

**UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF MASSACHUSETTS**

iROBOT CORPORATION,

Plaintiff

v.

THE BLACK & DECKER CORPORATION,

BLACK & DECKER (U.S.) INC., and

SHENZEN SILVER STAR INTELLIGENT
TECHNOLOGY CO., LTD.,

Defendants.

Civil Action No. 1:17-cv-10648

JURY TRIAL DEMANDED

COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff iRobot Corporation (“iRobot”), by and through its attorneys, brings this complaint for patent infringement and demand for jury trial against The Black & Decker Corporation and Black & Decker (U.S.) Inc. (together, “B&D”) and Shenzhen Silver Star Intelligent Technology Co., Ltd. (“SSSIT”) (collectively, the “Defendants”) and alleges as follows:

NATURE OF THE ACTION

1. This action for patent infringement arises under the laws of the United States, Title 35 of the United States Code, 35 U.S.C. § 1 *et seq.*

PARTIES

2. Plaintiff iRobot Corporation is a corporation organized and existing under the laws of the State of Delaware, with its principal place of business at 8 Crosby Drive, Bedford, Massachusetts 01730.

3. On information and belief, The Black & Decker Corporation is a corporation organized under the laws of the State of Maryland, having a principal place of business located at 701 E. Joppa Rd., Towson, Maryland 21286.

4. On information and belief, Black & Decker (U.S.) Inc. is a corporation organized under the laws of the State of Maryland, having a principal place of business located at 701 E. Joppa Rd., Towson, Maryland 21286.

5. On information and belief, Shenzhen Silver Star Intelligent Technology Co., Ltd. is a Chinese corporation, having a principal place of business located at Building D, Huiqing Technology Park, DAFU Industrial Area, Guanguang Road, Guanlan Town, Shenzhen, People's Republic of China.

JURISDICTION AND VENUE

6. This Court has subject matter jurisdiction over this action pursuant to 28 U.S.C. §§ 1331 and 1338(a).

7. This Court has personal jurisdiction over B&D because, *inter alia*, upon information and belief, B&D has purposefully availed itself of the privileges of conducting business in this judicial district and has regularly and systematically transacted business in this district, directly or through intermediaries; B&D has committed acts of patent infringement in this district; and B&D has substantial and continuous contacts within this judicial district, at least due to soliciting customers from this judicial district via its own website, blackanddecker.com, as well as through third-party websites and/or sales via retail and wholesale stores in Massachusetts. Moreover, upon information and belief, B&D has purposefully shipped its products into this district through established distribution channels and has placed its products into the stream of

commerce with the knowledge and expectation that they will be purchased by consumers in this district.

8. This Court has personal jurisdiction over SSSIT because, *inter alia*, upon information and belief, SSSIT manufactures and/or imports infringing devices that are marketed and sold to Massachusetts consumers through a nationwide channel of distribution in the United States. Moreover, upon information and belief, SSSIT has purposefully and voluntarily placed infringing devices in the stream of commerce with the knowledge and expectation that the same will end up in, and be marketed, sold, and purchased in, Massachusetts. Upon information and belief, SSSIT has entered into a business relationship with B&D whereby SSSIT manufactures infringing devices and imports them into the United States so that B&D can sell these infringing devices throughout the United States, including in Massachusetts.

9. Venue is proper in this district pursuant to 28 U.S.C. §§ 1391(b), 1391(c), and 1400(b).

SINGLE ACTION

10. This suit is commenced against Defendants pursuant to 35 U.S.C. § 299 because, *inter alia*, upon information and belief, SSSIT manufactures and/or imports infringing robotic vacuums for and on behalf of B&D, who offers them for sale in the United States, and sells them in the United States, including in Massachusetts. Defendants are therefore part of the same manufacturing and distribution chain and share accused product lines and products involving iRobot's patented technologies.

11. Accordingly, Defendants are jointly and severally liable for patent infringement relating to the infringing robotic vacuums made, used, imported, offered for sale, sold, and/or used in the United States by one or more of them. iRobot's right to relief against each of these

Defendants arises out of the same transaction, occurrence, or series of transactions or occurrences relating to the making, using, importing into the United States, offering for sale, and/or selling of the same accused robotic vacuums. Questions of fact common to both of these Defendants will arise in this action, including as to whether the accused products infringe the asserted patents. Thus, joinder of the Defendants is proper under 35 U.S.C. § 299.

THE PATENTS-IN-SUIT

The '308 Patent

12. On December 26, 2006, United States Patent No. 7,155,308 (“the ’308 Patent”), entitled “Robot Obstacle Detection System,” was duly and legally issued by the United States Patent and Trademark Office from U.S. Patent Application Serial No. 10/453,202, filed on June 3, 2003. iRobot is the owner, by valid assignment, of the entire right, title and interest in and to the ’308 Patent, including the right to assert all causes of action arising under the patent and the right to any remedies for infringement of the patent.

13. The ’308 Patent relates to a robot obstacle detection system that includes a robot housing that navigates with respect to a surface, and a sensor subsystem. The sensor subsystem includes an optical emitter which emits a directed beam having a defined field of emission and a photon detector having a defined field of view which intersects the field of emission of the emitter at a region. A circuit in communication with a detector redirects the robot when the surface does not occupy the region to avoid obstacles. A similar system is employed to detect walls.

The '090 Patent

14. On July 2, 2013, United States Patent No. 8,474,090 (“the ’090 Patent”), entitled “Autonomous Floor-Cleaning Robot,” was duly and legally issued by the United States Patent and Trademark Office from U.S. Patent Application Serial No. 12/201,554, filed on August 29, 2008.

iRobot is the owner, by valid assignment, of the entire right, title and interest in and to the '090 Patent, including the right to assert all causes of action arising under the patent and the right to any remedies for infringement of the patent.

15. The '090 Patent relates to a floor cleaning robot that includes a housing, wheels, and a motor driving the wheels to move the robot across a floor, a control module disposed within the housing and directing movement of the robot across the floor, a sensor for detecting and communicating obstacle information to the control module so that the control module can cause the robot to react to the obstacle, a removable bin disposed at least partially within the housing and receiving particulates, a first rotating member directing particulates toward the bin, and a second rotating member cooperating with the first rotating member to direct particulates toward the bin.

The '490 Patent

16. On October 26, 2004, United States Patent No. 6,809,490 ("the '490 Patent"), entitled "Method and System for Multi-Mode Coverage for an Autonomous Robot," was duly and legally issued by the United States Patent and Trademark Office from U.S. Patent Application Serial No. 10/167,851, filed on June 12, 2002. iRobot is the owner, by valid assignment, of the entire right, title, and interest in and to the '490 Patent, including the right to assert all causes of action arising under the patent and the right to any remedies for infringement of the patent.

17. The '490 Patent relates to a control system for a mobile robot to effectively cover a given area by operating in a plurality of modes. In an exemplary embodiment, an autonomous mobile robot can operate in an obstacle following mode, a random bounce mode, or in a spot coverage mode. Additionally, the '490 Patent describes a behavior based architecture for the control system to ensure full coverage.

BACKGROUND

18. iRobot (formerly IS Robotics, Inc.) was founded in 1990 by Massachusetts Institute of Technology roboticists with the vision of making practical robots a reality. The company has developed some of the world's most important robots, and has a rich history steeped in innovation.

19. iRobot is the leader in home robotic cleaning devices, with products delivering convenient, customized, powerful cleaning assistance. Among other product offerings, iRobot develops, manufactures, and sells the well-known Roomba® line of products, which have been recognized as a market leader in robotic vacuum cleaning as well as highly preferred Braava® branded products.

20. iRobot has extensive involvement in the U.S. market, including the Massachusetts market, with its innovative robotic vacuum cleaning devices. iRobot employs hundreds of persons in the United States who are dedicated to the design, research, development, testing, quality control, and customer care of its robotic vacuum cleaning devices, and related accessories for U.S. customers.

21. Defendants compete directly with iRobot.

22. On information and belief, SSSIT manufactures robotic vacuum cleaning devices for B&D, including, but not limited to, B&D's BDH5000 robot vacuum cleaner,¹ which, as explained below, infringes one or more claims of each of iRobot's '308 Patent, '090 Patent, and '490 Patent (the "Asserted Patents").

23. To the extent facts learned in discovery show that one or more Defendants' infringement of a claim of an Asserted Patent is or has been willful, including following the filing

¹ This exemplary infringing product is hereinafter referred to as the "Accused Product."

of this Complaint, iRobot reserves the right to request such a finding at the time of trial, or as may otherwise be allowed by the Court.

COUNT I: INFRINGEMENT OF THE '308 PATENT BY B&D

24. iRobot hereby incorporates by reference its allegations contained in paragraphs 1 through 23 of this Complaint as though fully set forth herein.

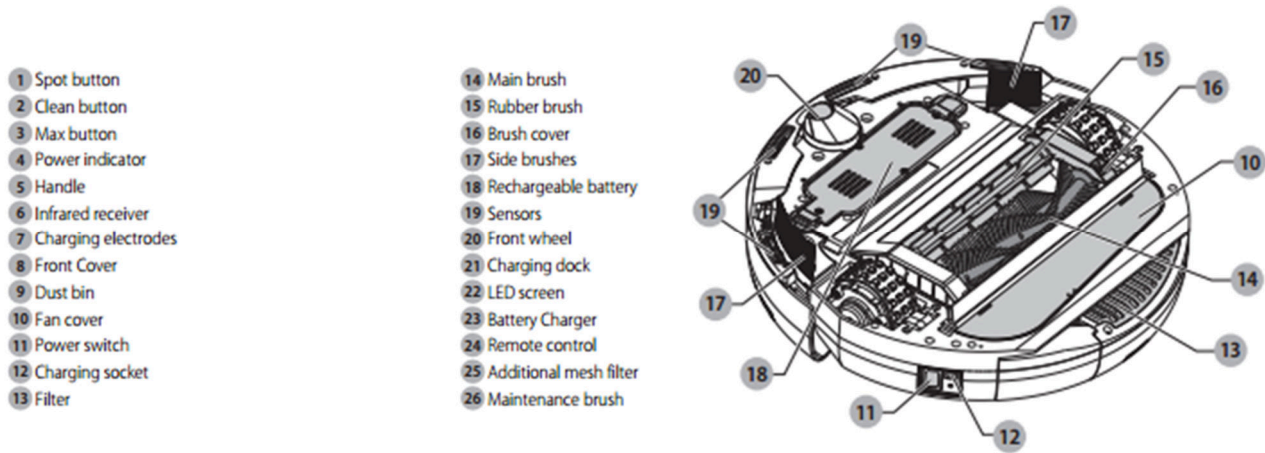
25. Upon information and belief, B&D has infringed and continues to infringe, either literally or under the doctrine of equivalents, at least claim 1 of the '308 Patent pursuant to 35 U.S.C. § 271(a) by making, using, offering to sell, and/or selling in the United States, and/or importing into the United States, at least the Accused Product.

26. For example, on information and belief, B&D's BDH5000 robotic vacuum, used by B&D and/or sold and offered for sale by B&D, including at its website, infringes claim 1 of the '308 Patent; this claim recites:

A sensor subsystem for an autonomous robot which rides on a surface, the sensor subsystem comprising: an optical emitter which emits a directed optical beam having a defined field of emission; a photon detector having a defined field of view which intersects the field of emission of the emitter at a region; and a circuit in communication with the detector providing an output when an object is not present in the region thereby re-directing the autonomous robot.

27. On information and belief, B&D's BDH5000 robotic vacuum is an autonomous robot that rides on a surface such as a floor. It includes sensor subsystems that comprise at least an optical emitter that emits an optical beam with a defined field of emission and a photon detector whose field of view intersects with this field of emission. On information and belief, the sensor subsystem also includes a circuit in communication with the detector that provides a signal when an object (such as the floor) is not present in this region of intersection such that the robot is re-directed. On information and belief, this behavior and its relation to the BDH5000's "sensors" is

described in the instruction manual for the BDH5000,² which includes an image of the BDH5000 sensors (below) and notes that the BDH5000 “will clean... depending on the objects around it.”



28. Furthermore, upon information and belief, B&D has induced and continues to induce infringement of at least claim 1 of the '308 Patent pursuant to 35 U.S.C. § 271(b), by actively and knowingly inducing, directing, causing, and encouraging others, including, but not limited to, its customers and/or end users, to make, use, sell, and/or offer to sell in the United States the Accused Product.

29. Upon information and belief, B&D's customers and/or end users have directly infringed and are directly infringing claim 1 of the '308 Patent. B&D has actual knowledge of the '308 Patent at least as of service of this Complaint. B&D is knowingly inducing its customers and/or end users to directly infringe the '308 Patent through, for example, their use of the BDH5000, with the specific intent to encourage such infringement, and knowing that the induced acts constitute patent infringement. B&D's inducement includes, for example, providing technical

² See, e.g., BDH5000 Instruction Manual, <https://servicenet.blackanddecker.com/Products/Detail/BDH5000#> (last visited April 13, 2017), hereinafter the “BDH5000 Instruction Manual.”

guides, product data sheets, demonstrations, specifications, installation guides, and other forms of support that induce its customers and/or end users to directly infringe the '308 Patent.³

30. Upon information and belief, B&D has committed the foregoing infringing activities without license from iRobot.

31. As a result of B&D's infringement of the '308 Patent iRobot has suffered and will continue to suffer damage.

32. B&D's continued infringement of iRobot's patent rights under the '308 Patent will irreparably harm iRobot.

33. The acts of infringement by B&D will continue unless enjoined by this Court.

COUNT II: INFRINGEMENT OF THE '308 PATENT BY SSSIT

34. iRobot hereby incorporates by reference its allegations contained in paragraphs 1 through 33 of this Complaint as though fully set forth herein.

35. Upon information and belief, SSSIT has directly infringed, and continues to directly infringe, the '308 Patent by importing into the United States the Accused Product that it manufactures for and on behalf of B&D. This Accused Product infringes at least claim 1 of the '308 Patent as explained above in paragraphs 25 – 27 with respect to B&D's direct infringement, which are incorporated herein by reference.

36. Upon information and belief, SSSIT has committed the foregoing infringing activities without license from iRobot.

37. As a result of SSSIT's infringement of the '308 Patent iRobot has suffered and will continue to suffer damage.

³ See, e.g., BDH5000 Instruction Manual.

38. SSSIT's continued infringement of iRobot's patent rights under the '308 Patent will irreparably harm iRobot.

39. The acts of infringement by SSSIT will continue unless enjoined by this Court.

COUNT III: INFRINGEMENT OF THE '090 PATENT BY B&D

40. iRobot hereby incorporates by reference its allegations contained in paragraphs 1 through 39 of this Complaint as though fully set forth herein.

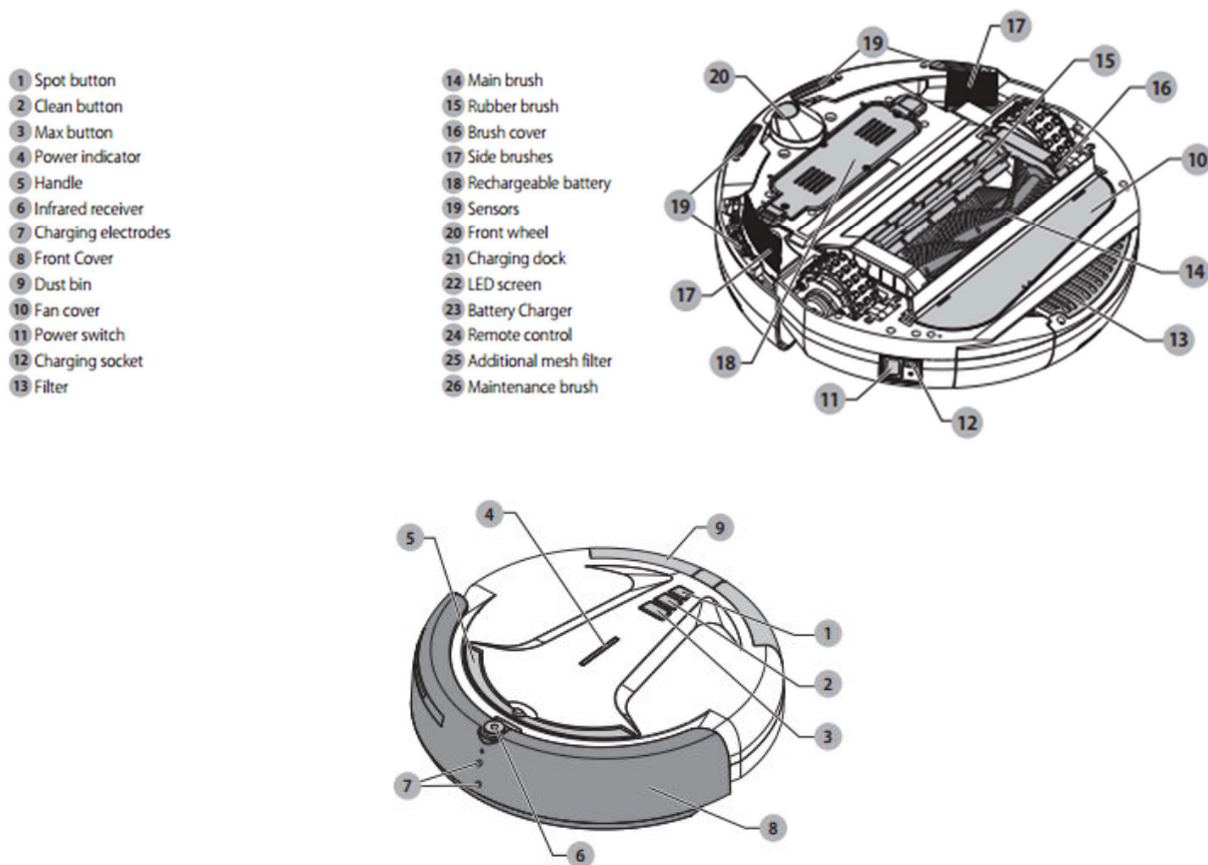
41. Upon information and belief, B&D has infringed and continues to infringe, either literally or under the doctrine of equivalents, at least claim 1 of the '090 Patent pursuant to 35 U.S.C. § 271(a) by making, using, offering to sell and/or selling in the United States, and/or importing into the United States, at least the Accused Product.

42. For example, on information and belief, B&D's BDH5000 robotic vacuum, used by B&D and/or sold and offered for sale by B&D at its website, infringes claim 1 of the '090 Patent; this claim recites:

A floor cleaning robot comprising: a housing and a chassis; wheels and at least one motor to drive the wheels disposed at least partially within the housing and configured to move the floor cleaning robot across a floor, each of the wheels being attached to the chassis via a respective arm having a distal end and a proximal end; a control module disposed within the housing and directing movement of the floor cleaning robot across the floor; at least one sensor for detecting an obstacle and communicating obstacle information to the control module so that the control module can cause the floor cleaning robot to react to the obstacle; a removable bin disposed at least partially within the housing and configured to receive particulates; and a first rotating member configured to direct particulates toward the bin, wherein one of the wheels is rotatably attached to the distal end of each arm, and the proximal end of each arm is pivotably attached to the chassis, wherein each wheel is biased to an extended position away from the robot chassis by a spring extending between the arm and the robot chassis, and wherein, during cleaning, the weight of the floor cleaning robot overcomes a force from the spring biasing the wheels to an extended position.

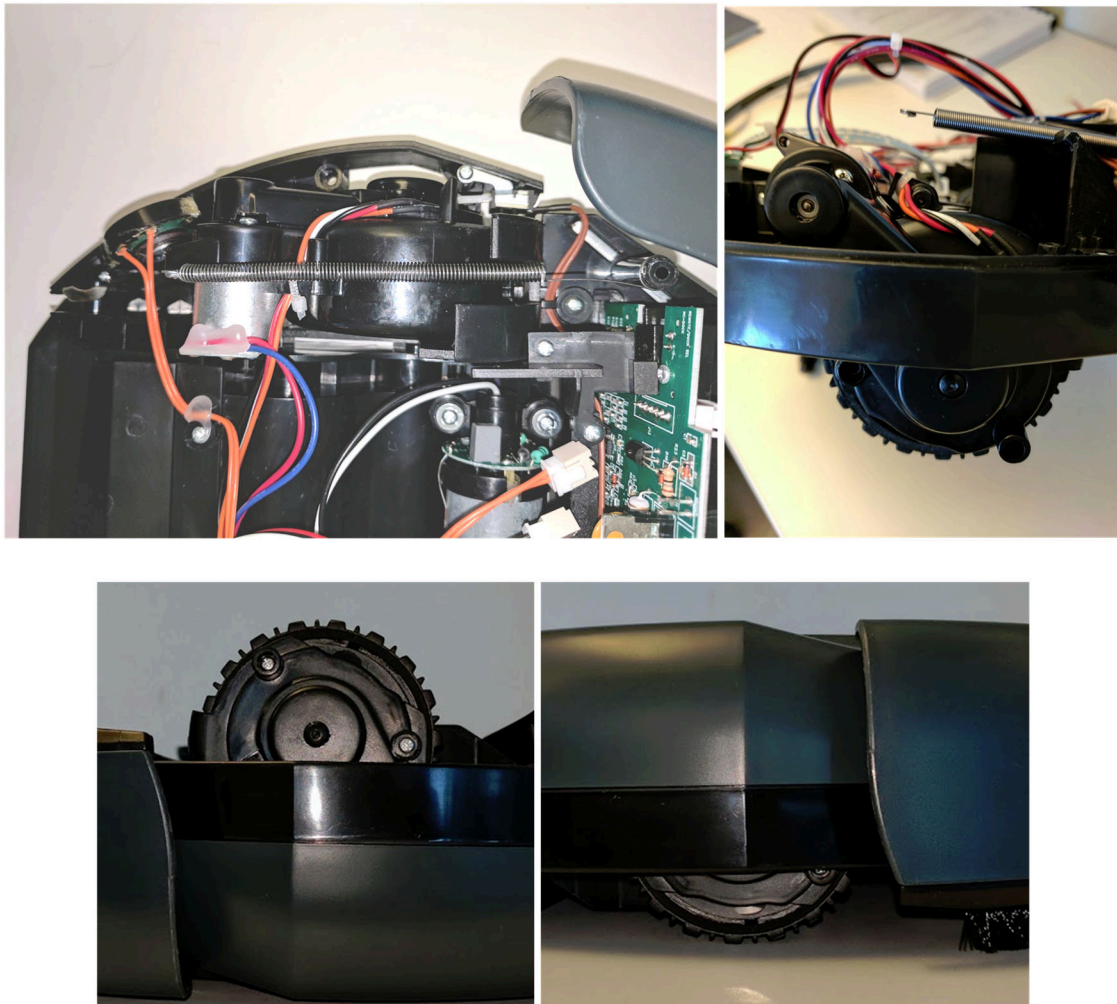
43. On information and belief, B&D's BDH5000 robotic vacuum is a floor cleaning robot that comprises a housing, chassis, and wheels with at least one motor, disposed at least

partially within the housing, to drive the wheels to move the Accused Product across a floor. The motorized driving of the wheels is referred to in the BDH5000 Instruction Manual, which discusses the BDH5000's "driving" and navigation capabilities, and includes an image (below) which, on information and belief, shows the housing, chassis, and wheels.



44. On information and belief, each of the aforementioned wheels is attached to the chassis via an arm with distal and proximal ends. On information and belief, the wheels are rotatably attached to the distal end of each arm, the proximal end of each arm is pivotably attached to the chassis, and the wheels are biased to an extended position away from the robot by a spring extending between the arm and the robot chassis. On information and belief, during cleaning, the

weight of the B&D BDH5000 overcomes this biasing force from the spring. The recited wheel arrangement and biasing spring is visible, *e.g.*, from the images below.⁴

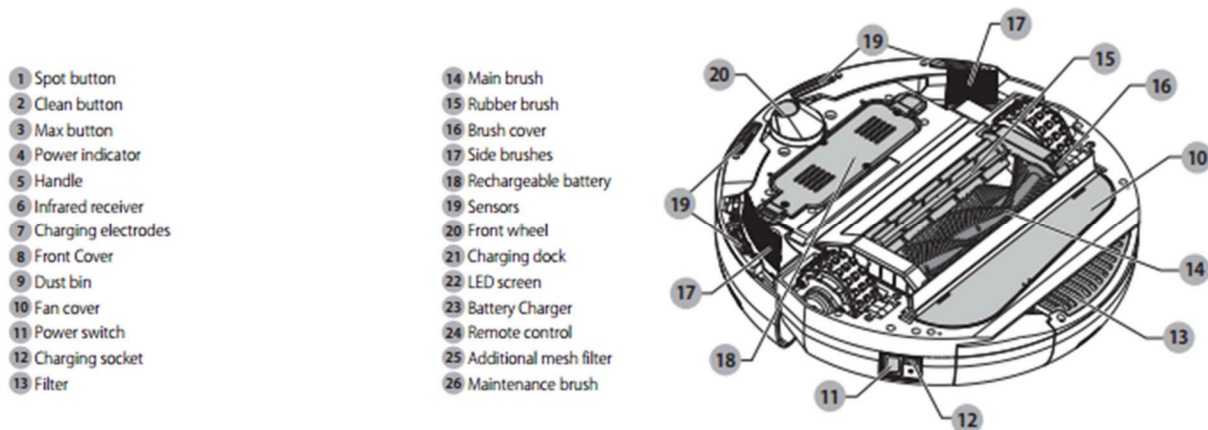


45. On information and belief, the B&D BDH5000 also comprises a control module disposed within the housing which directs movement of the robot. On information and belief, it also comprises at least one sensor for detecting an obstacle information and communicating obstacle information to the control module so that the control module can cause the Accused

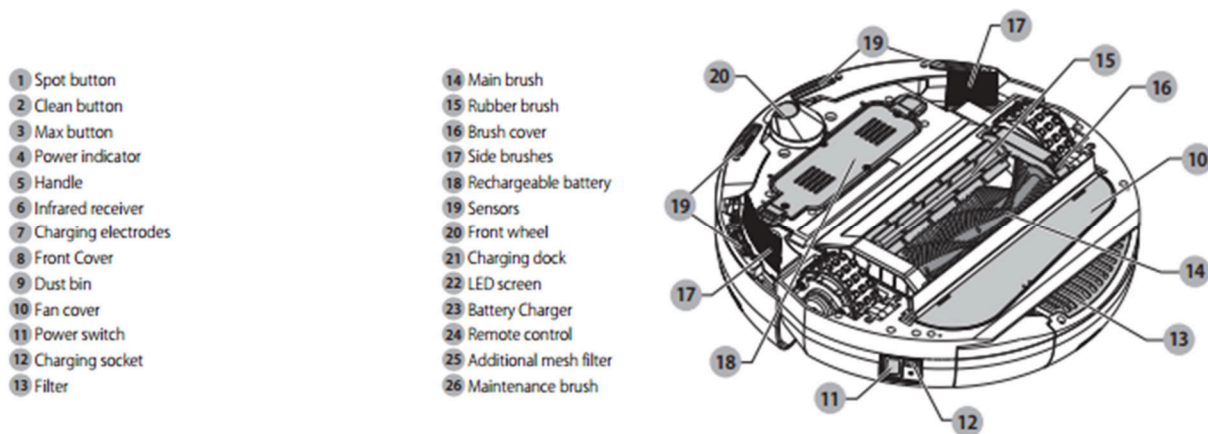
⁴ Photographs of disassembled BDH5000.

Product to react—indeed, the robot “will clean... depending on the objects around it.”⁵

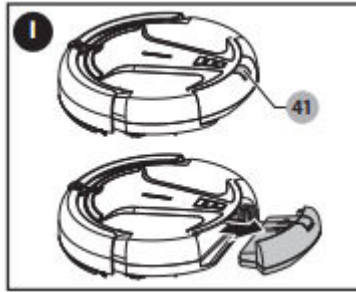
Additionally, for example, “sensors” are depicted in the BDH5000 Instruction Manual, below.



46. On information and belief, the BDH5000 also comprises a removable bin disposed at least partially within the housing and configured to receive particles, and a rotating member configured to direct particulates toward the bin, as shown in the following image from the BDH5000 Instruction Manual, labelled as a “Dust Bin.” The BDH5000 Instruction Manual also explains that the dustbin can be “slid[]... out of the vacuum.”



⁵ See, e.g., BDH5000 Instruction Manual; see also Black Decker Robot Vacuum video, <https://www.youtube.com/watch?v=n2Wq7vPZESI> (last visited April 13, 2017), hereinafter the “B&D Video.”



47. Upon information and belief, B&D has induced and continues to induce infringement of at least claim 1 of the '090 Patent pursuant to 35 U.S.C. § 271(b), by actively and knowingly inducing, directing, causing, and encouraging others, including, but not limited to, its customers and/or end users, to make, use, sell, and/or offer to sell in the United States the Accused Product.

48. Upon information and belief, B&D's customers and/or end users have directly infringed and are directly infringing claim 1 of the '090 Patent. B&D has actual knowledge of the '090 Patent at least as of service of this Complaint. B&D is knowingly inducing its customers and/or end users to directly infringe the '090 Patent through, for example, their use of the BDH5000, with the specific intent to encourage such infringement, and knowing that the induced acts constitute patent infringement. B&D's inducement includes, for example, providing technical guides, product data sheets, demonstrations, specifications, installation guides, and other forms of support that induce its customers and/or end users to directly infringe the '090 Patent.⁶

49. Upon information and belief, B&D has committed the foregoing infringing activities without license from iRobot.

50. As a result of B&D's infringement of the '090 Patent iRobot has suffered and will continue to suffer damage.

⁶ See, e.g., BDH5000 Instruction Manual.

51. B&D's continued infringement of iRobot's patent rights under the '090 Patent will irreparably harm iRobot.

52. The acts of infringement by B&D will continue unless enjoined by this Court.

COUNT IV: INFRINGEMENT OF THE '090 PATENT BY SSSIT

53. iRobot hereby incorporates by reference its allegations contained in paragraphs 1 through 52 of this Complaint as though fully set forth herein.

54. Upon information and belief, SSSIT has directly infringed, and continues to directly infringe, the '090 Patent by importing into the United States the Accused Product that it manufactures for and on behalf of B&D, including, for example, the BDH5000. This Accused Product infringes at least claim 1 of the '090 Patent as explained above in paragraphs 41 – 46 with respect to B&D's direct infringement, which are incorporated herein by reference.

55. Upon information and belief, SSSIT has committed the foregoing infringing activities without license from iRobot.

56. As a result of SSSIT's infringement of the '090 Patent iRobot has suffered and will continue to suffer damage.

57. SSSIT's continued infringement of iRobot's patent rights under the '090 Patent will irreparably harm iRobot.

58. The acts of infringement by SSSIT will continue unless enjoined by this Court.

COUNT V: INFRINGEMENT OF THE '490 PATENT BY B&D

59. iRobot hereby incorporates by reference its allegations contained in paragraphs 1 through 58 of this Complaint as though fully set forth herein.

60. Upon information and belief, B&D has infringed and continues to infringe, either literally or under the doctrine of equivalents, at least claim 1 of the '490 Patent pursuant to 35

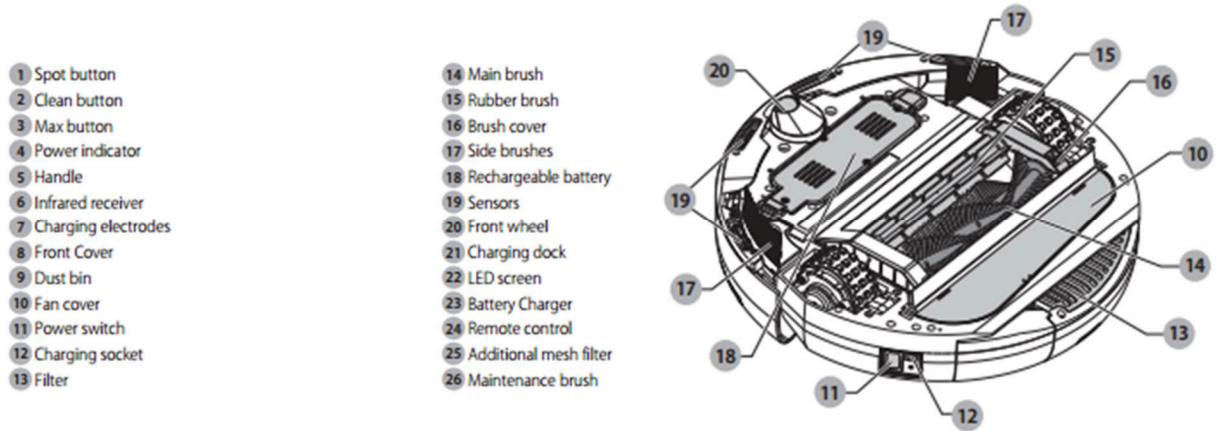
U.S.C. § 271(a) by making, using, offering to sell and/or selling in the United States, and/or importing into the United States, at least the Accused Product.

61. For example, on information and belief, B&D BDH5000 robotic vacuum, used by B&D and/or sold and offered for sale by B&D at its website, infringes claim 1 of the '490 Patent; this claim recites:

A mobile robot comprising: (a) means for moving the robot over a surface; (b) an obstacle detection sensor; (c) and a control system operatively connected to said obstacle detection sensor and said means for moving; (d) said control system configured to operate the robot in a plurality of operational modes and to select from among the plurality of modes in real time in response to signals generated by the obstacle detection sensor, said plurality of operational modes comprising: a spot-coverage mode whereby the robot operates in an isolated area, an obstacle following mode whereby said robot travels adjacent to an obstacle, and a bounce mode whereby the robot travels substantially in a direction away from an obstacle after encountering the obstacle, and wherein, when in the obstacle following mode, the robot travels adjacent to an obstacle for a distance at least twice the work width of the robot.

62. On information and belief, the B&D BDH5000 is a mobile robot that comprises a means for moving the robot over a surface, an obstacle detection sensor, and a control system operatively connected to the obstacle detection sensor and the means for moving.⁷ The robot and exemplary obstacle detection sensors are depicted in the BDH5000 Instruction Manual, labelled as “sensors” in the image below.

⁷ See, e.g., BDH5000 Instruction Manual, noting that the BDH5000 “will clean... depending on the objects around it” and which discusses the BDH5000’s “driving” and navigation capabilities; see also B&D Video.



63. On information and belief, the control system is configured to operate the robot in a plurality of modes, selecting among these modes in real time in response to signals generated by the obstacle sensor. On information and belief, these modes include a spot-coverage mode whereby the robot operates in an isolated area, an obstacle following mode whereby said robot travels adjacent to an obstacle, and a bounce mode whereby the robot travels substantially in a direction away from an obstacle after encountering the obstacle, and wherein, when in the obstacle following mode, the robot travels adjacent to an obstacle for a distance at least twice the work width of the robot. On information and belief, these modes are described in, for example, the BDH5000 Instruction Manual, which describes the BDH5000's "spot mode" and other cleaning modes, including those in which the robot "will clean... depending on the objects around it."⁸

64. Upon information and belief, B&D has induced and continues to induce infringement of at least claim 1 of the '490 Patent pursuant to 35 U.S.C. § 271(b), by actively and knowingly inducing, directing, causing, and encouraging others, including, but not limited to, its customers and/or end users, to make, use, sell, and/or offer to sell in the United States the Accused Product.

⁸ See also B&D Video.

65. Upon information and belief, B&D's customers and/or end users have directly infringed and are directly infringing claim 1 of the '490 Patent. B&D has actual knowledge of the '490 Patent at least as of service of this Complaint. B&D is knowingly inducing its customers and/or end users to directly infringe the '490 Patent through, for example, their use of the BDH5000, with the specific intent to encourage such infringement, and knowing that the induced acts constitute patent infringement. B&D's inducement includes, for example, providing technical guides, product data sheets, demonstrations, specifications, installation guides, and other forms of support that induce its customers and/or end users to directly infringe the '490 Patent.⁹

66. Upon information and belief, B&D has committed the foregoing infringing activities without license from iRobot.

67. As a result of B&D's infringement of the '490 Patent iRobot has suffered and will continue to suffer damage.

68. B&D's continued infringement of iRobot's patent rights under the '490 Patent will irreparably harm iRobot.

69. The acts of infringement by B&D will continue unless enjoined by this Court.

COUNT VI: INFRINGEMENT OF THE '490 PATENT BY SSSIT

70. iRobot hereby incorporates by reference its allegations contained in paragraphs 1 through 69 of this Complaint as though fully set forth herein.

71. Upon information and belief, SSSIT has directly infringed, and continues to directly infringe, the '490 Patent by importing into the United States the Accused Product that it manufactures for and on behalf of B&D, including, for example, the BDH5000. This Accused

⁹ See, e.g., BDH5000 Instruction Manual.

Product infringes at least claim 1 of the '490 Patent as explained in paragraphs 60 – 63 above with respect to B&D's infringement, which are incorporated herein by reference.

72. Upon information and belief, SSSIT has committed the foregoing infringing activities without license from iRobot.

73. As a result of SSSIT's infringement of the '490 Patent iRobot has suffered and will continue to suffer damage.

74. SSSIT's continued infringement of iRobot's patent rights under the '490 Patent will irreparably harm iRobot.

75. The acts of infringement by SSSIT will continue unless enjoined by this Court.

PRAYER FOR RELIEF

WHEREFORE, iRobot prays for judgment in its favor against Defendants, and granting relief as follows:

- A. For a judgment declaring that the Defendants have infringed the Asserted Patents;
- B. For a grant of an injunction pursuant to 35 U.S.C. § 283, enjoining the Defendants together with their respective officers, directors, agents, servants, employees, and attorneys, and upon those persons in active concert or participation with them from further acts of infringement;
- C. For an award to iRobot of compensatory damages as a result of the Defendants' infringement of the Asserted Patents, together with interest and costs, and in no event less than a reasonable royalty;
- D. For a judgment declaring that this case is exceptional and awarding iRobot its expenses, costs, and attorneys' fees in accordance with 35 U.S.C. § 285 and Rule 54(d) of the Federal Rules of Civil Procedure;
- E. For such other and further relief as the Court deems just and proper.

DEMAND FOR A JURY TRIAL

iRobot hereby demands a trial by jury in this action.

Respectfully submitted,

By: /s/ Stephen Marshall
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Counsel for Plaintiff iRobot Corp.

Dated: April 17, 2017