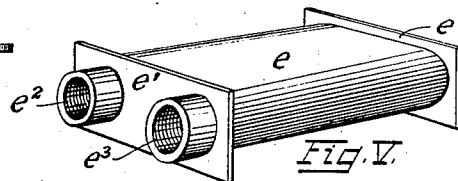
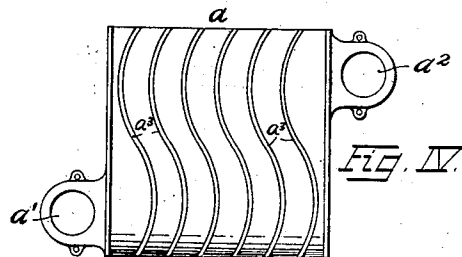
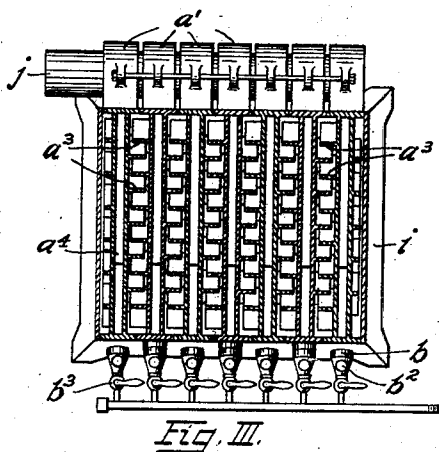
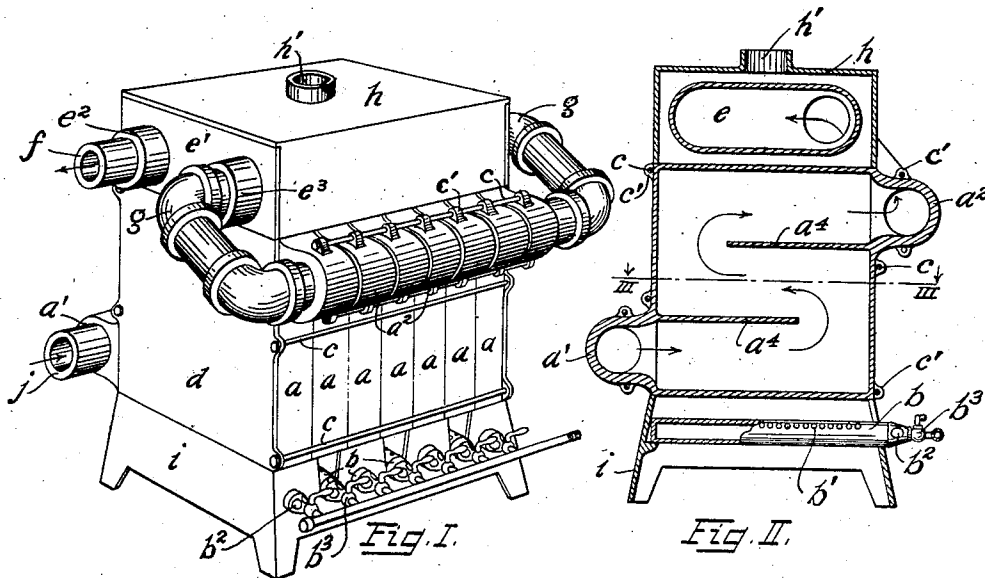


W. G. WISE.
WATER HEATING APPLIANCE.
APPLICATION FILED MAY 20, 1907.

935,876.

Patented Oct. 5, 1909.



Witnesses:
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UNITED STATES PATENT OFFICE.

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WATER-HEATING APPLIANCE.

935,876.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, WILBERT G. WISE, a citizen of the United States of America, and a resident of Akron, in the county of Summit and State of Ohio, have invented certain new and useful Improvements in Water-Heating Appliances, of which the following is a specification.

My invention relates to improvements in water heating apparatus, and more particularly to such apparatus designed for the heating of buildings and employing gas as a fuel.

The object of my invention has been the production of an appliance of this character which shall be economical in operation, both as to the cost of attendance and fuel, simple and cheap in construction, and one which provides a large heating surface and impedes the flow of the water through the heater as little as possible.

The furnace of my invention, preferably is constructed in vertical sections, each of which is provided with its own gas burner, and associated therewith is an upper section wherein the water is finally heated before passing to the connected system of piping. The particular details of my improved construction, however, may be more readily gathered by first making reference to the accompanying sheet of drawings, wherein;—

Figure I is a perspective view illustrating a water heating appliance embodying my invention. Fig. II is a vertical sectional view through the same. Fig. III is a horizontal section on line III—III indicated in Fig. II. Fig. IV is a side elevation of one of the vertical sections; and Fig. V is a perspective view of the upper reservoir provided in the horizontal section of the heater.

Throughout the several figures of the drawings, I have employed the same character of reference to indicate similar parts, in order to avoid possible confusion.

A seven-section heater is illustrated in Fig. I, and I may state that preferably the vertical sections are provided in odd numbers for the purpose of more economically operating the furnace under ordinary conditions. It is possible, of course, to employ any desired number of sections. Each of the vertical sections *a* is provided with its individual lower and upper manifolds or sub-reservoirs *a'* *a''*, which are connected with those of the adjacent sections by means

of the well known push-nipple. Serpentine ribs or flanges *a''* are provided upon either side of the sections, which intermesh with those of the adjacent sections, as best shown in Fig. III, to form passages for the heated gases emanating from the individual burners *b*. These burners are provided with two rows of holes *b'* adapted to direct the flame angularly beneath the section toward the inter-sectional passages formed by the flanges *a''*. An air mixer *b''*, and a valve *b'''* are respectively associated with each of the burners. Interiorly of each of the vertical water sections are positioned two baffle plates *a'''*, which insure the circulation of the water throughout the section without unduly impeding its movement. A plurality of threaded rods *c*, passing through the end plates *d*; or the lugs *c'*, serve to insure watertight connection between the several vertical sections of the heater. The horizontal or top section comprises a reservoir *e* having end plates *e'* and threaded nipples *e''* *e'''* respectively adapted to connect with the outlet pipe *f*, and with the elbows *g* extending to the upper manifold or sub-reservoir *a''*. The three-sided shell or casing *h* exteriorly seals the said reservoir, and is provided with an opening *h'* connected with the chimney stack. A suitable base *i* immediately mounting the burners and the assembled vertical sections, serves to complete the preferred embodiment of the simple water heating appliance made in accordance with my invention.

I shall now endeavor to point out some of the advantages attained by my invention, and explain the manner in which the appliance operates. Pipe *j* connecting with the lower manifold or sub-reservoir *a'* will be understood to extend from the return of the hot water heating system. From this the water is distributed to the several vertical heating sections, following the general course of the arrows supplied to Fig. II. Under ordinary circumstances only a portion of the gas burners will be lighted, since, if the 2nd, 4th and 6th burners are lighted, each one of the vertical sections will be adequately and individually heated through the medium of its exposed sides and serpentine flanges. Any one of these burners, accordingly, will serve to heat three of the adjacent sections, and the full number of burners ordinarily are employed merely for quickly starting the hot water into circulation, or because of a

sudden fall in temperature. In mild weather a single burner may be used to supply the required heat.

From the description of the structural features, it will be understood that the products of combustion are drawn upward between the adjacent flanges and sides of the vertical sections *a*, and strike against the bottom wall of the top reservoir *c*, the combustion being practically completed in its inclosing chamber, from which the exhausted gases pass to the chimney through the vent *h'*. Accordingly, the water is provided with a relatively large amount of heating surface, and in consequence the maximum temperature for a given fuel consumption is secured. In my improved heater, moreover, the flow of the water is impeded but very little, while by use of the communicating manifolds or sub-reservoirs, the circulation is maintained from those sections which receive the greatest amount of heat, as where only a portion of the burners are employed, while the hot water is delivered into the common upper reservoir which is positioned in the hottest portion of the appliance, and from which the water circulates immediately through the connected system of piping and radiators.

As stated, preferably gaseous fuel, of which natural gas is the cheapest, is employed in firing my improved heating appliance, but the same is not limited thereto. For the reasons stated, it likewise is preferable to associate a burner with each of the vertical sections, but from the foregoing it will appear that this is not necessary, since a single burner is advantageously positioned beneath one section to heat it and the two adjacent sections as well. By adopting this sectional construction, it is, of course, apparent that the heating appliance of my invention may be readily added to, or partially replaced, if required. The construction, moreover, readily lends itself to the economical heating of large apartments or buildings in small units or suites, controllable as the individual tenants shall see fit. This is particularly true of the natural-gas burning heater, since it is simple, extremely compact, and may be positioned in an out of the way corner of the apartment or the suite which it is desired to heat.

Having now explained the preferred embodiment of my invention, and indicated its uses and advantages, I claim as my invention, the following:—

1. In an appliance of the class described, the combination with a plurality of vertical sections, each section comprising a central heating compartment and laterally positioned connecting manifolds, integral flanges provided upon the exterior of the heating compartments, and independently controllable gas burners respectively positioned

adjacent to the lower portions of the several sections, substantially as set forth.

2. In an appliance of the class described, the combination with a plurality of vertical sections, each section comprising a central heating compartment and upper and lower connecting manifolds, baffle plates positioned interiorly of each section and interlocking flanges disposed exteriorly of the heating compartments to form passages for the products of combustion, gas burners respectively positioned below and intermediate of the heating sections, and means for independently controlling the flow of gas thereto, substantially as set forth.

3. In an appliance of the class described, the combination with a plurality of vertical sections, each section comprising a central heating compartment, having flanged exterior sides and interior baffle plates and integral manifolds laterally positioned above and below and interiorly connected therewith, and means for heating the sections, substantially as set forth.

4. In a sectional water heating appliance, the combination with a plurality of vertically disposed castings or sections spaced at a distance from each other to form flues or passages, and integral lateral reservoir members provided upon said castings for connecting the sections as a whole, of a plurality of independently controllable gas burners respectively positioned adjacent to the flues between two or more of said castings, whereby the heating of said sections may be economically regulated, substantially as set forth.

5. In a sectional heating appliance of the class described, the combination with a plurality of vertically positioned heating sections, a common connecting reservoir and a plurality of independently controllable gas burners positioned beneath said vertical sections each adapted to heat a plurality of such sections, substantially as set forth.

6. In a sectional heating appliance of the class described, the combination with a plurality of vertically positioned heating sections, a main reservoir horizontally positioned above the vertical sections, and a plurality of gas burners, each of which is independently controllable and interiorly positioned to heat a plurality of such vertical sections and the horizontal reservoir, substantially as set forth.

7. In a hot water heating appliance, the combination with a plurality of connected independent vertical sections, of a superposed and horizontal section connected in common thereto, each of said sections being formed of a single integral casting, and suitable means, comprising independently controllable gas burners for heating the several vertical and horizontal sections, substantially as set forth.

8. In a hot water heating appliance, the combination with a plurality of connected independent vertical sections, each comprising a sectional sub-reservoir, an interior heating space equipped with baffle plates and exterior intermeshing flanges, of a superposed and horizontal section connected in common thereto, each of said sections being formed of a single integral casting, and
10 suitable means for heating the several vertical and horizontal sections, substantially as set forth.

9. In a hot water heating appliance, the combination with a plurality of vertical sections, having inferior and superior reservoir-members connecting with those of the adjacent sections, a superposed main reservoir connecting with the superior reservoir-members, and suitable means for heating

the several sections and the reservoir, substantially as set forth. 20

10. In a hot water heating appliance, the combination with a plurality of vertical sections, having inferior and superior reservoir-members connecting with those of the adjacent sections, a superposed main reservoir connecting with the superior reservoir-members, and gas burners respectively positioned beneath the heating sections and the reservoir, adapted to be independently operated, substantially as set forth. 25 30

Signed at Akron, Ohio, this 16th day of May, A. D. 1907, in the presence of two subscribing witnesses.

WILBERT G. WISE.

Witnesses:

D. C. SIEGFRIED,
LAURA K. BERG.