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M. CAROL
RURAL STOVE
Filed Oct. 21, 1941

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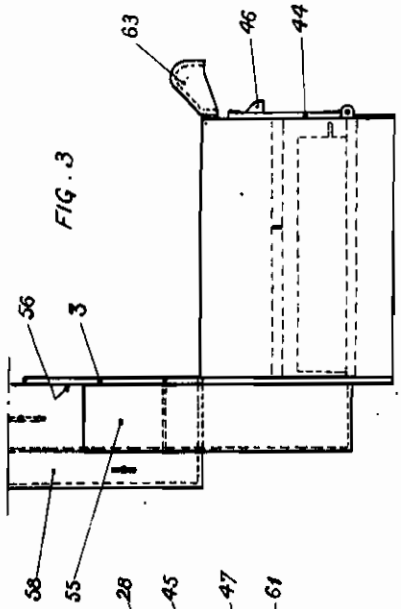

FIG. 3

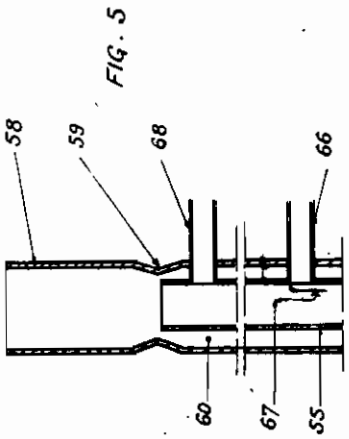

FIG. 5

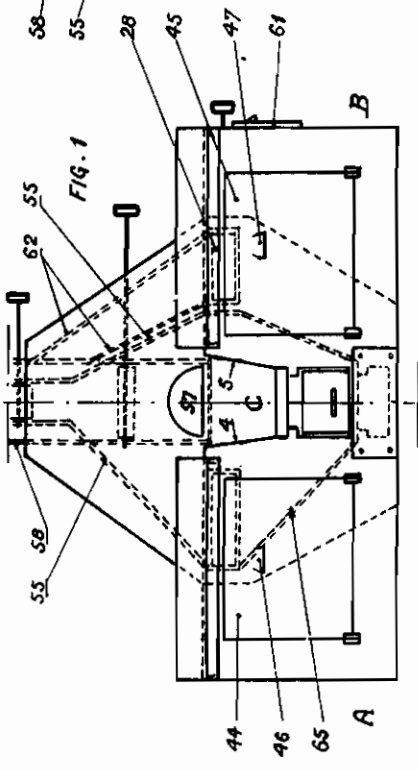

FIG. 1

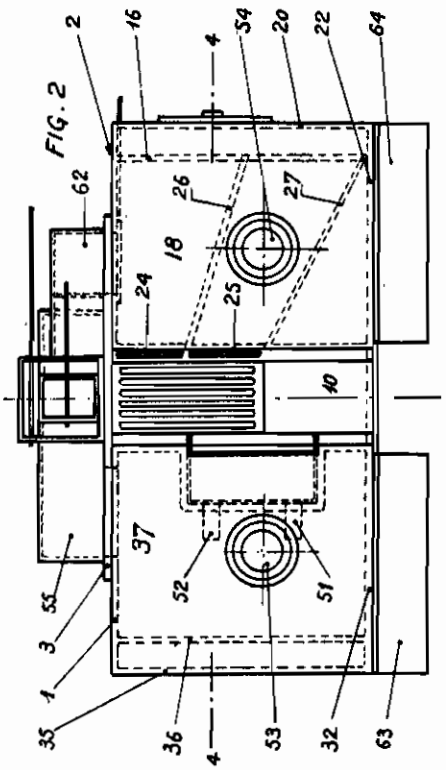

FIG. 2

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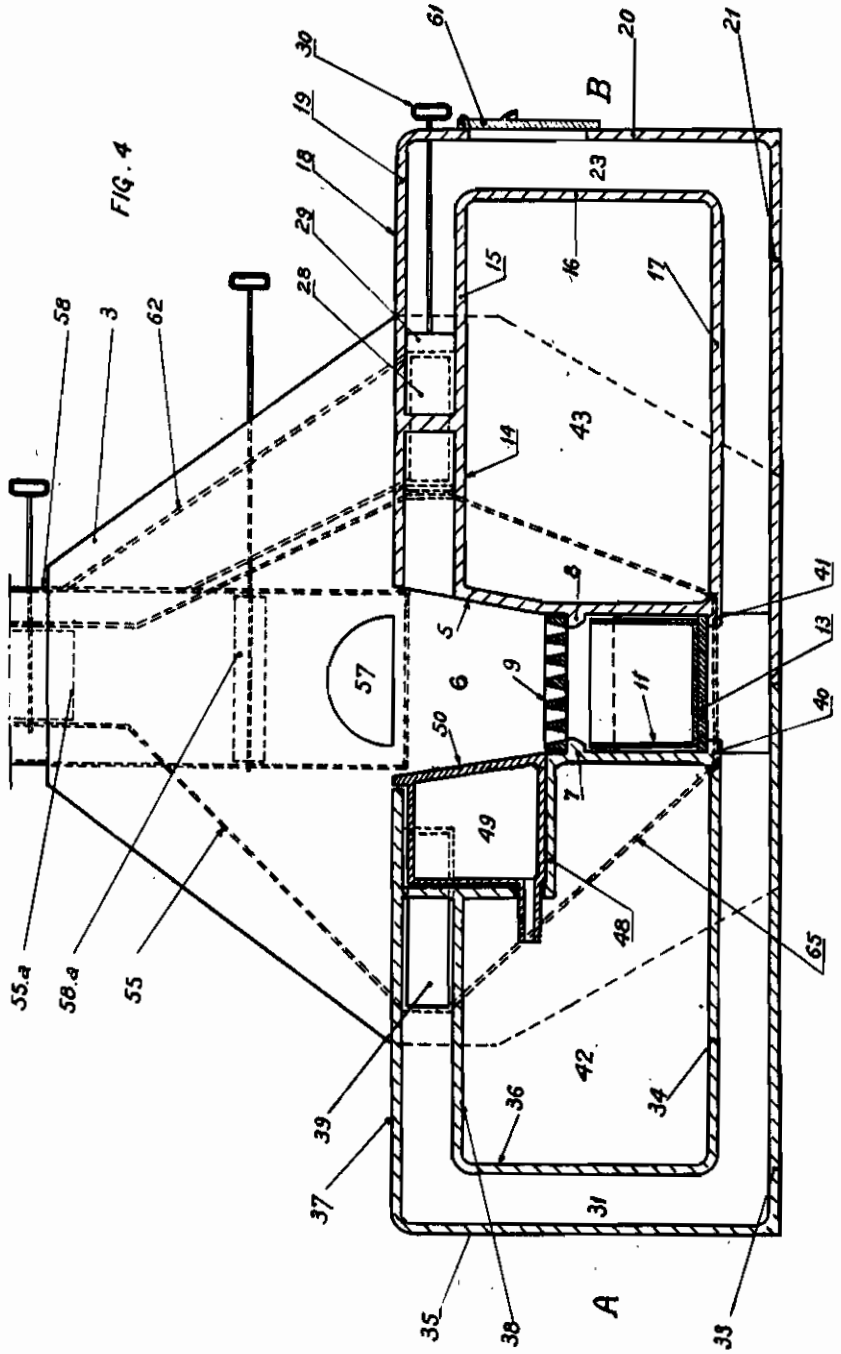
FIG. 4



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ALIEN PROPERTY CUSTODIAN

RURAL STOVE

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vested in the Alien Property Custodian

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In the country, till now, people use most often, for the cooking of food, a hearth with visible fire, placed in a big chimney, using, or not, firedogs; pans or pots are put on a trivet standing in the fireplace or hanging at a pot-hanger.

If such a stove of an extreme simplicity allows to burn branches and logs as they come from the faggots, it has on the other side some inconveniences.

It is difficult to warm simultaneously several recipients, in an appropriate way; the calorific produce is very small; there is no regulating means; the housekeeper has at her disposal neither oven nor any means to produce hot water; etc. it is the reason why, in many dwellings, people use, supplementarly, a heating-apparatus called a "Dutch-oven". However, this apparatus is seldom used: it wants coals, or at least, wood cut in small pieces; it warms the room in an excessive way during summer; besides, its fire is not visible, which breaks country-practices.

The object of this invention is a rural stove which ensures, by itself, in the best conditions, all calorific services the country-people may wish, as regards utility as well as comfort. This stove consists essentially in two boxes that are placed in existing chimneys and are separated one from the other by a certain interval. The two boxes are destined, on the one hand, to act as firedogs would do, but instead of being a simple support for the wood, as ordinary firedogs, they are, on the other hand, able to be employed as ovens, or, simultaneously, by their upper side, for the heating of recipients in the same way as dish-warmers.

Most easily, the heating of these boxes results of calorific conductibility, the parts which support directly the ignited fuel transmitting the heat to the whole wall, and that by radiation.

In a more improved realization, the boxes are provided with double walls, so that a part of gas issuing from the combustion circulates inside of the interval formed by this double wall before going to the chimney. The heating-circuits for the two boxes may, according to the case, be disposed serially or parallelly.

In order to insure a good circulation of these gases, it is intended to heat, on a certain length, their exhaust pipe in the chimney by means of gas issued directly from the hearth. On the same purpose, a part of the wall of this exhaust pipe is formed by the guard-plate itself, that is to say the plate which lengthens the backside of the boxes. Besides, the said pipe is advantageously surrounded by the eduction pipe of the gas issuing directly from the fireplace, and the gases which have circulated in the interval limited by the double wall of the boxes are mechanically carried along by those issuing directly from the hearth, owing to an exhauster effect.

Preferentially, the interval between the two boxes is made in order to be able to constitute a small self-acting hearth for wood or coal, able to be used, for instance, when a single recipient is to be heated. It is then provided with plates in order to obtain a closed hearth.

In the following, it will be described, by way of example, a realization of a rural stove according to the invention. In the annexed drawing:

Fig. 1 is a front view;

Fig. 2 is a plan view;

Fig. 3 is a side-view;

Fig. 4 is a sectional view, in greater scale, according to line 4—4 of Fig. 2;

Fig. 5 shows, in section, the gas exhaust pipes, next the spot where the exhaust pipe, after warming the boxes, opens out on the exhaust pipe of gas issuing directly from the hearth.

The rural stove according to the invention includes two boxes A and B, leaving between them a certain interval C. The backsides 1 and 2 of these boxes lengthen by a common guard-plate 3; the opposite sides 4 and 5 are, in their upper part, inclined one towards the other and limits, with the guard-plate 3, a small hearth 6. They wear projections 7 and 8, on which lays the grate 9 of the hearth. Preferentially, the grate 9 does not reign on the whole depth of the boxes A and B, but only on about the backhalf of these. The front half is formed by a fullplate 10. So, a better draught is obtained for the hearth 6. Under the grate 9 and the plate 10 an ash-pit 11 is provided, which lays, with possibility of sliding, on a plate 13 extending the whole length of the apparatus.

The boxes A and B have a double wall. The inside wall 14 of the box B begins on the inclined side 5 of the said box; it shows an upper horizontal part 15, a vertical part 16, and a lower horizontal part 17. It limits, with the outside wall 18 of the box B, (which has an upper horizontal part 19, a vertical part 20, a lower horizontal part 21, a vertical frontside 22, and the backside 2) an interval 23. The interval 23 opens on the hearth 6 by means of openings 24 and 25 (Fig. 2). Ribs 26 and 27 carry the gas coming from openings 24 and 25 on the whole depth of the interval situated between the vertical sides 16 and 20. On the backside 2 there is an opening 28 which can be

closed by a slider 29 which can be operated by means of a handle bar 30.

The box A has also a peripheric interval 31, limited by the backside 1, the frontside 32, the lowerside 33 and a lower horizontal wall 34, an ending vertical side 35, and a vertical wall 36, an upper side 37 and an upper wall 38. The backside 1 has an opening 39. The intervals 23 and 31 communicate together under the plate 13 on the whole depth of the apparatus. Projections 40 and 41 on the plates 34 and 17, are provided for sustaining the plate 13.

The inside of the boxes A and B make ovens 42 and 43 including, if necessary, usual heating plates and grates, and which are closed by doors 44 and 45 provided with handles 46 and 47 (Fig. 1) preferentially insulated against heat. On the inside of the hearth 42 a receptacle 48 is provided for a removable boiler 49, whose side 50, turned towards the hearth, is a part of the wall 4. Tubes 51 and 52 join the boiler to a hot water fitting. On the upper sides 37 and 38 openings are made which are obtured by rings and concentric circles, respectively 53 and 54, the ones fitting in the others, in the usual way, and on which the recipients to be heated are placed.

From the opening 39 is issued an exhaust pipe 55 for the burning gas, and whose foreside 56 is in contact on a very wide surface with the guard-plate 3, or even is a part of the same plate. The foreside of the pipe 55 has preferably waves (not shown for easy reading of the drawing) in order to increase the surface, and which fit, if necessary, with identical waves of the plate 3.

The guard-plate 3 shows, above the hearth 6, an opening 57 which allows the said hearth to communicate to an exhaust pipe 58, surrounding the vertical part of the pipe 55. The walls of this last are, preferentially, corrugated on their part which is surrounded by the pipe 58. The pipe 55 ends at a certain height and so opens in the pipe 58. This latter one shows preferentially, at the outlet of pipe 55, a decrease of its section, as shown in 59, in such a manner that the gas moving in the interval 60 between the two pipes may produce an exhauster effect and carry along, mechanically, the gas contained in the pipe 55. The pipes 55 and 59 are controlled by registers 55^a and 58^a.

A removable door 61 is provided, for instance, on the vertical side 28 of the box B, next to the beginning of the circuit of gas circulating around the ovens 42 and 43.

The guard-plate has one or several turnable supports, (not shown for easy reading of the drawing) which may be used as pot-hangers to suspend some recipients to be heated, and supplying in this way the pot-hangerrack habitually used for the suspension of recipients. However, the pot-hangerrack may also be used.

To use the stove according to the invention, the logs or the branches are placed on the boxes and lighted. A part of gas and flames issuing from the combustion escapes by the aperture 57 towards the pipe 58. Another part of these gases enters into the interval 23, by the openings 24 and 25. In normal conditions, the opening 28 is closed by a slider 29. During its circulation in the interval 23, the gases heat the oven 43 and the upper plate 19. The gases pass then under the ash-pit 11 and reach the interval 31 limited by the double wall on the box A heating so the oven 42 and the upper plate 37. They come out from this interval through the opening 39 where the exhaust pipe 55 opens. The circulation in the double wall of boxes A and B is effectuated, on the one part, by natural draught, and on the other part, in consequence of the heating, on an appreciable height, of the pipe 55, by reason of its contact with guard-plate 3 and of the circulation around the pipe 55 of the gas contained in the pipe 58, lastly by the increase of speed in the narrow section 58, of the gas moving in the interval 60. All these factors are added up and ensure an effectual circulation of the hot gas in the double wall of boxes A and B. The ovens 42 and 43 are used for cooking roast joints, pastry, in the usual way. The upper plates 19 and 37 of the boxes A and B, support the pans, boilers etc. . . . The hot water is permanently at disposal, on account of the presence of the boiler 48.

When just a small fire is required, the hearth 6 is used, built in the interval 8, managed between the boxes A and B. For the open fire heating, if the slider 29 is left shut, the gases get out partly by the opening 57 and the pipe 58, and partly into the intervals 23 and 31. If the slider 29 is open, the gases get out by the opening 57 and the pipe 28 on the one part, and, on the other part, through the pipe 62.

If a closed hearth is required, the invention intends to add an upper plate and a front plate on the hearth 6. If the slider is maintained shut, the stove will then work as a Dutch-oven. If the slider 29 is open, the gas coming from the hearth 6 runs out by the openings 24 and 29 and the pipe 62 which drives them to the pipe 58.

In a preferable structure, the pipe 62 opens out in the pipe 55. In this structure it is easier to joint the pipes 55 and 62 in a single pipe, wide enough at its basis to be able to receive the gas coming from the opening 39, as well as those coming from the opening 28.

When decreasing the radiation of the stove is required, for instance during summertime, the door 81 has to be opened; the intervals 23 and 31 instead of being passed through by hot gas, are then filled with cool air. This cool air comes from the premises which are so ventilated, or from outdoors, by means of an air hole.

The upper sides of the boxes can be covered with an insulating material, in order to decrease also the radiation of the stove. To attain this aim, a brick layer is provided.

Besides, a lengthening of the front sides 32 and 22 of the boxes can be considered with advantage, particularly in order to avoid the falls of the logs laying on the boxes. On the drawing it is shown, for that purpose, two runs 83 and 64 (Fig. 1 to 3), which are, preferentially thermically insulated from the other parts of the apparatus, in order to avoid the burns for the attendants.

When a great amount of hot water is required, supplementary boilers are provided in the inside of the stove or behind the guard-plate, and more particularly next to the pipe 58. The chimney-sweeping is made easy by a trapdoor 85 along the pipe 55.

In the described structure, the heating circuits of the two boxes are disposed in series, that is to say the one after the other. After having run through the interval around the box B, the gases run then through the interval around the box A. In another realization, the invention considers to arrange the two circuits of heating, not in series, but in parallel. The heating of the two ovens becomes so more uniform.

A gas intake of the gas circulating in the canalisation 55 may be used to supply a drying or

an evaporating device etc. . . . The pipe **66** (Fig. 5) is controlled by a hinged shutter; the return pipe is shown in **68**.

In some instances, the fetching of the gas-circulation in the pipe **55** may be obtained by an air ventilator or aspirator. The area of the openings **24** and **25** may advantageously be controlled by a shutter whose opening is, for instance, the result of a traction in the opposite direction to that of the guard-plate. The purpose of this shutter is to let open, in the case of a very small fire, only the part of the openings **24** and **26** corresponding to the hearth and so, to prevent the cold air to come into the heating circuit.

The stove, according to the invention, is normally laid directly on the ground. However, in some cases, it may be better to raise it, by means of feet, or by putting it on a ground work. In this last manner, an opening is managed allowing communication of the ash-pit with a receptacle reserved in the ground work, and whose capacity is sufficient to contain the ashes of several days.

MARIUS CAROL.