CLAIMS

1. An exhaust apparatus for a cooking appliance comprising:

a cooking chamber which houses a cooking appliance inside;

a door installed in or on the cooking chamber;

a fan connected to an exhaust duct for exhausting air inside the cooking chamber to inside or outside of a room in which the cooking chamber is placed; and

a control unit that changes an operation of the fan corresponding to an open/closed state of the door, wherein

the control unit

controls the fan so that the fan is kept stopped or operated with a first air volume when the door is in a closed state,

controls the fan so that the fan is operated with a third air volume larger than the first air volume between when the door starts to open and when the door becomes fully open, and

controls the fan so that the fan is operated with a second air volume larger than the first air volume and smaller than the third air volume after the door becomes fully open.

2. An exhaust apparatus for a cooking appliance comprising:

a cooking chamber which houses a cooking appliance inside;

a door installed in or on the cooking chamber;

a fan connected to an exhaust duct for exhausting

air inside the cooking chamber to inside or outside of a room in which the cooking chamber is placed;

a control unit that changes an operation of the fan corresponding to an open/closed state of the door;

an open button that issues an instruction to open the door; and

a lock unit that locks and unlocks the door with the door closed, wherein

the control unit unlocks the lock unit after operating the fan for a certain time when the control unit receives the instruction to open the door from the open button.

3. An exhaust apparatus for a cooking appliance comprising:

a cooking chamber which houses a cooking appliance inside;

a door installed in or on the cooking chamber;

a fan connected to an exhaust duct for exhausting air inside the cooking chamber to inside or outside of a room in which the cooking chamber is placed; and

a control unit that changes an operation of the fan corresponding to an open/closed state of the door;

an open button that issues an instruction to open the door; and

an open/close power unit that opens and closes the door, wherein

the control unit controls the open/close power unit so that the open/close power unit opens the door after operating the fan for a certain time when the control unit receives the instruction to open the

door from the open button.

4. An exhaust apparatus for a cooking appliance comprising:

a cooking chamber which houses a cooking appliance inside;

a door installed in or on the cooking chamber;

a fan connected to an exhaust duct for exhausting air inside the cooking chamber to inside or outside of a room in which the cooking chamber is placed;

a control unit that changes an operation of the fan corresponding to an open/closed state of the door,

an open button that issues an instruction to open the door;

a lock unit that locks and unlocks the door with the door closed; and

a cooking chamber internal state detection sensor that detects a state inside the cooking chamber, wherein

the control unit unlocks the door by the lock unit when a detected value of at least any of an odor, a temperature, an oil content in air, smoke, and a pressure inside the cooking chamber, detected by the cooking chamber internal state detection sensor, becomes equal to or less than a predetermined reference value.

5. An exhaust apparatus for a cooking appliance comprising:

a cooking chamber which houses a cooking appliance inside;

a door installed in or on the cooking chamber;

a fan connected to an exhaust duct for exhausting

air inside the cooking chamber to inside or outside of a room in which the cooking chamber is placed;

a control unit that changes an operation of the fan corresponding to an open/closed state of the door,

an open button that issues an instruction to open the door;

an open/close power unit that opens and closes the door; and

a cooking chamber internal state detection sensor that detects a state inside the cooking chamber, wherein

the control unit controls the open/close power unit so that the open/close power unit opens the door when a detected value of at least any of an odor, a temperature, an oil content in air, smoke, and a pressure inside the cooking chamber, detected by the cooking chamber internal state detection sensor, becomes equal to or less than a predetermined reference value.

6. An exhaust apparatus for a cooking appliance comprising:

a cooking chamber which houses a cooking appliance inside;

a door installed in or on the cooking chamber;

a fan connected to an exhaust duct for exhausting air inside the cooking chamber to inside or outside of a room in which the cooking chamber is placed;

a control unit that changes an operation of the fan corresponding to an open/closed state of the door; and

a temporary stop unit that temporarily stops the door between a start of opening of the door and a full-open state of the door, wherein

the control unit cancels a temporary stop by the temporary stop unit after an elapse of a predetermined temporary stop time after the temporary stop unit stops the door.

7. An exhaust apparatus for a cooking appliance comprising:

a cooking chamber which houses a cooking appliance inside;

a door installed in or on the cooking chamber;

a fan connected to an exhaust duct for exhausting air inside the cooking chamber to inside or outside of a room in which the cooking chamber is placed;

a control unit that changes an operation of the fan corresponding to an open/closed state of the door; and

a temporary stop unit that temporarily stops the door between a start of opening of the door and a full-open state of the door; and

a cooking chamber internal state detection sensor that detects a state inside the cooking chamber, wherein

the control unit cancels a temporary stop by the temporary stop unit when a detected value of at least any of an odor, a temperature, an oil content in air, smoke, and a pressure inside the cooking chamber, detected by the cooking chamber internal state detection sensor, becomes equal to or less than a predetermined reference value.

8. An exhaust apparatus for a cooking appliance comprising:

a cooking chamber which houses a cooking appliance

inside;

a door installed in or on the cooking chamber;

a fan connected to an exhaust duct for exhausting air inside the cooking chamber to inside or outside of a room in which the cooking chamber is placed; and

a control unit that changes an operation of the fan corresponding to an open/closed state of the door, wherein

the cooking appliance housed in the cooking chamber is capable of communicating with the control unit, and

the control unit brings the fan into operation when the fan is at a stop in response to a signal from the cooking appliance, the signal indicating a finish of cooking.

9. An exhaust apparatus for a cooking appliance comprising:

a cooking chamber which houses a cooking appliance inside;

a door installed in or on the cooking chamber;

a fan connected to an exhaust duct for exhausting air inside the cooking chamber to inside or outside of a room in which the cooking chamber is placed; and

a control unit that changes an operation of the fan corresponding to an open/closed state of the door,

wherein

the cooking appliance housed in the cooking chamber is capable of communicating with the control unit, and

the control unit brings the fan into operation when the fan is at a stop in response to a signal from the cooking appliance, the signal indicating that a

predetermined time has elapsed from a start of cooking.

10. An exhaust apparatus for a cooking appliance comprising:

a cooking chamber which houses a cooking appliance inside;

a door installed in or on the cooking chamber;

a fan connected to an exhaust duct for exhausting air inside the cooking chamber to inside or outside of a room in which the cooking chamber is placed; and

a control unit that changes an operation of the fan corresponding to an open/closed state of the door, wherein the control unit brings the fan into operation when the fan is at a stop after an elapse of a predetermined time from a start of cooking.

11. An exhaust apparatus for a cooking appliance comprising:

a cooking chamber which houses a cooking appliance inside;

a door installed in or on the cooking chamber;

a fan connected to an exhaust duct for exhausting air inside the cooking chamber to inside or outside of a room in which the cooking chamber is placed;

a control unit that changes an operation of the fan corresponding to an open/closed state of the door;

an oil remover that removes oil content from air inside the cooking chamber; and

an exhaust path switcher that guides air exhausted by the fan toward the exhaust duct when the door is open and toward the oil remover when the door is closed.

12. The exhaust apparatus for the cooking appliance according to any one of claims 2 to 11, wherein

the control unit

controls the fan so that the fan is kept stopped or operated with a first air volume when the door is in a closed state, and

controls the fan so that the fan is operated with a second air volume larger than the first air volume after the door starts to open.

13. The exhaust apparatus for the cooking appliance according to any one of claims 2 to 11, wherein

the control unit

controls the fan so that the fan is kept stopped or operated with a first air volume when the door is in a closed state,

controls the fan so that the fan is operated with any one of the first air volume, a second air volume larger than the first air volume, and a third air volume larger than the second air volume between when the door starts to open and when the door becomes fully open, and

controls the fan so that the fan is operated with the second air volume after the door becomes fully open.

14. The exhaust apparatus for the cooking appliance according to any one of claims 2 to 11, wherein

the control unit

controls the fan so that the fan is kept stopped or operated with a first air volume when the door is in a closed state,

controls the fan so that an air volume of the fan increases as an opening degree of the door increases between when the door starts to open and when the door becomes fully open, and

controls the fan so that the fan is operated with a second air volume larger than the first air volume after the door becomes fully open.

15. The exhaust apparatus for the cooking appliance according to claim 12, comprising an open/close sensor that detects the open/closed state of the door, wherein

the control unit defines a point in time when signals from the open/close sensor changes from a signal indicating the closed state of the door to a signal indicating the open state of the door as a start of opening of the door.

16. The exhaust apparatus for the cooking appliance according to claim 1 or 13, comprising:

an open/close sensor that detects the open/closed state of the door; and

a full-open sensor that detects a full-open state of the door, wherein

the control unit defines a point in time when signals from the open/close sensor changes from a signal indicating the closed state of the door to a signal indicating the open state of the door as a start of opening of the door, and receives a signal indicating that the door is fully open from the full-open sensor to control the fan.

17. The exhaust apparatus for the cooking appliance according to claim 14, comprising:

an open/close sensor and a full-open sensor that detects the open/closed state of the door and a full-open state of the door; and

an opening degree sensor that detects the opening degree of the door, wherein

the control unit defines a point in time when signals from the open/close sensor changes from a signal indicating the closed state of the door to a signal indicating the open state of the door as a start of opening of the door, receives a signal indicating the opening degree of the door from the opening degree sensor, and receives a signal indicating that the door is fully open from the full-open sensor to control the fan.

18. The exhaust apparatus for the cooking appliance according to any one of claims 1 to 17, comprising a deodorization filter that deodorizes air, the deodorization filter being installed in or on an upstream side or a downstream side of the fan.

19. The exhaust apparatus for the cooking appliance according to any one of claims 1 to 18, wherein the control unit controls the fan so that a velocity of air flowing into the cooking chamber becomes equal to or higher than 0.2 m/s when the door is in a full-open state.

20. The exhaust apparatus for the cooking appliance according to any one of claims 1 to 19, comprising a shutter that closes an exhaust side inside the cooking chamber when the fan is at a stop.

21. The exhaust apparatus for the cooking appliance according to any one of claims 1 to 20, comprising a fire alarm that monitors the inside of the cooking chamber and issues an alarm when fire breaks out.

22. The exhaust apparatus for the cooking appliance according to claim 3 or 5, comprising a fire alarm that monitors the inside of the cooking chamber and issues an alarm when fire breaks out, wherein

the control unit closes the door in a case where the door is open when the fire alarm issues the alarm.

23. The exhaust apparatus for the cooking appliance according to any one of claims 1 to 19, comprising:

a fire alarm that monitors the inside of the cooking chamber and issues an alarm when fire breaks out; and

a shutter that closes an exhaust side inside the cooking chamber, wherein

the control unit closes the shutter when the fire alarm issues the alarm.

24. The exhaust apparatus for the cooking appliance according to any one of claims 21 to 23, comprising a fire extinguisher that sprays a fire extinguishing agent at least toward the inside of the cooking chamber when

the fire alarm issues the alarm.

25. The exhaust apparatus for the cooking appliance according to any one of claims 1 to 24, wherein the cooking appliance is a fryer.

26. The exhaust apparatus for the cooking appliance according to any one of claims 1 to 25, wherein an oil repellent coating is applied to an inner wall of the cooking chamber.

27. The exhaust apparatus for the cooking appliance according to any one of claims 1 to 26, comprising an inner panel including an opening communicating with an intake port of the fan, the inner panel being installed inside the cooking chamber.

28. The exhaust apparatus for the cooking appliance according to any one of claims 1 to 10, 12 to 27 further comprising an oil remover that removes oil content from air inside the cooking chamber.

29. A cooking method using the exhaust apparatus for the cooking appliance according to any one of claims 1 to 28, the method comprising the steps of:

opening the door and setting a food material in or on the cooking appliance inside the cooking chamber;

closing the door; and

opening the door after finishing cooking.