B. E. MEACHAM.

AUTOMATIC GAS OVEN.

APPLICATION FILED OCT. 19, 1914.

1,162,297.

Patented Nov. 30, 1915

2 SHEETS—SHEET 1.

Fig. 1.

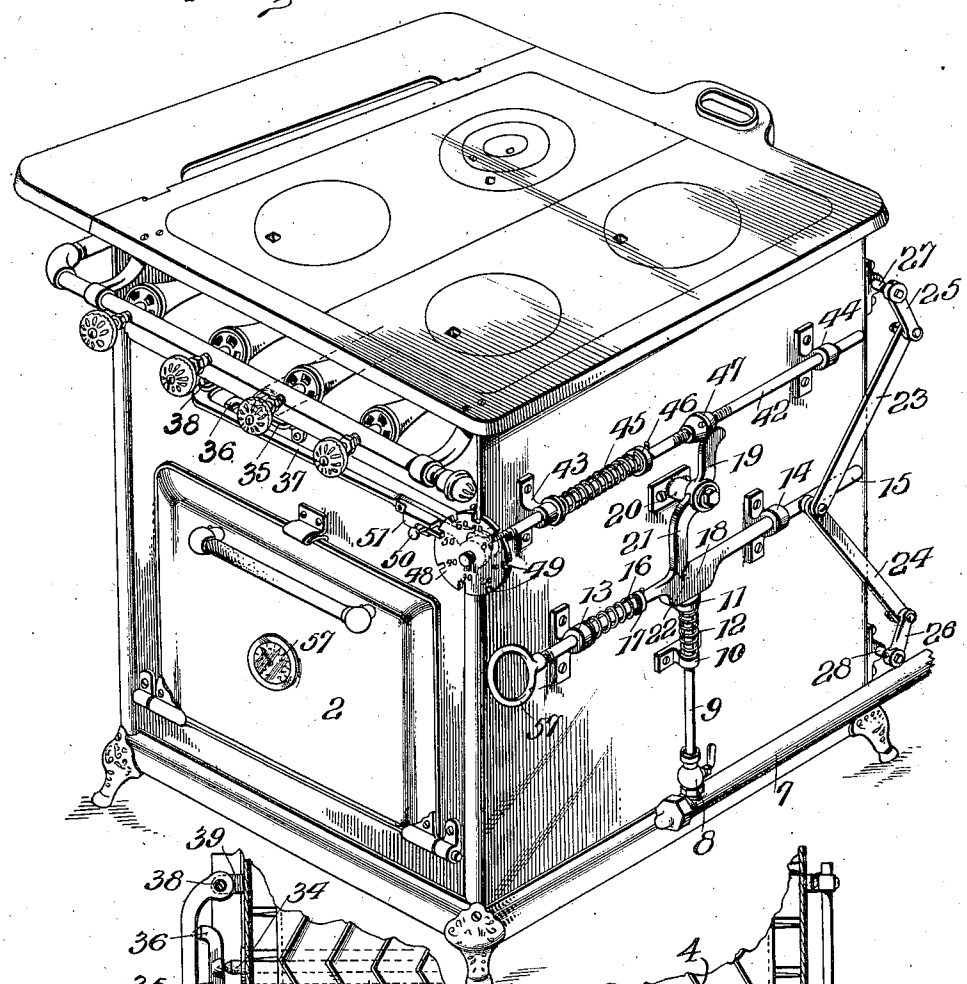
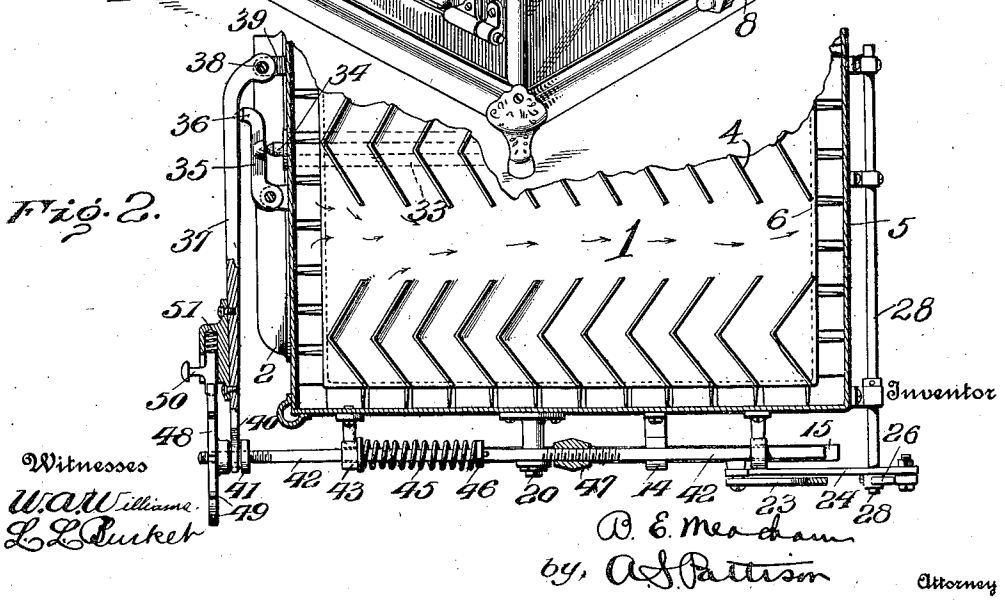


Fig. 2.



Witnesses

W. A. Williams.

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2 SHEETS—SHEET 2.

Fig. 3.

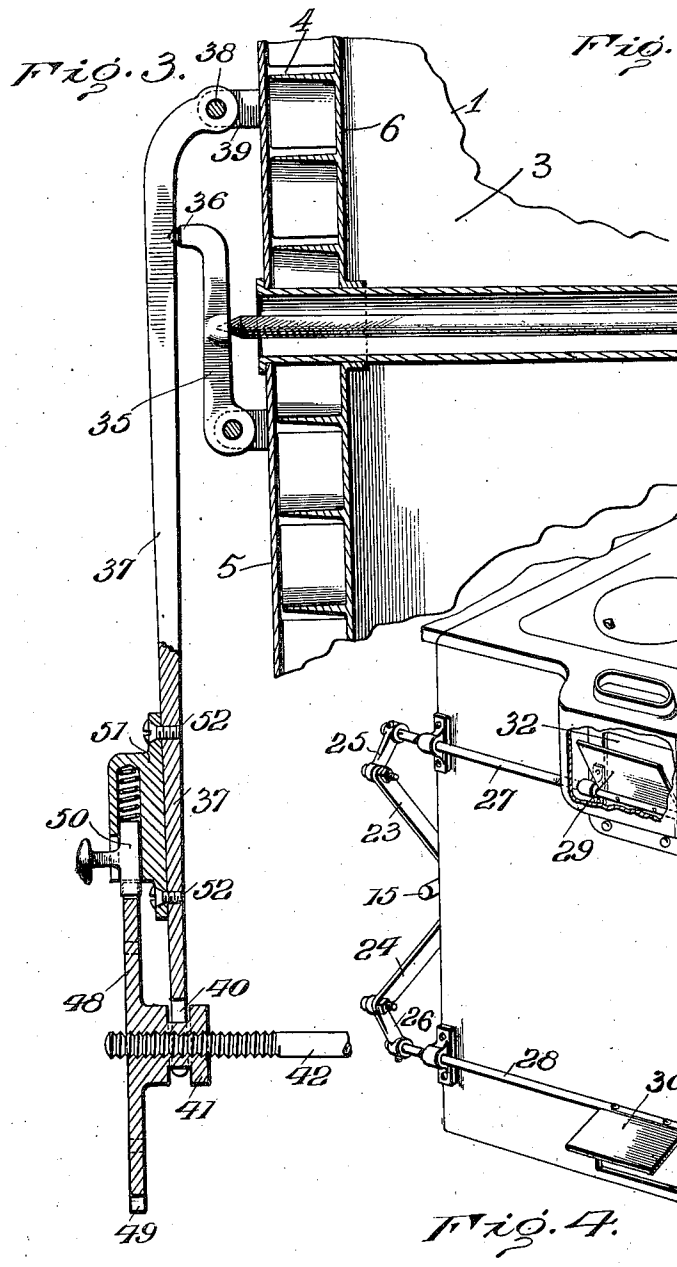


Fig. 5.

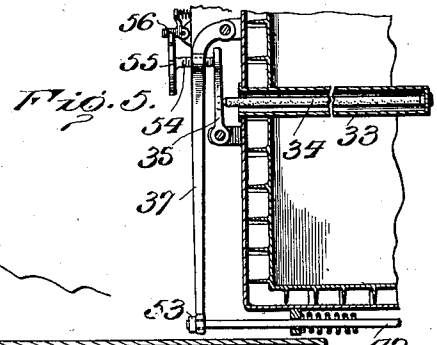


Fig. 4.

Witnesses

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UNITED STATES PATENT OFFICE.

BENJAMIN EDWARD MEACHAM, OF LORAIN, OHIO.

AUTOMATIC GAS-OVEN.

1,162,297. Specification of Letters Patent. Patented Nov. 30, 1915.

Application filed October 19, 1914. Serial No. 867,488.

To all whom it may concern:

Be it known that I, BENJAMIN E. MEACHAM, a citizen of the United States, residing at Lorain, in the county of Lorain and State of Ohio, have invented certain new and useful Improvements in Automatic Gas-Ovens, of which the following is a specification, reference being had therein to the accompanying drawing.

My invention relates to improvements in automatic gas ovens.

The object of my invention is to provide a gas oven in which the gas is automatically cut off when the temperature of the oven has reached a certain point, and at the same time the dampers are automatically closed so as to shut up the oven and cause a continued cooking of the article in the oven, using the same principle of the fireless cooker.

Another object of my invention is to provide an oven of this type in which a single thermostat simultaneously shuts off the gas from the burners of the oven and closes the dampers and the same is held in their closed position until reset or reopened by hand.

A further object of my invention is to provide an oven of this character in which the gas can be cut off and the dampers closed at any pre-determined temperature and which pre-determined temperature can be readily regulated and changed.

A still further object of my invention is to provide an oven of this character which is simple in structure and operation and can be readily attached to the ordinary gas oven now in use and having certain details of structure and operation hereinafter more fully set forth.

In the accompanying drawings: Figure 1 is a perspective view of the ordinary gas oven showing my improved valve and damper controlled mechanism applied thereto. Fig. 2 is a horizontal sectional view of Fig. 1. Fig. 3 is a horizontal, enlarged, sectional view of the thermostat and its controlling levers. Fig. 4 is a rear view of the oven showing the dampers in their open position. Fig. 5 is a horizontal, sectional view of the thermostat showing a modified form of temperature regulating means.

In gas ovens of this character, it is necessary to have a lower damper by means of which the burners are supplied with air and also an upper damper for allowing the discharge of the products of combustion, and in using my improved oven as a fireless cooker to complete the cooking of the article, it is absolutely necessary that these two dampers be closed to shut up the oven to make a practically air-tight oven.

Referring now to the drawings, 1 represents the oven which is provided at its front with the usual door 2 communicating with the space 3 or the oven proper. The oven, as shown, is of the double wall type having the deflecting plates or blades 4 arranged between the outer wall 5 and inner wall 6 which has been found to cause a greater heating of the oven with less fuel. While I have shown this specific form of oven, it will be understood that the same could be varied without departing from my invention.

Above the oven 1 are arranged a number of burners which together with the oven 1, forms the ordinary gas range and the arrangement of these burners need not be further described.

The oven heating burner is within the space at the lower end of the oven between the inner and outer walls, and is supplied with gas through the pipe 7 leading from the gas main or other source of supply, and is provided with a valve 8 whereby the supply of gas from the pipe 7 is controlled to the burner. The valve 8 has an upwardly extending stem 9 passing through the lug or guide 10 carried by the side of the oven. The upper end of the stem 9 above the guide 10 is provided with an enlarged head 11 and surrounding the stem below the head is a coil spring 12 which bears against the guide 10 and normally holds the valve stem 9 in an upward direction and thus normally holding the valve 8 closed. The side of the oven above the upper end of the valve stem 9 is provided with two guides 13 and 14 in which is movably supported the valve operating rod 15. This rod 15 is longitudinally movable within the guides 13 and 14 and surrounding the rod is a coil spring 16 which bears against the guide 13 and has its upper end bearing against a pin 17 carried by the rod 15, whereby the tension of the spring normally holds the rod to the right as will be hereinafter more fully described.

The rod 15 is provided with an enlarged portion 18 which is adapted to engage the head 11 of the valve stem 9 and force the stem downwardly to open the valve 8. This enlarged portion is so located on the rod 15, that it is in engagement with the valve stem

when the spring 16 is compressed. In order to hold the rod 15 in its position to the left with the spring 16 compressed, I provide a trigger 19 pivoted on the stud 20, carried by the side of the oven, and the lower end 21 adapted to enter the notch 22 in the upper face of the rod 15. By this structure, it will be seen that the rod 15 will be held to the left against the tension of the spring 16. Pivotally mounted upon the rear end of the rod 15 beyond the guide 14, are the two links 23 and 24 which have their outer ends pivotally connected to the cranks 25 and 26, carried by the shafts 27 and 28 upon which are mounted the dampers 29 and 30. The damper 30, as shown, closes the lower air supply opening 31, while the damper 29 closes the discharge opening 32 at the upper end of the oven. The arrangement of the cranks 25 and 26 and the links 23 and 24 is such that when the rod 15 is held to the left against the tension of the spring 16 by the trigger 19, the dampers are held open and the gas valve 8 is likewise open and the burners in the oven are in full operation.

Extending within the upper end of the oven from the front wall thereof, is a thermostatic tube 33 which has its outer end rigidly attached to the wall of the oven. Carried by this tube 33 is a porcelain rod 34 which extends out through the tube beyond the front wall of the oven. Pivoted to the front wall of the oven at one side of the tube 34, is a thermostatic lever 35 which has its outer end 36 bearing against the second thermostatic lever 37, pivoted at 38 to the projection 39, carried by the front of the oven. The outer end of the lever 37 is provided with an opening 40 in which is rotatably mounted the nut 41 screwed upon a rod 42. This rod 42 is longitudinally movable in brackets 43 and 44 carried by the side of the oven directly above the rod 15. Surrounding the rod 42 is a coil spring 45 which has one end bearing against the bearing 43 and the opposite end bearing against a collar 46 rigidly secured to the rod 42. By this structure it will be seen that the tension of the spring 45 will be to hold the rod 46 to the right, as will be hereinafter more fully described.

Screwed upon the rod 42 midway between the brackets 43 and 44 is a projection 47 which is adapted to engage the upper end of the trigger 19 and trip the same to release the rod 15, the operation of which will be later described.

The nut 41, at its outer end, is provided with a dial 48 having in its periphery a series of notches 49 into which extends the spring-pressed latch 50 carried by the lever 37. This latch is preferably mounted in the housing 51, secured to the lever 37 by screws 52, as clearly shown in Fig. 3 of the drawings.

The dial 48, as heretofore described, is provided with notches 49 and each notch is to indicate a certain degree of temperature in the oven.

When it is desired that the gas be cut off from the oven and the dampers closed at a certain temperature, the latch 50 is withdrawn from the notch 45 of the dial 48 and the dial turned or screwed upon the rod 42. This movement of the dial draws the rod 42 outwardly, bringing the projection 47 farther from the trigger 19 and thus requiring a greater movement of the thermostatic tube 33 to allow the lever 37 to be moved through the medium of the rod 42 and the spring 45. Thus it will be seen that the temperature of which the thermostat would cut off the gas and shut up the oven by means of the trigger 19 and the rod 15, heretofore described, will be changed by turning the dial 48 to the right or left, as the case may be.

In operation the heat of the oven expands the tube 33 carrying with it the porcelain rod 34 which allows the lever 35 to be forced inwardly by the long thermostatic lever 37 by means of the spring 45. The movement of the rod 42 causes the projection 47 to force the upper end of the trigger 19 to the right, withdrawing the lower end 21 from the notch 22 releasing the rod 15. The rod 15 being released, the spring 16 forces the rod to the right bringing the enlarged portion 18 from above the head 11 of the stem 9 which allows the spring 12 to force the valve stem 9 upwardly and close the valve 8 and thus shutting off the gas in the oven and extinguishing the burner. Simultaneously with this movement, the rod 15 through the medium of the links 23 and 24, and the cranks 25 and 26, operate the upper and lower dampers 29 and 30 and closes the oven so that it will retain its heat and the cooking process continued.

In the modification shown in Fig. 5, the thermostatic tube 33 and the rod 34 are precisely the same as that shown in the preferred form. The thermostatic lever 35 is also arranged at the same point, but the lever 37 has a positive connection 53 with the rod 42. Screwed through the lever 37 adjacent the end of the lever 35, is the screw 54 which is adapted to engage the outer end of the lever 35. The outer end of the screw 54 is provided with a dial 55 having the notches arranged the same as the dial 48 in the preferred form, but showing a pivoted spring-pressed latch 56 adapted to enter the notches. The operation of this dial is the same as that shown in the preferred form. By turning the dial, the screw 54 is either forced inwardly and outwardly moving the lever 37 and thus moving the rod 42 to the right or left to bring the projection 47 closer to or farther from the trigger, whereby the

movement of the thermostatic tube will be greater or less to cause the tripping of the trigger to shut off the gas and close the damper.

By the structure shown and described, it will be seen that after the rod 15 has been tripped by the thermostat, it will remain in this position and the said rod is provided with a handle 57 by means of which the rod can be moved to the left to again open the valve and the dampers. The oven is preferably provided with a thermometer 57 so that the dial can be adjusted in such a position that it would indicate certain degrees or certain points which would correspond with the temperature of the oven. The dial is set when leaving the factory, to indicate certain degrees at certain points. By this arrangement, it will be seen that when cooking certain articles, all that is necessary is to place the article in the oven and set the dial at the desired point, and when the oven has reached a certain temperature, the thermostat through the medium of the levers 35, 37 and the rod 42, trips the rod 15 and allows the gas to be shut off from the oven and simultaneously closing the upper and lower dampers so that the oven is made practically air-tight and the cooking operation continued.

Having thus fully described my invention what I claim and desire to secure by Letters Patent is:

1. The combination with an oven having burners, a valve controlling the gas to the burners and normally held closed, dampers for the oven and normally held closed, means for holding the valve and dampers open, a thermostat for releasing said holding means, and an adjustable connection between the thermostat and the holding means for regulating the temperature at which a thermostat will release the holding means.

2. The combination with an oven having burners, a valve controlling the gas to the burners and normally held closed, dampers for the oven normally held closed, a trigger for holding the valve and dampers open, a thermostat for operating the trigger and allowing the valve and dampers to automatically close, and a dial connection between the thermostat and the releasing means, whereby the temperature at which the thermostat will operate may be changed.

3. The combination with an oven having burners, a valve supplying gas to the burners and normally held closed, a sliding rod adapted to engage the valve and hold it open, dampers for the oven connected with the rod and normally held open by the rod, means for normally holding the rod in a position so that the valve and dampers are closed, a trigger engaging the rod and holding the same in a position to hold the valve and dampers open, and thermostatic means within the oven for operating the trigger for releasing the rod to close the dampers and the valve.

4. The combination with an oven, burners for the oven, a valve controlling the gas to the burners, dampers for the oven, a single means for opening the valve and the dampers, a trigger for normally holding said means in said position, a thermostat for releasing the trigger, and means for adjusting said connection between the thermostat and the trigger, substantially as shown and described.

5. The combination with an oven, burners within the oven, a valve controlling the gas to the burner and normally held closed, dampers for the upper and lower ends of the oven, means for normally holding the dampers closed, a trigger adapted to hold the valve and dampers open, and a thermostat within the oven, a lever operated by the thermostat for tripping the trigger, and means for varying the degree of temperature at which the thermostat will trip the trigger for shutting off the gas and closing the dampers.

6. The combination with an oven having burners, a valve controlling the gas to the burner, a damper, means for normally holding the valve and damper open, a trigger for locking said means in a position to hold the valve and damper open, a thermostat within the oven, a lever operated by the thermostat for tripping said trigger, and means for adjusting the lever whereby the thermostat will trip the lever at different temperatures.

7. The combination with an oven, burners within the oven, a valve controlling the gas supply to the burner and normally held closed, a damper for the oven, means for holding the valve open and the damper open, a trigger for locking the said means in a position to hold the valve and damper open, a thermostat within the oven, a lever operating by the said thermostat, and a tripping mechanism for the trigger adjustably connected to the lever, whereby the degree of temperature at which the trigger will be tripped can be changed.

8. The combination with an oven having a burner, a valve controlling the gas to the burner and normally held closed, dampers for the oven and normally held closed, means for holding the valve and dampers open, a thermostat for releasing the said holding means, and a dial connection between the thermostat and the releasing means whereby the temperature at which the thermostat will operate may be changed.

9. The combination with an oven, a valve controlling the supply of gas to the oven and normally held closed, dampers carried by the oven, means for holding the valve and dampers open, a thermostat within the

oven, and a dial connection between the thermostat and the damper holding means whereby the temperature at which the thermostat will operate may be changed.

10. The combination with an oven having a gas supply valve normally held closed, dampers for the oven, a spring-pressed member adapted to normally hold the valve and dampers closed, means for holding the spring-pressed member in a position whereby the valve and dampers are open, a thermostat within the oven, a lever operated by the thermostat, means operated by the lever for releasing the damper holding means, whereby the damper and the valves are automatically closed and an adjustable connection between the thermostat and the releasing means whereby the temperature at which the thermostat will operate may be changed.

11. The combination with an oven, a valve controlling the gas to the oven and normally held closed, dampers for the oven, a spring-pressed member adapted to hold the damper and the valve closed, means for holding the spring-pressed member in a position with the valve and dampers open, a thermostat within the oven, means operated by the thermostat for releasing the holding means whereby the valve and the dampers are automatically closed by the thermostat, an adjustable connection between the thermostat and the releasing means whereby the temperature at which the thermostat will operate may be changed.

12. The combination with an oven, a valve and dampers for said oven, a spring-pressed member for normally holding the valve and damper closed, a trigger for holding said means in a position whereby the valve and the dampers are open, a thermostat within the oven, means operated by the thermostat for tripping the trigger, and means for regulating the temperature at which the trigger will be tripped.

13. The combination with an oven having a valve and dampers, means for normally holding the valve and dampers open, a thermostat for releasing the said holding means and allowing the valve and dampers to automatically close and a dial connection between the thermostat and releasing means whereby the temperature at which the thermostat will operate may be changed.

14. The combination with an oven having a valve and dampers, a spring-pressed member normally holding the valve and dampers closed, means for locking the spring-pressed member in a position with the valve and dampers open, and a thermostat adapted to release said locking means, whereby the damper and valves are automatically closed and held closed by the spring-pressed members.

15. The combination with an oven having a valve and dampers, means for normally holding the valve and dampers closed, means for holding the dampers and valve open, a lock for holding the dampers and valve open, a thermostat adapted to operate said locking means whereby the valve and dampers are released and closed and held in said closed position and a dial connection between the thermostat and the releasing means whereby the temperature at which the thermostat will operate the locking means may be changed.

16. The combination with an oven having a valve and dampers, means for operating said valve and dampers, a trigger for holding the valve and dampers open, a thermostat having an adjustable connection with the trigger, whereby the dampers and valve are closed and held in said closed position.

17. The combination with an oven having a valve and dampers normally held closed, means for locking the dampers and valve in an open position, a thermostat within the oven, and an adjustable connection with the thermostat and the holding means whereby the valve and dampers may be closed at different degrees of temperature.

18. The combination with an oven having a valve and dampers normally held closed, means for opening the dampers, a trigger holding said means to retain the valve and dampers open, a thermostat within the oven, a lever operated by the thermostat, a sliding member adapted to engage the trigger, and an adjustable connection between the lever and the sliding member whereby the trigger can be released at different temperatures for closing the valve and the dampers.

19. The combination with an oven having a valve and dampers, a spring-pressed member normally holding the valve and dampers closed, a trigger for holding the spring-pressed member in a position with the valve and dampers open, a thermostat within the oven, a lever operated by the thermostat, a sliding member having the projection adapted to engage the upper end of the trigger, and a screw-threaded connection between the lever and the sliding member, whereby the valve and dampers can be closed by the thermostat when the damper of the oven has reached the pre-determined point.

20. The combination with an oven having a valve and dampers, means for normally holding the valve and dampers closed, a trigger for holding the valve and dampers open against spring tension, a thermostat within the oven, a lever engaged by said thermostat, a second pivoted lever engaged by the first-mentioned lever, a dial carried by the outer end of the second-mentioned lever, a spring catch carried by the lever and adapted to engage the dial, and a sliding member screwed through the dial and having a projection adapted to engage the

upper end of the trigger, whereby the valve and damper may be closed when the oven has reached the pre-determined temperature.

21. The combination with an oven having a valve and dampers, means for normally holding the valve and dampers closed, a trigger for holding the valve and dampers open against spring tension, a thermostat in the oven, a lever operated by the said thermostat, a second lever adjacent the first lever, a screw carried by the second lever and engaging the first lever, a dial carried by the outer end of the screw, a spring catch for engaging the dial, a sliding rod connected to the outer end of the second lever, and a projection carried by the rod and adapted to engage the outer end of the lever whereby the valve and dampers are automatically closed and held closed when the temperature has reached a pre-determined temperature, substantiallv as shown and described.

22. The combination with an oven having burners, a valve controlling the gas to the burners and normally held closed, dampers for the oven and normally held closed, means for holding the valve and dampers open, a thermostat for operating the said holding means and allowing the valve and dampers to automatically close, and an adjustable connection between the thermostat and the releasing means, whereby the temperature at which the thermostat will operate may be changed.

23. The combination with an oven having burners, a valve controlling the gas to the burners and normally held closed, dampers for the oven normally held closed, means for holding the valve and dampers open, a thermostat for releasing the said means and allowing the valve and dampers to automatically close, and a dial connection between the thermostat and the releasing means whereby the temperature at which the thermostat will operate may be changed.

24. The combination with an oven having burners, a valve controlling the gas to the burners and normally held closed, a damper for the oven and normally held closed, means for holding the valve and damper open, a thermostat for operating the said holding means and allowing the valve and damper to automatically close, and a dial connection between the thermostat and the releasing means whereby the temperature at which the thermostat will operate may be changed.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

BENJAMIN EDWARD MEACHAM.

Witnesses:
ROSE FINK,
ELMER W. WAITE.