J. HORST.

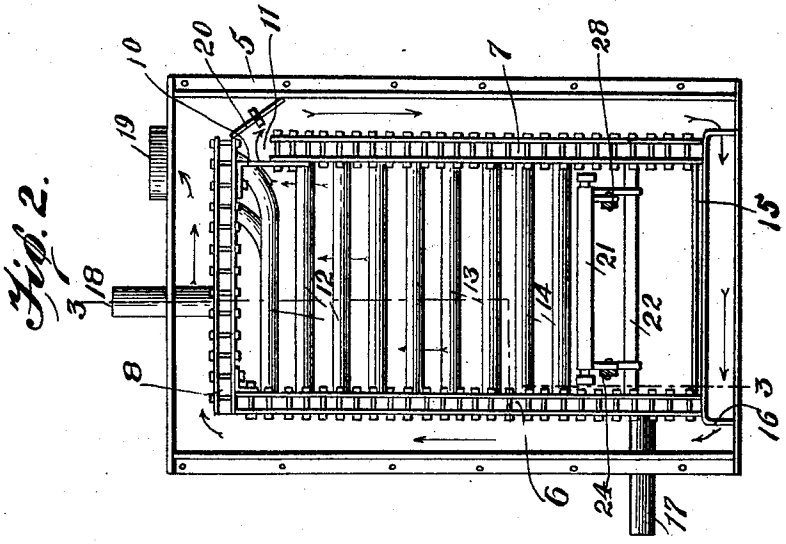
HEATER.

APPLICATION FILED JAN. 11, 1909.

929,436. Patented July 27, 1909.

2 SHEETS—SHEET 1.

Fig. 2.



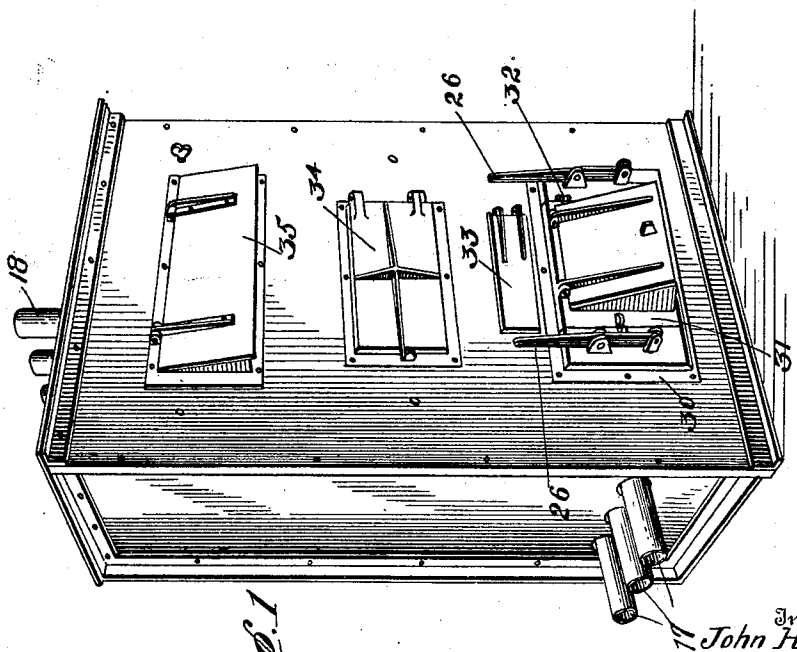


Fig. 1.

Witnesses

D. C. Wilson

H. B. Martin

Inventor

John Horst.

By William T. Jones.

Attorney

ANDREW. B. GRAHAM CO., PHOTO-LITHOGRAPHERS, WASHINGTON, D. C.

J. HORST.

HEATER.

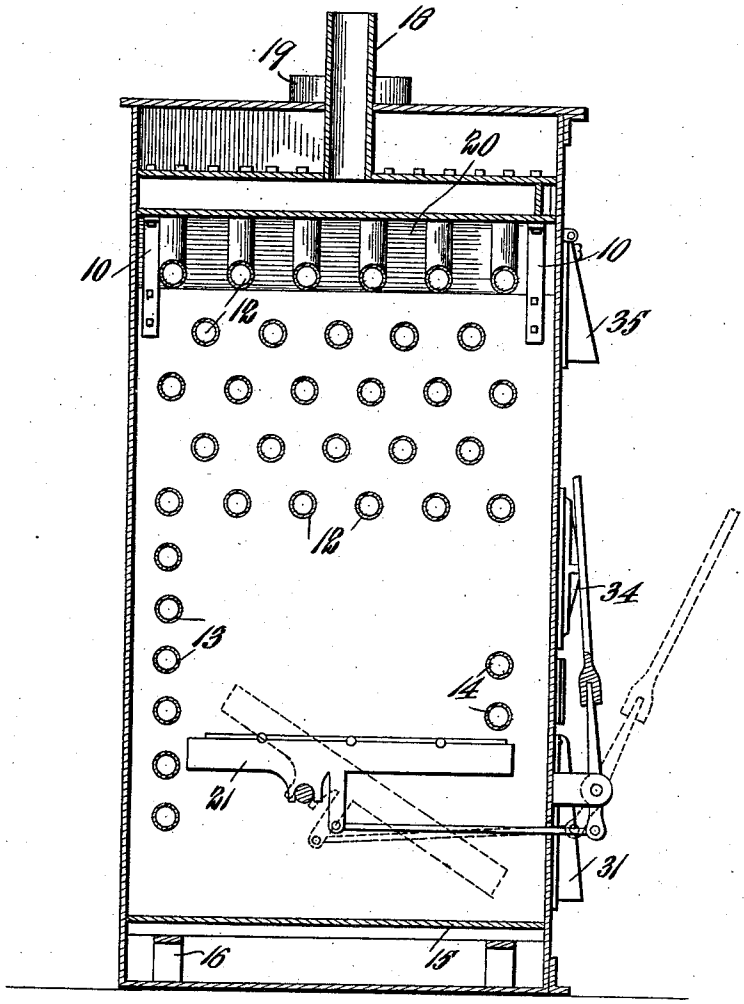
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Patented July 27, 1909.

2 SHEETS—SHEET 2.

Fig. 3.



Witnesses
E. M. Callaghan
D. E. Wilson

Inventor
JOHN HORST

By William F. Jones.
Attorney

ANDREW. B. GRAHAM CO., PHOTO-LITHOGRAPHERS, WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JOHN HORST, OF HARRISBURG, PENNSYLVANIA.

HEATER.

No. 929,436. Specification of Letters Patent. Patented July 27, 1909.

Application filed January 11, 1909. Serial No. 471,697.

To all whom it may concern:

Be it known that I, JOHN HORST, a citizen of the United States, residing at Harrisburg, in the county of Dauphin and State of Pennsylvania, have invented certain new and useful Improvements in Heaters, of which the following is a specification.

This invention relates to improvements in water-heaters; and the objects of the invention are to provide a contact water-circulating and hot-water-generating system of large heating surfaces in combination with a mode of handling the products of combustion to best develop and utilize the energy of the fuel in the creation of hot water; to secure an equal or desired distribution of the heating-gases and cause them to travel in close and constant contact with the heating surfaces; to facilitate the circulation throughout the hot water generating system; to decrease the danger of accidents; to facilitate cleaning, repairs, and renewals, and to provide generally for a high degree of economy and efficiency in the construction and operation.

The invention contemplates the provision of an outer casing equipped with its usual appurtenances and sufficiently large to inclose a trio of manifolds and a series of connecting tubes in such a manner as to cause the heat to circulate about the inside and outside walls of the manifolds previous to its discharge from said casing. By employing the principle of sectional manifolds provision is made for the expeditious removal of one or more of the manifolds, and the substitution of a new one when the occasion so requires.

To the accomplishment of the recited objects, and others coördinate therewith, the preferred embodiment of my invention resides in that arrangement and construction of parts hereinafter described, illustrated in the accompanying drawings, and embraced within the scope of the appended claims.

In said drawings:—Figure 1 is a perspective view of the heater embodying my invention. Fig. 2 is a side elevation of the stove showing the front plate of the outer casing removed. Fig. 3 is a transverse sectional elevation taken along lines 3—3 of Fig. 2.

Like reference characters designate corresponding parts throughout the several views.

Referring more particularly to the drawings for a detail description of my invention, the numeral 5 designates a casing which may be constructed of any suitable metal, and presents a rectangular contour. Arranged within the casing, and extending from the front of the rear portions thereof are preferably, three manifolds (6, 7 and 8), two being vertically disposed, and the remaining one lying in a horizontal plane and connected to the top of the aforesaid pair of vertical manifolds by pairs of angular brackets (9 and 10). It will be pointed out in this connection that the manifold 7 is of less longitudinal extent than the corresponding manifold 6 in order that a space (11) may be formed between the outer extremital portion of the manifold 8 and the top extremital portion of the manifold 7, this space or opening serving for the passage of the products of combustion, as will be presently set forth. The tubes connecting the manifolds are arranged in such relation that a thorough circulation of the water will ensue, and comprise two essential features, a main series (12) and a pair of ancillary vertical banks (13 and 14). Upon referring to Fig. 2 of the drawings it will be observed that a plurality of the topmost tubes have curvilinear proximal ends which connect the manifolds 6 and 8. The lowermost row of tubes in the main series is located preferably some distance above the grate mechanism for obvious reasons. The bottom of the manifold structure, considered as an entirety, is formed by a plate, as 15, which is in turn supported by the substantially U-shaped rests 16. Manifestly, the manifold 6 is furnished with a plurality of inlet pipes (17), the manifold 8 is equipped with the same number of discharge pipes (18), and the outer casing (5) is provided with a smoke outlet (19).

From the foregoing description it will be seen that a space is formed on the outside walls of all of the manifolds, and when the heat is generated and the damper (20), which is mounted adjacent the opening (11), is closed, as shown in Fig. 2 of the drawings, the products of combustion will naturally arise within the manifolds and make its exit through said openings (11) and said spaces on the outside walls of the manifolds, as indicated by the arrow, finally passing out the outlet (19).

Having thus described the invention what is claimed as new is:—

1. In a heater, the combination of a casing having an outlet, a pair of manifolds ver-

tically disposed within said casing, a top manifold, said top manifold and one of the vertically disposed manifolds being arranged to form an opening therebetween, said manifolds inclosing a combustion chamber and contacting with the front and rear walls of the casing and being spaced from the top and side walls thereof, said combustion chamber being provided with a bottom extending between the lower ends of the vertically disposed manifolds and spaced from the bottom of the casing, the space around said combustion chamber forming a continuous passage, and means for causing the products of combustion to travel through said passage to said outlet.

2. In a heater, the combination of a casing having an outlet, a pair of manifolds vertically disposed within said casing, a top manifold, brackets connecting the vertically disposed manifolds with the top manifold, said top manifold and one of the vertically disposed manifolds being arranged to form an opening therebetween, said manifold inclosing a combustion chamber and contacting with the front and rear walls of the casing and being spaced from the top and side walls thereof, said combustion chamber being provided with a bottom extending between the lower ends of the vertically disposed manifolds and spaced from the bottom of the casing, the space around said combustion chamber forming a continuous passage, and means for causing the products of combustion to travel through said passage to said outlet.

3. In a heater, the combination of a casing having an outlet, a pair of manifolds vertically disposed within said casing, a top manifold, said top manifold and one of the vertically disposed manifolds being arranged to form an opening therebetween, said manifolds inclosing a combustion chamber and contacting with the front and rear walls of the casing and being spaced from the top and side walls thereof, water tubes connecting the manifolds, said combustion chamber being provided with a bottom extending between the lower ends of the vertically disposed manifolds and spaced from the bottom of the casing, the space around said combustion chamber forming a continuous passage, and means for causing the products of combustion to travel through said passage to said outlet.

In testimony whereof I affix my signature, in presence of two witnesses.

JOHN HORST.

Witnesses:
JOHN W. A. HANDIBOE,
M. BECK.