/148
D816,137 S * 4/2018 Chiaravalloti D15/148
D819,100 S * 5/2018 Lin D15/148
D821,471 S * 6/2018 Zhuang D15/148
9,989,133 B2 * 6/2018 Wu F16H 1/203
10,036,482 B1 * 7/2018 Wu F16H 25/20
10,148,153 B2 * 12/2018 Wu F16H 25/20
D839,329 S * 1/2019 Luck D15/148
D839,937 S * 2/2019 Zhuang D15/143
D853,460 S * 7/2019 Zhuang D15/148

D855,670 S * 8/2019 Zhuang D15/148
D861,052 S * 9/2019 Zhuang D15/143
D864,268 S * 10/2019 Shen D15/148
D865,016 S * 10/2019 Jorgensen D15/148
D865,018 S * 10/2019 Zhou D15/148
D865,019 S * 10/2019 Zhou D15/148
D867,399 S * 11/2019 Morita D15/7
D868,118 S * 11/2019 Tang D15/7
D871,469 S * 12/2019 Matsushige D15/143

OTHER PUBLICATIONS

Bullet Series 36 Cal. Linear Actuator, posted on firgelliauto.com, earliest reviewed Apr. 16, 2019, no production date given, [online], [site visited Feb. 15, 2020, Available from Internet, URL: <https://tinyurl.com/sah2tz6> (Year: 2020).*

Office Action dated Aug. 26, 2019 of the corresponding Taiwan patent application No. 107307130.

* cited by examiner

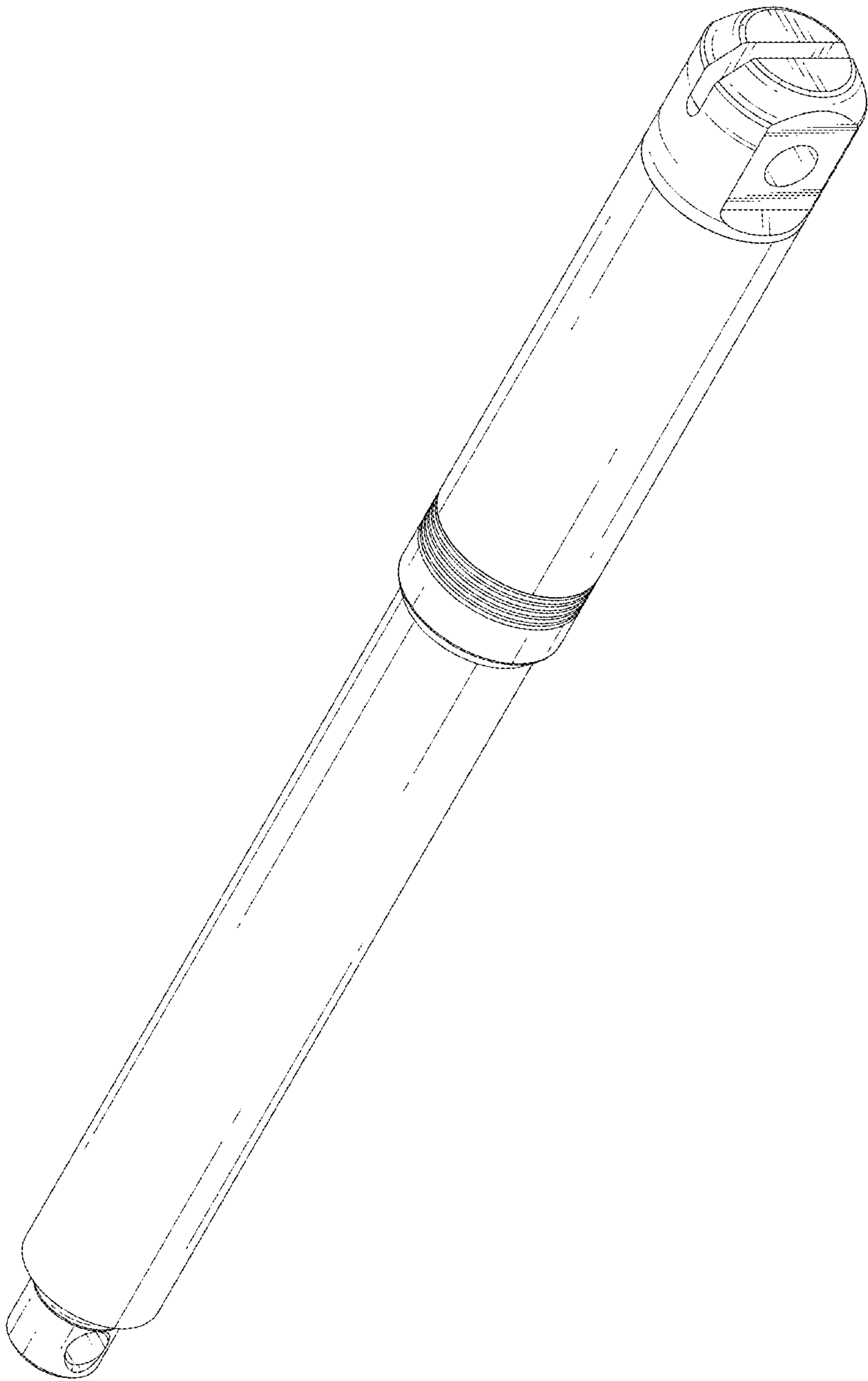


FIG.1

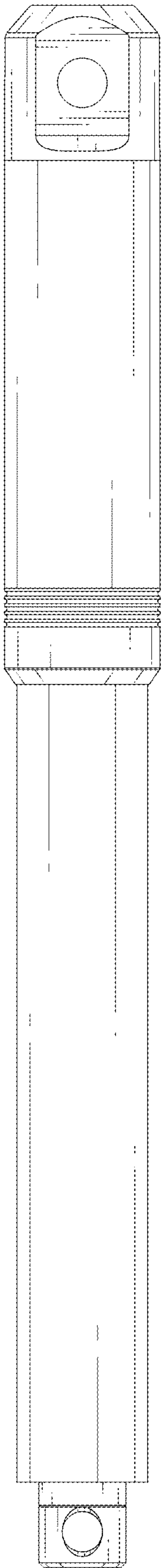


FIG.2

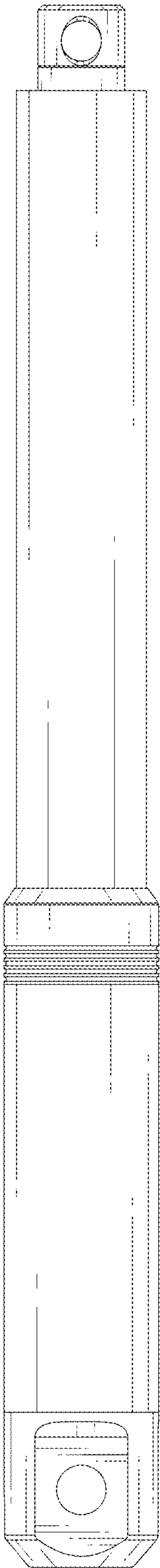


FIG.3

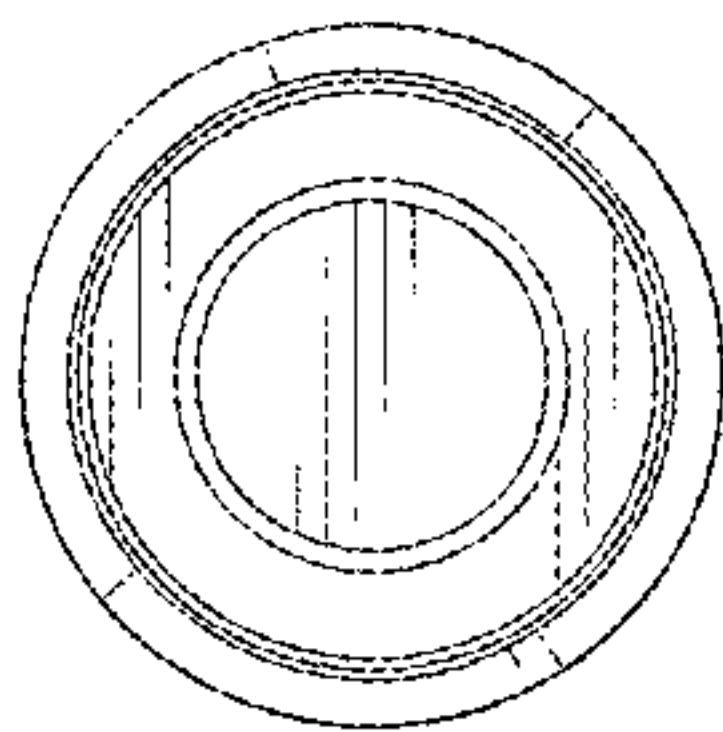


FIG.4

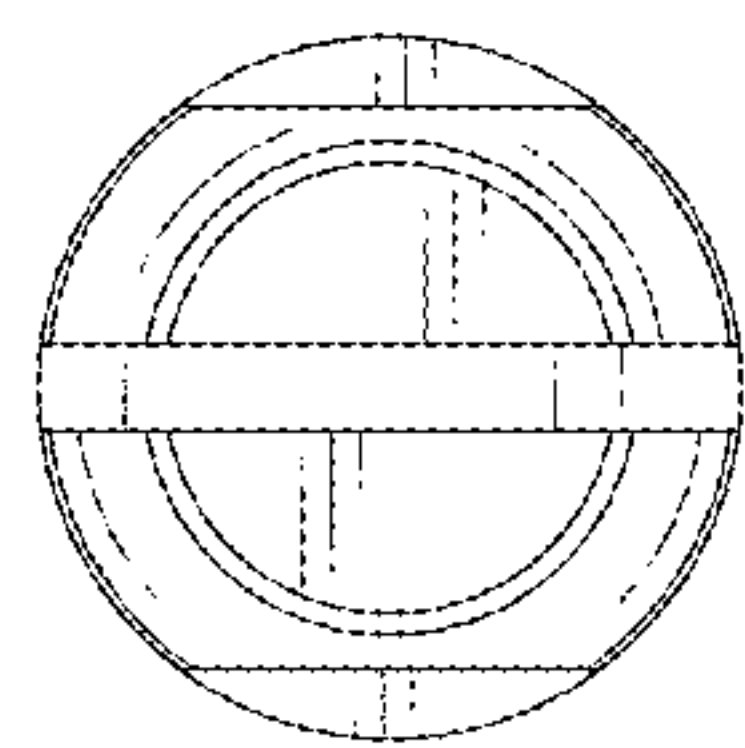


FIG.5

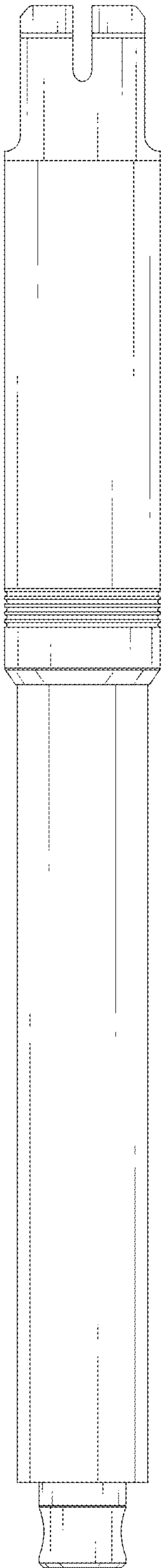


FIG.6

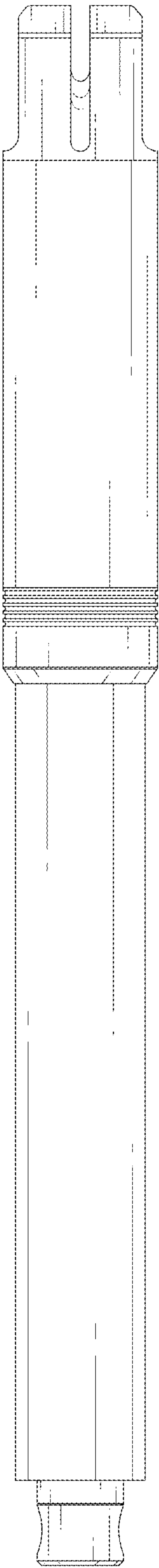


FIG.7

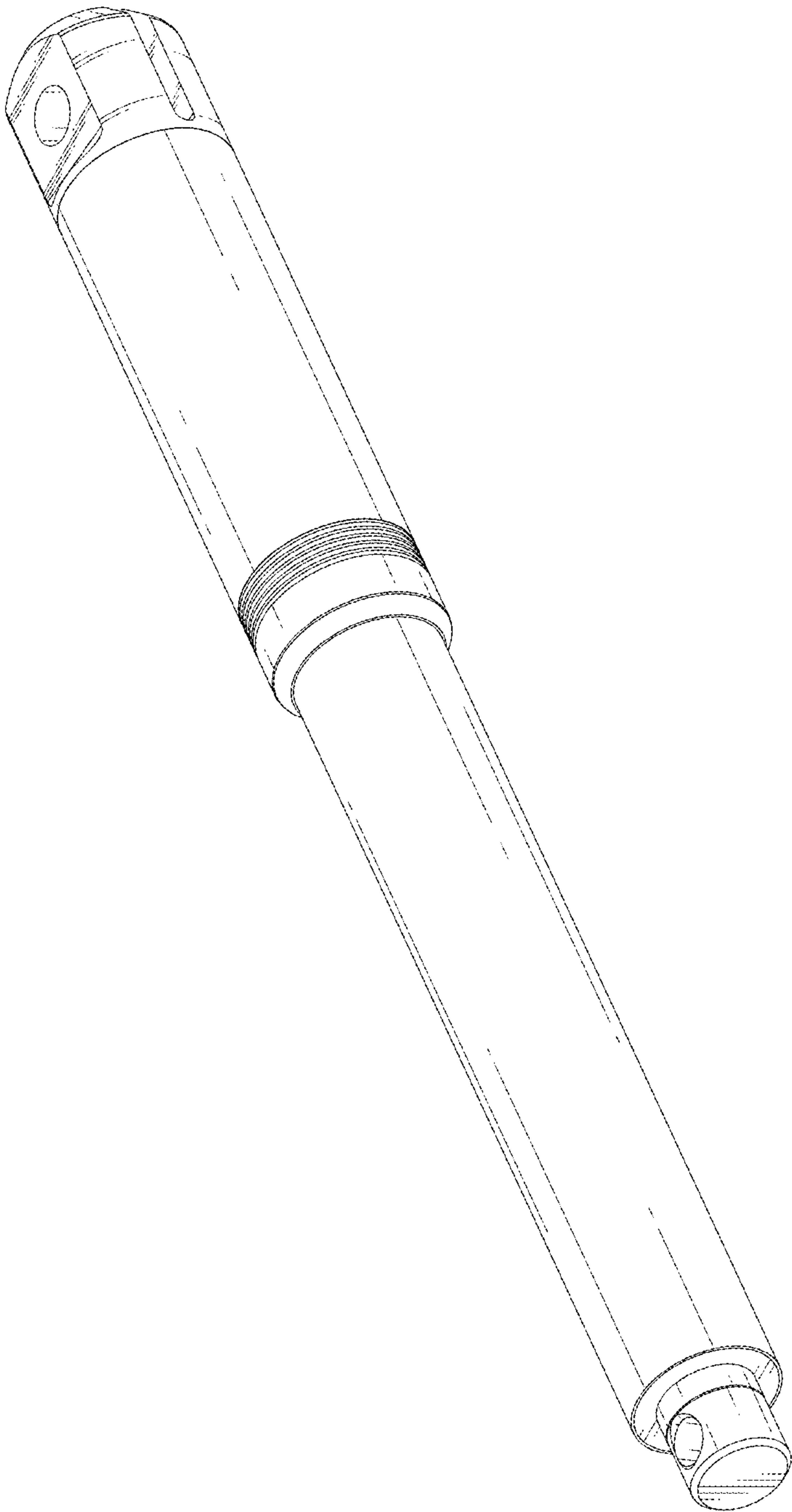


FIG.8