C. F. LUMB.

BOILER TUBE CLEANER.

APPLICATION FILED OCT. 18, 1913.

1,121,192.

Patented Dec. 15, 1914.

2 SHEETS—SHEET 1.

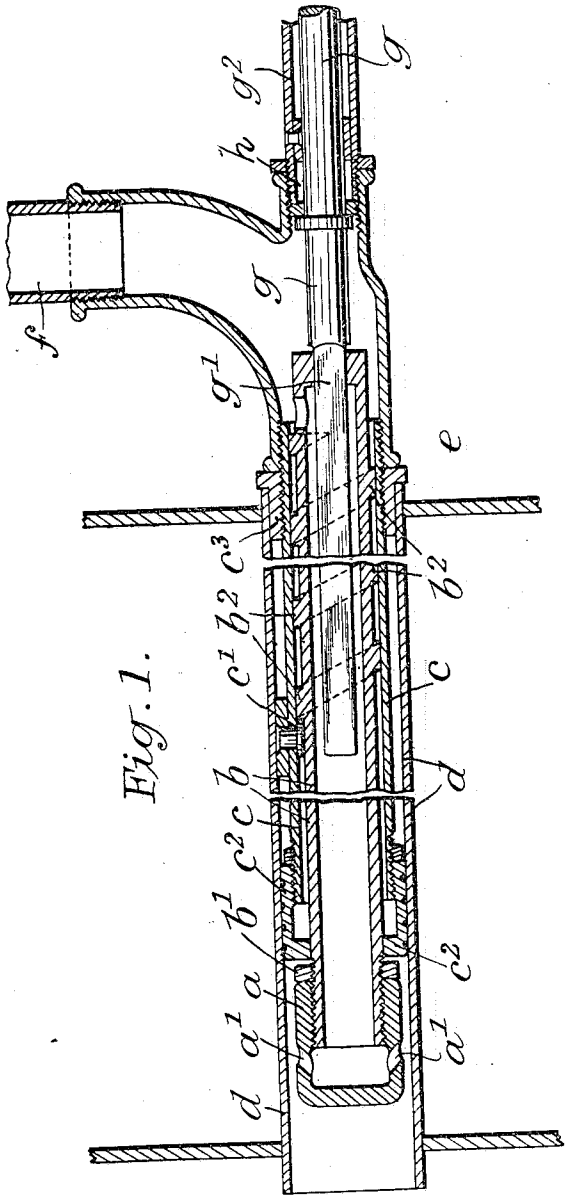


Fig. 1.

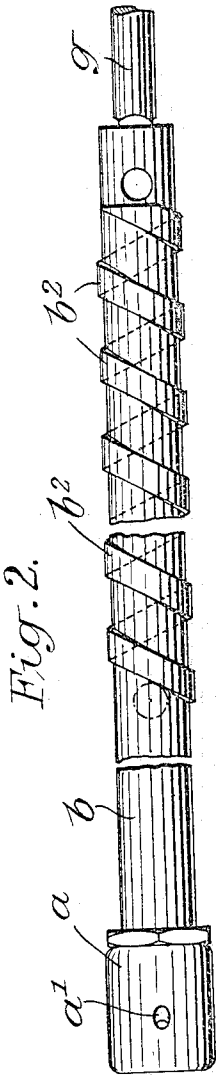


Fig. 2.

Witnesses:
H. A. Hoffing
Benj. R. Newcomb.

Inventor:
Charles Fletcher Lumb
by A. Singer
Atty.

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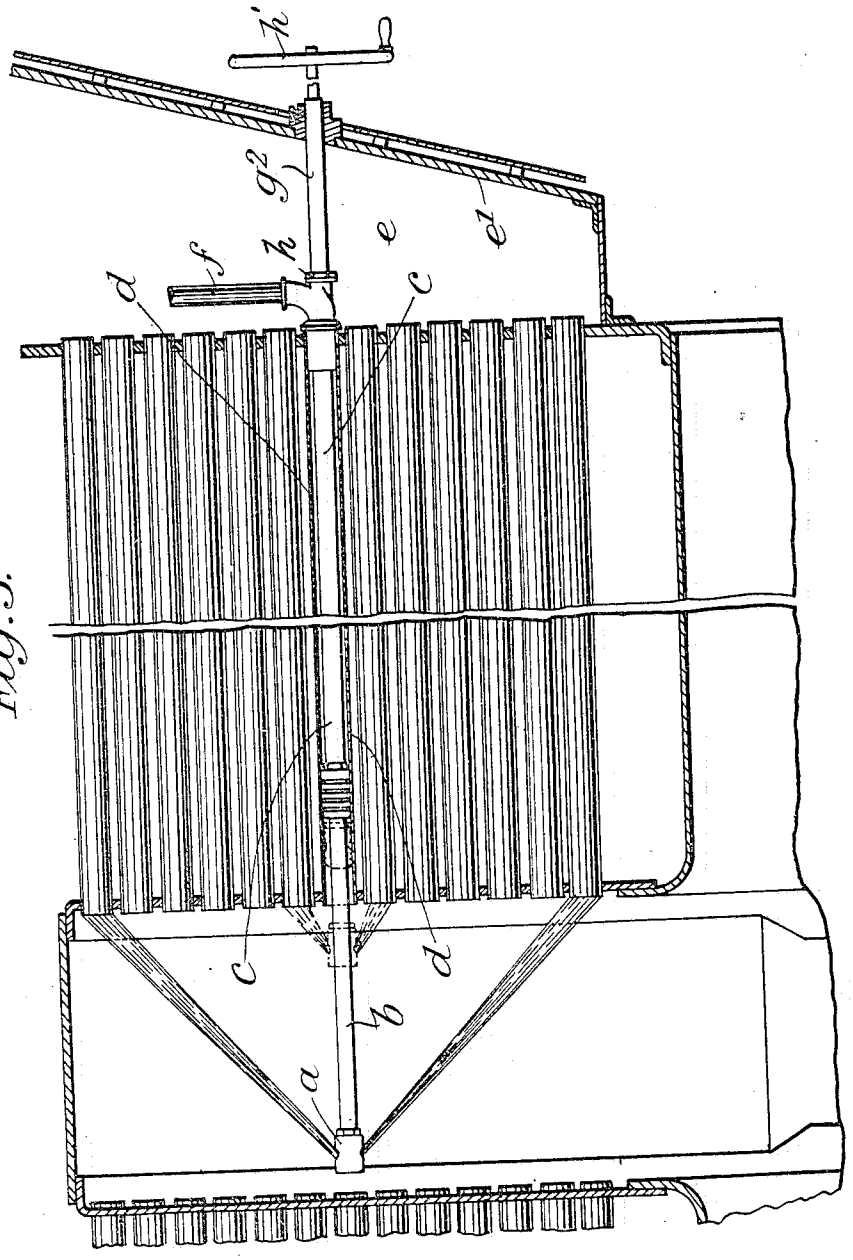


Fig. 3.

Witnesses
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Bert L. Newcomb.

Inventor:
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by C. Singer Atty.

UNITED STATES PATENT OFFICE.

CHARLES FLETCHER LUMB, OF LONDON, ENGLAND.

BOILER-TUBE CLEANER.

1,121,192. Specification of Letters Patent. Patented Dec. 15, 1914.

Application filed October 18, 1913. Serial No. 795,893.

To all whom it may concern:

Be it known that I, CHARLES FLETCHER LUMB, subject of the King of Great Britain and Ireland, residing at Hornsby House, 75b Queen Victoria street, in the county of London, E. C., England, have invented certain new and useful Improvements in Boiler-Tube Cleaners, of which the following is a specification.

This invention relates to boiler tube cleaners of the type having a movable nozzle adapted to deliver a jet of steam or air or other fluid under pressure through the smoke tubes in succession and has for its object an improved tube cleaner for use more especially with return tube boilers and adapted normally to be housed within one of the tubes and be extended forward into the combustion chamber, and that can be installed without cutting the shell of the boiler and that shall direct the jet of fluid in the same direction as the furnace gases are flowing. The arrangement is such that when the steam is turned on and the nozzle rotated and moved forward it directs a jet of steam or the like over the whole surface of the tube plate.

A boiler tube cleaner according to this invention is adapted to be operated by fluid pressure and consists of a steam tube, a nozzle tube telescoping in the steam tube so that the nozzle tube and nozzle can be withdrawn from the combustion chamber for protection and a nozzle with jets inclined to the tube so that the whole area of the tube plate of the boiler being cleaned can be exposed to the action of the jets by telescoping and rotating the nozzle tube. The steam pipe is provided at its forward end with a gland ring that packs the telescoping tube and closes the forward portion of the boiler tube. A collar on the steam tube closes the rear portion of the boiler tube. A projection on the steam tube engages a thread on the nozzle tube so that as the nozzle tube is rotated it is telescoped forward or backward in the steam tube.

When in action the nozzle tube is rotated first in one direction and then in the other and is thus as it is rotated moved away from and toward the tubes and causes a jet of steam, air, or other pressure fluid to traverse over the whole surface of the tube plate so that it acts on all the tubes in succession and blows the soot and other matter from the tubes toward the flue.

In the accompanying two sheets of drawings: Figure 1 is a longitudinal section of a tube cleaner constructed according to this invention and shown in its inoperative position in the smoke tube. Fig. 2 is a detail view of the nozzle tube and nozzle, Fig. 3 is a sectional view of part of a return tube boiler showing in full and interrupted lines the tube cleaner in the extreme operative positions.

The nozzle tube b is mounted to slide telescopically within the steam tube c and is provided with a helical or screw thread b^2 engaging a projection c' secured on the inner surface of the steam pipe c, so that as the nozzle tube b is rotated it also advances from or retreats within the steam tube c so that it forms a rigid whole with the nozzle tube.

The steam nozzle a, which has two oblique steam openings a' arranged at about 45° to the axis of the nozzle and in the example shown directed backward is screwed on the end of the nozzle tube b and secured by a nut lock b'. The steam pipe is housed in one of the tubes in the nest to be cleaned by the apparatus, preferably the center tube d as seen in Fig. 3 and extends rearwardly into the smoke chamber e where it is connected to a steam supply pipe f. At its forward end the steam pipe carries a gland ring c^2 and at its rear end a collar c^3 by means of which it is arranged centrally within the smoke tube d and which practically close the smoke tube. The rotation of the nozzle a is effected by a spindle g passing through a gland h in the rear end of the steam pipe c and having a squared portion g' engaging a square aperture b^3 in the rear end of the nozzle tube b. The spindle passes through the smoke chamber e in a protecting tube g^2 and through the smoke chamber door e' where it is provided with a hand wheel h'.

In operation the steam is turned on and the hand wheel rotated, in the forward direction causing the nozzle and nozzle tube to be rotated and moved gradually forward into the combustion chamber, causing jets of steam to traverse in a spiral course over the whole surface of the tube plate and into all the tubes in succession. The rotation of the hand wheel h' may then be reversed

when the action takes place, but in the reverse direction.

What I claim and desire to secure by Letters Patent is:—

1. A fluid pressure boiler tube cleaner comprising in combination, a steam tube adapted to be disposed within a boiler tube, a nozzle tube rotatably mounted within said steam tube, means whereby said nozzle tube is moved progressively or retrogressively with respect to said steam tube when said nozzle tube is rotated in one direction or the other, and means for forming a steam-tight joint between said boiler tube and steam tube.

2. A fluid pressure boiler tube cleaner comprising in combination, a steam tube adapted to be disposed within a boiler tube, a nozzle tube rotatably mounted within said steam tube, means whereby said nozzle tube is moved progressively or retrogressively with respect to said steam tube when said nozzle tube is rotated in one direction or the other, means for rotating said nozzle tube, and means for forming a steam-tight joint between said boiler tube and steam tube.

3. A fluid pressure boiler tube cleaner, comprising in combination, a steam tube adapted to be disposed within a boiler tube, a nozzle tube rotatably mounted within said steam tube, a spiral element disposed on the surface of said nozzle tube, a projection on the inner surface of said steam tube and adapted to engage the said spiral element whereby the said nozzle tube is moved progressively or retrogressively upon the rotation of the latter, and means for rotating the said nozzle tube.

4. A fluid pressure boiler tube cleaner, comprising in combination, a steam tube adapted to be disposed within a boiler tube, a nozzle member disposed within said steam tube and adapted to be moved rotatively backward and forward with respect to said boiler tube, and means for forming steam-tight joint between said boiler tube and steam tube.

In testimony whereof I have affixed my signature, in presence of two witnesses.

CHARLES FLETCHER LUMB.

Witnesses:
O. J. Worth,
F. F. Williams.