

A. H. REVELL & T. P. MURRAY.
STOVE.

APPLICATION FILED JAN. 21, 1911.

1,043,252.

Patented Nov. 5, 1912.

2 SHEETS-SHEET 1.

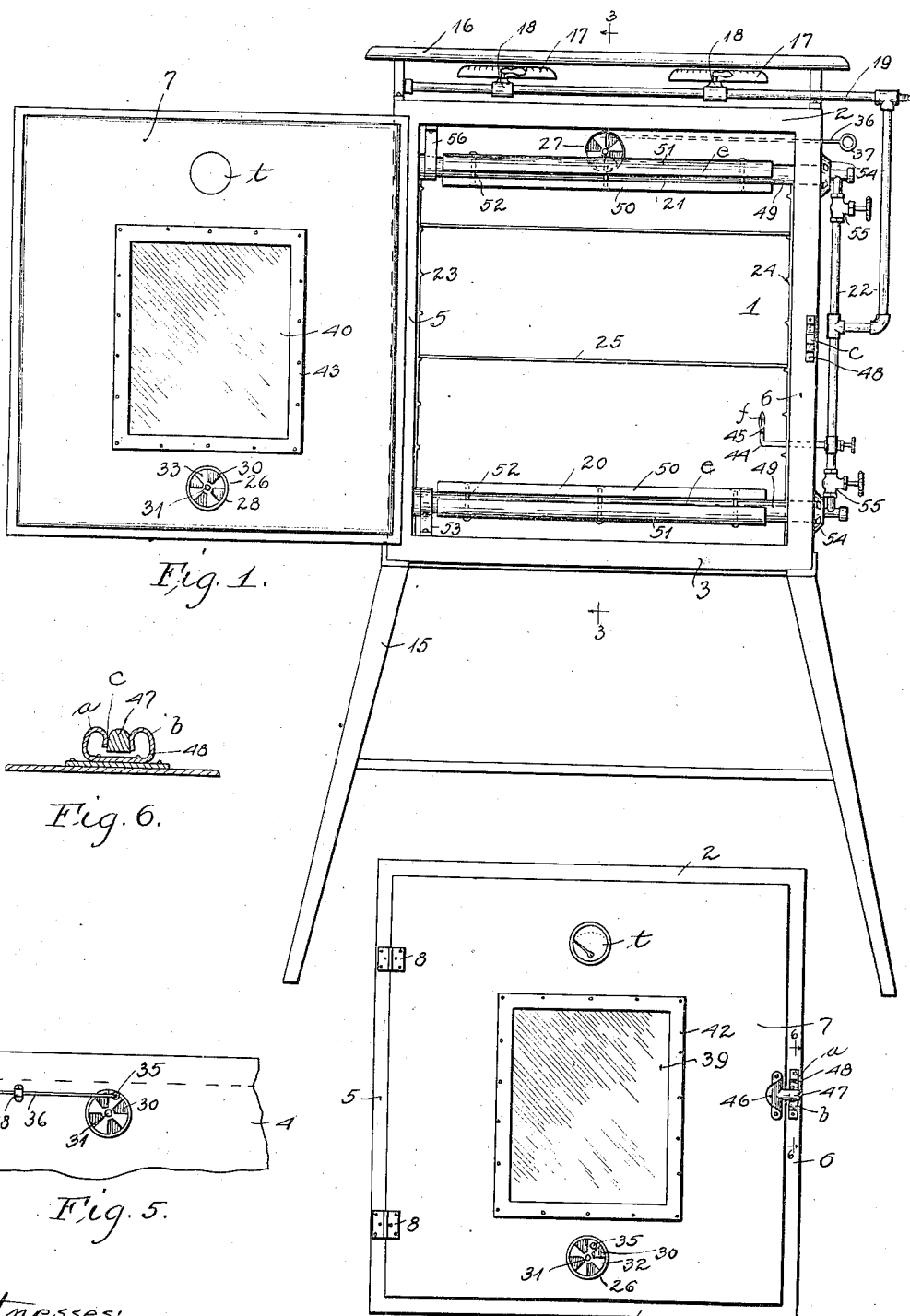


Fig. 1.

Fig. 6.

Fig. 5.

Fig. 2.

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Nellie B. Dearborn

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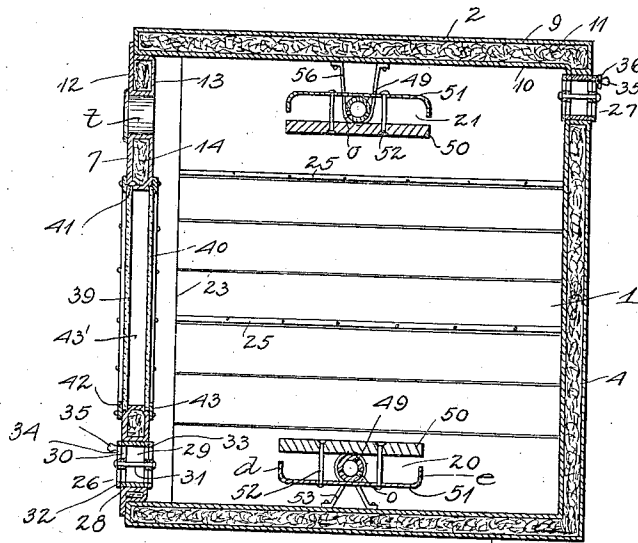


Fig. 3.

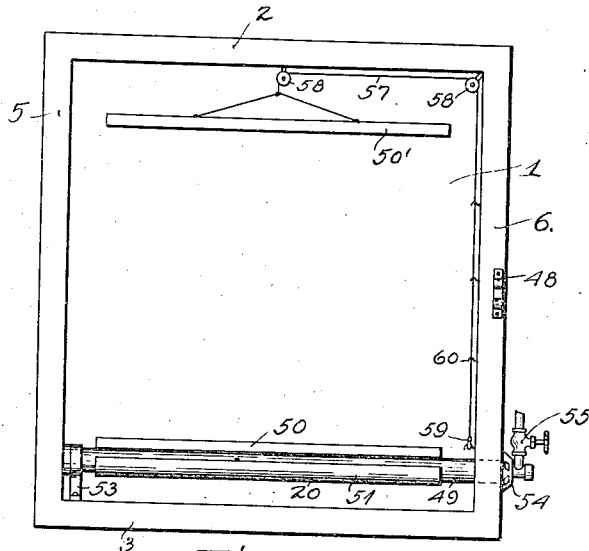


Fig. 4.

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UNITED STATES PATENT OFFICE.

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STOVE.

1,043,252.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that we, ALEXANDER H. REVELL and THOMAS P. MURRAY, citizens of the United States, and residents of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Stoves, of which the following is a full, clear, and precise specification.

This invention relates to stoves which can be used in the ordinary capacity with continuous fire conditions or which can be operated on the fireless principle.

Among the important objects of the invention are to provide improved construction and arrangement involving a receptacle or inclosure in which cooking, baking or other utensils can be subjected continuously and directly to heating flame as on an ordinary stove, or can be subjected indirectly to the heat within the inclosure and to the heat stored in heat retaining bodies primarily heated within the inclosure; to provide a construction in which burners or other heat producing sources are permanently installed within the inclosure to be continually burned therein or to be burned for only a short time to store the necessary heat within the inclosure for subsequent fireless cooking, baking, etc.; to provide for improved ventilation and air supply through the inclosure during active operation of the burners, such ventilating arrangement being operable from the exterior of the inclosure; to provide a transparent wall section for the inclosure through which the interior thereof and its contents will be visible at any time during the cooking, baking or other process; to provide means for illuminating the interior of the inclosure during operation thereof; to provide yielding lock mechanism for the door or doors of the inclosure which will allow the door or doors to open in the event of undue pressure for any cause within the compartment; to provide improved burner units which can readily be applied in various positions within the compartment and which include as part of their construction deflector members for more effectively directing the flame or the heat thereof to the heat storing plates; to provide adjustable arrangement whereby heat storing plates may be moved and held in various positions with reference to the cooking utensils or material to be treated, depending upon whether cooking, baking or

broiling, etc., is to be accomplished; and in general to provide improved construction and arrangement which is less expensive and more efficient and desirable.

In the accompanying drawings, which illustrate the various features of the invention, Figure 1 is a front elevation view of a stove, showing the door of the cooking or baking inclosure in open position, Fig. 2 is a front view of the cooking or baking inclosure, showing the door closed, Fig. 3 is a sectional view of the inclosure taken on plane 3—3, Fig. 1, Fig. 4 is a front view of the inclosure, with the door removed, and showing a modified arrangement, Fig. 5 is a rear view of a section of the inclosure, showing more clearly the means for controlling the outlet vent; and Fig. 6 is an enlarged sectional view taken on plane 6—6, Fig. 2, showing more in detail the yieldable locking mechanism for the door.

The inclosure 1 forms the body part of the stove and comprises top and bottom walls 2 and 3, rear wall 4, the side walls 5 and 6, and a door 7 hinged at 8 to the side wall 5, as indicated. The various walls of the inclosure preferably comprise outer and inner sheet metal retaining walls 9 and 10, between which heat insulating material 11, such as asbestos, mineral wool, or other suitable material, is inserted. The door, likewise, has outer and inner sheet metal walls 12 and 13, between which heat insulating material 14 is inserted. This body part or inclosure is mounted on a suitable stand 15, and on top of the inclosure is mounted an ordinary gas stove plate 16, together with ordinary gas burners 17 controlled in the usual manner by valves 18 included in supply piping 19.

In cooking heat should be applied from below, and in baking it is usual to apply heat from both below and above, while in broiling heat is usually applied only from the top, and provision is therefore made for most efficiently supplying heat to the cooking utensils in the desired manner to produce the desired results on the material to be treated. As shown in Fig. 1, we have applied a burner device 20 at the bottom of the inclosure and a burner device 21 at the top of the inclosure, the burner devices being shown as fed by gas from branch supply piping 22. Within the inclosure are side racks 23 and 24 for supporting at vari-

ous levels the grid frames 25 which support the utensils. The gas burners being within the receptacle, provision must be made for venting the inclosure to prevent extinction of the flame and to relieve the pressure within the compartment. Suitable inlet for air is therefore provided at the lower part of the inclosure, and suitable outlet is provided at the top. As shown best in Fig. 3, the lower part of the door is provided with controllable damper mechanism 26, and the rear wall 4 at the top thereof is provided with controllable damper mechanism 27, these damper mechanisms being similar. In order to retain the heat insulating features of the inclosure when the damper mechanisms are closed these damper mechanisms are preferably constructed as indicated. The door is provided with an opening 28 for receiving the damper drum 29 whose front and rear walls have segmental openings 30, a rod 31 supporting the outer and inner damper plates 32 and 33 against the front and inner walls of the drum, and these damper plates having the segmental openings 34 adapted to register more or less with the openings in the drum ends to control the flow through the dampers. An actuating knob 35 is provided on the outer damper plate. The damper mechanism in the rear wall 4 of the inclosure has a similar construction, and to enable it to be more readily adjusted an actuating rod 36 is pivoted to the knob 35 (see Fig. 5), this rod extending laterally beyond a side of the inclosure and terminating in an eye 37, the rod being guided and supported in a bracket 38 secured to the wall 4. Thus when the burners are lighted the damper mechanisms are adjusted accordingly to allow sufficient ventilation and air supply to the inclosure. However, where fireless cooking is to be accomplished the dampers are entirely closed after the burners have been operated to primarily heat the inclosure, and the inclosure is then air tight and the acquired heat retained therein to complete the cooking, baking or other operation.

It being very desirable to be able to observe the contents of the inclosure during a cooking, baking or other operation, a section of the door is made transparent, and for this purpose, as best indicated in Fig. 3, inner and outer glass panels 39 and 40 are secured over the outer and inner ends of the opening 41 provided in the door, the panels being held in place by frames 42 and 43 suitably secured to the outer and inner walls of the door. The panels are also separated to leave the air space 43' and to more efficiently retain thereby the heat insulating qualities of the inclosure. Also, to illuminate the interior of the inclosure, a pipe 44 is extended into the inclosure from piping 22 and provided with an illuminating tip 45,

the flame *f* then sufficiently illuminating the inclosure so that its contents are visible. One or more of these illuminating sources can of course be installed.

It may occur of course that the pressure will at times be greatly increased within the inclosure, as for example by the generation of steam or the expansion of the air, and yieldable locking means are therefore provided for the door, which, upon such undue pressure conditions, will allow the door to open to relieve the pressure. The yieldable locking mechanism is best shown in Figs. 2 and 6. The door is provided with a pull attachment 46 from which extends a tongue 47, and to the front of wall 6 a spring detent member 48 is secured, this member being constructed from a strip of springy metal whose ends *a* and *b* are curled over inwardly into substantially circular form to leave the passageway *c* for receiving the tongue 47. This passageway is normally somewhat narrower than the width of the tongue, so that when the door is closed and the tongue enters the passageway the spring ends *a* and *b* will exert pressure against the tongue to hold the door yieldably in locked position so that should the pressure at any time unduly rise within the compartment, the door will be forced open sufficiently to relieve the pressure and to prevent injury or accident.

In Figs. 1 and 3 the detail construction of the burner devices is clearly shown. Each burner device comprises a pipe or tube 49 which has at one side a heat storing plate 50 and at the opposite side a deflector plate 51, the plate and deflector being rigidly secured to the pipe by means of bolts 52, as indicated. The side sections *d* and *e* of the deflector are bent toward the plate 50 so that the flame of the gas issuing from the openings *o* in the pipe will be deflected against the plate 50 to cause this plate to become highly heated. The lower burner device 20 is supported in place within the compartment by a bracket 53 engaging the inner end of the pipe, the outer end of the pipe passing through the side wall 6 and terminating in an air adjusting head 54 and a valve 55 for controlling the gas flow from piping 22. The upper burner device 21 is supported at its inner end by bracket 56, and the outer end of the pipe passes through the wall 6 and terminates in an air adjusting head 54 and valve adjusting mechanism 55. This form of burner device comprising a storing plate, deflector plate and gas supply pipe has been found very efficient, the heat from the burning gas being directed and confined to the storing plates by the deflectors and prevented from being carried away through the outlet damper mechanism 27, the damper vents serving only to relieve the inclosure of foul air and gas and particularly to cause

expulsion from the inclosure of carbondioxid gas, which, if retained within the inclosure, would choke and extinguish the flame of the burners.

5 If it is desired to cook, only the lower burner device is ignited; if it is desired to bake, both devices are ignited; while if it is desired to broil or grill, only the upper burner device is ignited. The burners can
10 be kept continually burning during cooking, baking or broiling, or the materials can be set in the inclosure and can be given a preliminary heating during the period that the storing plates are heated, and upon extinction
15 guishment of the burners the heat stored in the plates and within the compartment will complete the cooking, baking or other treatment. To indicate the temperature within the inclosure thermometer mechanism *t* can
20 be installed on the door, as shown.

In Fig. 4 we have shown a modified arrangement particularly adaptable for smaller stoves where an upper burner is not necessary. In this modification no burner
25 is associated with the upper heating plate 50', but this plate is suspended from a metallic cord or chain 57 passing about pulleys 58 to be raised and lowered into various positions within the inclosure, a ring 59 being
30 shown at the end of the cord adapted for engagement with hooks 60 to support the plate at the desired level. For cooking the plate 50' can be lowered to rest on the plate 50 of the lower burner unit, and the heat
35 stored in both plates utilized for cooking after the burner is extinguished. For baking the plate 50' is first lowered to the burner unit and when sufficiently heated is raised to be in proper position above the
40 baking utensil. For broiling or grilling the plate 50' is first lowered to receive its heat and is then raised and the material to be treated set thereunder. A stove is thus provided in which there is very little loss of
45 heat units, the burners being directly within

the heating compartment and the heat from the burning source being directed and confined to most efficiently apply the heat, the damper controlled vents preventing any accumulation of gas within the inclosure which
50 might extinguish the flames or explode or spoil the material to be treated. The transparent door section, together with the illuminating means, enables the operator to inspect the interior without need of opening
55 the door, ability to observe the material during its treatment enabling much better results to be attained. Where such observation means are not provided it is necessary for the operator to occasionally open the door to
60 inspect the contents, which results in considerable loss of heat and consequently reduction in efficiency.

Changes and modifications are of course possible which would still come within the
65 scope of the invention, and it is therefore not desired that the invention be limited to the precise construction and arrangement shown, but the following is claimed:

In a cooking stove, the combination of
70 walls forming an inclosure, a burner tube extending into said inclosure and connecting at its exterior with a gas supply, a heat storing plate at one side of said tube, a deflector plate at the opposite side of said tube and
75 having its edges bent up in close proximity to said heating plate for deflecting the flame from said burner tube against said plate, and means securing said tube, heat storing plate and deflector plate together into a
80 unitary structure.

In witness hereof, we hereunto subscribe our names this 18th day of January, A. D. 1911.

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