

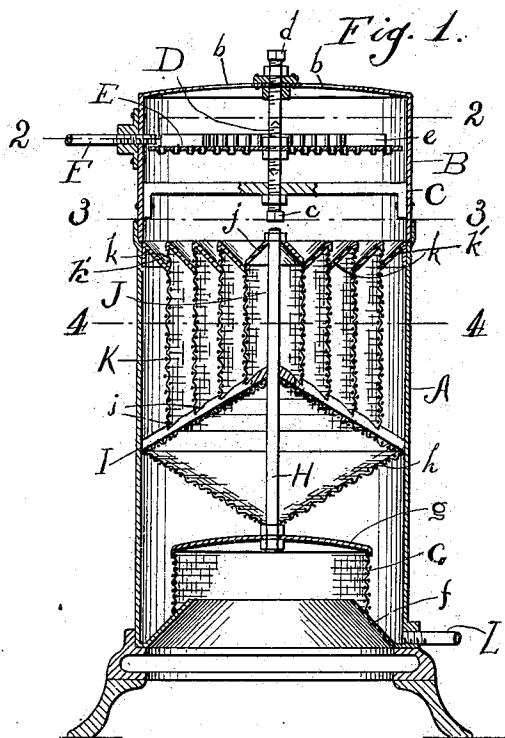
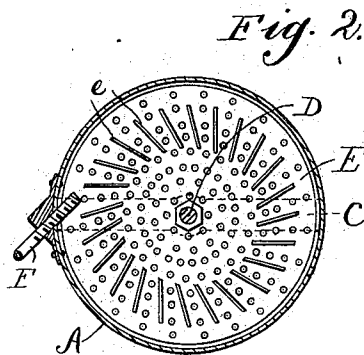
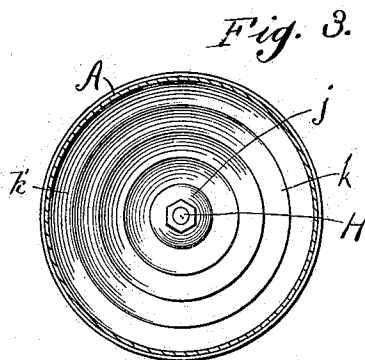
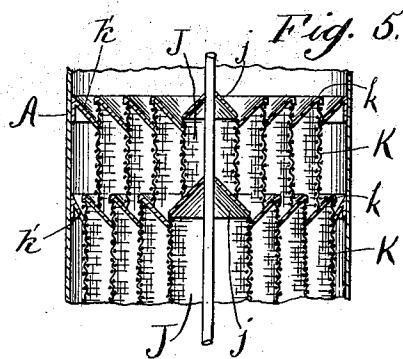
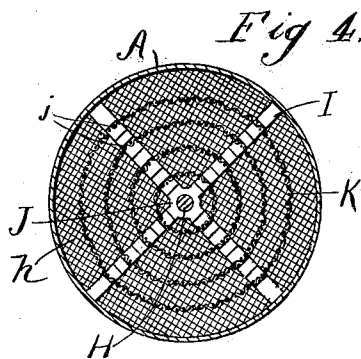
No. 651,207.

Patented June 5, 1900.

M. SCHAACK.
WATER HEATER.

(Application filed July 24, 1899.)

(No Model.)



Witnesses:

E. F. Wilson.

Wm B. Snowhook.

Inventor:

Michael Schaack

By *Rudolph K. Lutz*
Att'y

UNITED STATES PATENT OFFICE.

MICHEL SCHAAACK, OF CHICAGO, ILLINOIS.

WATER-HEATER.

SPECIFICATION forming part of Letters Patent No. 651,207, dated June 5, 1900.

Application filed July 24, 1899. Serial No. 724,917. (No model.)

To all whom it may concern:

Be it known that I, MICHEL SCHAAACK, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Water-Heaters; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to a novel construction in a water-heater, the object being to provide a device of this character of simple and efficient construction in which the water is brought into direct contact with the hot gases; and it consists in the features of construction and combinations of parts hereinafter fully described and claimed.

In the accompanying drawings, illustrating my invention, Figure 1 is a central vertical section of a water-heater constructed in accordance with my invention. Fig. 2 is a transverse section on the line 2 2 of Fig. 1. Fig. 3 is a transverse section on the line 3 3 of Fig. 1. Fig. 4 is a transverse section on the line 4 4 of Fig. 1. Fig. 5 is a fragmentary central vertical section of a modified form of construction.

Referring now to said drawings, A indicates a cylindrical casing having a cover B, provided with openings *b*. A cross-piece C spans said cover at its lower end, in which a vertically-adjustable set-screw *c* is mounted at its middle portion, between which and a set-screw *d* in the top of said cover B a vertical shaft D is journaled, which carries a horizontal perforated plate E, which is provided at regular intervals with a series of upright plates *e*, set at an incline to the radial lines of the plate. Entering said cover B on a level with said plates *e* and at an incline thereto is a water-supply pipe F, adapted to throw a stream of water against said plates *e*, thereby revolving the plate E. Said stream of water is deflected inwardly over said plate E, thus spreading evenly over same. Said cylinder A is provided with a conical upwardly-inclined bottom *f*, having a central opening for the admission of heated gases. Resting upon said bottom *f* is a cylinder G, of wire-cloth, of less diameter than said casing A, and upon said cylinder G is a plate *g*

of practically the same diameter, which is dished and convex on its upper face. Said plate *g* carries a rod H, extending upwardly therefrom and centrally through said casing A. Immediately above said plate *g* said rod carries a wire-cloth frame *h*, consisting of two conical sections placed base to base and having a diameter about equal to the inner diameter of said casing A. Mounted on the upper face of said frame *h* are a plurality of radial rods I, provided with a series of notches *i*, which are adapted to receive the lower ends of a plurality of concentric wire-cloth cylinders J and K. Said cylinder J is provided with a conical cap *j*, through which said rod H passes. Mounted on each of said cylinders K are inverted conical rings *k*, extending inwardly from each of said cylinders and abutting against the next. A similar ring *k'* is mounted on the inner wall of said casing A and abuts at its inner end against the outermost cylinder K.

The operation of my device is as follows: The water admitted through the pipe F revolves said plate E and spreads over same, dropping through the perforations therein. By the revolution of said plate E the drops of water are thrown more or less centrifugally outwardly and are thus dropped upon the conical cap *j* and rings *k* in quantities proportioned approximately to the area of each of said rings, and thus to the circumference of each of said cylinders J and K, to which the water is guided by said cone *j* and rings *k*. The water percolates down said cylinders J and K and drops thence upon the wire-cloth frame *h*, which it follows to some extent and through the meshes of which it drops, thus dropping upon the plate *g* and flowing to the edges of same, flows into the annular receiving-chamber formed between the wall and bottom of said casing A by following the cylinder G, and is thence drained off by the outlet-pipe L. The heated gases introduced through the opening in the bottom pass upwardly through said casing in irregular currents and are brought into direct contact with the water, thus rapidly heating the same.

In Fig. 5 I have shown a modification in which a plurality of series of wire-cloth cylinders J and K, with their caps *j* and rings *k*, are used.

I claim as my invention—

1. In a water-heater, the combination with a casing, a water-supply and water-distributing devices, of a plurality of conical surfaces of different diameters adapted to receive said
5 water, a plurality of concentric foraminated metal cylinders below said conical surfaces adapted to receive the water therefrom and lead it downwardly, foraminated devices be-
10 low said cylinders adapted to receive the water therefrom, a water-receiving chamber, an outlet therefrom, and means for admitting heated gases to said casing.

2. In a water-heater, the combination with
15 a casing having openings in its upper and lower ends, a water-receiving chamber in its lower end, an outlet therefrom, a water-supply and water-distributing devices in its upper end, of a plurality of inclined concentric
20 plates below said water-distributing devices, and concentric foraminated cylinders below said plates adapted to receive the water therefrom and guide same toward said water-receiving chamber, substantially as described.

25 3. In a water-heater, the combination with a casing having openings in its upper and lower ends, a water-receiving chamber in its lower end, an outlet therefrom, a water-supply and water-distributing devices in its upper
30 end, of a plurality of inclined concentric plates below said water-distributing devices, and concentric foraminated cylinders below

said plates adapted to receive the water therefrom, a foraminated conical frame below said
35 cylinders, a dished plate below said conical frame adapted to receive the water therefrom, and a foraminated cylinder below said dished plate to receive and guide the water from said plate to said water-receiving chamber, substantially as described. 40

4. In a water-heater, the combination with a casing, devices within the same for guiding water in a zigzag downward course, and a horizontal water-supply pipe entering said casing above said guiding devices, of a horizontal perforated rotating plate pivotally
45 mounted on a shaft journaled in bearings in the upper end of said casing, said plate being below said water-supply pipe, and carrying a plurality of upright plates set at an incline
50 to the radial lines of said plate, against which the water flowing from said supply-pipe is adapted to impinge to rotate said plate, said upright plates being adapted to deflect said water inwardly over said plate to distribute
55 same uniformly, whereby said water is uniformly distributed over said guiding devices, substantially as described.

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

MICHEL SCHAAK.

Witnesses:

G. F. WILSON,

RUDOLPH WM. LOTZ.