

P. QUINN.  
Upright Steam-Boiler.

No. 213,837.

Patented April 1, 1879.

Fig. 1.

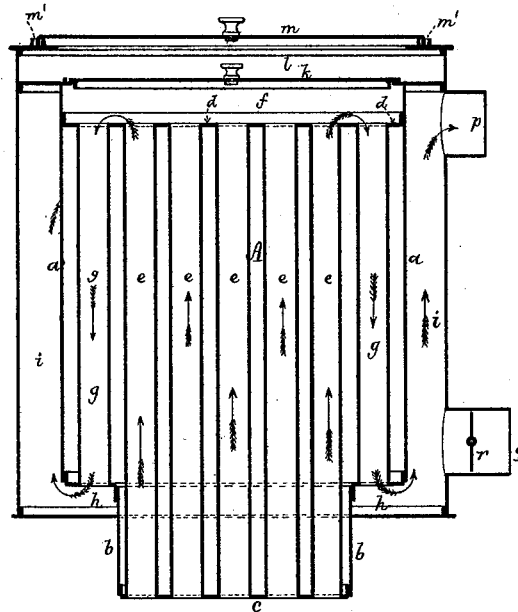
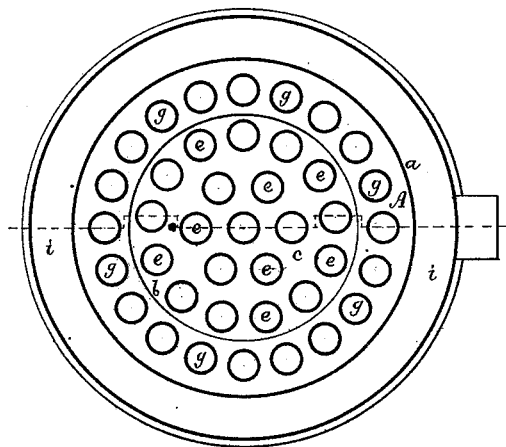


Fig. 2.



Witnesses.  
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# UNITED STATES PATENT OFFICE.

PATRICK QUINN, OF SOUTH NEW MARKET, NEW HAMPSHIRE, ASSIGNOR  
TO SWAMSCOT MACHINE COMPANY, OF SAME PLACE.

## IMPROVEMENT IN UPRIGHT STEAM-BOILERS.

Specification forming part of Letters Patent No. **213,837**, dated April 1, 1879; application filed  
December 24, 1878.

*To all whom it may concern:*

Be it known that I, PATRICK QUINN, of South New Market, of the county of Rockingham, of the State of New Hampshire, have invented a new and useful Improvement in Upright Steam-Boilers or Water-Heaters; and do hereby declare the same to be described in the following specification and represented in the accompanying drawings, of which—

Figure 1 is a vertical, and Fig. 2 a horizontal, section of a boiler or water heater of my improved kind, or provided with my invention.

The said boiler A has projecting down from its main part *a*, in manner as shown, a cylindrical neck, *b*, around which and beneath whose bottom *c* the furnace is to be situated.

There extends from such bottom *c* up to the top *d* of the boiler a stack or series of pipes, *e e*, &c., each of which opens through such bottom and top.

Over the top of the boiler is a smoke-chamber, *f*, from which a circular range or series of pipes, *g g*, &c., extend through the main part *a* of the boiler to its bottom, the said pipes opening out of the said chamber, and into an annular space, *h*, encompassing the upper part of the neck *b*, and opening into a flue, *i*, concentric with and surrounding the main part *a* of the boiler, and closed at bottom and at top, as shown.

The smoke-chamber is open at top, and provided with a cover, *k*; to the opening, and over the said top and that of the flue *i* is another chamber, *l*, open at top, and provided with a cover, *m*, to the opening.

The chamber *l* is to prevent waste of heat from the top of the smoke-chamber. The cover of the insulating-chamber *l* may be applied by what is termed a "sand-joint," as shown at *m'*. Furthermore, the chamber *l* may be filled with some suitable heat-non-conducting material.

The smoke-flue *i* has projecting from it two educts, *p q*, the lower of which is furnished with a damper, *r*. One of these educts is at the upper and the other at the lower part of the chamber.

The boiler or heater being supplied with water, the smoke and volatile products of combustion from the furnace will pass up through the tubes *e* into the smoke-chamber *f*. From

such chamber the smoke and heated gases will pass down through the outer range of pipes, *g g*, into the space *h*, and thence up through the flue *i*, surrounding the boiler. In this way the smoke and heated gases are caused to flow twice through the boiler and its charge and once around such, whereby the water will be heated to great advantage, the smoke escaping through the upper educt. By opening the damper of the lower educt the smoke may be caused to escape by such educt.

My boiler, in some respects, is like those represented in the United States Patents Nos. 24,326 and 109,195. It differs from each, however, in having a neck to project down within the furnace, and in having the stack of pipes *e* extending into and through such neck. Furthermore, it has two smoke-educts, in one of which is a damper. Each boiler shown in such patents has but one such educt, and no insulating chamber at top separate from the smoke-flues, as in my boiler.

I claim—

1. The boiler as provided with the neck *b*, extending down from the main part *a*, as represented, in combination with the vertical stack of pipes *e*, extending up through such neck, the smoke chamber *f*, the return-pipes *g*, and the encompassing flue *i*, arranged with such neck *b* and main part *a*, substantially as set forth.

2. The boiler as provided with the insulating-chamber *l*, the smoke-chamber *f*, the neck *b*, the tubes *e g*, and the smoke-flue *h*, all arranged substantially as shown and described.

3. The improved boiler having the neck *b*, (to extend into the furnace) the stack of pipes *e e*, (going through the neck and the main part *a* into the smoke-chambers *f h*), the encompassing flue *i*, and the two educts *p q*, and damper *r*, arranged in the lower of such educts, all being substantially as set forth.

4. The boiler having chambers *f l*, open at top, and there provided with covers *k m*, in combination with the stack of pipes *e g*, neck *b*, smoke-chamber *h*, and the encompassing-flue *i*, all arranged as set forth.

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Witnesses:

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