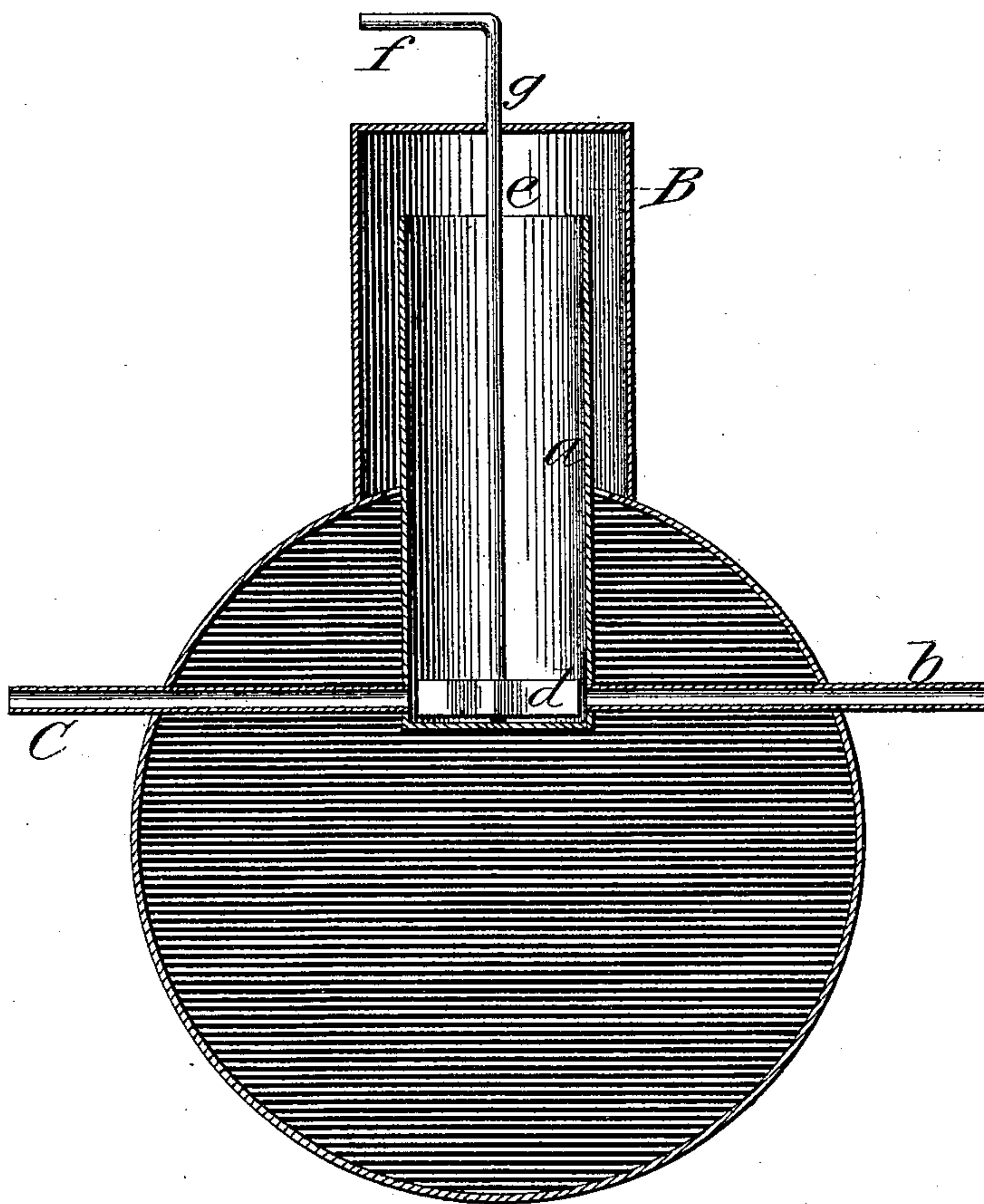


(Model.)

C. A. FRENCH.  
FEED WATER GENERATOR.

No. 251,036.

Patented Dec. 20, 1881.



*Witnesses:*

*Charles French*  
*Strawder Plummer*

*Inventor:*

*Chas A French*

# UNITED STATES PATENT OFFICE.

CHARLES A. FRENCH, OF DAVENPORT, IOWA.

## FEED-WATER GENERATOR.

SPECIFICATION forming part of Letters Patent No. 251,036, dated December 20, 1881.

Application filed August 23, 1880. (Model.)

*To all whom it may concern:*

Be it known that I, CHARLES ALBERT FRENCH, a citizen of the United States, residing at Davenport, in the county of Scott and State of Iowa, have invented certain new and useful Improvements in Feed-Water Generators for Steam-Boilers; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

Heretofore feed-water has been only partially purified by compositions tending to filter, absorb, or collect a portion only of the impurities, which after a short time lose their power of absorbing impurities, and must be replaced or cleaned.

The object of my invention is to perfectly purify feed-water and make the operation continuous without any perceptible loss of heat; and it consists in pumping or injecting the feed-water into a chamber or receptacle that is surrounded by steam, and its top left open enough to cause a perfectly free circulation of the steam within, causing the feed-water that is pumped or injected into said chamber or receptacle to be speedily evaporated and condensed or absorbed by the steam in the boiler proper, leaving the impurities in said chamber or receptacle, where they can be blown or scraped out. I attain these objects by the apparatus illustrated in the accompanying drawing, in which the figure is a vertical section through the dome of the boiler and apparatus.

The drum or receptacle *a* is placed in the dome *B*, with its top left open, and its bottom is placed either a little above or a little below the water-line. It is provided with a pipe, *b*, extending out through the boiler-shell for the purpose of conducting the feed-water into the drum *a*. The other pipe, *c*, is for blowing out the sediment; or a branch pipe provided with a stop-cock may be connected to the pipe *b* on the outside of the boiler.

The feed-water (which may have been partially heated by exhaust-steam or otherwise) is forced or injected into the drum *a* through the pipe *b*. The steam surrounds it, heats it, and

evaporates and condenses or absorbs it out of the chamber *a*, leaving all the impurities in the drum *a*.

A scraping device, *d*, on shaft *e*, working through stuffing-box *g*, operating by handle *f*, aids in loosening up the impurities, so they can be blown off through pipe *c* while the steam-pressure is up.

I am aware that a patent was granted March 30, 1880, to S. J. Hayes, C. T. Jeffery, and H. Schlacks for a receptacle placed in the dome; but it being so small, and a free circulation of the steam being prevented by perforated partition between the dome and boiler, also by their filtering device placed in the dome, (being a part of their invention,) the feed-water overflows the drum, so that with their present apparatus the water cannot be evaporated and absorbed or condensed as by my invention. They anticipate only partially heating the water in the drum, and then allow it to overflow. They anticipate only partial purification by filtering, working on a different principle.

It is evident the water may be previously heated before it is forced or injected into the drum *a*.

I do not claim the process of evaporation and distillation.

I claim—

1. A boiler or dome, in combination with a feed-water receptacle placed within the said boiler or dome, said receptacle having an open or partially-obstructed communication with the steam of the boiler or dome, whereby the water is absorbed or generated into steam, substantially as specified.

2. The process of purifying feed-water for steam-boilers, consisting in conveying the feed-water through a suitable inlet into a vessel or receptacle on the inside of the boiler or dome, having an opening large enough to cause a free circulation of the steam of the boiler or dome, as and for the purpose set forth.

CHAS. A. FRENCH.

Witnesses:

CHAS. FRENCH,  
STRAWDER PLUMMER.