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

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- (54) **MANIPULATOR FOR ROBOT**
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- (**) Term: **15 Years**
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- (51) **LOC (12) Cl.** **15-99**
- (52) **U.S. Cl.**
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- (58) **Field of Classification Search**
USPC D15/199; D21/369, 578-583, 621, 622
CPC B25J 15/10; B25J 15/086; B25J 15/0009; Y10S 901/38; Y10S 901/39
See application file for complete search history.

- (56) **References Cited**
U.S. PATENT DOCUMENTS
5,447,403 A * 9/1995 Engler, Jr. B25J 15/0009 294/111
8,936,289 B1 * 1/2015 Kozlowski B25J 15/0009 294/106
9,814,604 B2 * 11/2017 Jury A61F 2/583
D812,122 S * 3/2018 Clerc D15/199

D846,613 S *	4/2019	Kawaguchi	.....	D15/199
D846,614 S *	4/2019	Kawaguchi	.....	D15/199
D846,615 S *	4/2019	Kawaguchi	.....	D15/199
D847,243 S *	4/2019	Kawaguchi	.....	D15/199
D847,244 S *	4/2019	Kawaguchi	.....	D15/199
D852,859 S *	7/2019	Kawaguchi	.....	D15/199
D865,831 S *	11/2019	Kawaguchi	.....	D15/199
2004/0054424 A1 *	3/2004	Matsuda	.....	B25J 9/104 623/64
2006/0158146 A1 *	7/2006	Tadano	.....	B25J 15/0004 318/568.21
2007/0236162 A1 *	10/2007	Kawabuchi	.....	B25J 9/102 318/568.16
2008/0127768 A1 *	6/2008	Shirai	B25J 15/0009 74/490.05
2009/0015026 A1 *	1/2009	Matsuda	B25J 15/0009 294/106

(Continued)

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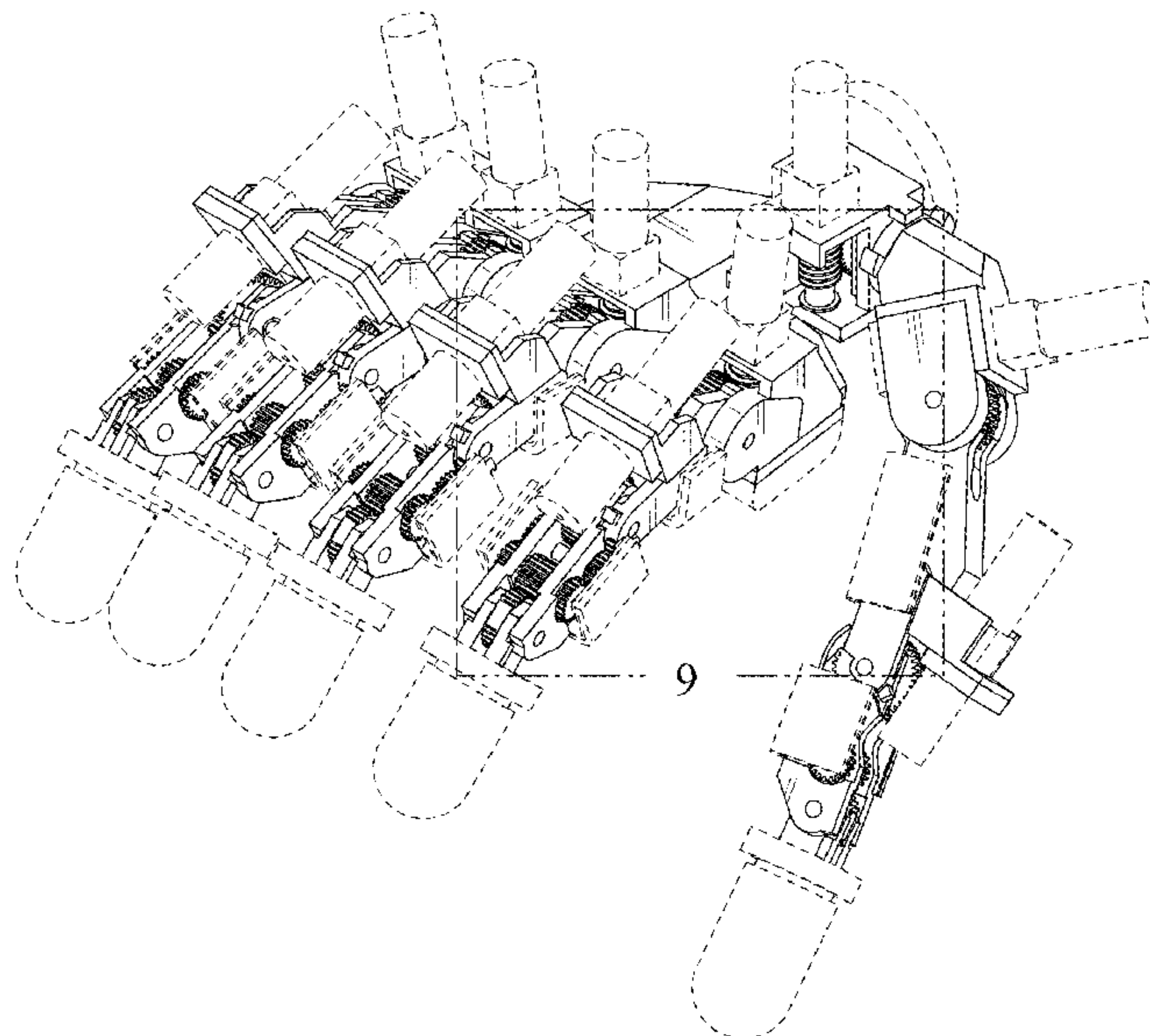
(57) **CLAIM**

The ornamental design for a manipulator for robot, as shown and described.

DESCRIPTION

FIG. 1 is a front perspective view of the front, left, and top sides of a manipulator for robot showing our new design; FIG. 2 is a rear perspective view of the rear, right, and bottom sides thereof; FIG. 3 is a front view thereof; FIG. 4 is a rear view thereof; FIG. 5 is a left side view thereof; FIG. 6 is a right side view thereof; FIG. 7 is a top plan view thereof; FIG. 8 is a bottom plan view thereof; and, FIG. 9 is an enlarged view of a part 9. The broken lines shown represent portions of the manipulator for robot and form no part of the claimed design.

1 Claim, 9 Drawing Sheets



(56)

References Cited

U.S. PATENT DOCUMENTS

2009/0114054	A1 *	5/2009	Horiuchi	B25J 9/102 74/490.05	2014/0107805	A1 *	4/2014	Varley	A61F 2/586 623/24
2010/0005918	A1 *	1/2010	Mizuno	B25J 9/102 74/490.03	2014/0132018	A1 *	5/2014	Claffee	B25J 9/0015 294/192
2010/0116079	A1 *	5/2010	Ihrke	B25J 9/1075 74/490.05	2014/0159407	A1 *	6/2014	Neff	B25J 15/0206 294/213
2010/0176615	A1 *	7/2010	Okuda	A61F 2/583 294/106	2014/0197652	A1 *	7/2014	Wang	B25J 15/0009 294/185
2010/0259057	A1 *	10/2010	Madhani	B25J 9/1045 294/106	2014/0232124	A1 *	8/2014	Dan	B25J 15/0009 294/198
2011/0040408	A1 *	2/2011	De La Rosa Tames	B25J 9/1045 700/258	2015/0216679	A1 *	8/2015	Lipsey	A61F 2/582 623/24
2011/0257765	A1 *	10/2011	Evans	A61F 2/54 623/24	2015/0230941	A1 *	8/2015	Jury	A61F 2/583 623/64
2012/0068486	A1 *	3/2012	Kim	B25J 15/0009 294/213	2015/0257903	A1 *	9/2015	Perry	A61F 2/70 623/24
2012/0205932	A1 *	8/2012	Nammoto	B25J 15/10 294/213	2016/0008146	A1 *	1/2016	Nagatsuka	B25J 15/0009 623/64
2014/0007730	A1 *	1/2014	DeLouis	B25J 15/0009 74/490.03	2016/0263748	A1 *	9/2016	Nagatsuka	B25J 15/0009
2014/0103673	A1 *	4/2014	Nammoto	B25J 13/082 294/106	2016/0278872	A1 *	9/2016	Gombert	B25J 15/028
					2017/0151679	A1 *	6/2017	Wong	B25J 15/10
					2018/0140441	A1 *	5/2018	Poirters	A61F 2/54
					2018/0272541	A1 *	9/2018	Salisbury	B25J 13/085
					2018/0311827	A1 *	11/2018	Bicchi	B25J 15/0009

* cited by examiner

FIG. 1

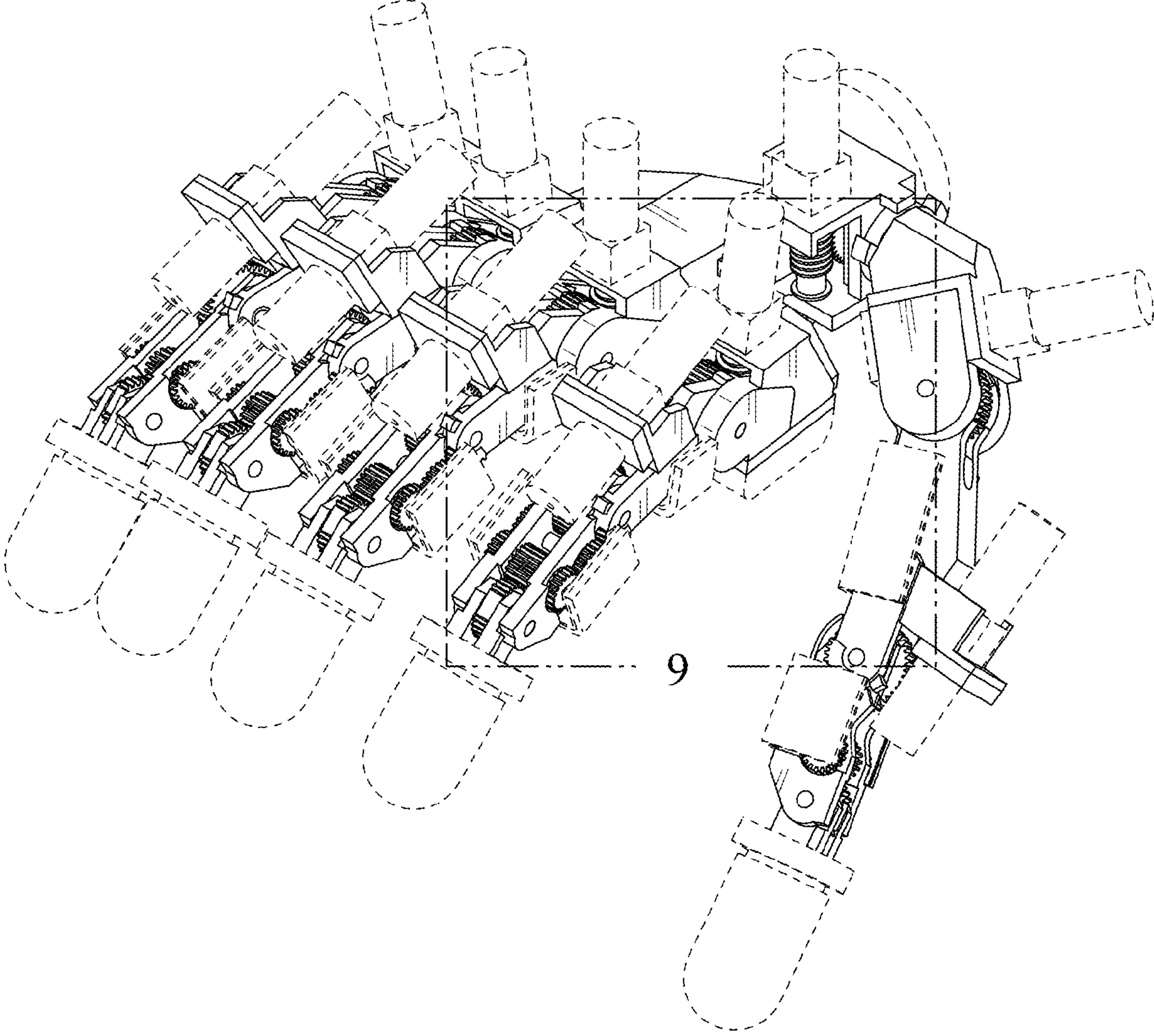


FIG. 2

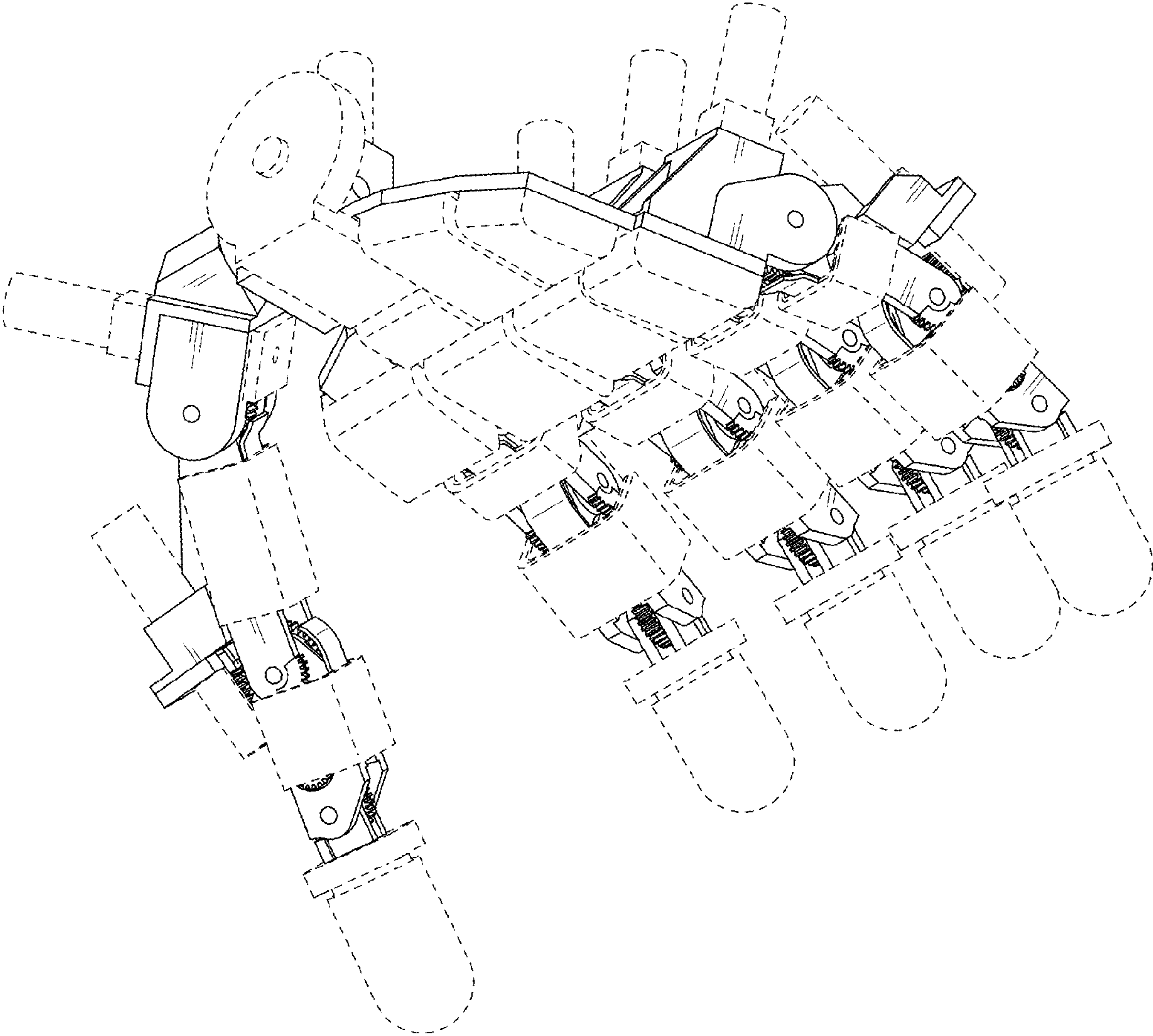


FIG. 3

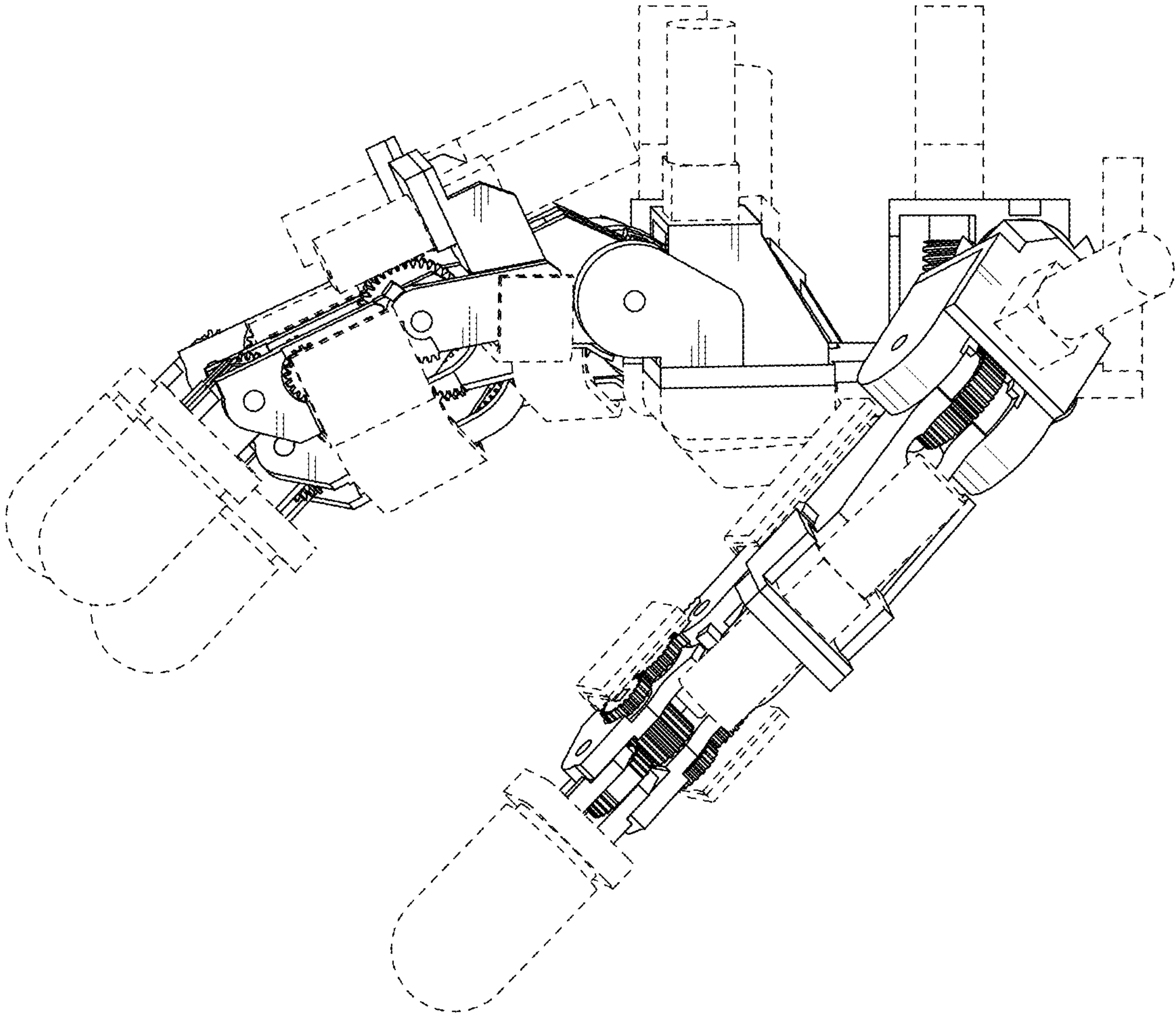


FIG. 4

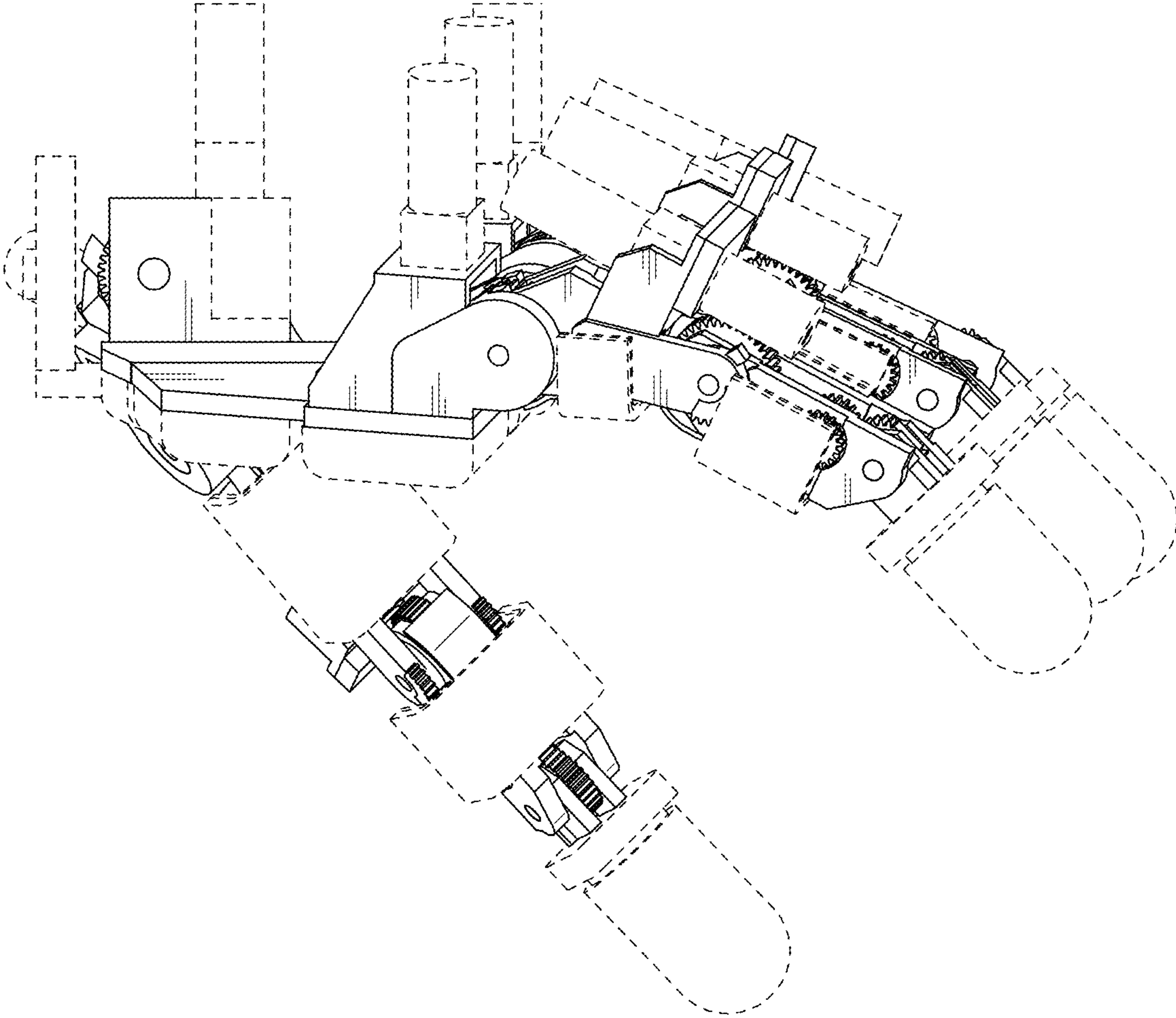


FIG. 5

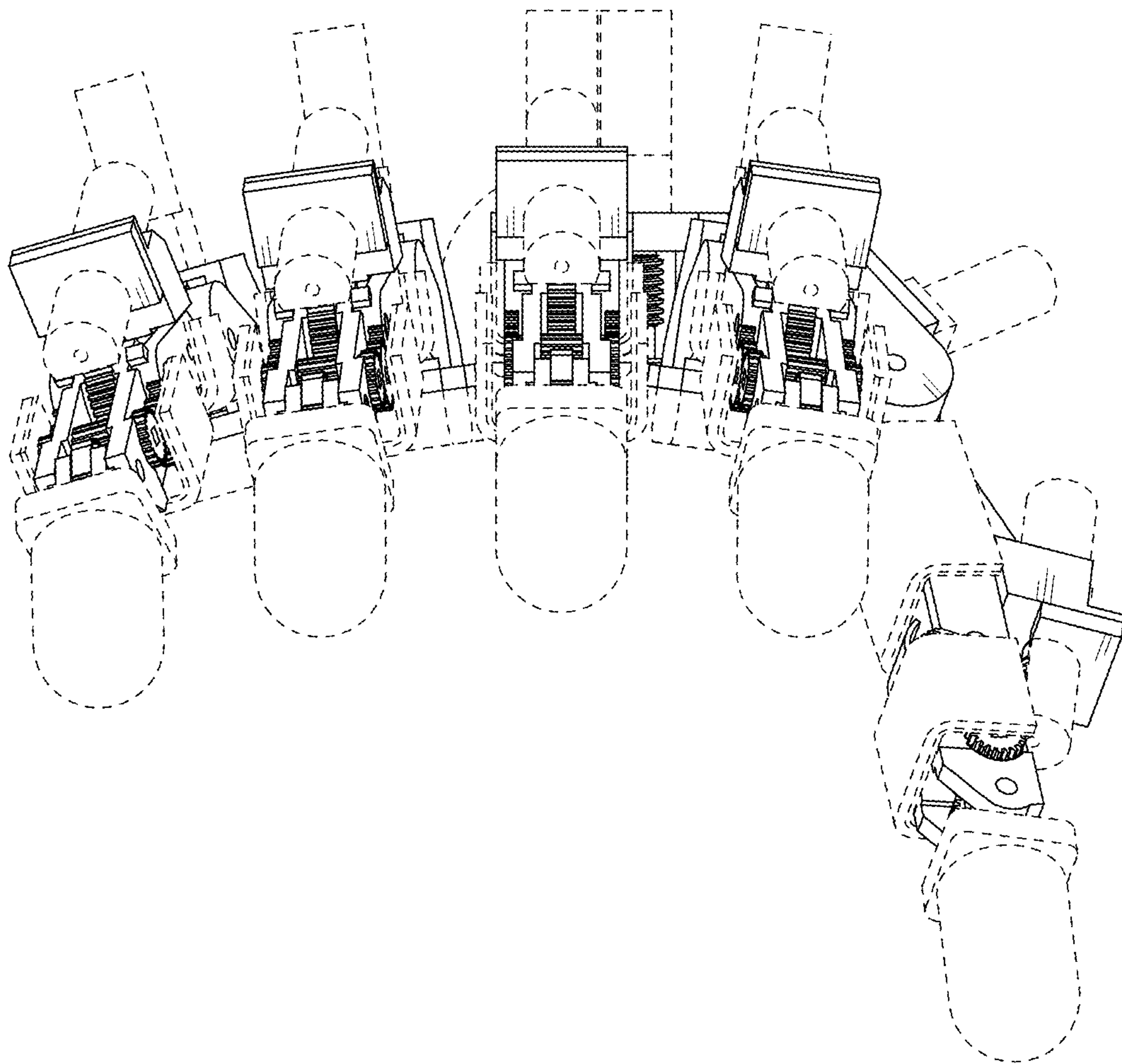


FIG. 6

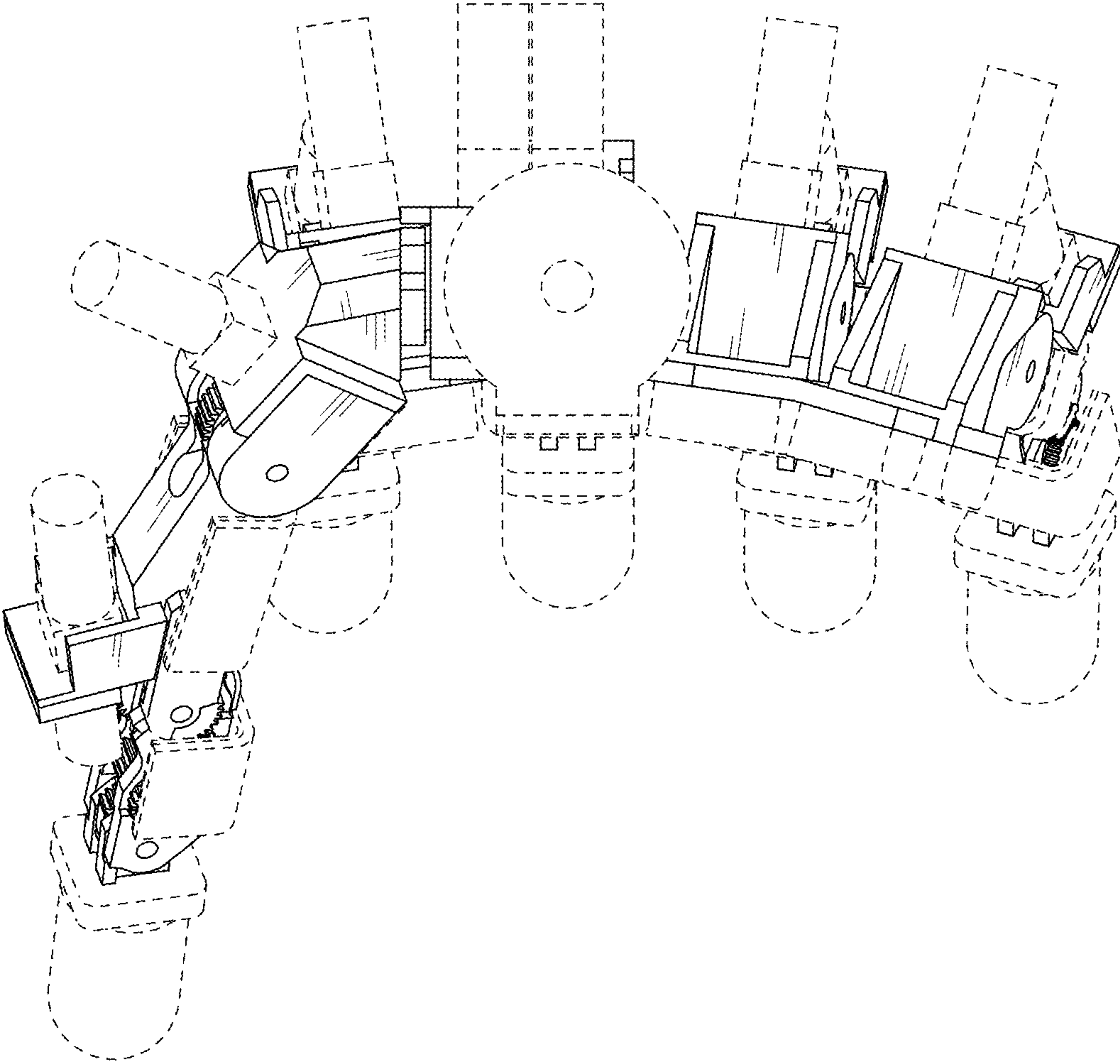


FIG. 7

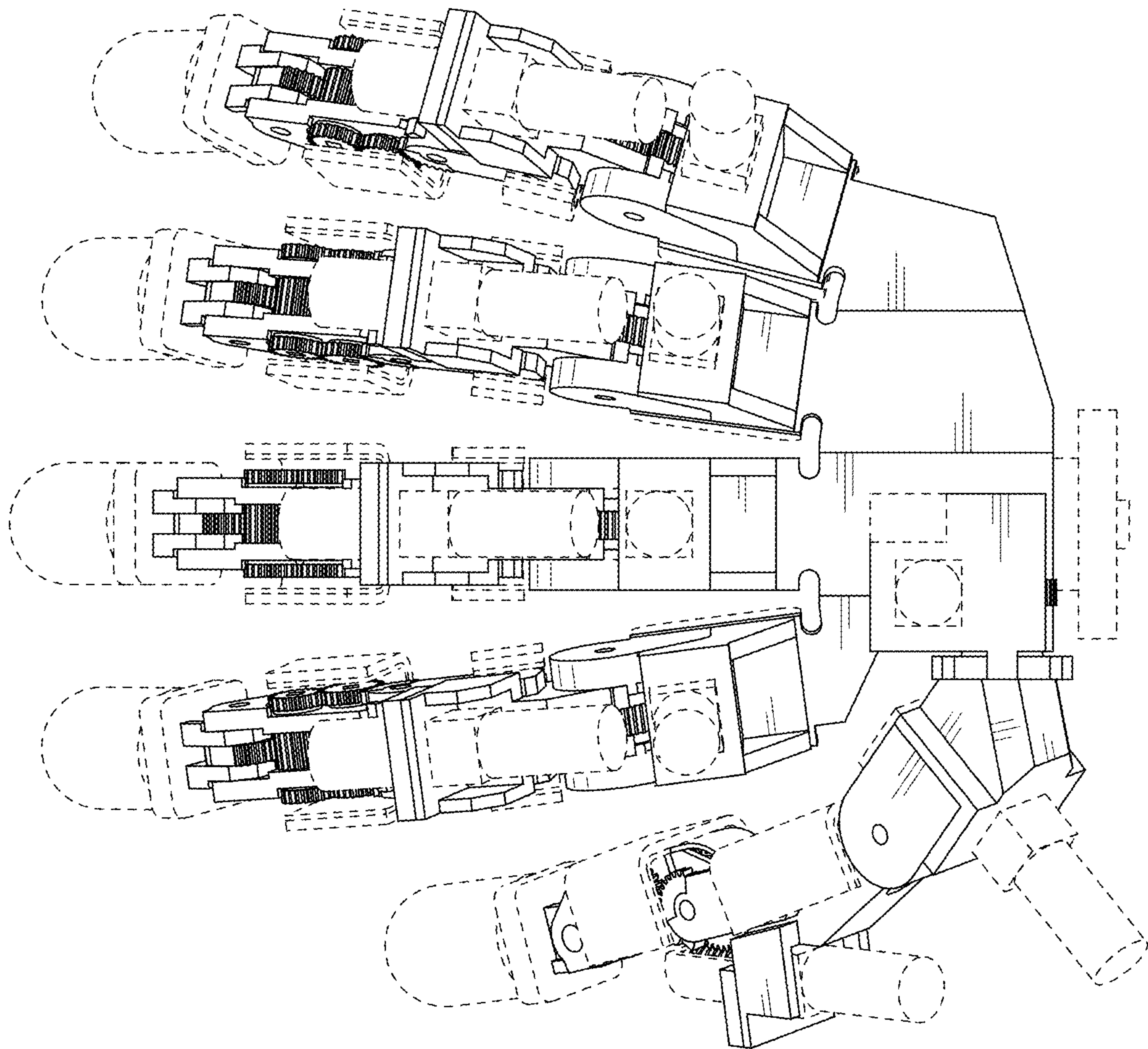


FIG. 8

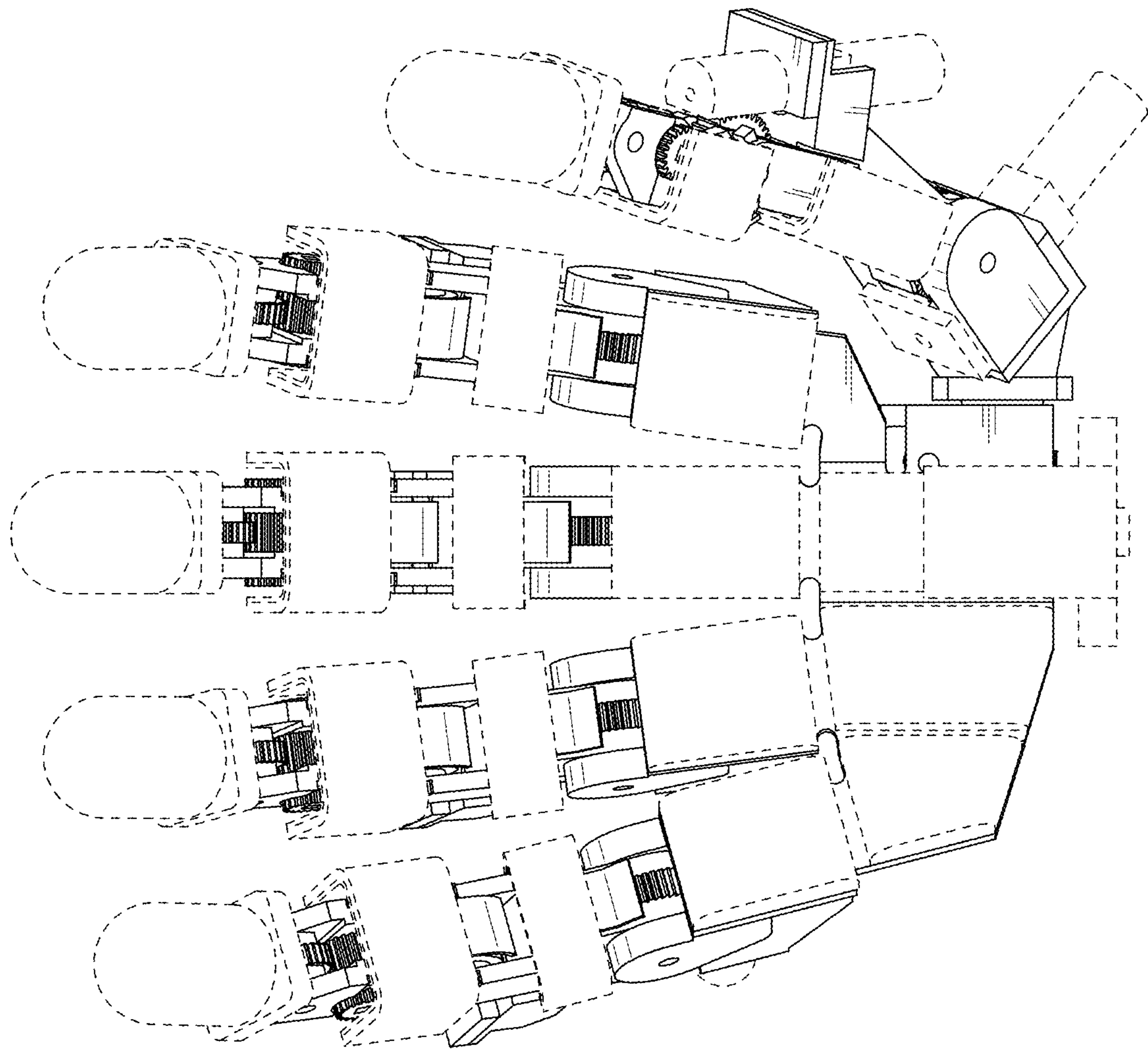


FIG. 9

