

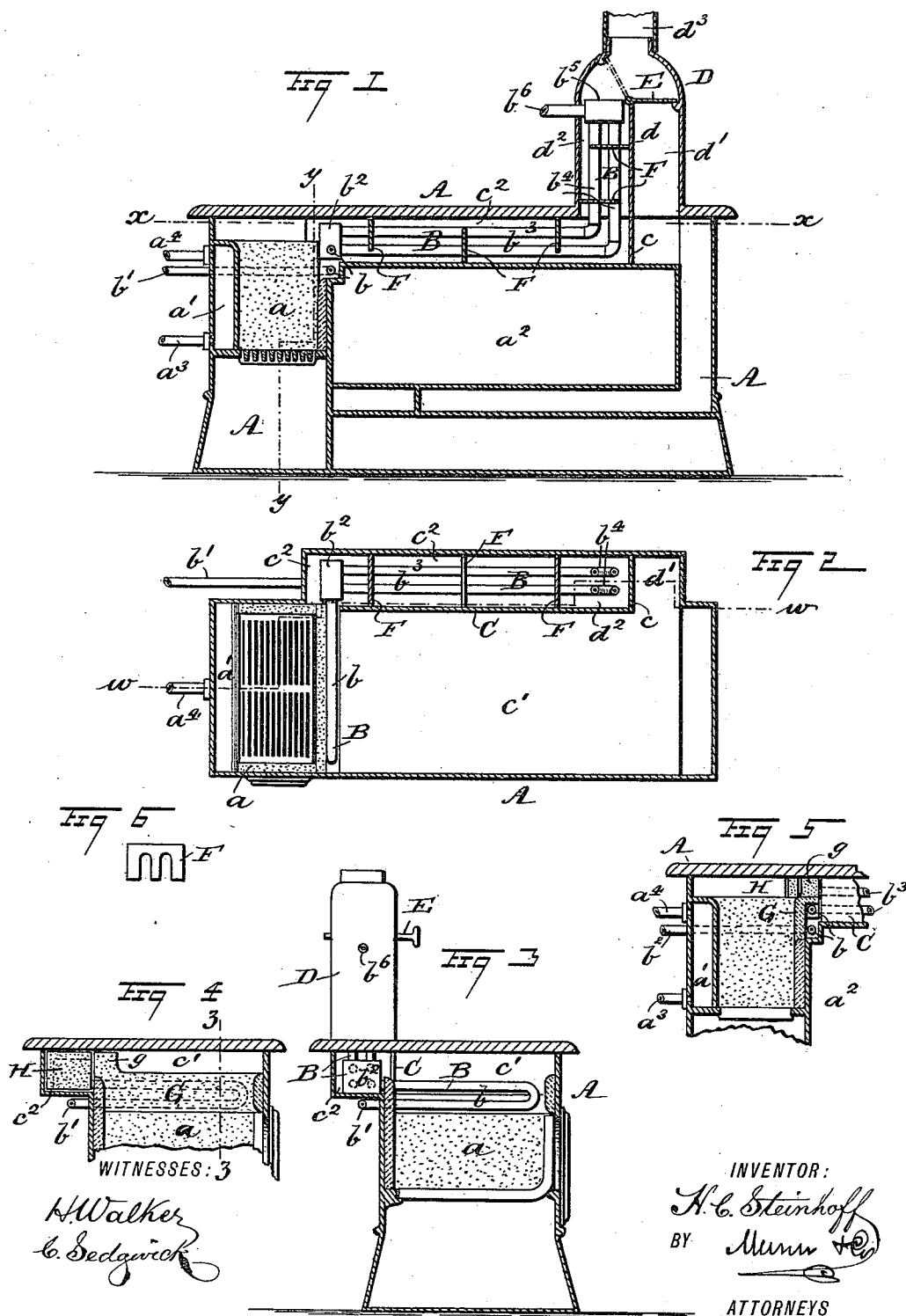
(No Model.)

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WATER HEATING ATTACHMENT FOR RANGES.

No. 440,970.

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UNITED STATES PATENT OFFICE.

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WATER-HEATING ATTACHMENT FOR RANGES.

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To all whom it may concern:

Be it known that I, HENRY C. STEINHOFF, of the town of Union, in the county of Hudson and State of New Jersey, have invented a new and Improved Water-Heating Attachment to Ranges, of which the following is a full, clear, and exact description.

My invention relates to ranges or stoves and more particularly to ordinary cooking or kitchen ranges, and has for its object to provide such ranges with a simple, inexpensive, and efficient system of water-pipes applied independently of the ordinary water-back, and adapted to heat water and maintain circulation of it through radiators for thereby heating other rooms than that in which the range is set.

The invention requires little or no change in the construction and no change in the setting of the ordinary range, and in its preferred embodiment is adapted by the simple manipulation of a damper to be made operative or inoperative at pleasure.

The invention will first be described, and then will be particularly pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a front vertical sectional elevation of an ordinary kitchen-range fitted with my improvement and taken on the irregular line *ww* in Fig. 2. Fig. 2 is a plan view of the range and attachment in horizontal section on the line *xx* in Fig. 1. Fig. 3 is a vertical transverse sectional view taken on the line *yy* in Fig. 1, and as arranged for using the water-heating attachment. Fig. 4 is a detail view showing the guard-plates adjusted, as when the water-heating attachment is not in use. Fig. 5 is a detail front vertical sectional view taken on the line *zz* in Fig. 4, and Fig. 6 is a face view of one of the heat-deflecting plates used in the water-pipe flue.

The range *A* (shown as an example of the application of my improvement) is one of the ordinary style, provided with a fire-pot *a*, having the usual water back or box *a'* at one side wall, and a baking-oven *a²*, which is surrounded by the usual system of flues common to stoves or ranges of this character. Pipes

a³ *a⁴* lead cold water to and discharge hot water from the water-back to the ordinary hot-water boiler. (Not necessary to show or describe, as this boiler and water-back form no part of my improvement.)

In carrying out my invention I utilize the space usually left below the top plate and behind the back plate of the range in which to locate the greater portion of the auxiliary water-pipes *B*, which makes the heat of the fire-pot available for heating said pipes. In the preferred construction shown in the drawings the water-pipes *B* are arranged with a return-bend *b*, which is located at the upper part of the fire-pot and forms a portion of the side wall of the pot opposite the water-back *a'*, which forms the opposite side wall of the pot. The lower part of this bend *b* is extended outward and forms the cold-water inlet *b'* to the whole system of pipes *B*, and will be connected with any suitable source of water-supply. The upper part of the pipe-bend *b* is fitted into a hollow coupling-box *b²*, made large enough to receive the ends of any desired number of pipes *b³*, forming the rear horizontal portion of the water-pipe system *B*. I show four of these pipes *b³*, but any desired number may be used.

A partition *C*, having a rearward right-angular extension *c*, is fitted between the top of the oven and the range-top plate and separates the space or hot-product chamber, opening to and from the fire-pot *a* into two independent flues *c'* *c²*, the former overlying the range-oven and the latter forming a rear flue traversed by the system of pipes *B*. The hot products from the fire-pot thus may be directed either through the flue *c²*, containing the water-pipes *B*, or directly over or around the range-oven to the hot-product outlet or exit-flue of the range. I prefer to make the hot-product outlet in the form of a bonnet *D*, which has a central vertical partition *d* above the part *c* of the range-partition *C*, and thus divides the bonnet into two chambers *d'* *d²*, both of which have communication with a common exit-pipe *d³*, which is fitted to the top of the bonnet and conducts the hot products to a chimney-flue. A damper *E*, fitted, preferably, to the top of the bonnet-partition *d*, where it is pivoted, may be swung down, as shown in full lines in Fig. 1, to close the bon-

net-chamber d' to the exit-flue d^3 , and may be swung over, as indicated by the dotted lines, to close the bonnet-chamber d^2 to said flue. By using this double-chambered bonnet D, I am enabled to continue the series of pipes B beyond the horizontal pipes b^3 by a connected series of vertical pipes b^4 , which range upward through the bonnet-chamber d^2 , with which the hot-product flue c^2 communicates. I prefer to connect the upper ends of these pipes b^4 with the hollow box-coupling b^5 , from which extends a pipe b^6 , which conveys the hot water from the entire pipe system B to any number of radiators (not shown) and placed in other apartments to heat them by the same fire in the range which does the cooking for a family. I prefer to fit into the hot-product flue c^2 and the bonnet-chamber d^2 a series of deflecting-plates F, slotted to admit the pipes B, and fixed to the opposite walls of the flue and chamber to retard the passage of the hot products and deflect them in a sinuous course toward the exit-flue to assure their best effect in heating the water-pipes.

As it is necessary to use the auxiliary water-pipe system B only in cold weather for heating adjacent rooms, as above described, it is desirable to protect these pipes from the heat of the range fire-pot at other times. I accomplish this by employing a guard, which may consist of one or more refractory plates. I show two guard-plates G H, the former being angular in cross-section and set upon the permanent fire-brick lining of that side of the fire-pot a , and extending over the pipe return-bend b to shield it from the heat, while the other fire-brick plate H, in conjunction with a suitable lug g , formed on the guard-plate G, closes the end of the water-pipe flue c^2 , to cut off therefrom the hot products from the fire-pot. The guard plate or shield G, and without the lug g , may alone be used, because when the damper E is set to close the bonnet-chamber d^2 to the exit-flue d^3 the draft from the fire-pot will be induced directly through the range-flues c' to the exit-flue, and the pipes b^3 in the flue c^2 will not be dangerously overheated. It may be preferable, however, to use both guard-plates G H, as above described.

The operation of my invention is very simple and effective. When the guards G H are removed from the pipes B and their flue c^2 and the damper E is adjusted as shown in full lines in Fig. 1 of the drawings, the hot products from the fire-pot a of the range will pass through the flue c^2 and bonnet-chamber d^2 , traversed by the pipes B, to heat the water in the pipes and supply the connected radiators in adjacent rooms for warming them; but when the damper E is adjusted as indicated in dotted lines the hot products from the range fire-pot will pass directly through the flue c' and bonnet-chamber d' to the exit-flue and chimney, the guards G H being then

adjusted to shield the water-pipes B from the heat.

I show the hot-product flue c^2 with independent bottom and rear walls, connecting, respectively, with the bottom and top plates of the range; but the bottom and rear walls of said flue c^2 may be formed by the brick-work into which the range may be set, as will readily be understood.

I am aware that bodily-removable circular or rectangular fire-pots have been fitted within the main fixed fire-pot of a stove or range, and that ordinary slide-dampers have also been used as guards against needless or excessive heating of water chambers or pipes at or next the main fire-pot when heating of water for warming adjacent rooms is not required, as in warm weather, but I am not aware of any prior construction in which a water pipe or coil has been arranged along the side of the main fire-pot and adjacent to and back of a shoulder or ledge of the main fire-pot, formed, preferably, by a brick or refractory lining thereof, whereby a simple bodily-removable shield-plate, preferably made of fire-brick, may be sustained on the fire-pot ledge to guard against excessive or unnecessary heating of the pipe or coil; neither am I aware of a prior construction in which a bodily-removable guard or guards have been used in connection with a pipe or pipe-coil at the side of the main fire-pot and extended into an adjacent hot-product flue, said guards serving both to shield the pipe or coil at the side of the fire-pot and to cut off entrance of hot products to the flue traversed by the water-heating pipes, and whereby the entire system of auxiliary water-heating pipes may at pleasure be shielded from excessive heat from the fire-pot. Manifestly a bodily-removable imperforate guard, when taken away from pipes or a pipe-coil at the side of the main fire-pot, allows far more efficient and economical heating of said pipe or coil than would a perforated-damper base-plate when the damper is open, as a damper and its base-plate which are not bodily removable from between the auxiliary water-heating pipes or coil and the fire-pot would, when the damper is open, prevent full heating effect of the fire-pot on the pipes, which is assured by my construction allowing entire removal of the guards and consequent full exposure of the heating-pipes to the hot products of the fire-pot.

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

1. In a water-heating attachment to ranges, the combination, with the range hot-product chamber divided into independent flues communicating with the fire-pot, of auxiliary water-pipes extended along one of said flues, a bonnet communicating by its independent passages or chambers with the separate hot-product flues of the range and also with a common exit-flue, and a damper at the bonnet,

adapted to direct the fire-pot products to the exit-flue either along the flue traversed by the water-pipes or along the other flues of the range, substantially as described.

5 2. In a water-heating attachment to ranges, the combination, with the range hot-product chamber divided into independent flues communicating with the fire-pot, of auxiliary water-pipes traversing the fire-pot to be heated
10 thereby and extended along one of the hot-product flues, a bonnet communicating by its independent passages or chambers with the separate hot-product flues of the range and also with a common exit-flue, and a
15 damper at the bonnet, adapted to direct the fire-pot products to the exit-flue either along the flue traversed by the water-pipes or along the other flues of the range, substantially as described.

20 3. In a water-heating attachment to ranges, the combination, with the range hot-product chamber divided into independent flues communicating with the fire-pot, and a partitioned bonnet communicating by its independent
25 passages or chambers with the separate hot-product flues of the range and also with a common exit-flue, of water-pipes extended along one of said hot-product flues and also into one passage or chamber of the bonnet,
30 and a damper at the bonnet, adapted to direct the fire-pot products to the exit-flue either along the flue and bonnet-chamber traversed by the water-pipes or through the other flues of the range and bonnet, substantially as described.
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4. In a water-heating attachment to ranges, the combination, with the range hot-product chamber divided into independent flues communicating with the fire-pot, and a partitioned

bonnet communicating by its independent
40 passages or chambers with the separate hot-product flues of the range and also with a common exit-flue, of water-pipes traversing the fire-pot to be heated thereby and extended
45 along one of the range hot-product flues and also into and along one passage or chamber of the bonnet, and a damper in the bonnet, adapted to direct the fire-pot products to the exit-flue along either the flue and bonnet
50 chamber traversed by the water-pipes or through the other flues of the range, substantially as described.

5. In a water-heating attachment to ranges, the combination, with the main fire-pot having a ledge or shoulder formed, preferably, by
55 its fire-brick or refractory lining, of an auxiliary water-heating pipe or coil set back of said ledge, and a bodily removable guard placed upon said ledge and shielding the pipe or coil from direct heat of the fire-pot, substantially as described.
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6. In a water-heating attachment to ranges, the combination, with the main fire-pot having a ledge or shoulder formed, preferably, by
65 its fire-brick or refractory lining, and a hot-product flue communicating with the fire-pot, of a water-heating pipe or coil set back of said ledge and extended along said hot-product flue, and a bodily-removable guard
70 adapted in part to said ledge and in part to the mouth of the hot-product flue to shield the water-heating pipes next the fire-pot and in the flue from the fire-pot products, substantially as described.

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Witnesses:

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