

A. C. DUNHAM.
ART OF COOKING.
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1,001,627.

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Fig. 1

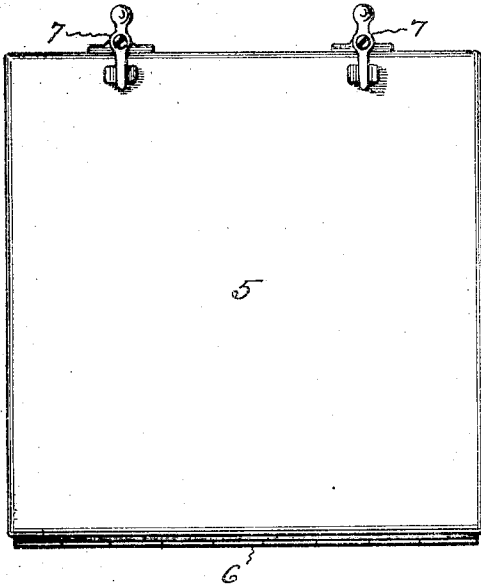


Fig. 2

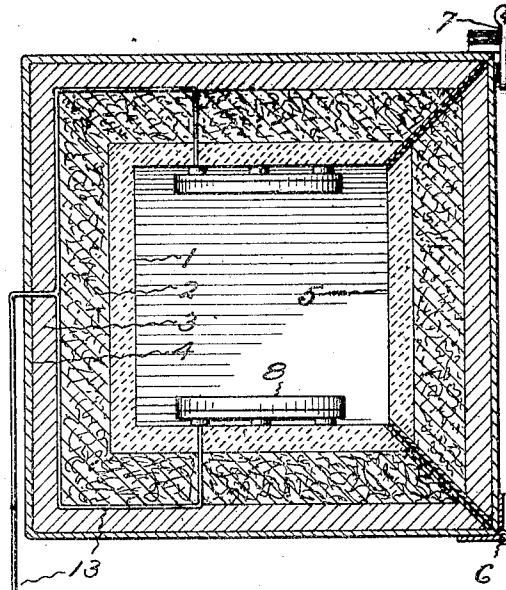


Fig. 3

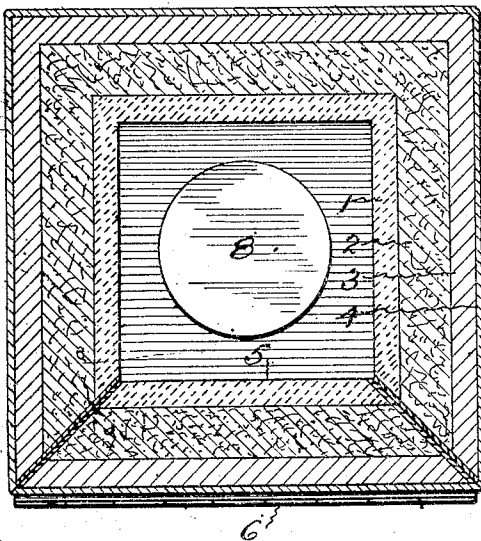


Fig. 4

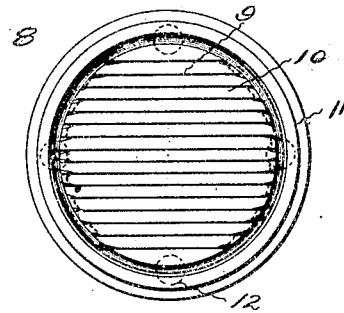
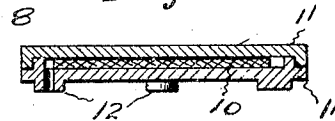


Fig. 5



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UNITED STATES PATENT OFFICE.

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ART OF COOKING.

1,001,627.

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To all whom it may concern:

Be it known that I, AUSTIN C. DUNHAM, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented a new and useful Improvement in the Art of Cooking, of which the following is a specification.

This invention relates to the art of preparing food in the so-called fireless cooker by means of heat developed from electric current.

The object of the invention is to provide such an extremely simple method of this character that a central station furnishing current for light and power purposes can, profitably to itself, furnish means for cooking food at such very low rate as to bring its cost within the reach of people in modest financial circumstances. To accomplish this object the cost of the apparatus, the cost of installing it, and, more especially, the cost of the operating current, must be so low that it will meet the competition of apparatus utilizing coal, oil or gas as fuel, otherwise it will not be within the reach of the consumer of limited means. In order to effect this at a profit to the producing company, the apparatus must be simple to manufacture, and the conditions of use must be such that the current can be supplied without necessitating an increase of the generating and distributing equipment of the central station. It is well known that a central station must have apparatus sufficient to supply current to meet the maximum demand or the "peak of the load." The peak of the load comes at various times under different conditions, for instance, in a system devoted solely to lighting, the load is heaviest during the evening hours. The remainder of the twenty-four hours of the day the load is light. In a power plant the peak occurs during the working hours of the day, while with a plant furnishing current for both light and power the peak is reached during the short period when motors and lamps are both being used at the same time. A company can supply current profitably, at a low rate to the consumer, if the demand is uniform and is extended throughout the twenty-four hours of the day, for this raises the so-called average "load line" or tends toward the theoretical condition of economy, which is what is known as the "hundred per cent. load

factor" striven for by central stations. In other words, if a demand is spread over twenty-four hours, the increased income derived from the many hours of low demand more than makes up for the additional cost of the increase at the short time of the peak.

Certain degrees of heat are desirable to satisfactorily cook food. It is a self evident fact that if the required degree of temperature is once obtained, it is only necessary to supply the heat lost by absorption and radiation in order to maintain that temperature. If the loss by radiation is reduced to practically nothing, the amount of energy necessary to maintain a specific degree of temperature once obtained will be very small. Consequently, in carrying out this invention a simple oven chamber is constructed in such manner that, at the desired internal cooking temperature, the loss of heat by radiation is very slight, in fact practically nothing. This chamber is provided with simple means which merely supplies enough heat to compensate for the loss due to external radiation and the absorption by the food to be cooked. This slight amount of heat necessary to keep the temperature uniform is developed by a small quantity of electric current, but in order to accomplish this result with the low current factor, the current is supplied continuously for twenty-four hours, thus keeping the temperature uniform and eliminating the necessity of extra amounts of current that would be necessary if the chamber were allowed to cool off and which probably would be wanted at the time of heaviest demand on the system. This equalizes the load on the operating plant, and it is only in this manner that the central station company, with profit to itself, can furnish current for cooking at sufficiently low rates to bring it within the purchasing power of consumers of limited means.

This invention has been developed to meet the requirements of a central station, and the apparatus illustrated in the accompanying drawings has been used for some time for baking, roasting and boiling foods in order to demonstrate the practicability of this invention.

Figure 1 shows a front elevation of such an apparatus. Fig. 2 shows a vertical section of the same. Fig. 3 shows a horizontal section. Fig. 4 shows a plan on larger

scale of one of the heat units with a part removed. Fig. 5 shows a central section of this heat unit.

The oven that is illustrated has walls, 1, desirably formed of fire clay, which are preferably white enameled on the inside so that they will be neat and easily cleaned. Surrounding these walls are heat insulating walls, 2, of suitable thickness, desirably made of carbonate of magnesia. Outside of this it has been found desirable to use walls, 3, of cork. These walls may be inclosed in a pressed metal case, 4, that is preferably coated on the exterior with white enamel in order to give the structure a neat and attractive appearance. The door 5 is desirably made of the same materials and the same thickness as the walls. It is shaped so as to closely fit into the open side of the oven, and has a hinge 6 at one edge so that it will open and close easily, and is provided with suitable fastenings 7 at the other edge so that it may be held tightly closed. In the interior at the bottom of the chamber of this oven is a heating unit 8. This heating unit is preferably formed of a short length of fine resistance wire 9 rove back and forth on the upper surface of a disk 10 of asbestos or other material, which disk and wire are inclosed in a recess between two plates 11 of baked earthy material. It is preferred to use a material known as "fire-ite". This material, as is known in this art, is a good conductor of heat, yet is impervious to moisture so as to eliminate any possible injury to or short-circuiting or grounding of the resistance wire, should liquids be spilled thereon from the foods being cooked. The lower fire-ite plate is desirably mounted on legs 12 so as to raise it above the bottom of the oven chamber. Circuit wires 13, provided with a lamp socket plug 14, are led through the walls of the oven and connected with the terminals of the resistance wire. A similar heating unit may, if desired, be attached to the inside of the top wall of the oven chamber.

It has been demonstrated that in a chamber containing approximately 1200 cubic inches and having walls approximately 3 inches thick, built in the manner described, a good baking temperature of approximately 380° F. can be maintained, the loss by radiation being so little, with two heating units each formed of about 58 inches of No. 33 microme wire. In other words, this temperature can be maintained approximately uniform for twenty-four hours a day with an expenditure of but 80 watts of current, on a 60 volt circuit.

This apparatus is very cheap to build. There is no expense for installation, because it can be attached to any common socket connected with an ordinary lighting system. The operating expense is very low, for

the radiation being small, and it only being necessary to maintain the loss due to radiation, but a small amount of current is necessary, less than 150 watts, and this small amount of current flowing twenty-four hours a day can thus be furnished by the producing company at a low fixed rate. As the wattage is fixed and the hours are known, the exact amount of current consumed can be absolutely determined without necessitating the installation of a meter. There is nothing to get out of repair. The apparatus is sanitary; it is easy to clean inside and out, and is convenient to use. It is always ready for use, it only being necessary to open the door, put in the matter to be cooked and take out the food when done, then close the door. There are no regulating switches whatsoever. There is no danger of overheating and spoiling the food and it does not heat up an apartment. It is safe; there is no possible chance for setting anything on fire. The oven is compact and attractive in appearance, and can be placed in any convenient locality in any room.

As the temperature is always uniform, of course the time required for properly cooking different substances varies. But with this time element known by the user, food can be placed in the oven the proper length of time before meals to have it suitably cooked at the desired hour.

The invention claimed is:

1. The method of heating a fireless cooker, which consists in providing an electric heating element therein and continuously supplying said element with uniform electrical energy sufficient only to maintain a cooking temperature in the cooker.

2. The method of heating a fireless cooker, which consists in providing an electric heating element therein and continuously supplying said element with a constant quantity of electrical energy sufficient only to maintain a uniform cooking temperature in the cooker.

3. The method of heating a fireless cooker, which consists in providing the heating chamber thereof with an electrical heating resistance of small capacity and continuously supplying said resistance with a constant quantity of electrical energy sufficient only to maintain a cooking temperature in the cooker.

4. The method of heating a fireless cooker, which consists in providing the heating chamber thereof with an electrical heating resistance of small capacity and continuously supplying said resistance with a current of electricity of low wattage.

5. The method of heating a fireless cooker, which consists in providing the heating chamber thereof with an electrical heating resistance of small capacity and continuously supplying said resistance with a uni-

form current of electricity of less than 150 watts.

6. The method of constantly maintaining the interior of a heat insulated cooking chamber at a uniform efficient cooking temperature, which consists in developing heat therein by continuously passing there-through a uniform electric current of low wattage.

7. The treatment of food substances which consists in placing the substances to

be treated in, and subjecting them to the uniform temperature of, a chamber which has heat non-conducting walls and which is provided with an electrical heating resistance of small capacity through which there is a continuous flow of electric current of low wattage.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."