J. J. REID.

BAKER'S OVEN.

APPLICATION FILED JUNE 25, 1919.

1,384,406.

Patented July 12, 1921.

Fig. 1.

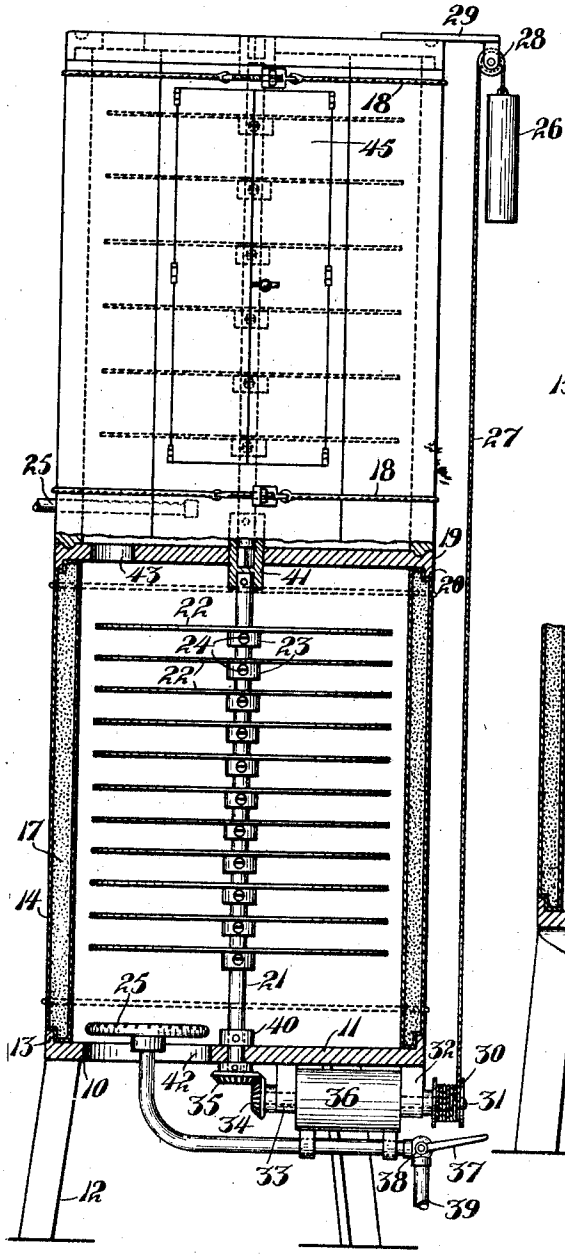


Fig. 2.

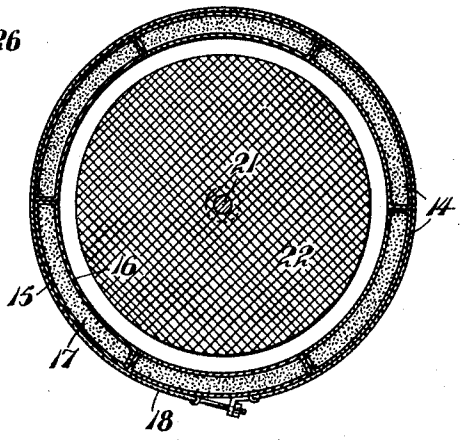
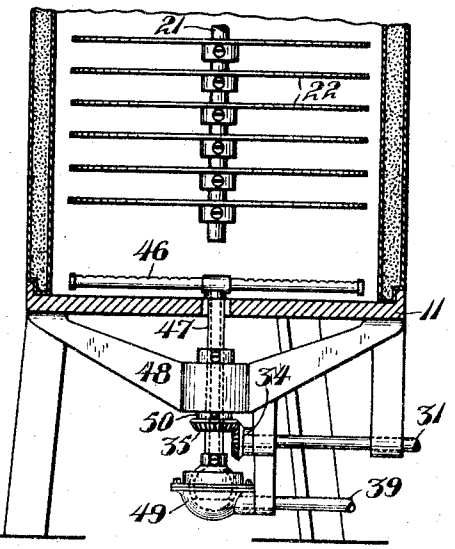


Fig. 3.



INVENTOR

James J. Reid

BY Strong & Townsend

ATTORNEYS

UNITED STATES PATENT OFFICE.

JAMES J. REID, OF SAN FRANCISCO, CALIFORNIA.

BAKER'S OVEN.

1,384,406. Specification of Letters Patent. Patented July 12, 1921.

Application filed June 25, 1919. Serial No. 306,599.

To all whom it may concern:

Be it known that I, JAMES J. REID, a citizen of the United States, residing at the city and county of San Francisco and State of California, have invented new and useful Improvements in Bakers' Ovens, of which the following is a specification.

The invention relates to a baker's oven, and particularly pertains to a portable oven of unitary construction.

It is the principal object of the present invention to provide a baker's oven which is neat and efficient in its design and operation and which will require a minimum amount of space, at the same time insuring that the products placed within the oven may be economically cooked by uniformly distributed heat, and, furthermore, the pan trays may be rotated by a simple and effective mechanism. Another object of the present invention is to provide an oven structure which may be built up from a plurality of units superimposed one upon the other and operated by a single driving mechanism.

The present invention contemplates the use of vertically disposed oven sections which may be mounted one upon the other if large capacity is desired and which are fitted with a plurality of reticulated supporting trays adjustably arranged on a central supporting shaft; the oven being further provided with means for insuring a uniform distribution of heat throughout the oven.

The invention is illustrated by way of example in the accompanying drawings, in which:—

Figure 1 is a view in vertical section and elevation, showing a two-unit oven and more particularly disclosing the drive for the tray-supporting shelves.

Fig. 2 is a view in horizontal section through the oven, showing its composite wall structure.

Fig. 3 is a fragmentary view in vertical section, showing a modified form of the invention, in which the burner is rotated.

In the drawings, 10 indicates a base structure. This structure comprises a circular base plate 11 supported upon a plurality of legs 12; the base plate is fitted with an annular upwardly extending flange 13 which combines with the side-wall sections 14 to securely seal the bottom of the oven. The side-wall is formed of a plurality of these sections 14, as more clearly shown in Fig. 2. These sections may be hollow, having outer and inner wall portions 15 and 16, between which a packing of mineral wool or other heat insulating material 17 is positioned. It will be also evident that the arcuate sections may be made of concrete, if desired, and will be held together by clamping rings 18. The upper end of an oven unit is adapted to be closed by an annular plate 19 which is formed with a down-turn lip 20, registering with a recess at the top of the sections and thus completing the formation of the single oven unit. The plates 11 and 19 are formed with central openings, through which a shaft 21 extends. This shaft is vertically disposed and it carries a plurality of shelves 22, these shelves are circular and are preferably formed with a frame-work supporting a body portion of foraminous material so that a complete circulation of heat will be insured. In order that the capacity of the oven may be entirely utilized, the shelves are mounted upon hubs 23, which are adjustably set upon the shaft 21 by means of set screws 24.

In the form of the invention shown in Figs. 1 and 2, the shaft 21 with its shelves 22 are adapted to be rotated and thus to insure that the pans upon the shelves will be thoroughly subjected to the heat of a burner 25. The rotation of the shaft 21 is preferably produced by the action of a weight 26; this weight is hung from a cable 27 which is led over a pulley 28 secured upon a bracket 29 at the top of the oven structure. The cable extends downwardly and is wound around a drum 30, which is fixed upon a shaft 31 beneath the base plate 11 of the oven. This shaft is carried by bearings 32 and 33. The opposite end of the shaft 31 is fitted with a bevel gear 34 in mesh with a similar gear 35 which is secured upon the lower end of the vertical shaft 21, a suitable governor or escapement mechanism is inclosed within the case 36, through which the shaft 31 passes and thus controls the downward movement of the weight 26 and maintains the rotation of the shaft 31 at a constant speed.

The weight 26 is adapted to strike a lever 37 which is mounted upon the stem of a fuel valve 38. This lever, as shown in Fig. 1, is

in the path of travel of the weight and will act to open or close the fuel valve to admit fuel from a pipe 39 to the burner 25.

The lower end of the shaft 21 is fitted with a collar 40 which supports it and permits the entire weight of the shaft and its shelves to rest upon the base plate 11. In the event that other units are provided, a coupling collar or sleeve 41 is mounted upon the upper end of the shaft 21 and is adapted to receive the lower end of the additional shaft sections, insuring that they will rotate in unison and be driven by the action of the weight 26.

Fresh air is admitted to the lower sections of the ovens through an enlarged opening 42 and the heated air is allowed to circulate through and around the shelves 22, thereafter passing into the superimposed units through a passageway 43 in the top plate 19. Access is obtained to the various units by means of doors 45 which are carried by one of the sections of the wall, as indicated at 16. These doors are hinged to swing horizontally and are clearly shown in the upper section of Fig. 1.

Reference being had to Fig. 3, it will be seen that the shaft 21 is not rotated and thus causes the various shelves 22 to stand stationary at all times. Provision is made, however, for the movement of a burner 46; this burner is mounted in the bottom of the unit and above the base-plate 11. Radial arms extend outwardly to form the burner and are in communication with a central vertical pipe 47. This pipe extends downwardly through a hanging bearing 48 beneath the base and there connects by means of a suitable joint 49 with the gas-pipe 39. A sleeve 50 is secured around the pipe 47 and is fitted with the gear 35 which is in mesh with the driving gear 34. This gear is driven by the shaft 31 and in a mechanism such, for instance, as that shown in Fig. 1.

In operation of the present invention, it will be assumed primarily that a single unit is used. When this is done the shelves 22 may be spaced as desired in relation to each other and when pie pans or thin pans of any sort are being used, the shelves may be closely spaced. If it is desired to bake bread, the shelves must be farther separated and may be removed from the spindle 21, if desired. After the shelves have been properly set, the oven may be charged by opening the doors 45 and placing the pans on the shelves.

When it has been determined what articles are to be baked the weight 26 may be raised corresponding to the time required for baking and as controlled by the governor mechanism 36. The burner is then lighted and the baking operation begun. This operation will continue as long as the weight 26 is above the trip lever 37. When the weight reaches this lever it will cut off the fuel supply and will settle to the floor in a short period of time thereafter. This action will insure that the proper baking time has been used and that the fuel has been automatically discontinued without danger of damaging the articles being baked.

Attention is further directed to the fact that due to the use of horizontally moving trays instead of the common reels used in most ovens, there is slight possibility of shaking or disturbing the articles being baked and a chance to bake pies on the lowermost trays as the pies often run over and cannot be baked when trays are mounted upon the usual reels. The lack of vibration will also insure that cakes may be baked without falling and by the use of the weight driving mechanism a very continuous and smooth driving action will be produced. When it is desired to increase the capacity of the oven, additional units may be superimposed upon the base unit, as shown in Fig. 1, these units being preferably fitted with separate burners so that a uniform heat will be provided throughout the height of the baking structure.

In the form of the invention shown in Fig. 3, the baking operation will be identical with that previously described save for the fact that the trays or pans will be stationary and a circulation of heat produced by movement of the burner 46, the trays being manually rotatable while charging.

It will thus be seen that the present device provides a very simple, economical and compact oven structure which may be built and shipped in "knock-down" fashion and may be readily set up to form a single unit or a plurality of units occupying a minimum amount of space. It will further be evident that very desirable results may be obtained by the use of the horizontally moving shelves and by the automatic cut-off provided for the fuel and the driving mechanism.

While I have shown the preferred form of my invention, as now known to me, it will be understood that various changes in the combination, construction and arrangement of parts may be made by those skilled in the art, without departing from the spirit of the invention as claimed.

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

1. In a baking oven, a baking chamber, shelves therein, valve controlled heating means for the chamber and means to effect relative rotation between the shelves and heating means including a weight actuated drive the weight of which is arranged to engage and close the valve of the heating means upon downward movement of the weight.

2. In a baking oven, a baking chamber, shelves therein, heating means for the cham-

ber, means to effect relative rotation between the shelves and heating means, and means to automatically cut off the heat supply after a predetermined interval of use.

3. A baking oven comprising an upright baking chamber, heating means therebeneath, a vertical rotatable shaft extending through the center of said chamber, a plurality of adjustable shelves secured along said shaft and adapted to rotate therewith, means for driving the shaft, means for automatically cutting off the supply of fuel and means for discontinuing the rotation of said driving means.

4. A baking oven comprising a plurality of superimposed baking compartments, vertical shafts, one of which is in each compartment and adapted to be connected, a plurality of reticulated shelves secured in superimposed relation to each other along said shaft, burner means for said compartment, and means for insuring a complete distribution and circulation of heat throughout the oven structure, and means to automatically cut off said heat supply after a predetermined interval of use.

5. A baking oven comprising a plurality of superimposed baking compartments, vertical shafts, one of which is in each compartment and adapted to be connected, a plurality of reticulated shelves secured in superimposed relation to each other along said shaft, burner means for said compartment, means for insuring a complete distribution and circulation of heat throughout the oven structure, means for insuring a predetermined period of rotation for the shaft and means for effecting a predetermined interval of operation of the burner.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

JAMES J. REID.

Witnesses:
W. W. Healey,
M. E. Erving.