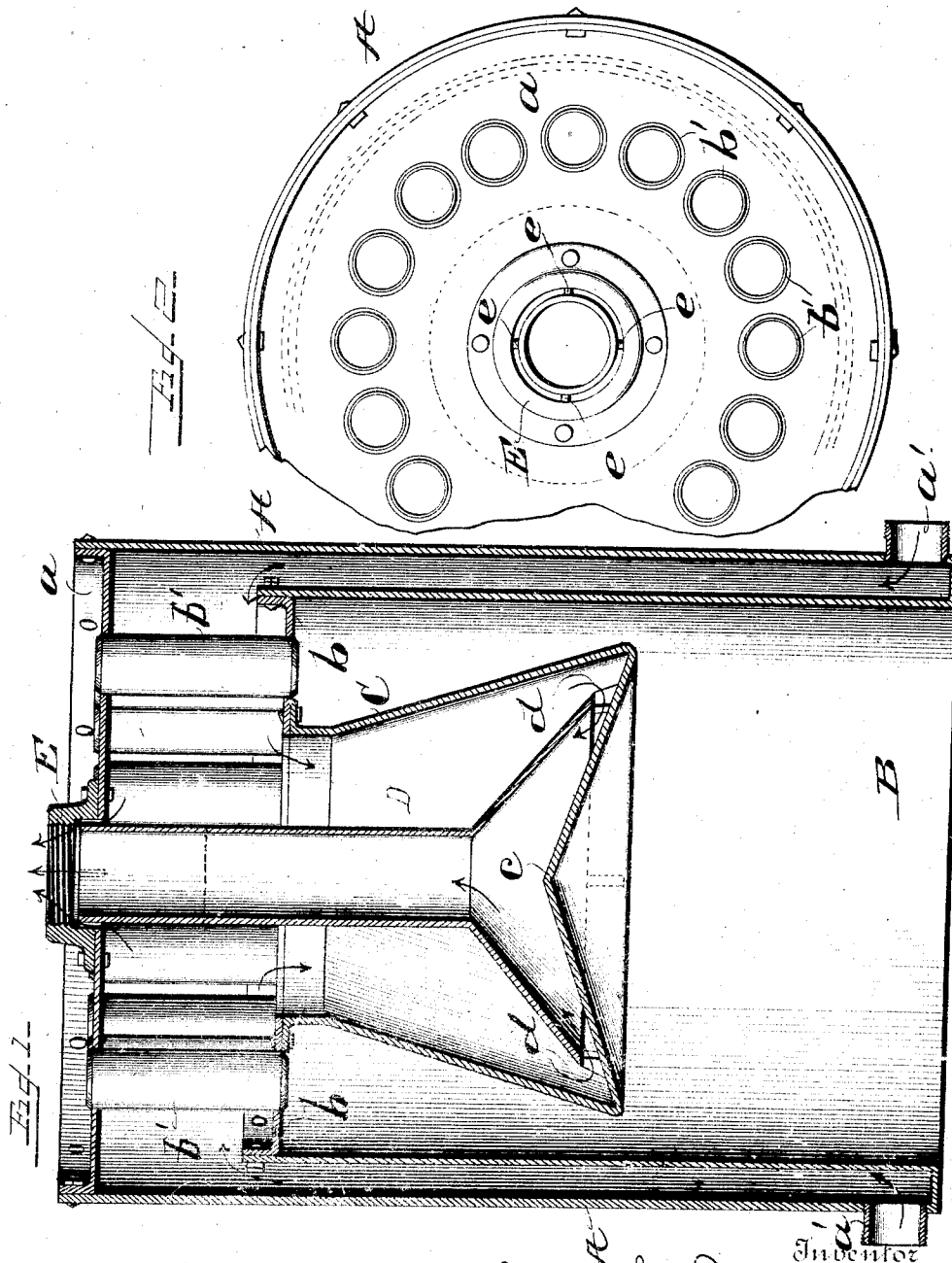


(No Model.)

O. C. DAVIS.  
BOILER.

No. 519,887.

Patented May 15, 1894.



Witnesses  
G. A. Tauberschnitt.  
Jesse Kingsbury.

By Ossian C. Davis  
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# UNITED STATES PATENT OFFICE.

OSSIAN C. DAVIS, OF RACINE, WISCONSIN.

## BOILER.

SPECIFICATION forming part of Letters Patent No. 519,867, dated May 15, 1894.

Application filed September 28, 1893. Serial No. 486,700. (No model.)

*To all whom it may concern:*

Be it known that I, OSSIAN C. DAVIS, a citizen of the United States, residing at Racine, in the county of Racine and State of Wisconsin, have invented certain new and useful Improvements in Boilers; 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 present invention is an improvement in boilers, that is, water heaters or steam generators and it consists of certain improved constructions and combinations of parts whereby water is more readily heated or steam more quickly generated.

The best form in which I have contemplated embodying my invention is illustrated in the accompanying drawings and the said invention is disclosed in the following description and claims.

In the drawings, Figure 1 is a vertical section of my improved boiler, and Fig. 2 is a partial top view of the same.

In the figures A is the outer shell of the boiler B is the inner shell forming the fire box. The shells A B are united at the base and at the upper ends the shell A is provided with a head *a* and the shell B with a head *b*. These heads are a distance apart and they are connected by tubes *b'* for the passage of the products of combustion through the boiler. The head *b* of shell B is provided with a downwardly extending inner or depending shell C which increases in size as it descends and is provided at its lower end with a re-entrant bottom *c* forming the top or dome of the fire box. Within this depending part of the boiler or heater is placed the inverted funnel shaped deflector D. This deflector is preferably supported upon the bottom *c* of the depending portion C of the boiler. A space must be provided between the lower edge of the deflector and the bottom to permit the free passage of the water between them; and in order to secure this I provide the lower edge of the deflector with feet *d* which rest upon the bottom *c*. The upper tubular end of the deflector is loosely held in the outlet through the head *a*. In this instance the head is provided with a socket E to which a pipe may be secured to conduct away the out-going stream

of water or steam, and the upper end of the deflector D is provided with projections *e e* to form a space between the deflector and the socket.

In practice the fire-box is provided with a grate and the top of casing A is fitted with a hood for conducting the products of combustion to a stack or up-take of usual construction.

The space between the shells A, B, the heads *a, b* and within the depending portion C constitute the interior of the boiler and the shell A is provided with one or more inlets *a'* through which water is brought into the boiler.

The method of operation of my improved device will be at once apparent to any one skilled in the use or construction of this class of devices.

When used in connection with a circulatory system the water enters at the inlets *a' a'* and passing up between the shells takes the heat from the inner shell B reducing the temperature of the same and thus greatly protecting the walls of the fire box. The water then passes upward and through the series of pipes *b'* where it is further heated, then downward within the depending portion C when it passes beneath the deflector and is brought into contact with the crown or dome of the fire box and is highly heated, expanding and rising quickly through the tubular part of the deflector and passing in a strong current out through the outlet pipe. In case any steam is generated in the boiler it passes out through the deflector or through the space between the upper end of the same and the outlet opening. The construction also gives excellent results as a steam generator for heating and other purposes. In such case the deflector tube may if desired be cut off at the dotted lines shown in the drawings.

The lower part deflector C resting upon the bottom *c* of the boiler has a considerable degree of heat imparted to it and the water between it and the bottom is by reason of this, quickly raised to a high degree of temperature, while the incline of the deflector concentrates the same into the tubular portion giving the sharp action before described.

What I claim, and desire to secure by Letters Patent, is—

1. A water boiler having a bottom portion

forming the top of the fire box and provided with an inverted funnel shaped deflector resting on and supported by the said bottom portion, substantially as described.

5 2. A water heater or boiler having a re-entrant bottom and provided with an inverted funnel shaped deflector resting on and supported by said bottom, substantially as described.

10 3. The combination with a water heater or boiler, of an inverted funnel shaped deflector and provision for the escape of steam between the top of said deflector and boiler, substantially as described.

15 4. The combination with a water heater or boiler provided with outlet and inlet, of an inverted funnel shaped deflector adjacent to the outlet, resting on and supported by the bottom of the boiler of tubular passages for

the product of combustion passing through 20 the boiler between the inlet and said deflector, substantially as described.

5. The combination with a water heater or boiler, provided with an outlet and inlet, of a depending portion extending to near the bot- 25 tom of the boiler having an interior passage connected directly with the outlet, and tubular passages for the products of combustion passing through the boiler between the inlet and said depending portion, substantially as 30 described.

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

O. C. DAVIS.

Witnesses:

JOHN W. OWENS,  
J. D. KINGSBURY.