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(12) **United States Design Patent** (10) **Patent No.:** **US D970,434 S**  
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(54) **CHARGING MODULE**

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

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**Related U.S. Application Data**

(63) Continuation of application No. 29/744,880, filed on Jul. 31, 2020, now Pat. No. Des. 937,765.

(51) **LOC (13) Cl.** ..... **13-02**

(52) **U.S. Cl.**  
USPC ..... **D13/107**

(58) **Field of Classification Search**  
USPC ..... **D13/102–110, 118, 119, 153, 154, 184, D13/199**

(Continued)

(56) **References Cited**

**U.S. PATENT DOCUMENTS**

D650,334 S ‡ 12/2011 Matsuoka ..... **D13/133**  
D654,431 S ‡ 2/2012 Stephanchick ..... **D13/108**

(Continued)

**FOREIGN PATENT DOCUMENTS**

CN 304265916 S 9/2017  
CN 304731452 S 7/2018

(Continued)

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(57) **CLAIM**

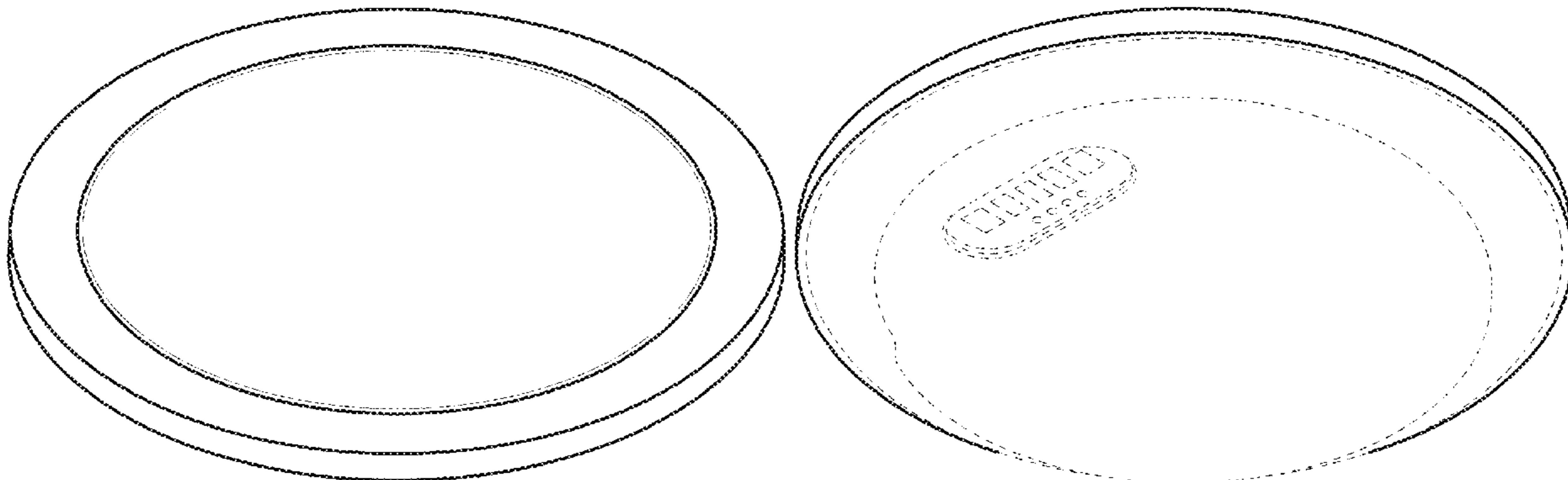
The ornamental design for a charging module, as shown and described.

**DESCRIPTION**

FIG. 1 is a top front perspective view of a charging module showing the claimed design;  
FIG. 2 is a bottom rear perspective view thereof;  
FIG. 3 is a rear view thereof;  
FIG. 4 is a front view thereof;  
FIG. 5 is a right side view thereof;  
FIG. 6 is a left side view thereof;  
FIG. 7 is a top view thereof; and,  
FIG. 8 is a bottom view thereof.

The broken lines in the figures show portions of the charging module that form no part of the claimed design.

**1 Claim, 4 Drawing Sheets**



(58) **Field of Classification Search**

CPC ..... Y02E 60/10; Y02E 60/12; Y02E 60/122;  
Y02E 60/124; Y02E 60/50; H01M 2/02;  
H01M 2/022; H01M 2/0202; H01M  
2/0207; H01M 2/0212; H01M 2/1061;  
H01M 2/1022; H01M 2/1055; H01M  
2/1066; H01M 2/105; H01M 2/20; H01M  
2/202; H01M 2/204; H01M 2/206; H01M  
10/44; H01M 10/46; H01M 10/465;  
H01M 10/482; H01M 10/4257; H01M  
10/0436; H01M 10/48; H01M 2200/30;  
H01M 2250/30; H01M 2250/40; H02J  
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7/0027; Y02T 10/7005; Y02T 10/705;  
Y02T 10/7088; B60R 16/03; B60L  
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See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

D656,096 S † 3/2012 Sasada ..... D13/108  
D658,604 S † 5/2012 Egawa ..... D26/1  
D663,685 S † 7/2012 Yang ..... D13/108  
D669,027 S † 10/2012 Kumpula ..... D13/108  
D673,110 S † 12/2012 Sasada ..... D13/108  
D674,391 S † 1/2013 Chatterjee ..... D14/434  
D694,182 S † 11/2013 Lee ..... D13/108  
D701,831 S † 4/2014 Park ..... D13/108  
D704,634 S † 5/2014 Eidelman ..... D13/108  
D707,681 S † 6/2014 Akana ..... D14/433  
D712,850 S † 9/2014 Welch ..... D13/180  
D718,233 S † 11/2014 Aumiller ..... D13/108  
D718,234 S † 11/2014 Rautiainen ..... D13/108  
D718,236 S \* 11/2014 Murray ..... D13/108  
D718,712 S \* 12/2014 Aumiller ..... D13/108  
D720,288 S † 12/2014 Ko ..... D13/108  
D720,289 S † 12/2014 Chiang ..... D13/108  
D720,688 S † 1/2015 Popper ..... D13/103  
D722,962 S † 2/2015 Kim ..... D13/108  
D725,034 S † 3/2015 Chen ..... D13/108  
D727,260 S † 4/2015 Aumiller ..... D13/108  
D735,131 S \* 7/2015 Akana ..... D13/108  
D737,760 S † 9/2015 Kyriakoulis ..... D13/108  
D737,761 S † 9/2015 Zhuang ..... D13/110  
D737,762 S \* 9/2015 Aumiller ..... D13/108  
D742,823 S † 11/2015 Nitz ..... D13/103  
D746,772 S \* 1/2016 Aumiller ..... D13/108  
D747,267 S † 1/2016 Aumiller ..... D13/108  
D749,504 S † 2/2016 Jeong ..... D13/108  
D758,305 S \* 6/2016 Dorn ..... D13/107  
D772,813 S \* 11/2016 Wahl ..... D13/108  
D777,103 S † 1/2017 Park ..... D13/108  
D782,973 S † 4/2017 Zhou ..... D13/108  
D784,259 S † 4/2017 Huang ..... D13/108  
D786,193 S \* 5/2017 Akana ..... D13/108  
D786,791 S † 5/2017 Jeong ..... D13/108  
D788,041 S † 5/2017 Akana ..... D13/147  
D794,556 S † 8/2017 Liao ..... D3/208  
D794,557 S \* 8/2017 Kim ..... D13/108  
D795,182 S \* 8/2017 Akana ..... D13/108  
D795,183 S † 8/2017 Akana ..... D13/108  
D796,433 S † 9/2017 Langhammer ..... D13/108  
D798,807 S \* 10/2017 Shi ..... D13/108  
9,787,129 B2 † 10/2017 Green ..... H02J 7/025  
D812,556 S † 3/2018 Xu ..... D13/103  
D812,563 S † 3/2018 Akana ..... D13/108  
9,929,596 B2 † 3/2018 Chen ..... H02J 50/005  
D815,593 S † 4/2018 Alves ..... D13/103  
D817,268 S † 5/2018 Symons ..... D13/108  
D821,309 S † 6/2018 Barnard ..... D13/108

D839,189 S † 1/2019 Miller ..... D13/103  
D839,837 S † 2/2019 Akana ..... D13/147  
D849,683 S † 5/2019 Lee ..... D13/108  
D850,367 S † 6/2019 Xiong ..... D14/434  
D850,370 S † 6/2019 Lee ..... D13/108  
D850,371 S † 6/2019 Yun ..... D13/108  
D850,372 S † 6/2019 Kong ..... D13/108  
D855,567 S \* 8/2019 Cai ..... D13/108  
D859,307 S † 9/2019 Campos ..... D13/108  
10,424,962 B2 † 9/2019 Graham ..... H01F 27/36  
D861,602 S \* 10/2019 Feng ..... D13/108  
D865,666 S † 11/2019 Roberts ..... D13/108  
D869,391 S \* 12/2019 Roberts ..... D13/108  
D872,015 S \* 1/2020 Choi ..... D13/108  
D875,678 S † 2/2020 Kim ..... D13/108  
D876,347 S † 2/2020 Nauroy ..... D13/108  
D883,203 S \* 5/2020 Zheng ..... D13/108  
D883,209 S † 5/2020 Liao ..... D13/110  
D884,624 S † 5/2020 Lei ..... D13/108  
D887,974 S † 6/2020 Chen ..... D13/108  
D890,095 S † 7/2020 Liao ..... D13/110  
D891,366 S † 7/2020 Xie ..... D13/108  
D893,420 S \* 8/2020 Xiao ..... D13/108  
D893,421 S \* 8/2020 Xiao ..... D13/108  
D894,191 S † 8/2020 Turksu ..... D14/434  
D895,543 S † 9/2020 Akana ..... D13/108  
D897,954 S \* 10/2020 Wei ..... D13/108  
D899,359 S \* 10/2020 Zhang ..... D13/108  
D900,027 S \* 10/2020 Reilly ..... D13/108  
D901,379 S \* 11/2020 Choi ..... D13/108  
D906,959 S † 1/2021 Turksu ..... D13/108  
D908,620 S \* 1/2021 Akana ..... D13/108  
D908,621 S 1/2021 Akana et al.  
D911,276 S \* 2/2021 Li ..... D13/108  
D913,222 S † 3/2021 Albay ..... D13/108  
D918,135 S \* 5/2021 Akana ..... D13/108  
D918,137 S † 5/2021 Painter ..... D13/108  
10,998,121 B2 † 5/2021 Perez ..... H01F 41/098  
D921,581 S † 6/2021 Bao ..... D13/107  
D924,796 S \* 7/2021 Ye ..... D28/64.1  
D935,402 S \* 11/2021 Qiu ..... D13/108  
D935,448 S \* 11/2021 Lee ..... D13/108  
D936,006 S \* 11/2021 Siciliano ..... D13/110  
D936,576 S \* 11/2021 Joung ..... D13/108  
D937,206 S \* 11/2021 Romano ..... D13/108  
D937,765 S \* 12/2021 Akana ..... D13/107  
D938,353 S \* 12/2021 Gan ..... D13/108  
D939,437 S \* 12/2021 Liao ..... D13/108  
D939,438 S \* 12/2021 Hu ..... D13/108  
D943,524 S \* 2/2022 Zheng ..... D13/108  
D943,525 S \* 2/2022 Deshaies ..... D13/108  
D944,728 S \* 3/2022 Bajpai ..... D13/107  
D945,364 S \* 3/2022 Chang ..... D13/108  
D947,119 S \* 3/2022 Canham ..... D13/108  
D947,122 S \* 3/2022 Dastmalchi ..... D13/108  
D948,427 S \* 4/2022 Lin ..... D13/108  
D953,981 S \* 6/2022 Parcon ..... D13/108  
2016/0064137 A1 † 3/2016 Perez ..... H04B 5/0037  
336/90  
2017/0093198 A1 † 3/2017 Graham ..... H01F 27/361  
2017/0331306 A1 † 11/2017 Lo ..... H02J 7/0042  
2018/0097373 A1 † 4/2018 McSweyn ..... H02J 7/0042  
2019/0165516 A1 † 5/2019 Li ..... H02J 50/10  
2019/0372377 A1 † 12/2019 Weinstein ..... H01R 13/72  
2020/0059114 A1 † 2/2020 Langlois ..... H02J 50/10  
2020/0083726 A1 † 3/2020 Kim ..... H02J 7/0044  
2020/0119582 A1 † 4/2020 Salzinger ..... H02J 50/005  
2020/0280199 A1 † 9/2020 Lopotko ..... H01R 35/02

FOREIGN PATENT DOCUMENTS

EM 007992235-0002 6/2020  
JP 1614416 S 9/2018  
JP 1651998 S 2/2020  
KR 30-10467590000 2/2020  
KR 30-10592240000 5/2020

\* cited by examiner

† imported from a related application

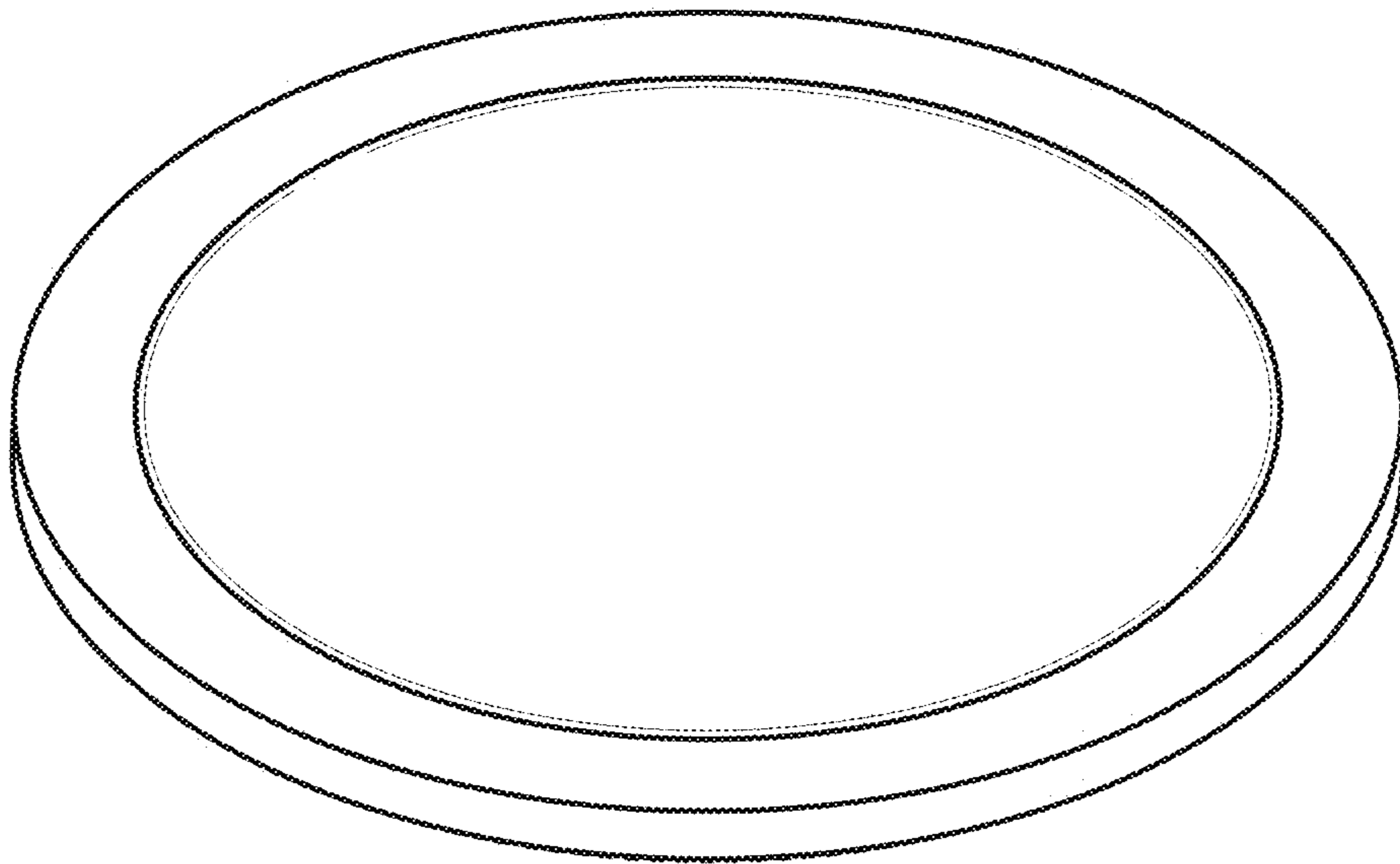


FIG. 1

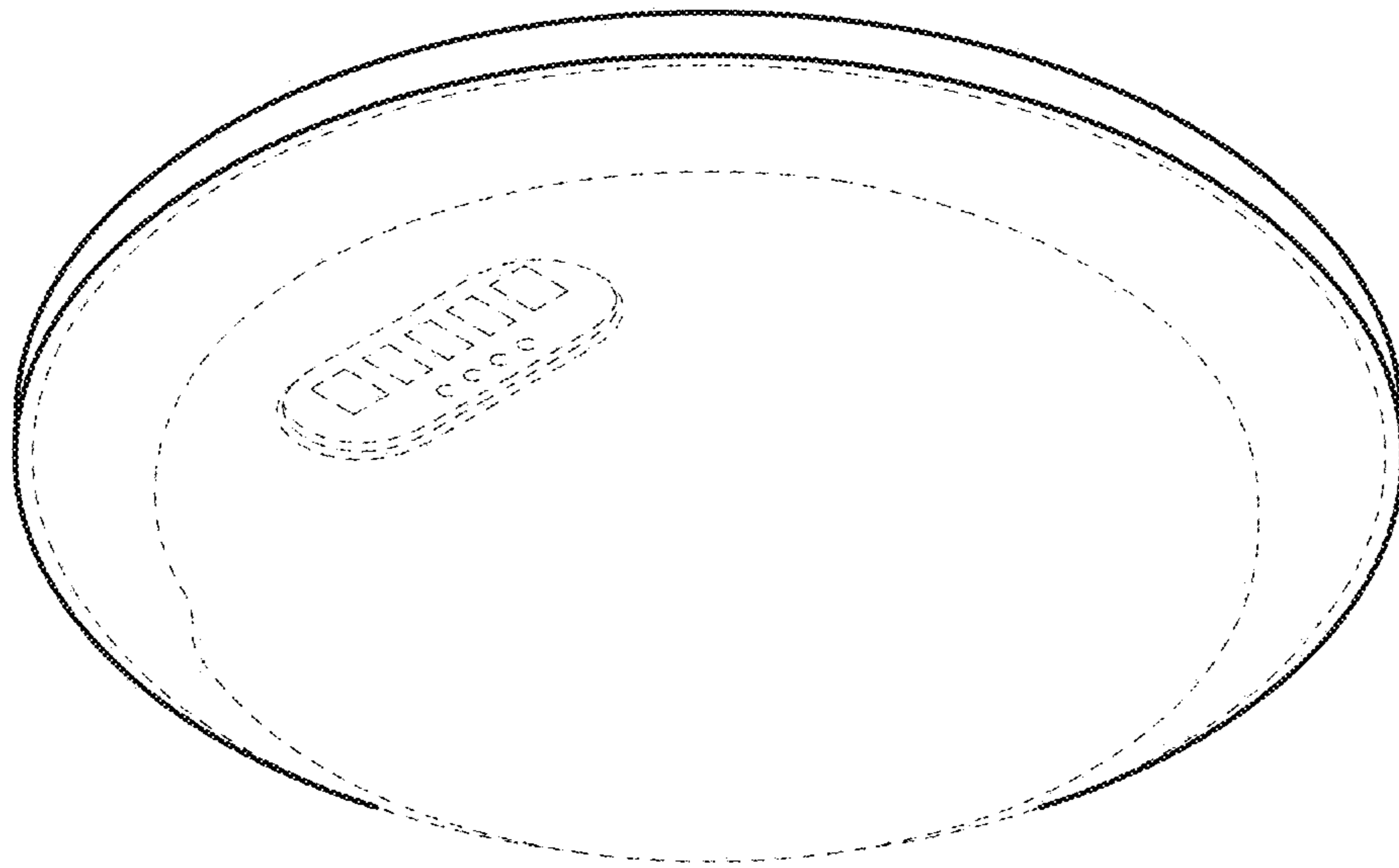


FIG. 2

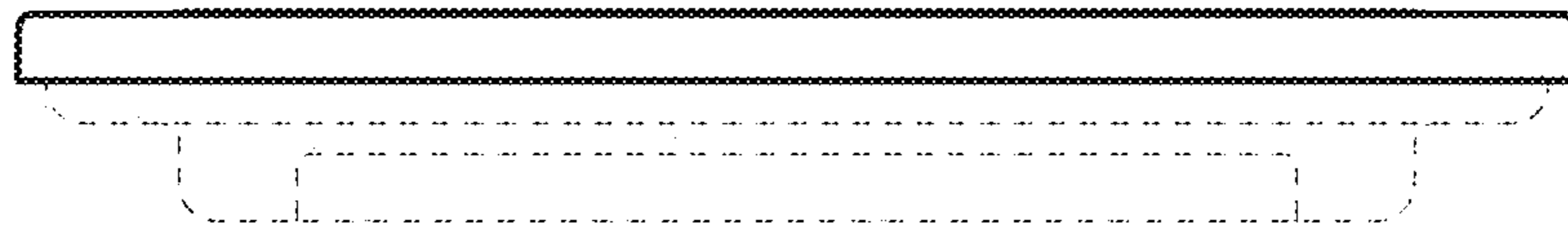


FIG. 3

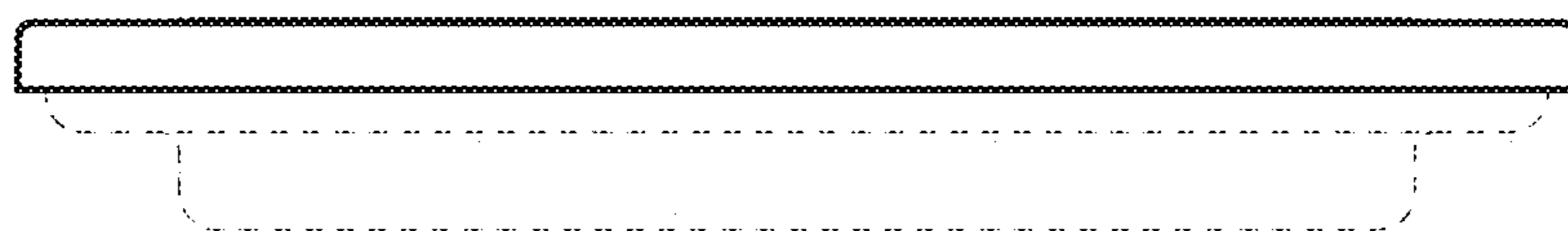


FIG. 4

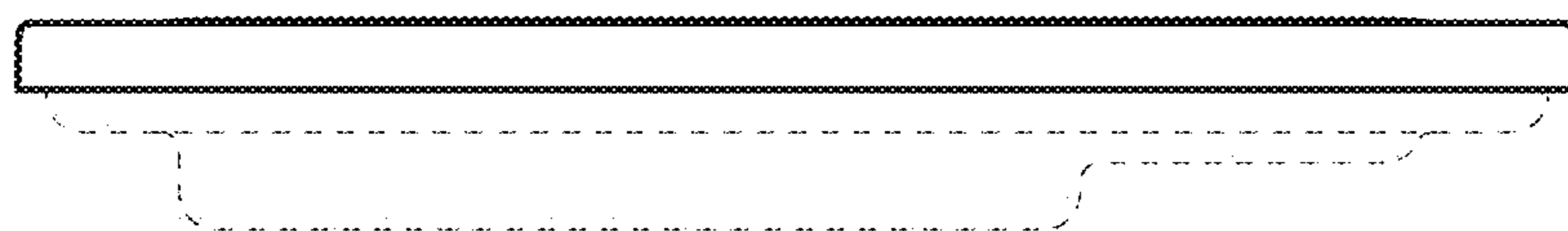


FIG. 5

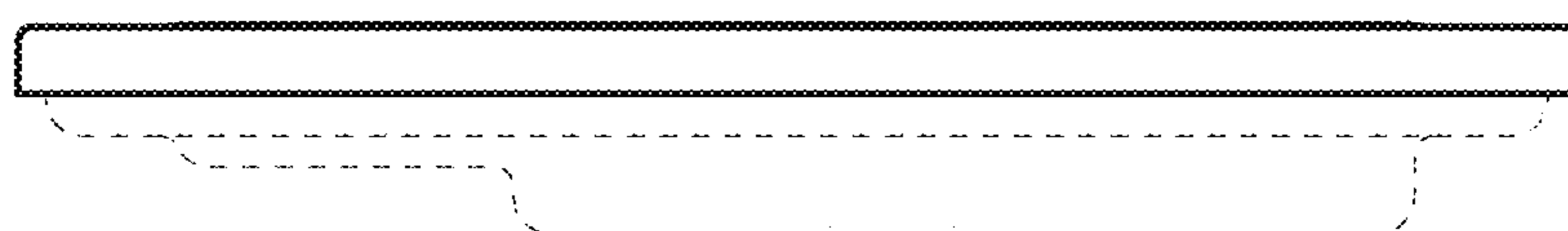


FIG. 6

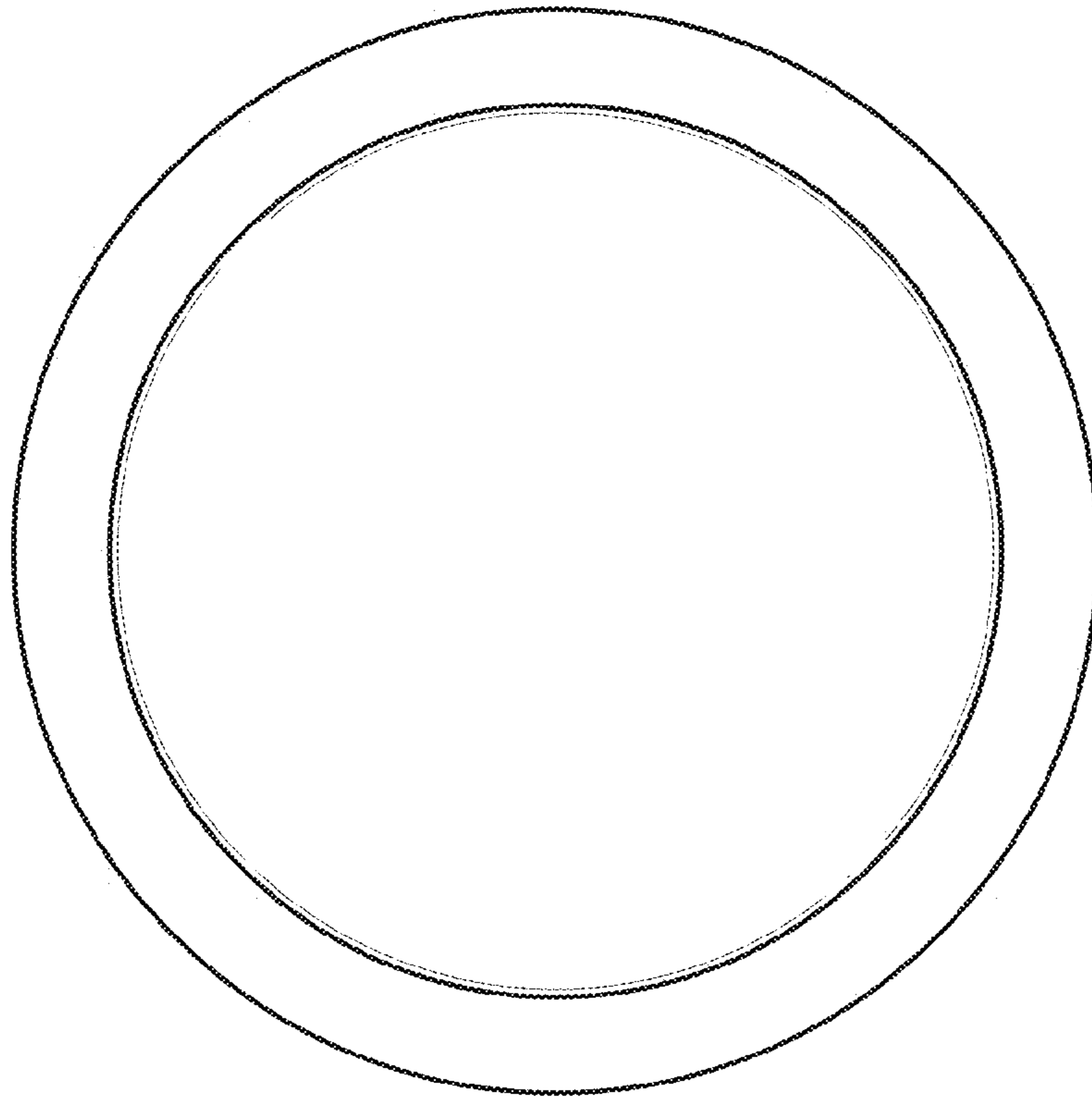


FIG. 7

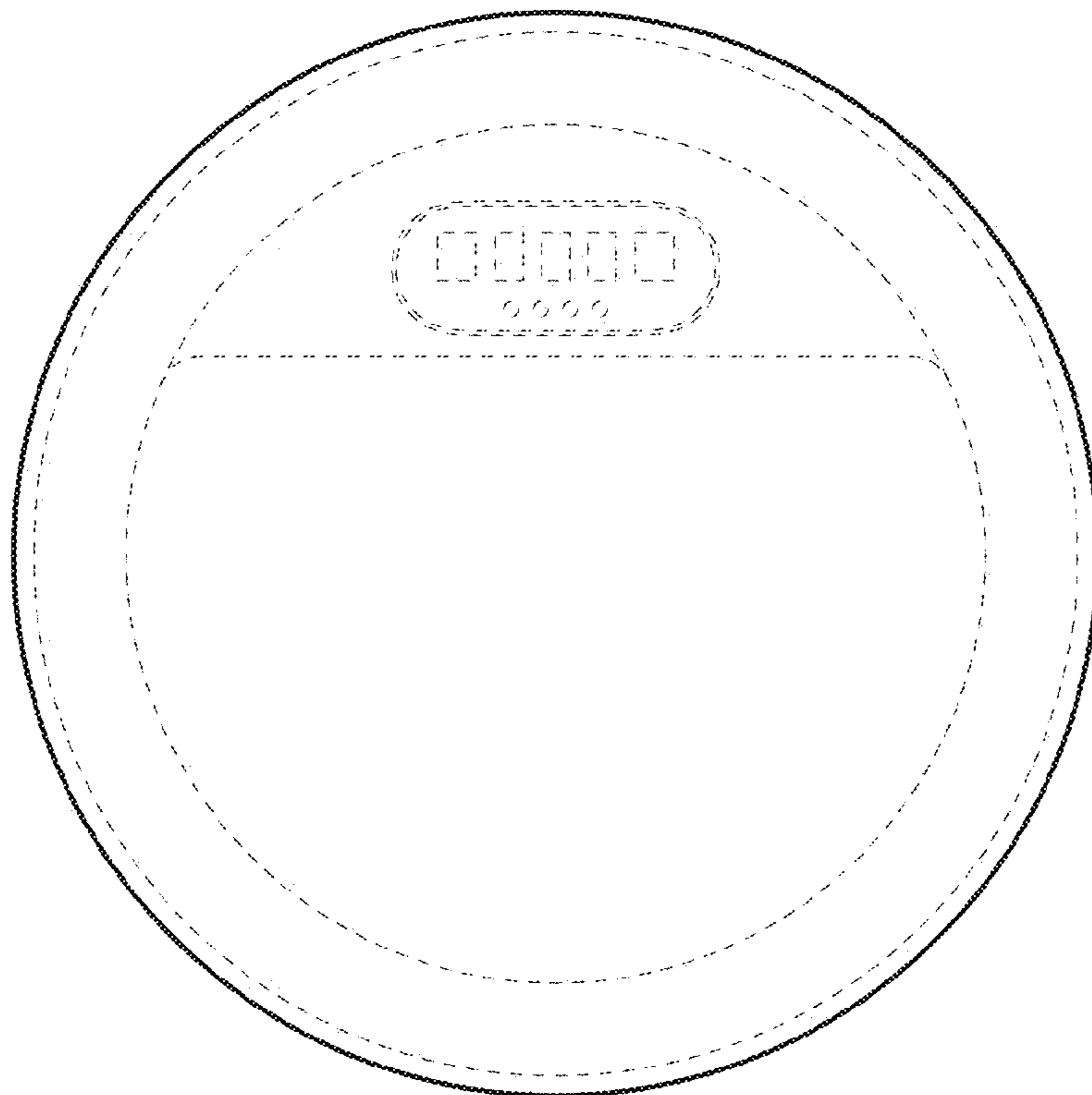


FIG. 8