No. 711,370. Patented Oct. 14, 1902.

J. H. WILLIAMS.

BOILER PIPE CLEANER.

(Application filed Jan. 14, 1902.)

(No Model.)

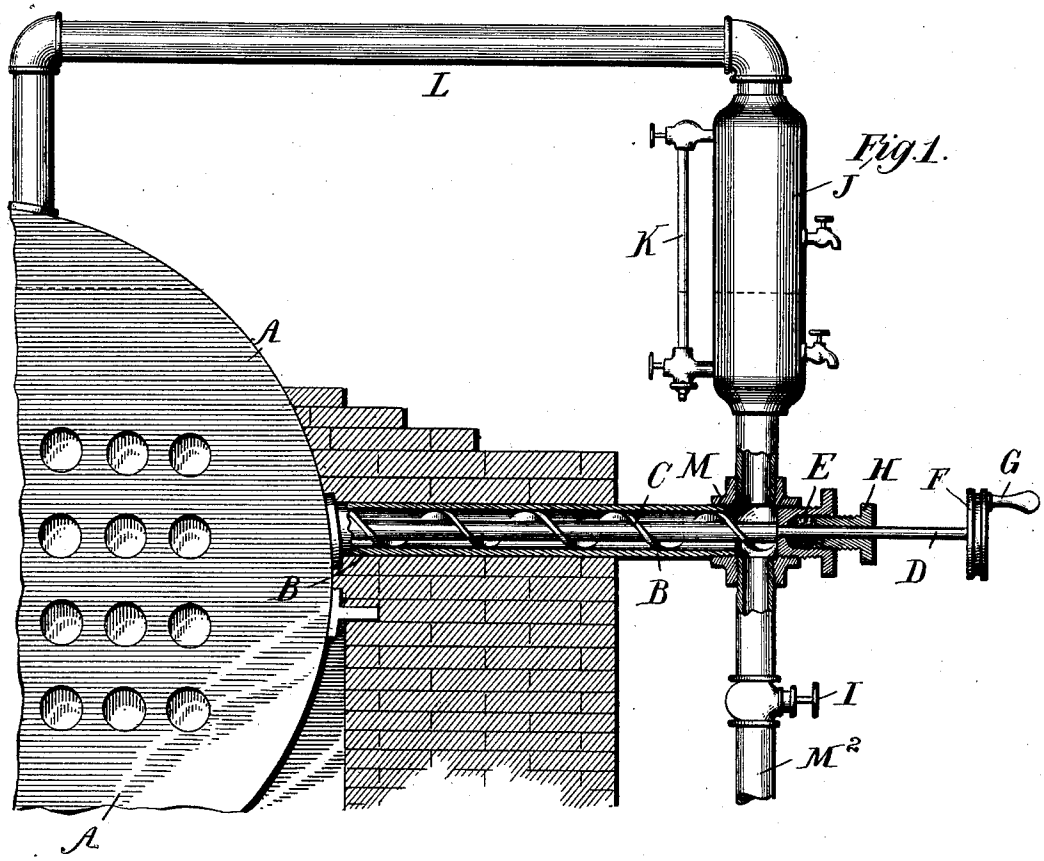
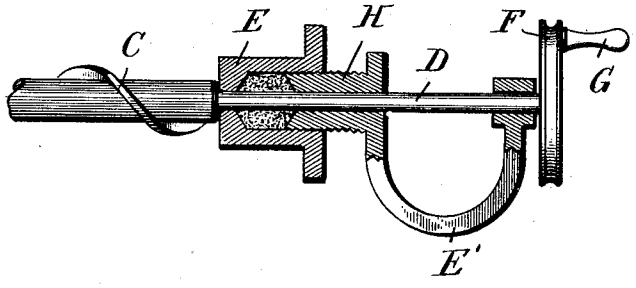


Fig. 1.

Fig. 2.



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BOILER-PIPE CLEANER.

SPECIFICATION forming part of Letters Patent No. 711,370, dated October 14, 1902.

Application filed January 14, 1902. Serial No. 89,678. (No model.)

To all whom it may concern:

Be it known that I, JAMES HENRY WILLIAMS, of Wilson, in the county of Ellsworth and State of Kansas, have invented a new and useful Improvement in Boiler-Pipe Cleaners, of which the following is a specification.

In steam-boilers the water-pipe that connects the water-space of the boiler with the lower part of the water-column and water-gage is very liable to become choked with sediment and scale, because the water in this pipe is comparatively still or is free from violent ebullition, and this favors the deposition of sediment. When so choked up, it is liable to make the water-level in the glass different from that in the boiler and by so falsely indicating the amount of water in the boiler leads to a disastrous explosion.

The object of my invention is to provide a means for keeping clear of sediment or scale the pipe or pipes which connect the water-column to a steam-boiler, so that there may be no obstruction in said pipe to interfere with the free passage of water from the boiler to the bottom of the water-column and water-gage and also a free passage for the entrance of feed-water into the boiler for supplying the same; and it consists in the peculiar construction and arrangement of the parts of the same, which I will now proceed to describe, reference being had to the accompanying drawings, in which—

Figure 1 is a side view of the device, partly broken away and shown applied to the water-column and the boiler; and Fig. 2 is an enlarged detail of the same, showing a slight modification.

In the drawings, A represents a steam-boiler.

J is the water-column, having beside it and connected at top and bottom a glass gage K. The water-column J is connected at the top to the steam-space of the boiler through pipe L and at the bottom is by a four-way coupling M connected to the horizontal pipe B, which communicates with the water-space of the boiler and also with a vertical pipe M^2, controlled by valve I, through which feed-water may be fed to the boiler or sediment blown out.

My invention is designed to prevent the deposition of sediment or scale in the pipe B, and thus preserve at all times a free and unobstructed circulation of water therethrough, so that the water-level in gage K and water-column J may be always preserved in a true position indicative of the level of the water in the boiler and to permit the free introduction of feed-water through pipe M^2 and valve I.

In carrying out my invention I arrange permanently in the pipe B a spirally-flanged shaft C, extending the full length of the pipe B and having at one end a reduced extension D, which passes through a stuffing-box E. This stuffing-box I place in the four-way coupling M immediately opposite the pipe B, and on the end of the reduced portion D of the shaft C, I rigidly fix a wheel F or some other means of turning the shaft. This shaft may be turned continuously, and for that purpose the wheel F may be constructed as either a grooved or a flat-faced pulley and be belted to some moving part of the engine, or it may be turned intermittently, for which purpose it may have a crank-handle G, or it may be turned in any other way. The object is to cause the spiral flanges to scrape the interior walls of pipe B throughout its entire length, and thus prevent or dislodge all sediment and scale. In some cases, as when the shaft is to be rotated mechanically, as by a pulley and belt, I form the stuffing-box with an arm, as shown at E′, Fig. 2, which arm has an outer bearing to sustain the reduced end D of the shaft, so as to better resist the pull of the belt on the wheel F.

My invention is designed to be operated while the boiler is under steam-pressure and is performing its ordinary function as a steam-generator.

I do not claim, broadly, a spiral conveyer for removing scale from boiler-tubes, and I am also aware that a valve for controlling the passage-way between the water-gage and the boiler has been provided with a flattened portion extending into said pipe and provided with scrapers. In the latter case the scrapers could only be operated by opening and closing the valve, and, besides, said scrapers were not spiral and had no means for continuously turning therein in the same direction, and therefore had no progressive feed for discharging the dislodged sediment and scale

into the boiler or back into pipe M^2 when the latter is used as a blow-off.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination with a boiler, and the pipe from the water-column; of a stuffing-box placed opposite the end of said pipe, a spiral conveyer-shaft located within said pipe and having one end reduced and extended through said stuffing-box, and means for rotating it substantially as described.

2. The combination with a boiler and the pipe from the water-column; of a stuffing-box placed opposite the end of said pipe, a scraper-conveyer located within said pipe and having a reduced end passing through said stuffing-box, and a pulley rigidly fixed to the said reduced end to adapt it to be continuously turned substantially as described.

3. The combination with a boiler and the pipe from the water-column; of a stuffing-box placed opposite the end of said pipe and having an arm extending outwardly and carrying a journal-bearing, a scraper-shaft arranged within the pipe and having a reduced end extending through the stuffing-box and also through the journal-bearing of the stuffing-box arm, and a pulley mounted on the said reduced end of the scraper-shaft substantially as and for the purpose described.

4. The combination of a steam-boiler, its water-column pipe extending from the bottom of the said column to the boiler, a vertical pipe, and a four-way coupling having three of its openings communicating respectively with the bottom of the water-column, its horizontal pipe leading to the boiler and the top of the feed-water pipe, and having in its fourth opening a stuffing-box and a scraper-shaft located in the horizontal pipe and extending through the stuffing-box to the exterior substantially as and for the purpose described.

JAMES HENRY WILLIAMS.

Witnesses:
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