

(No Model.)

B. A. STEVENS.

STEAM HEATER.

No. 348,247.

Patented Aug. 31, 1886.

Fig. 1.

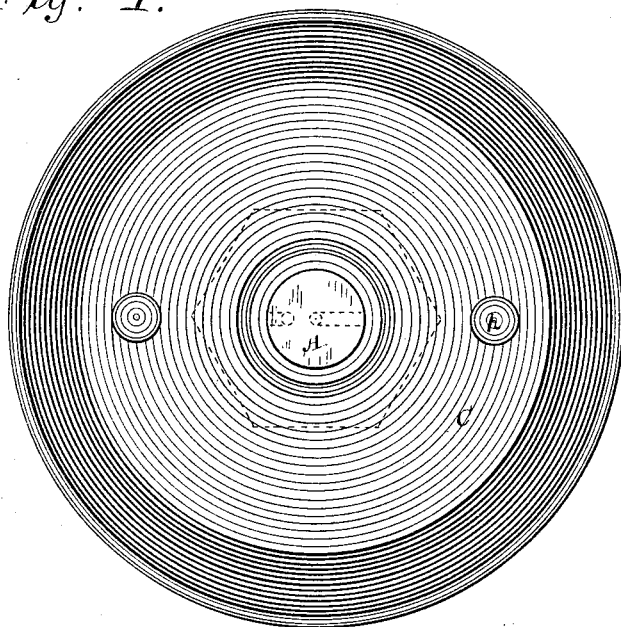
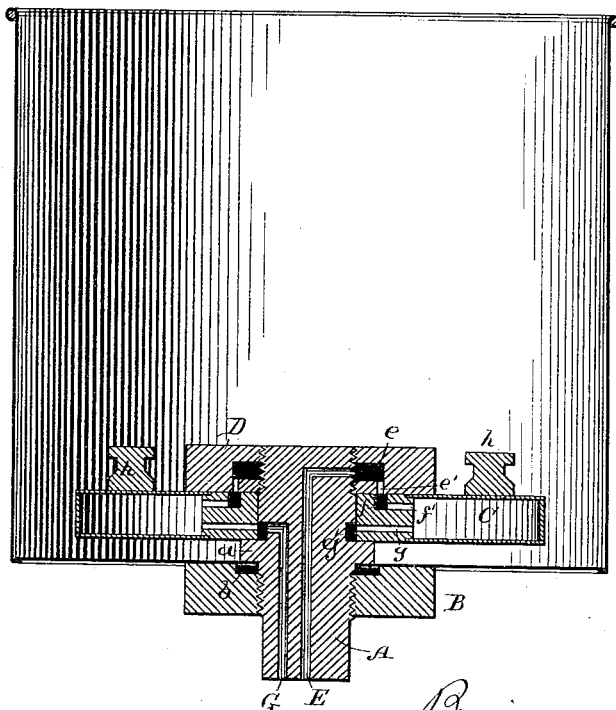


Fig. 2.



WITNESSES

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BENJAMIN ABBOTT STEVENS, OF TOLEDO, OHIO.

STEAM-HEATER.

SPECIFICATION forming part of Letters Patent No. 348,247, dated August 31, 1886.

Application filed December 28, 1885. Serial No. 186,920. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN ABBOTT STEVENS, of Toledo, State of Ohio, have invented an Improved Steam Heater or Cooker, of which the following is a specification.

My invention relates to that class of heaters or cookers in which a steam-heating chamber is secured within a vessel or boiler.

I am aware of various devices of the same general character as mine that have been patented heretofore.

One of the principal results I have sought to accomplish is to provide a new, cheap, and simple arrangement in which the heater proper can readily be removed from the vessel or boiler whenever desired. This is desirable in order that the parts of the vessel and heater may be kept perfectly bright and clean. In practice I expect that the heater will not be put into place in the vessel until needed for use, and that when finished with for the time the heater proper will be at once removed and cleaned.

In the accompanying drawings, Figure 1 is a plan view looking into the top of the vessel, with the inner nut shown by dotted lines; and Fig. 2 is a vertical central section.

The vessel or boiler, which may of course be of any suitable material and is preferably of metal, is provided with an aperture in the bottom, through which a plug, A, passes. This plug is formed with an annular flange, *a*, which rests on the inside of the vessel-bottom, and the plug and vessel are tightly united by a clamp-nut, B, which screws on a thread on the plug. An annular depression, *b*, is formed in the upper face of this nut around the opening therein, so that a yielding or elastic compression-joint is formed between the flange *a* and the bottom of the vessel, as clearly appears in Fig. 2.

The steam chamber or heater proper, C, fits loosely over the plug A, rests on the upper face of the flange *a*, and is held in place by a nut, D, which screws on a thread on the inner end of the plug A. This steam-chamber may be of any suitable size or shape or construction. In the present instance I have shown a flat disk-shaped chamber, which may be of any suitable diameter. It is formed of a central hub, with which the thin metal sides are connected by soldering or otherwise. Steam from

any suitable source is admitted through an aperture, E, bored through the plug and opening at the top into an annular recess, *e*, formed within the screw-threaded aperture of the nut D. From this annular chamber *e* one, two, or more apertures, *e'*, lead to an annular recess or steam-passage, *f*, formed in the upper face of the hub of the steam chamber, from which recess steam passages or apertures *f'* lead to the interior of the steam-chamber. Thus live steam entering by the passage E from any suitable source will pass by the passages indicated into the steam-chamber C.

Water of condensation and exhaust-steam will pass out from the steam-chamber by several apertures which pass through the hub of the steam-chamber, and communicate with an annular recess, *g'*, formed around the plug A, with which annular recess the exit or exhaust aperture G, which is also bored in the plug A, communicates. Obviously, therefore, there will be a complete and perfect circulation of live steam through the heater. Of course, the annular chamber *g'* might be formed in the hub of the steam-chamber, instead of in the plug, if desired.

In the arrangement shown it will be observed that the steam-chamber C does not rest in contact with the bottom of the vessel, but is held above by the flange *a* on the plug. There is therefore a complete utilization of the steam-heating surface.

Lugs *h* are preferably secured upon the upper face of the steam-heating chamber, by means of which all the parts may be lifted from the vessel when the lower or outer nut is removed. Of course, by unscrewing the upper nut said nut, the plug, and the steam-chamber can be separated from each other.

Obviously with such a structure all the parts could be kept perfectly fresh and clean, and it is but a moment's work to remove and replace the heater for use.

The various parts of the device are preferably made of iron, brass, or copper; but any suitable material may be employed.

Doubtless some of the details of the structure which I have described may be varied without departing from the principles involved in the details of construction, as shown.

I claim as my invention—

1. The combination of the vessel having an aperture therein, a single plug or steam-chamber support secured in said aperture and having steam inlet and exhaust passages, and a steam-chamber supported by said plug above the bottom of the vessel, whereby the material in the vessel is heated from the bottom as well as the top and sides of the steam-chamber.
 2. The combination of the vessel having an aperture therein, a single plug or steam-chamber support secured in said aperture and having steam inlet and exhaust passages, a steam-chamber supported by said plug within the vessel, and a clamp-nut arranged within the vessel for holding said chamber in place.
 3. The combination of the vessel, the steam-chamber arranged within the vessel, steam inlet and exhaust passages, and a clamping or securing device which holds the steam-chamber in place, constructed independently of the steam-chamber and located within the vessel, whereby the steam-chamber proper may readily be removed by unscrewing said device without disturbing the other parts of the apparatus.
 4. The combination of a vessel having an aperture therein, a plug or steam-chamber support adapted to be secured in said aperture, and having steam inlet and exhaust passages, the clamp-nut arranged on the lower end of said plug, which clamps it to the bottom of the vessel, and the steam-chamber within the vessel carried by said plug.
 5. The combination of the vessel, the plug or steam-chamber support arranged in the bottom thereof, steam inlet and exhaust passages, and a flat disk-like steam-chamber supported by said plug out of contact with the vessel.
 6. The combination, substantially as set forth, of the vessel, the plug or steam-chamber support arranged in the bottom thereof, steam inlet and exhaust passages, a flat disk-like steam-chamber which fits over the end of the plug within the vessel, and a clamp device applied to said end of the plug to hold the steam-chamber in place and yet permit its ready removal.
 7. The combination of a vessel having an aperture therein, a plug or steam-chamber support which fits in said aperture, a clamp-nut which works upon the lower end of said plug and clamps the plug in the aperture, a steam-chamber carried upon the upper end of the plug within the vessel, a clamping device within the vessel for securing the steam-chamber in place upon the plug, and steam supply and exhaust passages.
 8. The combination of the vessel having an aperture formed therein, the flanged plug having steam-passages therein, the steam-chamber carried by the plug, and the clamp-nut formed with an annular depression in its upper face, for the purpose set forth.
 9. The combination of a vessel formed with an aperture therein, the plug and its securing devices, the steam-chamber, the clamp-nut D, which holds it in place, the steam-supply apertures *E e' f f'*, formed in the plug, clamp-nut D, and steam-chamber, and the exhaust-passages.
- In testimony whereof I have hereunto subscribed my name.
- BENJAMIN ABBOTT STEVENS.
- Witnesses:
J. D. FORD,
M. G. BLOCK.