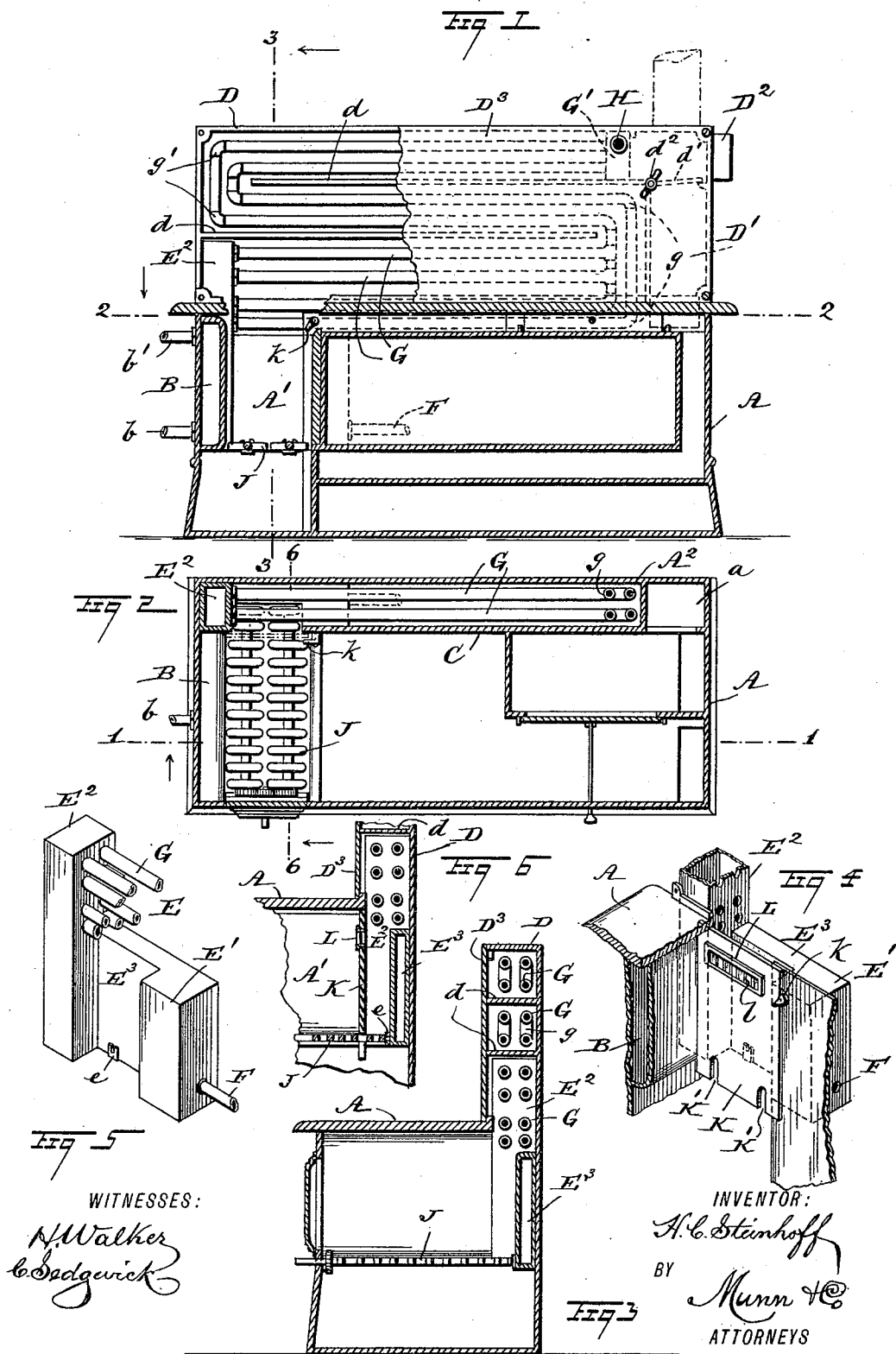


(No Model.)

H. C. STEINHOFF.
WATER HEATING ATTACHMENT FOR RANGES.

No. 459,662.

Patented Sept. 15, 1891.



UNITED STATES PATENT OFFICE.

HENRY C. STEINHOFF, OF UNION, NEW JERSEY.

WATER-HEATING ATTACHMENT FOR RANGES.

SPECIFICATION forming part of Letters Patent No. 459,662, dated September 15, 1891.

Application filed December 24, 1890. Serial No. 375,696. (No model.)

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 for Ranges, of which the following is a full, clear, and exact description.

My invention relates to improvements in water-heating attachments for ranges; and the object of my invention is to produce a simple and efficient attachment which may be easily applied to ranges of the ordinary form and by means of which the waste heat of the range may be utilized to heat water, so that it may be circulated through pipes and radiators in adjoining rooms and made to heat the same.

A further object of the invention is to provide means for shutting off the heating attachment from the range or stove, so that the water will not be heated in summer, and to provide means for heating the water very slightly, so that it will be adapted for use in early fall and spring.

To this end my invention consists in certain features of construction and combinations of parts, which will be hereinafter described and claimed.

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 vertical longitudinal section on the line 1 1 of Fig. 2, showing the heating attachment applied to a range and with the front wall of the heating attachment broken away. Fig. 2 is a sectional plan of the range and heating attachment on the line 2 2 of Fig. 1. Fig. 3 is a vertical cross-section on the line 3 3 of Fig. 1. Fig. 4 is a broken detail perspective view showing the slide in position in front of the auxiliary water-back. Fig. 5 is a broken detail perspective view of the auxiliary water-back, showing also the pipe connections with the same; and Fig. 6 is a broken detail sectional view on the line 6 6 of Fig. 2.

The range A is in the main substantially like an ordinary cooking-range, and has at one end a fire-pot A' and at the back a space A² beneath the top plate, at one end of which is the ordinary flue a, and the space above the oven is formed by a vertical partition C. The

range has also at one side of the fire-pot the usual water-back B, with the inlet and outlet pipes b and b', respectively, which may connect with the common form of hot-water tank in the ordinary way.

On the back of the range is secured a casing D, which extends the entire length of the range or stove and the width of which corresponds to the width of the space A², above which it is located, and the casing has at one end a flue D', which aligns with the flue a of the range. The casing D has also at one end an outlet-pipe D² for connecting with the chimney, which pipe is located on the side, but may be on the top, as indicated by dotted lines in Fig. 1. The casing D has also deflector-plates d, extending throughout nearly its entire length, the plates being arranged to extend from opposite ends, and they will thus cause the heat which passes through the casing from the fire-pot to be retained in the casing and to circulate among the pipes therein for a sufficient time to thoroughly heat the water in the pipes, and the heat is thus entirely utilized, so that but little, if any, escapes into the chimney. The front plate D³ of the casing is removable, being held by screws at the corners, and the casing may be got at to be cleaned by removing the plate. The flue D' aligns with the flue a of the stove and is used only in summer, when the water is not heated for warming rooms, and the flue is closed by a damper d', (indicated by dotted lines in Fig. 1,) which damper is turned by a convenient handle d², and it will be seen that when the damper is turned into a horizontal position, as shown in Fig. 1, the flue D' will be closed, and the hot products from the fire-pot will then be forced to pass through the casing D and will escape above the damper; but when the water is not to be heated the damper is turned into a vertical position, so that the hot products will pass upward through the flue.

The auxiliary water-back E is fitted into the range at the back end of the fire-pot A' and of the water-back B, and said water-back is hollow and comprises the enlarged end portions E' and E² and the comparatively thin center portion E³, connecting the two, a recess being thus formed between the two end por-

tions to receive the grate J, which is elongated, so as to extend into the recess, and which is pivoted in a suitable support *e*, secured to the lower edge of the water-back. The end portion E' and the thin portion E³ extend only to the top of the fire-pot; but the part E² is made to extend upward into the chamber formed by the casing D, and the heating-pipes are connected with the upper end of the portion E², as best shown in Fig. 5. The inlet-pipe F, through which the cooler water from the circulating-pipes is admitted to the auxiliary water-back, enters the part E' at its lower end, and the heating-pipes G are connected with the upper end of the part E² of the water-back, as described, and extend longitudinally through the lower portion of the casing D, and are then bent twice at right angles, as shown at *g*, and made to extend back to the front end of the casing, when they are again doubled, as shown at *g'*, and made to extend to the rear end, where they terminate in a head G', which has an outlet-pipe H, to connect with the ordinary circulation-pipes. The deflectors *d* are located between the different coils of the pipes, as best shown in Fig. 1, and the waste heat and hot products from the fire-pot will, when the damper *d'* is properly arranged, pass through the casing D, thus heating the water in the pipes G, and the water from the pipes will be carried to adjoining rooms in the ordinary way, so that said rooms may be heated at practically no expense.

In order that the pipes may not be heated in summer, a shield K is shaped to fit in the rear end of the fire-pot and in front of the auxiliary water-back E; the shield having slots K' in its lower end, so that it may fit nicely over the grate-bars, and the shield is held in place by a suitable catch *k*, or it may be held in any convenient way. The shield will thus prevent the water-back and pipes connecting therewith from being heated, and when the shield is used the damper *d'* is turned so that the hot products from the fire-pot will pass through the ordinary range-flue *a* and up through the flue D' to the chimney. The shield K has a series of perforations through the upper part thereof, as shown in Fig. 4, and mounted on the shield so as to slide over the perforations is a slide L, which has a series of perforations *l*, corresponding to the perforations in the shield, and by moving the slide so that the perforations align a small amount of heat will pass through the perforations and into the casing D, thus slightly heating the pipes G, and as the water circulates as soon as it is heated to any extent the rooms connected with the pipes G may be thus slightly warmed; but when the rooms are to be thoroughly heated the shield is entirely removed, so that sufficient heat will pass from the fire-pot through the casing to heat the pipes thoroughly.

Having thus described my invention, I claim

as new and desire to secure by Letters Patent—

1. In a water-heating attachment for ranges, the combination, with a range and a hot-product casing thereon, of the water-back E, mounted in one end of the fire-pot and having a suitable inlet-pipe, coils of pipe connected with the water-back and arranged within the hot-product casing, said pipes having an outlet connecting with the circulation-pipes, a flue in the casing aligning with the range-flue, and a damper for the casing, substantially as described.

2. In a water-heating attachment for ranges, the combination, with a range and a hot-product casing mounted thereon and connecting with the chimney and with one end of the fire-pot, of the water-back E, located in one end of the fire-pot of the range, pipe-coils connected with the water-back and arranged within the casing, and connections between the pipes and water-back and the circulation-pipes, substantially as described.

3. In a water-heating attachment for ranges, the combination, with a range and a hot-product casing mounted thereon and connecting with the chimney, of the water-back E, located in one end of the fire-pot of the range, said water-back having a central recess to receive the range-grate and having one end elongated and connecting with coils of pipe arranged within the casing, substantially as described.

4. The combination, with a range, a hot-product casing, and pipe-coils within the casing, of the water-back E in the fire-pot of the range having a central recess to receive the range-grate, said water-back having one end connected with the inlet of the circulation-pipes and the opposite end elongated to enter the hot-product casing and connected with the pipe-coils within the casing, substantially as described.

5. The combination, with a range, a hot-product casing mounted on the range and connected with one end of the fire-pot and with the chimney, and the water-back E, located in one end of the fire-pot of the range, of a shield adapted to fit between the fire-pot and the water-back and close the entrance to the hot-product casing, substantially as described.

6. The combination, with a range, a hot-product casing mounted on the range and connecting with the fire-pot and chimney, and the water-back E in one end of the fire-pot of the range, of a shield shaped to fit between the fire-pot and the water-back and close the entrance to the hot-product casing, said shield having perforations therein, and a perforated slide mounted on the shield to move opposite the perforations of the shield, substantially as set forth.

7. The combination, with a range and an auxiliary water-back therein, of a shield for the water-back, said shield having slots in its lower edge to fit the grate-bars and having

perforations in its upper portion, a catch for the shield, and a perforated slide mounted on the shield to move opposite its perforations, substantially as described.

pot and the damper in the casing, for sending the heat through or around the casing, substantially as described.

5 8. The combination, with a range, of a water-heating casing thereon, heat-passages through the casing from the fire-pot to the chimney, and means, as the shield in the fire-

HENRY C. STEINHOFF.

Witnesses:

HENRY REINERS,
JOSEPH E. CHAMBERS.