

E. R. STILWELL.
 FEED WATER HEATER AND FILTER.

No. 104,789.

Patented June 28, 1870.

Fig. 1

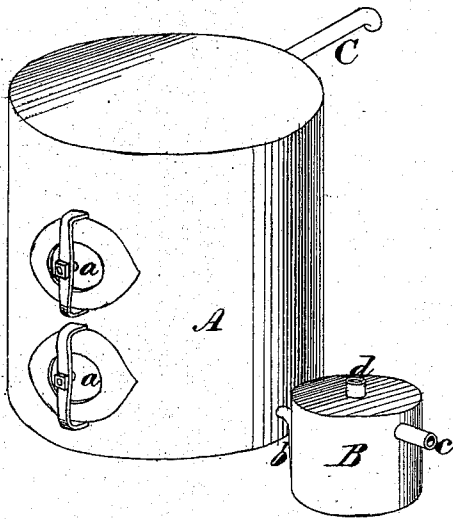


Fig. 3

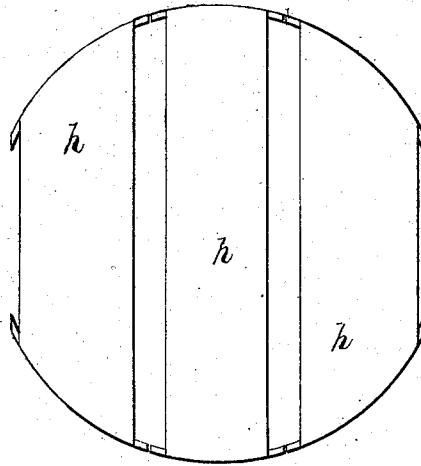
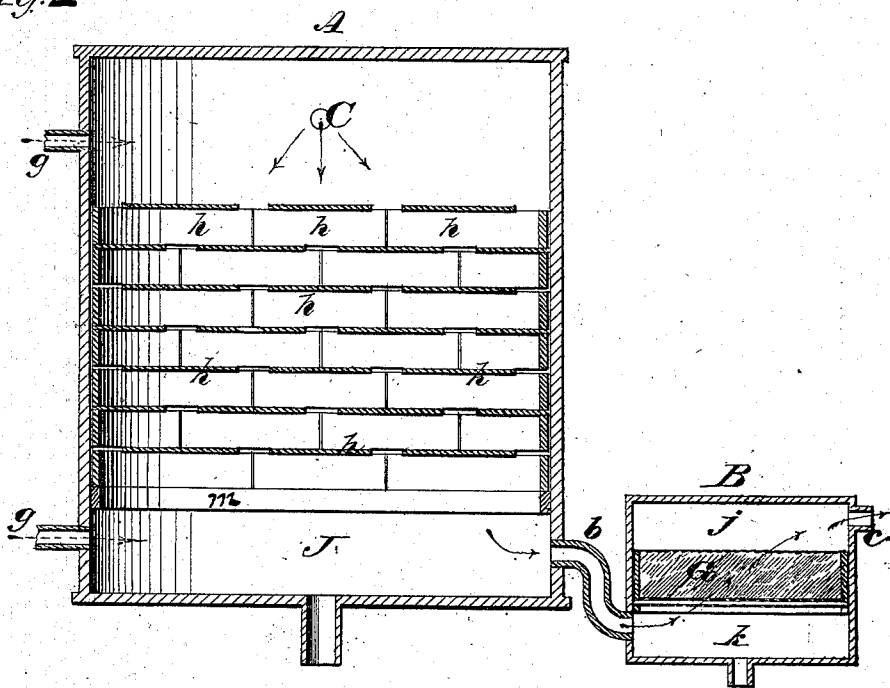


Fig. 2



Witnesses:
 R. H. Campbell
 J. W. Campbell

Inventor
 E. R. Stilwell
 by
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United States Patent Office.

EDWIN R. STILWELL, OF DAYTON, OHIO.

Letters Patent No. 104,789, dated June 28, 1870.

FEED-WATER HEATER AND FILTER.

The Schedule referred to in these Letters Patent and making part of the same

To all whom it may concern:

Be it known that I, EDWIN R. STILWELL, of Dayton, in the county of Montgomery and State of Ohio, have invented certain novel Improvements on Feed-water Heaters and Purifiers; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing making part of this specification, in which—

Figure 1 is a perspective view of the improved apparatus.

Figure 2 is a section through the center of the apparatus in a vertical plane.

Figure 3 is a top view, showing the construction of the sectional shelves.

Similar letters of reference indicate corresponding parts in the several figures.

The object of my invention is to so construct and combine an outside filtering-chamber with a feed-water heater and purifier, that the heavier particles of floating mud or sediment of very muddy water shall be trapped below the filtering material, and the water, thus partially deprived of its dirt and extraneous substances, shall be passed upward through the filter and discharged at a point above the filtering material.

In the schedule annexed to my reissued Letters Patent numbered 3,618, is described a feed-water heater and purifier having filtering material arranged within its casing beneath a series of shelves, over which the water flows before passing through said filtering material.

In the schedule annexed to my Letters Patent, numbered 93,244, is described a feed-water heater and purifier having a filtering-chamber arranged within its case below the series of shelves therein, in such manner that the water is filtered by rising through this chamber from beneath it.

Where water is very muddy a large amount of sediment will be deposited in the case of the heater, and, if not frequently removed, will clog up the pores of the filtering-material and impair or totally destroy its usefulness.

To obtain access to the filtering-material, when arranged as above stated, within the case of the apparatus, it is necessary to remove all the shelves below the man-hole door, which is inconvenient and involves labor and loss of time.

Another object is to arrange within the case of a feed-water heater a series of shelves, composed of sections having spaces between them, the spaces of one series being arranged over the shelves of the next lower series, whereby the water is distributed in thin sheets over a large extent of surface in a comparatively small space, as will be hereinafter explained.

To enable others skilled in the art to understand

my invention, I will describe its construction and operation.

In the accompanying drawing—

A represents the outer shell of the heating and depositing apparatus, which shell is preferably made cylindrical, although it may be made rectangular or of any other shape.

Within the shell or case A are arranged in horizontal planes, a number of shelves, *h*, which are supported collectively upon a ring, *m*, arranged a short distance above the bottom of the said case, as shown in fig. 2.

The shelves have flanges secured to them, which support them in proper position, and which also space them, as shown in figs. 2 and 3.

Fig. 3 shows one series of shelves arranged as they would appear within the heater case, with narrow spaces between them, and

Fig. 2 shows the relative arrangement of the spaces between the shelves or plates *h* of one series or plane of shelves with respect to the adjacent series or plane of shelves.

It will be seen that the space between two shelves *h h*, of one series, is directly over the center of the shelf of the succeeding series below.

By this arrangement, the water, which enters the case at C, will flow over the shelves in a great number of divided sheets, and be dashed into spray and heated by the steam entering at *g g*.

The shelves *h* can be removed from the case A through man-holes by removing the covers *a a* of these holes.

An overflow-cup and a spreader, or a cup alone, may be applied to the inner end of the water-inlet pipe C, as described in Letters Patent previously granted to me.

Beneath the lower shelves of the series is a chamber, J, to the bottom of which a pipe, closed by a cock, may be applied, for drawing off any deposition of sediment which may collect on the bottom of the case A.

At a point just above the bottom of the case A, a pipe, *b*, is applied, which descends and enters a chamber, *k*, in a filtering-chest, B, near the bottom thereof.

Above the chamber *k*, in the chest B, filtering-material G is applied, and above this filtering-material is a chamber, *j*, from which there is an outlet, *c*.

A draw-off pipe may be applied to the bottom of the chest B; also means for obtaining access to the filtering material.

The filtering material may be confined in a wire-gauze box, fitted into the chest B, as shown in fig. 2, or any other arrangement of this material may be adopted.

By having the filtering device in a chest outside of the case A, the filtering material can be conveniently reached without interfering with the shelves inside of the heating-case.

Where the water used contains much foreign matter, as does the water of many of the western rivers, the filtering device outside of the heater will be found very convenient and useful.

Having described my invention,

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

1. The combination, with the feed water heater and

purifier, of the outside filtering device B, constructed with a mud-trap below, and with a water-discharging pipe above the filtering material, substantially in the manner and for the purpose described.

2. The construction shown and described of the shelves *h h* within the case A, for the purpose set forth.

EDWIN R. STILWELL.

Witnesses:

G. NELSON BIERCE,
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