T. J. Jones,

Steam-Boiler Cleaner.

No. 48,870. Patented July 18, 1865.

Fig. 2

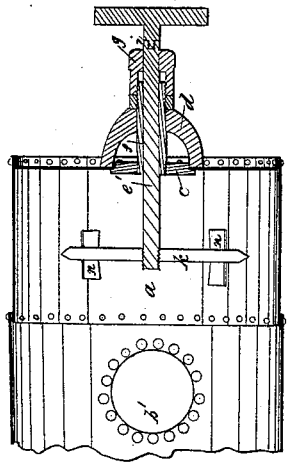


Fig. 3.

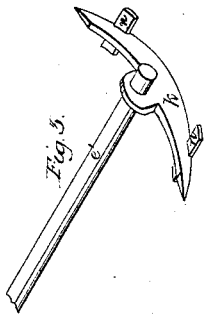
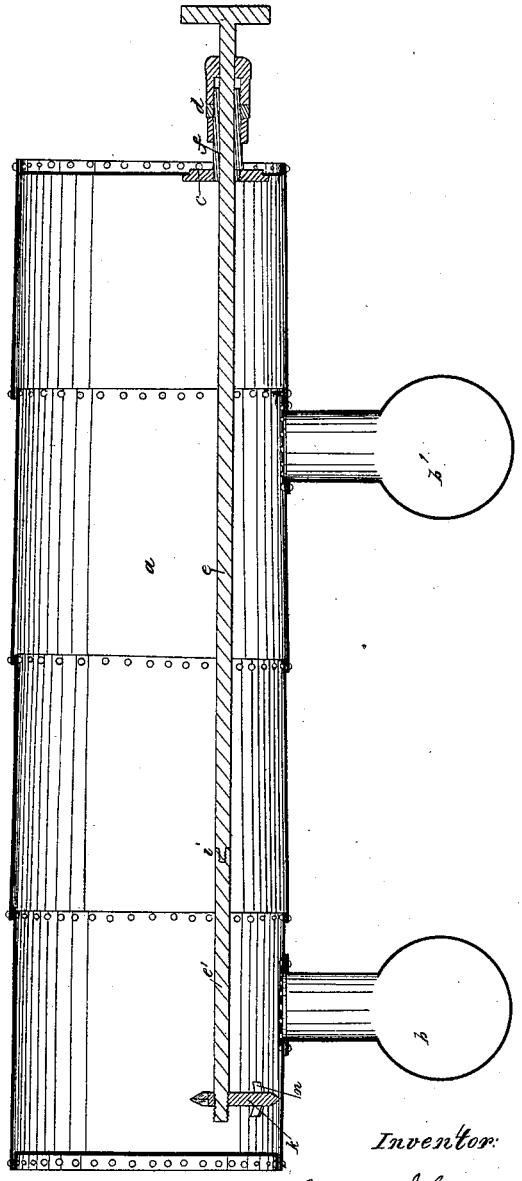


Fig. 1.



Witnesses:

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UNITED STATES PATENT OFFICE.

THOMAS J. JONES, OF WEST PITTSBURG, PENNSYLVANIA, ASSIGNOR TO HIMSELF, GEO. WETTENGELL, AND JOHN D. RICHARDS, OF SAME PLACE.

IMPROVEMENT IN STEAM-BOILERS.

Specification forming part of Letters Patent No. **48,870**, dated July 18, 1865.

To all whom it may concern:

Be it known that I, THOMAS J. JONES, of the borough of West Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in the Mode of Cleaning Steam-Boilers; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a longitudinal vertical section of a steam-boiler, showing the application of my improvement. Fig. 2 is a horizontal section of the front end of a boiler with my apparatus attached. Fig. 3 is a perspective representation of the scraper.

In the several figures like letters of reference denote similar parts of the apparatus.

It is well known that great trouble is experienced from the incrustations of the bottom of steam-boilers with lime and earthy deposits, which has the effect of causing the bottom of the boiler to burn out very rapidly, and is often the cause of serious accidents by the bursting of the boiler. Various methods have been devised to prevent this incrustation, but with very little success, so that it is usually necessary to clean the boilers frequently by removing the deposit when the boiler is emptied of water.

The object of my invention is to enable the deposit to be removed frequently, so as to prevent its accumulation, and to do it in such a manner as that it may be accomplished while the boiler is in use, so as to prevent the loss of time consequent on the letting out of the fires and emptying the boilers for that purpose. This is a matter of especial importance in boilers used for ocean navigation and on steamboats on the Mississippi river, where the sedimentary deposit is very great and accumulates very rapidly, owing to the muddiness of the river water.

My invention is also applicable with great advantage to the cleaning of stills for distilling petroleum, because the deposit of residuum from the process of distillation is so heavy that the still-bottoms burn out very rapidly, which would be in a great measure prevented if the residuum could be removed gradually as it accumulates, without waiting until the process of distillation has been carried on for a considerable length of time.

To enable others skilled in the art to construct and use my improved apparatus for cleaning steam-boilers and oil-stills, I will proceed to describe its construction and operation as applied to a steam-boiler.

In the drawings, *a* is a horizontal steam-boiler of ordinary construction, made of sheets of boiler-iron lapped in the usual manner.

b b' are the ordinary mud-drums, being short vertical pipes opening into the bottom of the boiler, one near each end, each vertical pipe terminating in a short horizontal cylinder, in which the mud is to be deposited.

In front of the boiler is an opening or manhole in the boiler-head, which is closed by a cap or door, *c*, fastened by means of an arch, *d*, in the ordinary way, excepting that, instead of the lug usually cast on the outside of the door *c*, by which the screw of the arch is attached to fasten it, there is a sleeve, *f*, screwed into or cast in one piece with the door *c*, through which the rod *e* of the scraper passes. A stuffing-box, *g*, is screwed over the sleeve *f*, so as to prevent the escape of water or steam through the sleeve *f*. The rod *e* is made long enough to extend to the rear end of the boiler, but is made in two pieces connected by a screw at *i*, that portion of the rod to which the scraper is attached (marked *e'*) being the shorter, for the reason hereinafter explained. At the end of the rod, to the extremity of the short piece *e'*, is attached the scraper *k*, of the shape shown in Fig. 3, being curved so as to conform to the curvature of the boiler—that is, its under side or edge is an arc of a circle of the same diameter as that of the boiler. Near to each end of the scraper is a shoe, *n*, let into the edge of the scraper so as to have its under side or face flush with the edge of the scraper. The object of these shoes *n n* is to prevent the scraper catching upon the end of the boiler-plates where they are lapped, and as these shoes are curved, as seen in Fig. 3, they will ride over the ends of the boiler-plates as the scraper is pushed back and forth over the bottom of the boiler. The use of the scraper is to scrape the sediment from the bottom of the

boiler and cause it to descend into the mud-drums instead of remaining and becoming incrusted on the bottom of the boiler. This may very easily be done by moving the scraper backward and forward while the boiler is in use, and if done with sufficient frequency the mud can be easily removed before it becomes caked and hardened.

As in horizontal boilers the fire is placed under the front end of the boiler that portion of the boiler is always the hottest, and is most liable to incrustation, owing to the fact that there is a continual under-current of water from the rear to the front end of the boiler, which carries the sediment to the front of the boiler, where it settles. It is therefore necessary to clean the front end of the boiler more frequently than the rear end. To facilitate this I leave the scraper always at the front end of the boiler, as in Fig. 2, with the short piece *e'* of the rod projecting from the stuffing-box *g*, and unscrew the longer part of the rod *e*.

An apparatus similar in all respects to that which I have described may be used in oil-stills, the drum for reception of the residuum being placed in any convenient position in the bottom of the still, and the rod being of such length as to reach to the rear end of the still.

Having thus described my improved apparatus for cleaning steam-boilers and oil-stills, what I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, with a steam-boiler, of a scraper attached to a rod inserted through a stuffing-box in one end of the boiler, for the purpose of removing the sedimentary or residual deposit from the bottom of the boiler, substantially as and for the purpose hereinbefore described.

2. The shoes in the edge of the scraper to enable it to pass the overlapping ends of the boiler-plates, substantially as hereinbefore set forth.

In testimony whereof I, the said THOMAS J. JONES, have hereunto set my hand.

THOMAS J. JONES.

Witnesses:

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