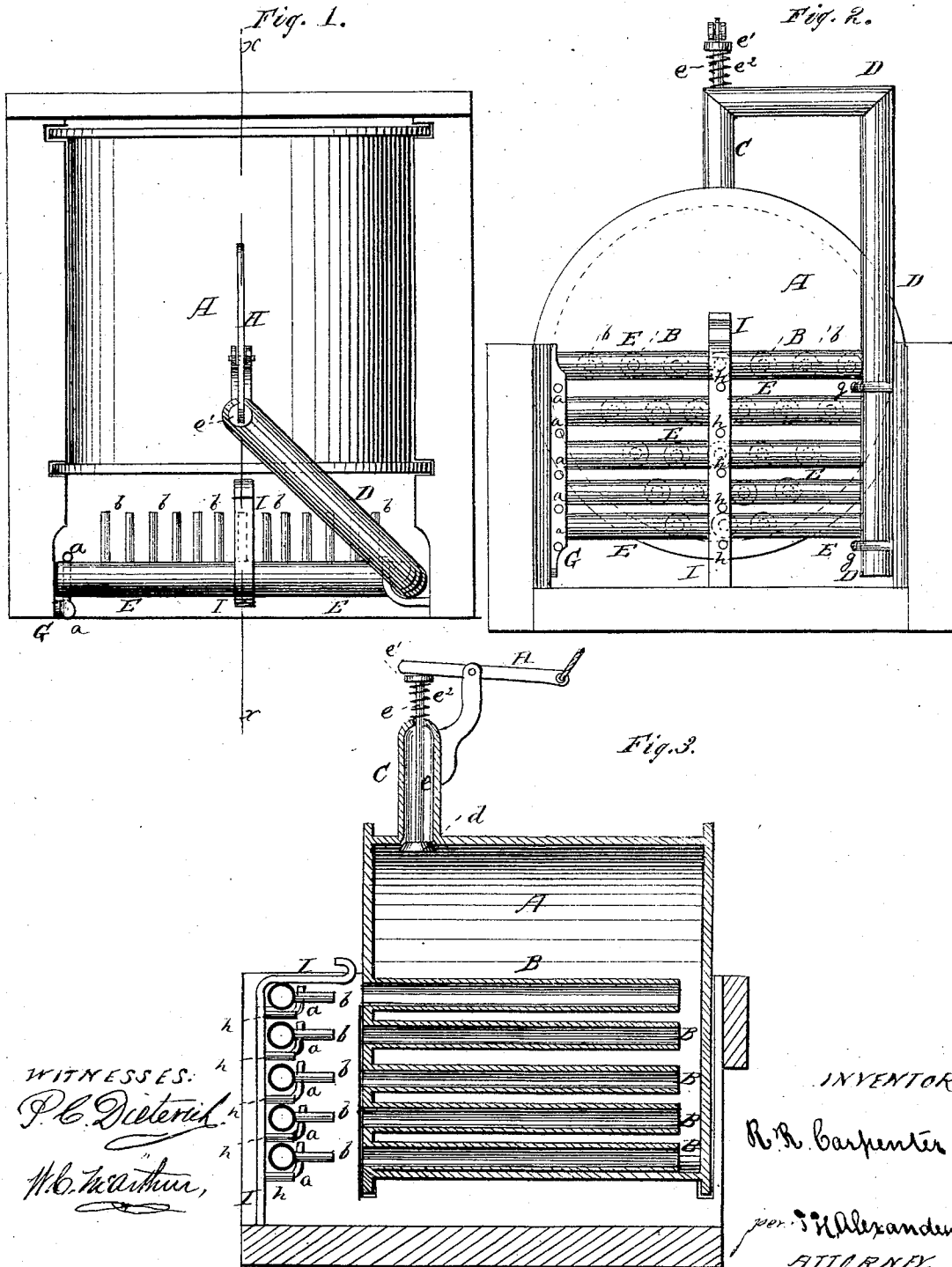


R. R. CARPENTER.  
Boiler-Flue Cleaners.

No. 157,371.

Patented Dec. 1, 1874.



# UNITED STATES PATENT OFFICE.

RALPH R. CARPENTER, OF TIPPECANOE CITY, OHIO.

## IMPROVEMENT IN BOILER-FLUE CLEANERS.

Specification forming part of Letters Patent No. **157,371**, dated December 1, 1874; application filed November 2, 1874.

*To all whom it may concern:*

Be it known that I, RALPH R. CARPENTER, of Tippecanoe City, in the county of Miami and State of Ohio, have invented certain new and useful Improvements in Flue-Cleaners; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification.

My invention relates to that class of steam-boilers known as tubular boilers; and the nature of my invention consists in the construction and arrangement of a device for cleaning out the tubes or flues of the boiler by means of steam, as will be hereinafter more fully set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawing, in which—

Figure 1 is a plan view. Fig. 2 is a rear end view. Fig. 3 is a central vertical section.

A represents a horizontal steam-boiler, provided with flues or tubes B B passing longitudinally through it in any of the known and usual ways. The flues or tubes B B are arranged in a series of horizontal rows, which may be of any desired number, and any desired number of tubes or flues may be in each row. These flues or tubes often require to be cleaned, and the object of my invention is to accomplish this by blowing them out by steam from the boiler. To this end I attach a pipe, C, in the top of the boiler A near the rear end, and connect this pipe with a pipe, D, located a suitable distance in rear and to one side of the boiler, said pipe D standing in a vertical position, as shown, and firmly secured to the wall by means of staples or hooks g g. From the pipe D extend a series of horizontal pipes, E E, across the fire-box and in rear of the boiler. The pipes E correspond in number and position with the rows of flues in the boiler, and their outer ends are closed and supported by means of L-shaped arms a a projecting from a bar, G, attached to the inner side of the fire-box, or they may be supported in the fire-box itself, if found conven-

ient. From each of the pipes E extend a series of small tubes, b b, corresponding in number and position with the flues in the boiler, so that each flue will have one of these small tubes b pointing into it, and about three inches, more or less, from its rear end. In the end of the pipe C, within the boiler A, is a valve, d, closing the end of said pipe. This valve is provided with a stem, e, which extends vertically up through the elbow of the pipe C, and is, at its upper end, provided with a head, e'. Between this head and the pipe C is a spiral spring, e<sup>2</sup>, surrounding the valve-stem, the tendency of which spring is to draw the valve upward and close the end of the pipe. In a curved arm attached to the pipe C is pivoted a lever, H, one end of which is to bear on the head e'. From the other end of the lever H a cord should lead over suitable pulleys, so that by the engineer or fireman pulling on said rope the lever will be turned and force the valve open. When the valve is thus opened, the steam will instantaneously rush through the pipes C D and E E, and through the small tubes b b into and through the flues of the boiler, thereby blowing out and cleaning the flues from all soot and dirt therein, the steam and dirt passing out at the front ends of the flues and into the smoke-stack.

As soon as the pressure is removed from the lever, the combined action of the spring e<sup>2</sup> and the steam within the boiler, at once closes the valve d, and shuts off the steam from the pipes.

The pipes E E are supported in the center by means of arms h h extending horizontally from a vertical standard, I, the lower end of which is built into the floor of the fire-box, and its upper end is bent at right angles forward nearly to the boiler, and there built into the masonry at the rear end of the boiler above the flues. This standard with its arms will prevent the pipes E from sagging down in the center.

By this device, as constructed, the flues of the boiler can be easily and quickly, as well as thoroughly, cleaned out at any time when needed without stopping the fires, or in any way interfering with the proper working of the boiler.

Having thus fully described my invention,

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

The combination, with the boiler A having flues B, of the pipes C, D, and E, tubes *b*, valve *d* with stem *e* and head *e'*, spring *e''*, and lever H, all constructed and arranged to operate substantially as and for the purposes herein set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

RALPH R. CARPENTER.

Witnesses:

T. H. ALEXANDER,  
J. TYLER POWELL.