W. DOOTSON.

WATER-HEATER.

No. 187,605. Patented Feb. 20, 1877.

Fig. 1.

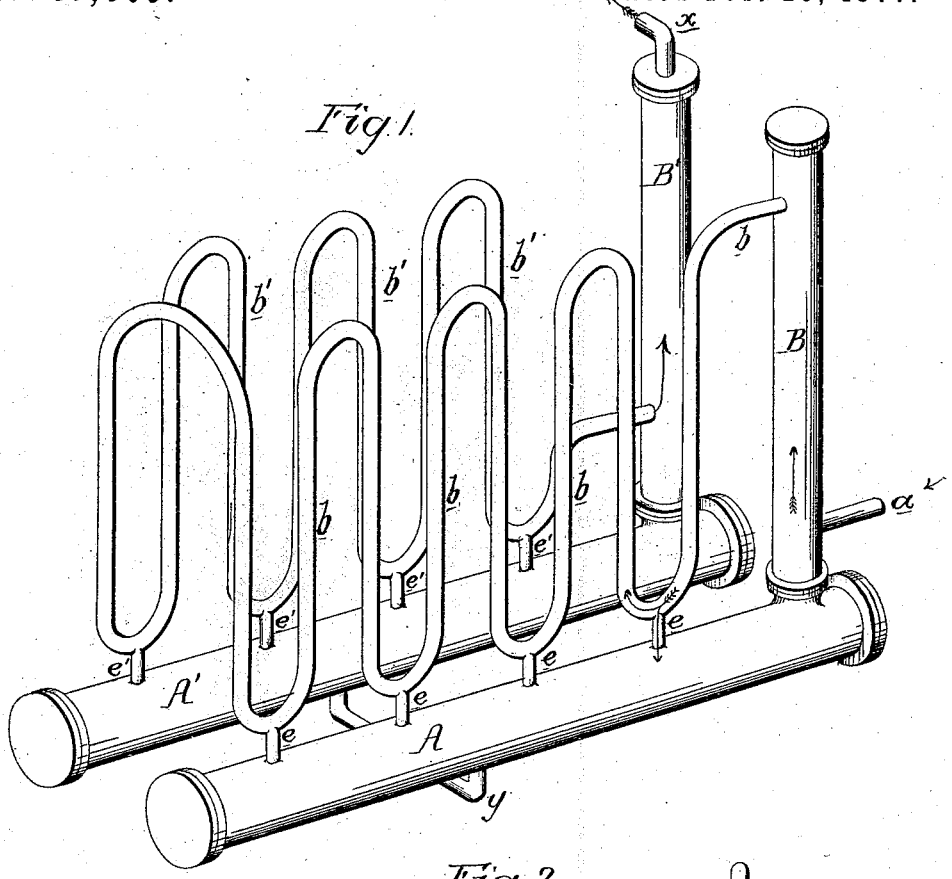
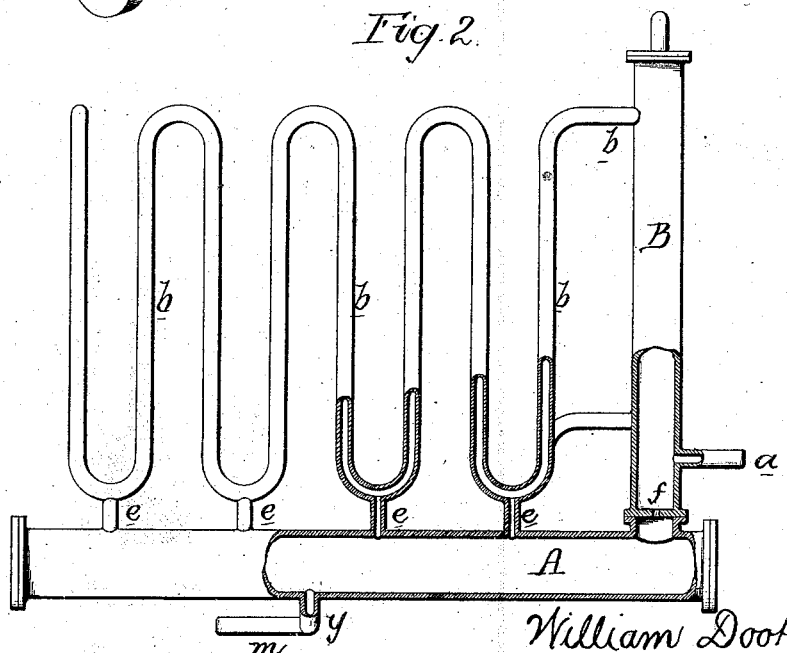


Fig. 2.



Witnesses
John M. Deemer
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William Dootson,
by his Attorneys,
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UNITED STATES PATENT OFFICE.

WILLIAM DOOTSON, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN WATER-HEATERS.

Specification forming part of Letters Patent No. 187,605, dated February 20, 1877; application filed January 22, 1877.

To all whom it may concern:

Be it known that I, WILLIAM DOOTSON, of Philadelphia, Pennsylvania, have invented a new and useful Improvement in Water-Heaters, of which the following is a specification:

The object of my invention is to construct a water-heating apparatus in passing through which the water will be deprived of the solid foreign matter which it holds in suspension.

In the accompanying drawing, Figure 1 is a perspective view of my improved water-heater; and Fig. 2, a side view, partly in section.

A and A′ are two horizontal pipes, closed at the opposite ends. To the pipe A′, near one end of the same, is secured a vertical tube, B′, and to the pipe A a similar vertical tube, B.

Feed-water is admitted to the tube B, near the lower end of the same, through a pipe, *a*, and passes from the tube, near the upper end of the same, through a pipe, *b*, which is bent as shown, so as to form a series of united tubular columns, communicating at each lower bend, through a branch, *e*, with the pipe A. A pipe, *b′*, forming another series of united tubular columns, forms a continuation of the pipe *b*, every lower bend of the said pipe *b′* communicating, through branches *e′*, with the pipe A′. The water, after circulating through the bent pipes *b b′*, is discharged into the tube B′, near the lower end of the same, and is discharged from the said tube through a pipe, *x*.

The two horizontal pipes A A′ communicate with each other through a transverse pipe, *y*, which has an outlet branch, *m*.

The above apparatus is to be placed in the flue of a steam-boiler in such a position that a proper degree of heat may be imparted to it without detracting from that required for generating steam. The flue at the rear end of the boiler, for instance, would be a good location for the apparatus, as the products of combustion, after performing their steam-generating duties, will impinge against the heater before they pass off to the chimney.

It should be understood that the communication *f*, between the tube B and pipe A, that between the tube B′ and pipe A′, and the communication between the bends of the pipe *b b′* and the said pipes A A′, are so small that while they will not interfere with the free circulation of the water from the tube B, and through the bent pipes *b b′* to the tube B′, they are large enough for the passage of particles of solid foreign matter, which enter and are trapped in the pipes A A′, which are in reality mud-drums, and from which the contents may be discharged from time to time through the pipe *m*.

The water may pass directly from the pipe *a* into the bent pipes *b b′*, and may be forced directly (that is to say, without first entering the pipe B′) into the boiler or other device in which it is to be used; but I prefer to have a pipe of large capacity for the water to enter before it reaches the bent pipe, and for the water to pass into before it reaches the distributing-pipe.

There may be but one bent pipe *b*, and one pipe or mud-drum A; or there may be more than two mud-drums, and two sets of bent pipes. The capacity of the apparatus will, in fact, depend in a great measure upon the size of the boiler to be fed, and upon that of the flue in which the apparatus has to be placed.

I claim as my invention—

1. The combination, in a feed-water heater, of the mud-drum A with the vertical bent pipe *b*, each lower bend communicating with the said drum, as specified.

2. The combination of the vertical tubes B B′ with the bent pipes *b b′*, the mud-drums A A′, communicating-pipes *e e′*, and inlets and outlets, all substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM DOOTSON.

Witnesses:

HERMANN MOESSNER,

HARRY SMITH.