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Dolezalek et al.

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(54) TOUCH SENSOR ELECTRIC SWITCH

FOREIGN PATENT DOCUMENTS

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CN 302423266 * 5/2013
CN 216052980 U 3/2022
(Continued)

OTHER PUBLICATIONS

Banner LC25T In-Line Touch Switch Specification, Feb. 20, 2023,
4 pgs.*
(Continued)

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

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Offices PC

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(57) **CLAIM**

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The ornamental design for a touch sensor electric switch as
shown and described.

(51) **LOC (15) Cl.** **13-03**
(52) **U.S. Cl.**
USPC **D13/158**
(58) **Field of Classification Search**
USPC D13/158, 162, 171, 165, 174
CPC H03K 17/96; H03K 17/962; H01H 13/02;
H01H 13/04; H01H 13/023; H01H 13/06
See application file for complete search history.

DESCRIPTION

(56) **References Cited**

1. Touch sensor electric switch
1. Touch sensor electric switch
1.1 : Perspective
1.2 : Perspective
1.3 : Top
1.4 : Front
1.5 : Left
1.6 : Right
1.7 : Back
1.8 : Bottom
2.1 : Perspective
2.2 : Perspective

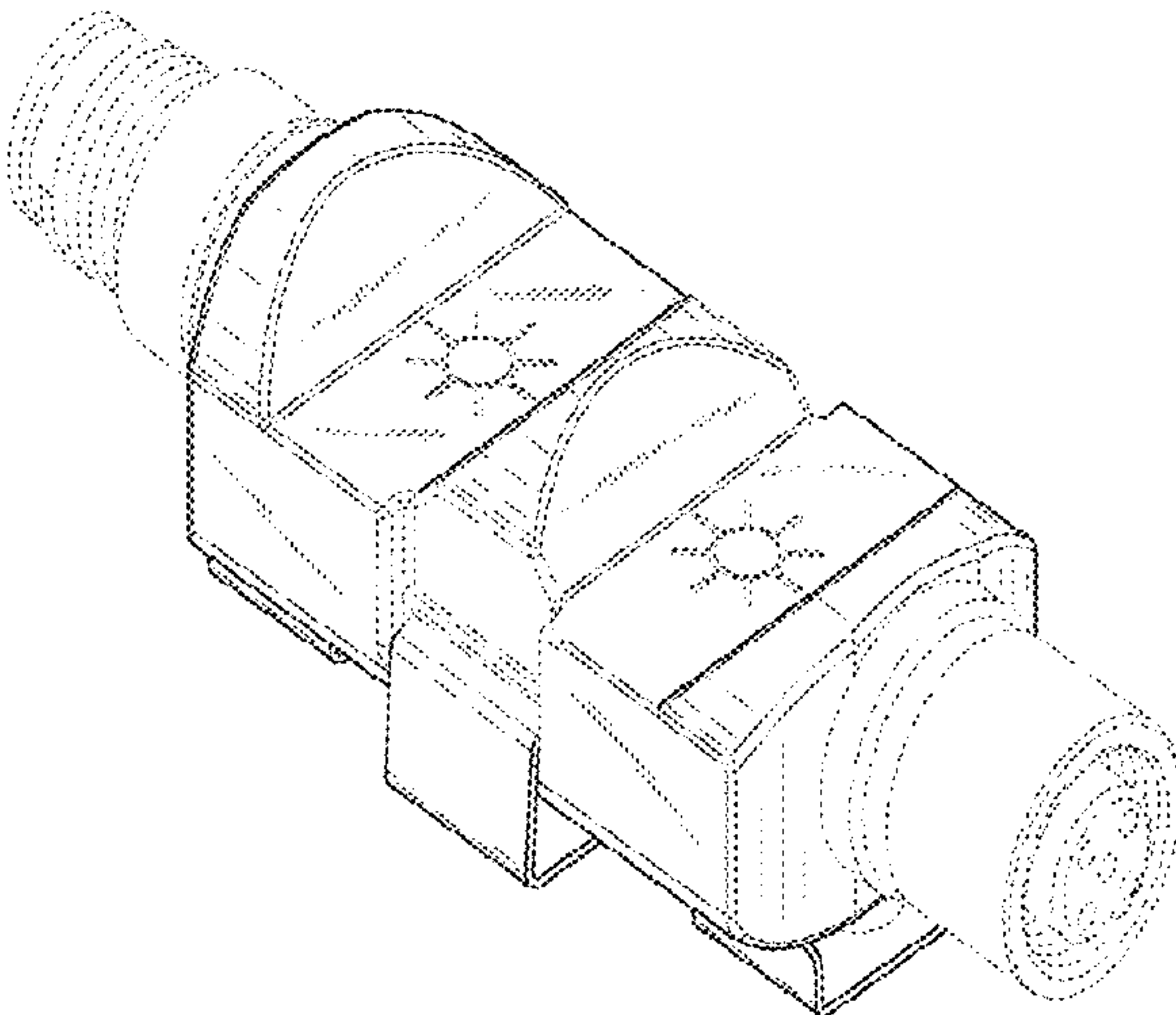
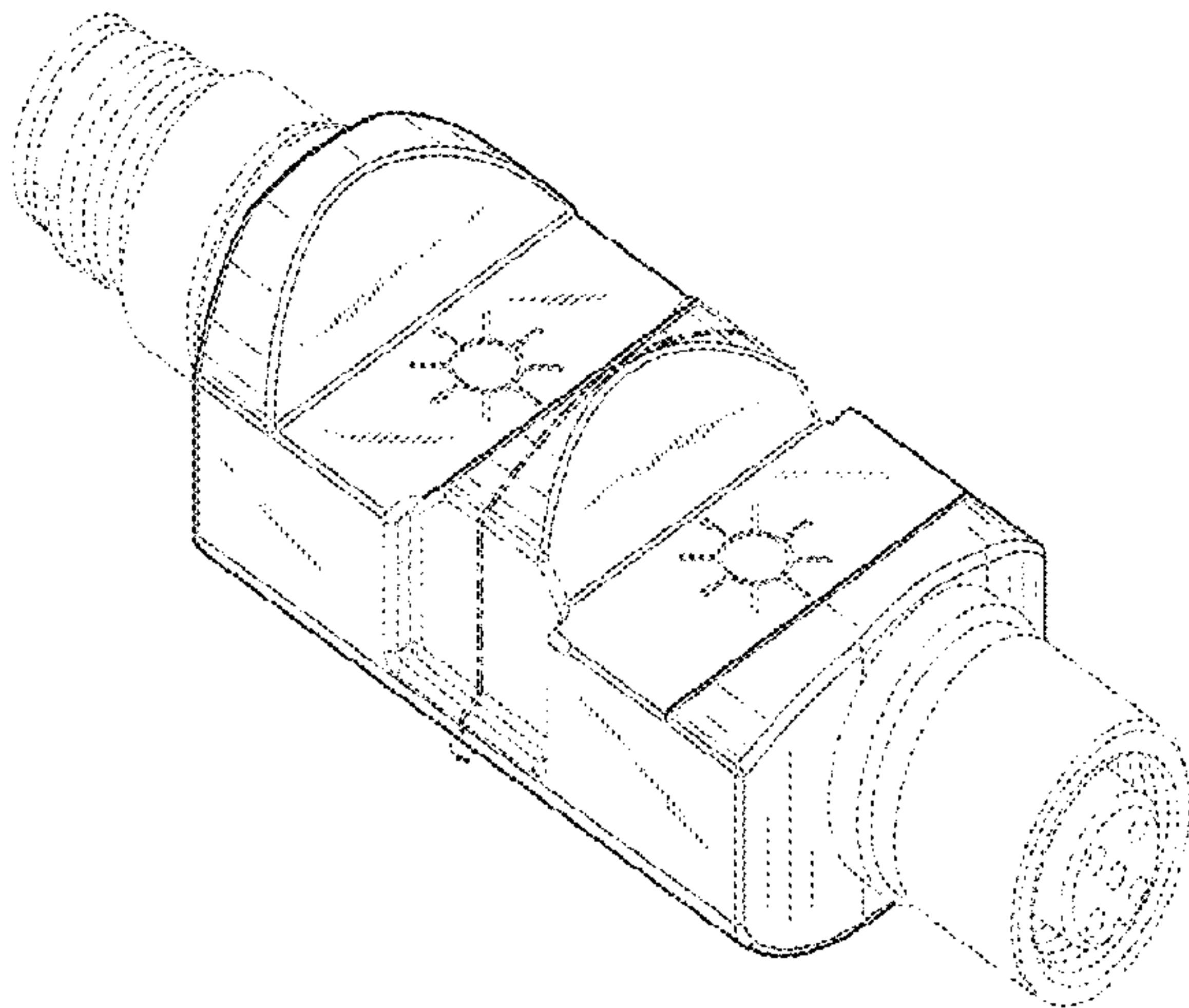
U.S. PATENT DOCUMENTS

3,732,384 A * 5/1973 Fischel H01H 3/142
200/86 R
3,751,615 A * 8/1973 De Loisy H01H 3/142
200/85 A
3,911,241 A * 10/1975 Jarrard H01H 13/08
606/42
5,118,910 A * 6/1992 Duhon H01H 9/161
362/249.05

The broken lines in the drawings depict portions of the touch
sensor electric switch that form no part of the claimed
design. The touch sensor electric switch in design 1 is shown
with a symbolic break in its length. The appearance of any
portion of the article between the break lines forms no part
of the claimed design.

(Continued)

1 Claim, 10 Drawing Sheets



(56)

References Cited

U.S. PATENT DOCUMENTS

5,723,817 A * 3/1998 Arenas H02G 3/14
220/241
6,402,748 B1 * 6/2002 Schoenman G06M 1/04
606/49
D685,750 S * 7/2013 Nakagawa D13/168
D689,445 S * 9/2013 Chu D13/174
8,658,893 B1 * 2/2014 Shotey H01H 23/04
174/53
D751,044 S * 3/2016 Maynard D13/174
9,589,461 B1 * 3/2017 Byrne G08C 19/00
9,687,292 B2 * 6/2017 Cosmescu A61B 18/1402
D821,982 S * 7/2018 Fujii D14/240
D865,682 S * 11/2019 Dimberg G01R 21/00
D13/168
D906,262 S * 12/2020 Suda D13/158
11,032,895 B1 * 6/2021 Sharifpour H05B 47/11
11,419,663 B2 * 8/2022 Brooke A61B 18/1402
11,545,315 B1 * 1/2023 Aaron H01H 9/04
D993,195 S * 7/2023 Fu D13/158
D1,009,811 S * 1/2024 Altonen D13/169
2003/0121765 A1 * 7/2003 Savicki, Jr. H01H 23/04
200/296
2003/0159910 A1 8/2003 Caldwell
2003/0230982 A1 * 12/2003 Pagano H05B 39/08
315/56
2004/0238726 A1 12/2004 Caldwell
2008/0257707 A1 * 10/2008 Murase H01H 13/81
200/600
2008/0296136 A1 * 12/2008 Kelso H01H 23/145
200/330
2011/0041755 A1 * 2/2011 Hsu H01H 23/145
116/303
2011/0140548 A1 * 6/2011 Hakkarainen H05B 39/085
307/157
2014/0376253 A1 12/2014 Tahara et al.
2015/0200061 A1 * 7/2015 de Peralta H01H 9/02
200/297
2015/0357133 A1 * 12/2015 Keirstead H01H 23/04
200/339
2017/0179952 A1 6/2017 Zhang et al.
2017/0207042 A1 * 7/2017 Tress H01H 9/0235

2018/0190451 A1 * 7/2018 Scruggs H01H 23/04
2018/0212603 A1 7/2018 Kwak
2021/0281262 A1 9/2021 James et al.
2022/0246372 A1 * 8/2022 Jamal G08C 17/02
2023/0039228 A1 * 2/2023 Starchuk H01H 23/04
2024/0222949 A1 * 7/2024 Rohmer H01R 13/7135

FOREIGN PATENT DOCUMENTS

DE 102020207159 8/2022
EP 3800789 A1 4/2021
EP 3920419 A1 12/2021
KR 300503739.0000 * 8/2008
WO 2010048373 A2 4/2010

OTHER PUBLICATIONS

Banner Engineering Corp., LC15T-127AP2RBGQP—LC15T Series, accessed Aug. 29, 2022, <https://www.bannerengineering.com/us/en/products/part.809826.html>.
Banner Engineering, K50 Pro Touch Series, accessed Aug. 29, 2022, <https://www.bannerengineering.com/us/en/products/lighting-and-indicators/touch-buttons/k50-pro-programmable-multicolor.html>.
Banner Engineering, VTB Series Illuminated Verification Touch Buttons, accessed Aug. 30, 2022, <https://www.bannerengineering.com/sg/en/products/lighting-and-indicators/touch-buttons/illuminated-verification-touch-buttons-vtb-series.html>.
Camacho, et al., Designing Touch Sensing Electrodes, Rev. 4, Jul. 2011, accessed Aug. 29, 2022, <https://www.nxp.com/docs/en/application-note/AN3863.pdf>.
Nissha, Insert Molding with Film Electrode, accessed Aug. 29, 2022, <https://connect.nissha.com/ime/en/>.
Peterson, Z, Designing Capacitive Touch Sensor PCBs in Altium Designer, Nov. 10, 2020, accessed Aug. 29, 2022, <https://resources.altium.com/p/designing-capacitive-touch-sensor-pcbs-in-altium-designer>.
Twtade, Twtade LED Touch Inline Dimmer Switch DC 12V 2A 5.5×2.1mm with DC Power Male Plug for LED Strip Light 5050 3528 I-L-014-BK, accessed Aug. 29, 2022, <https://www.amazon.com/TWTADE-Inline-Dimmer-Switch-I-L-014-BK/dp/B09CKW929Y?th=1>.

* cited by examiner

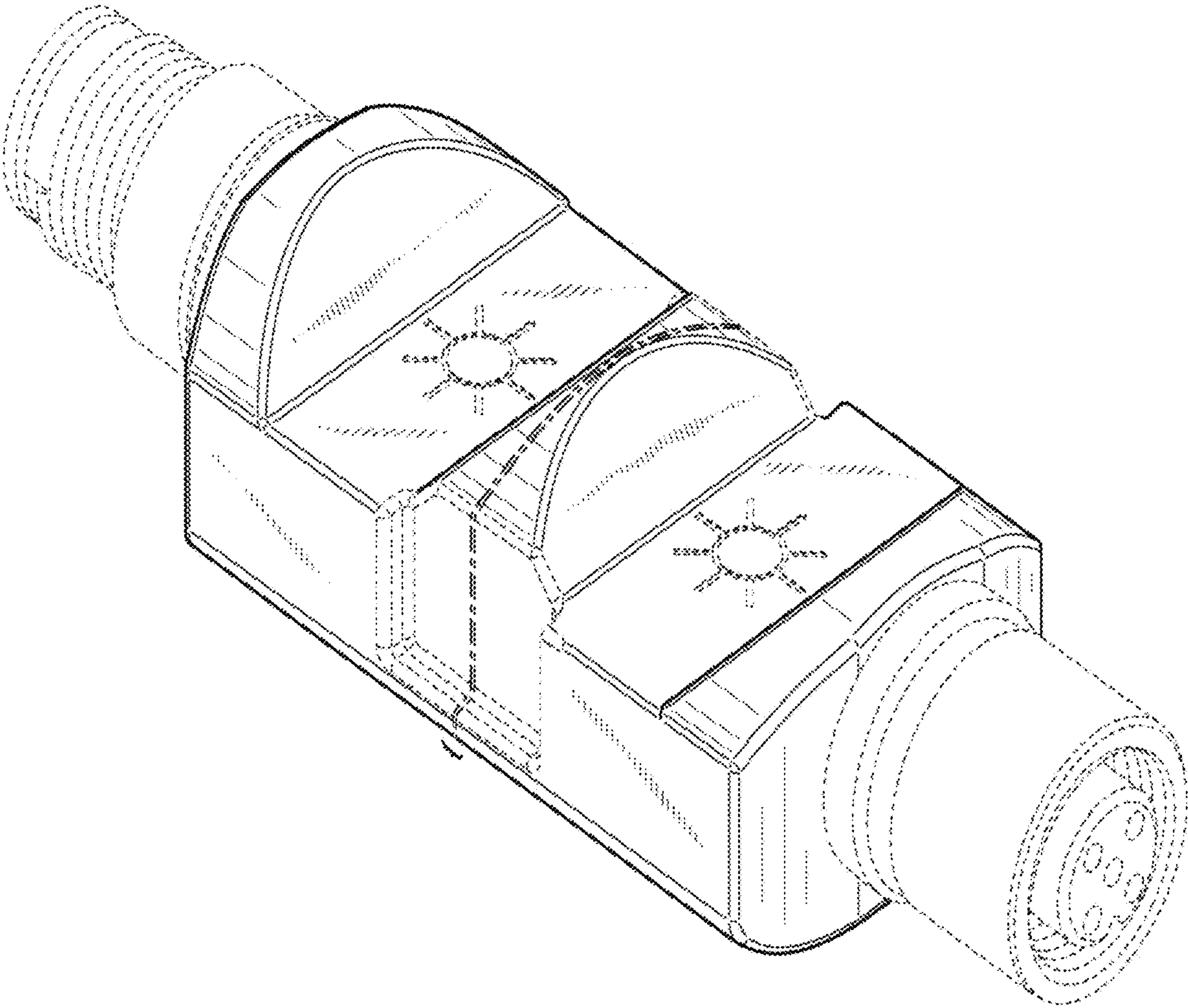


FIG. 1.1

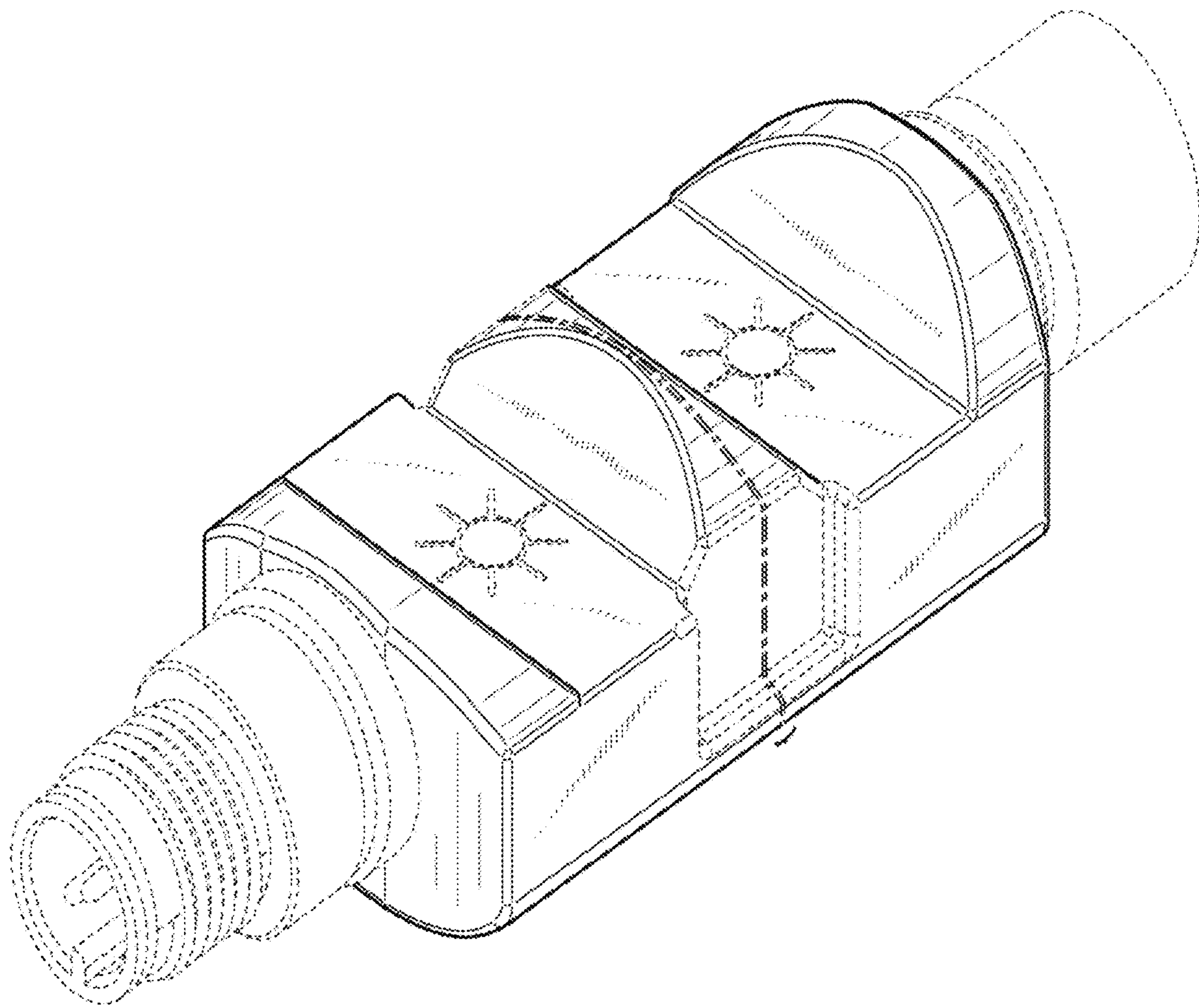


FIG. 1.2

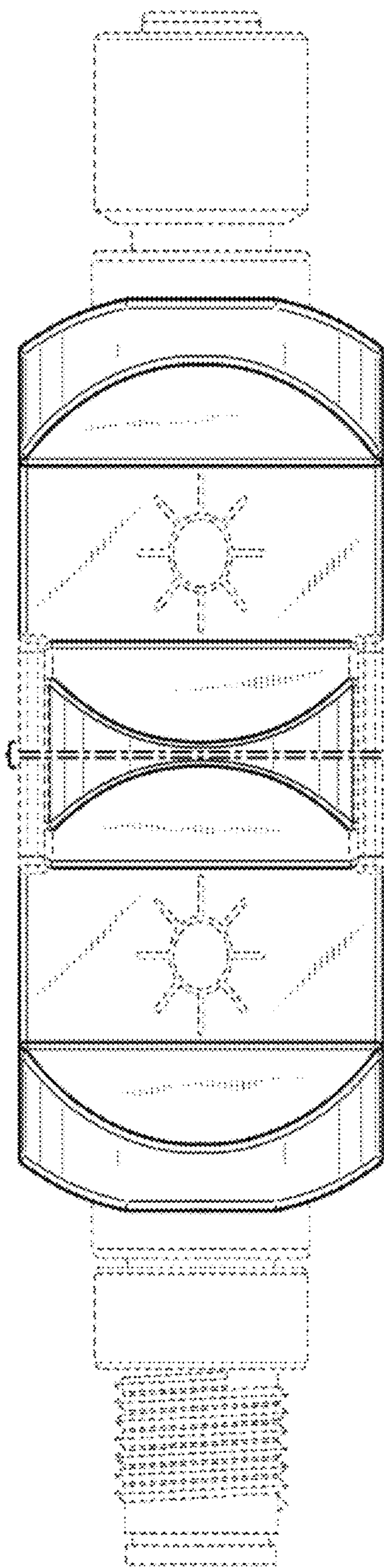


FIG. 1.3

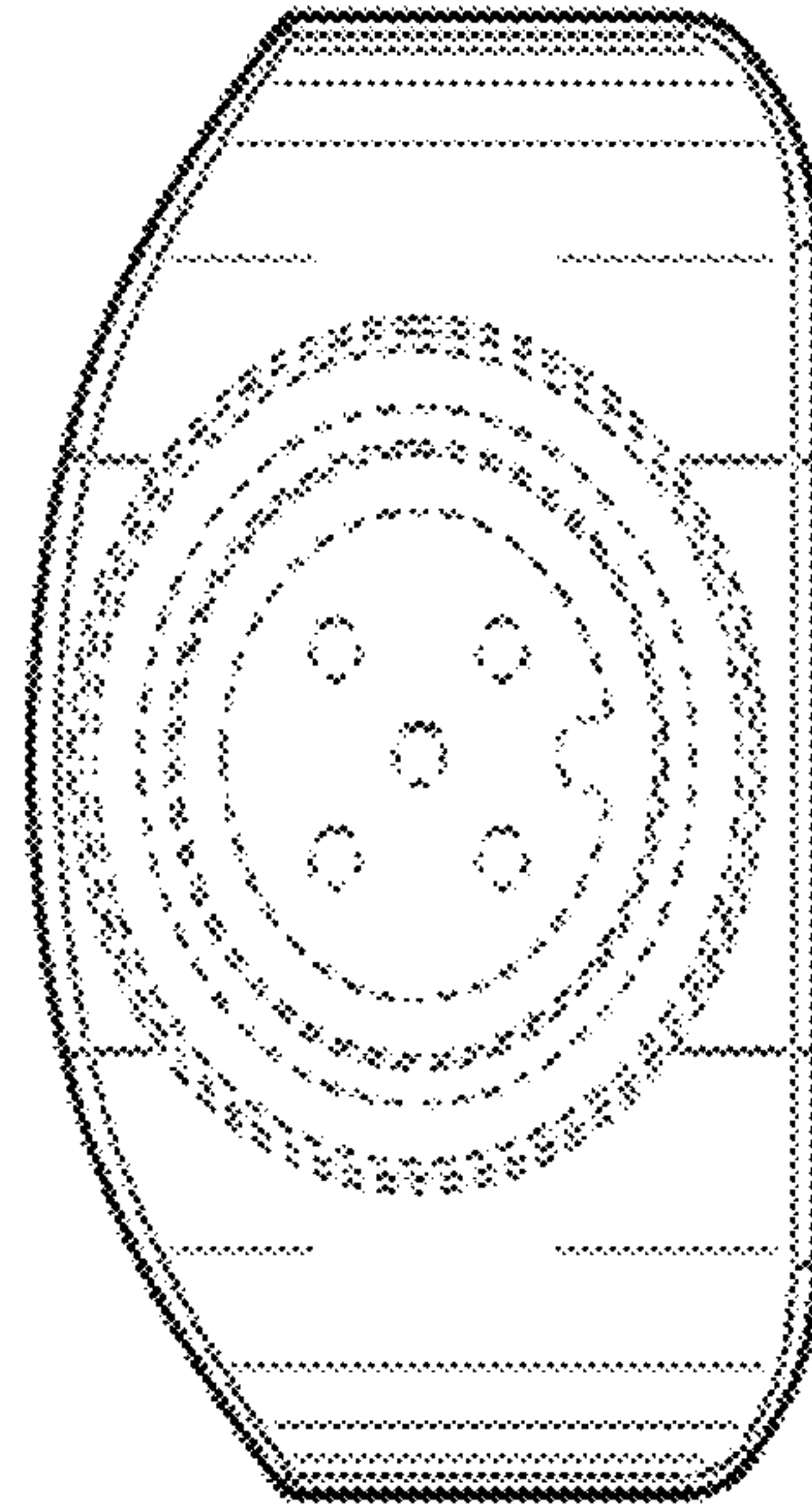


FIG. 1.4

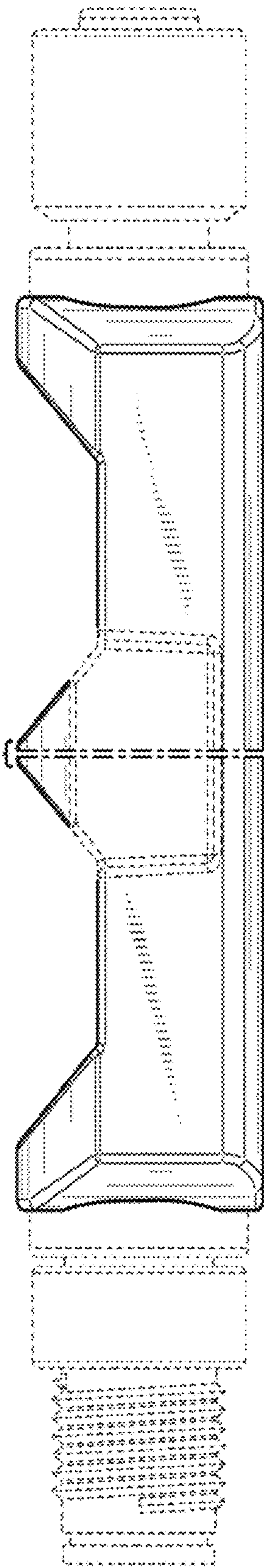


FIG. 1.5

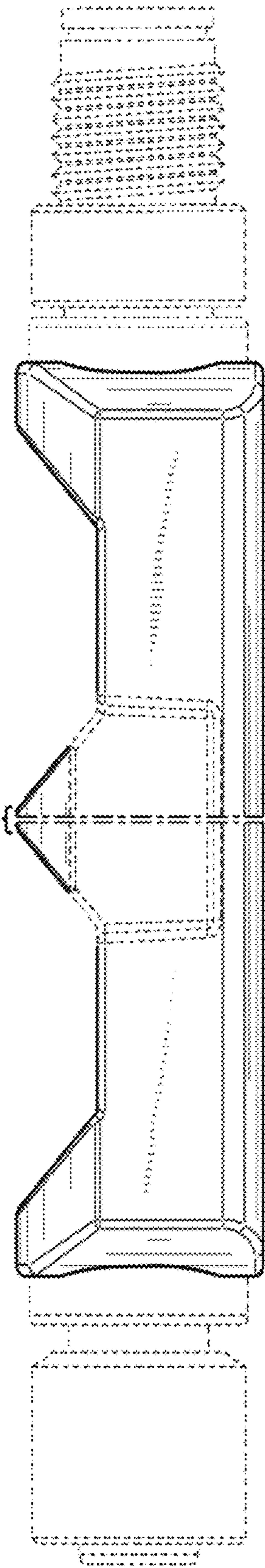


FIG. 1.6

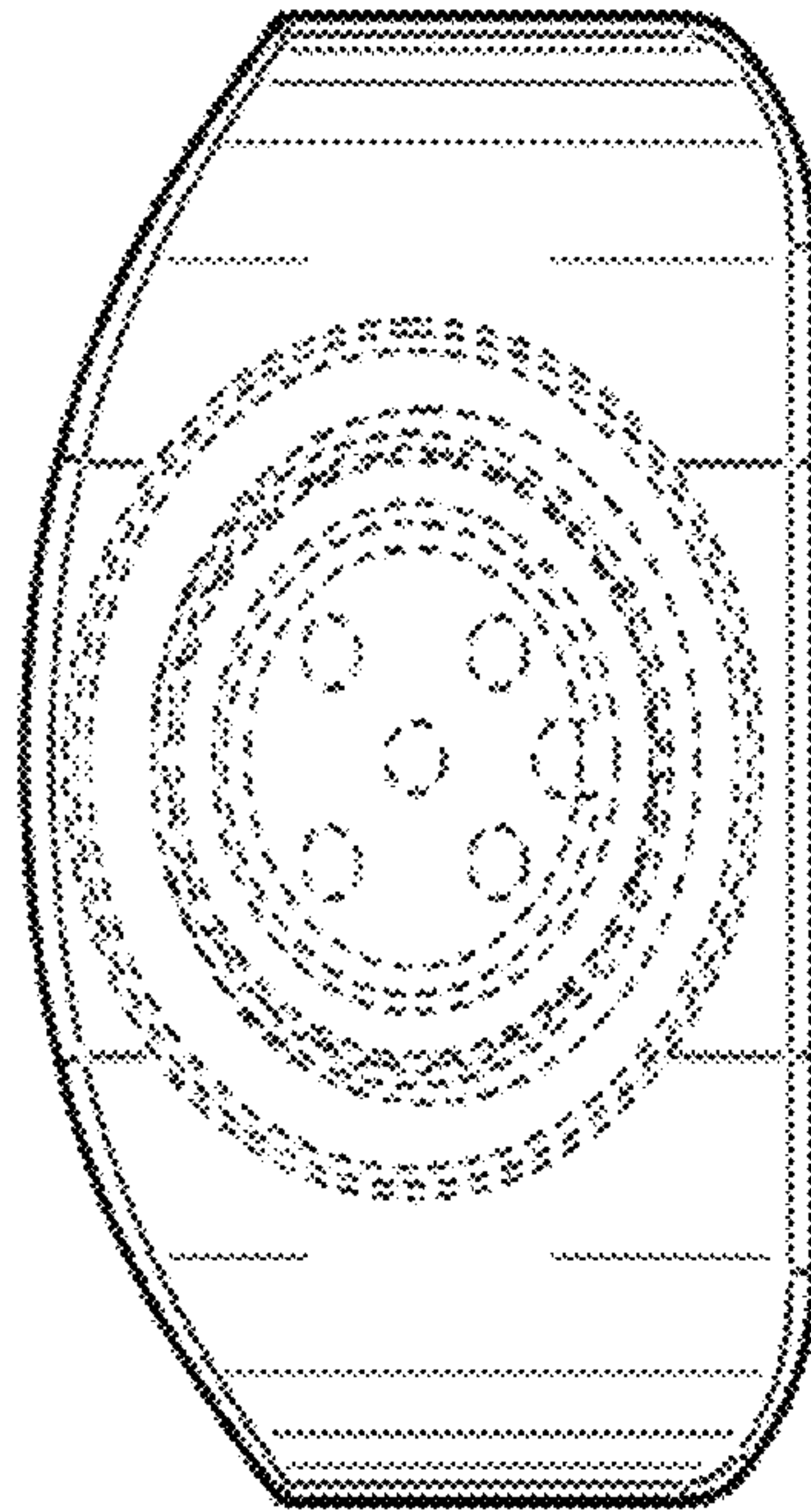


FIG. 1.7

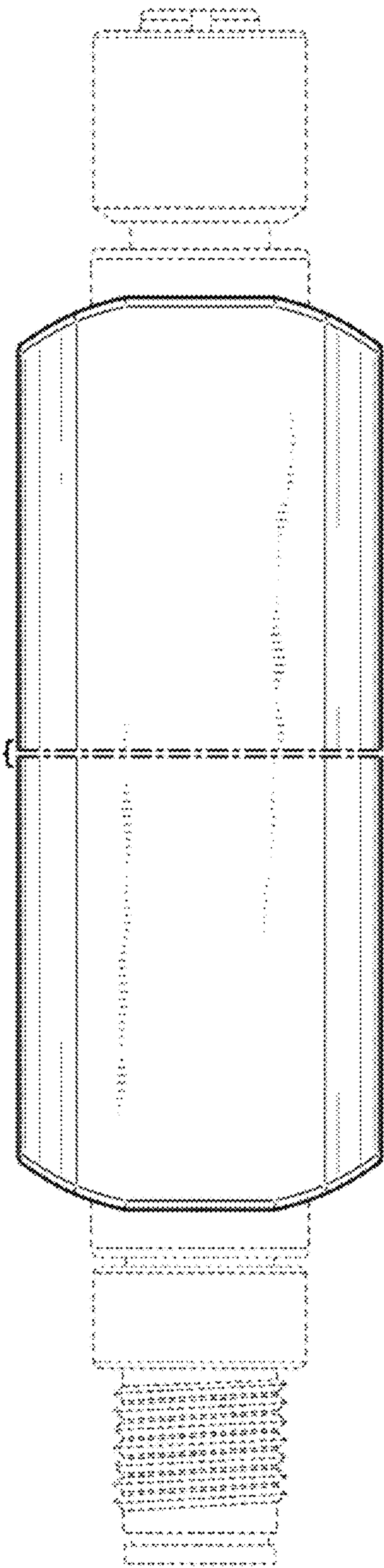


FIG. 1.8

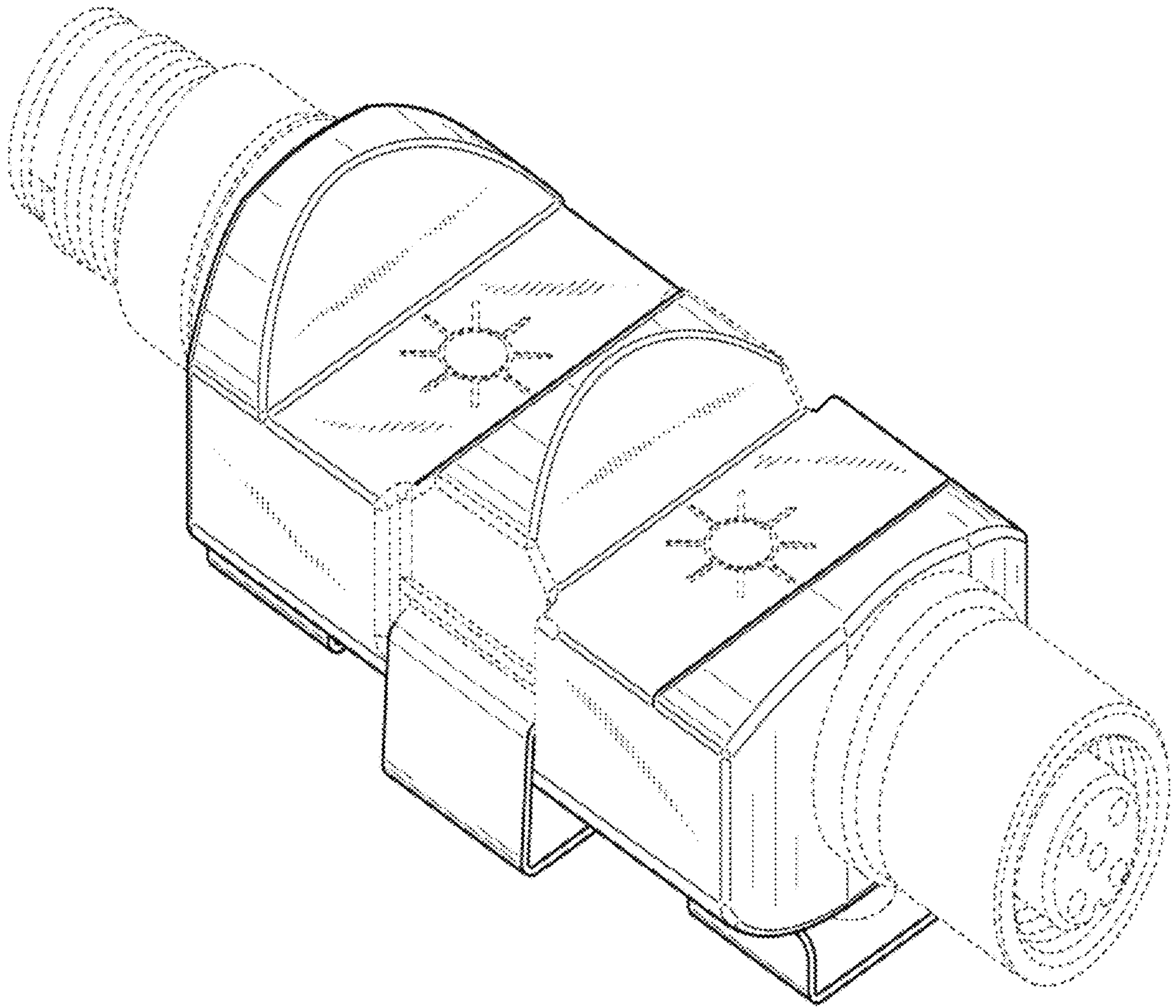


FIG. 2.1

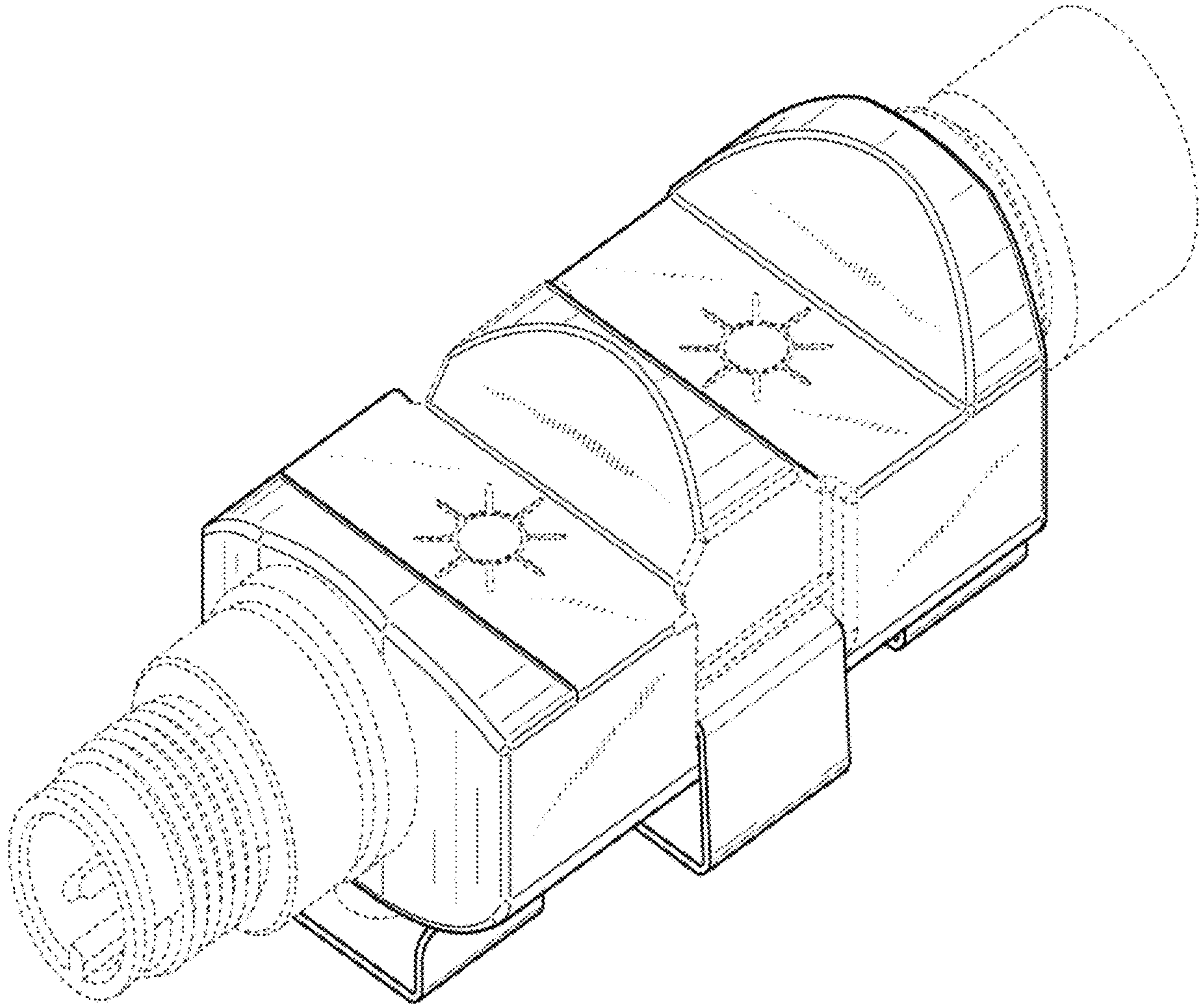


FIG. 2.2