

(No Model.)

F. M. CLARK & F. R. LOW.

BOILER TUBE CLEANER.

No. 336,292.

Patented Feb. 16, 1886.

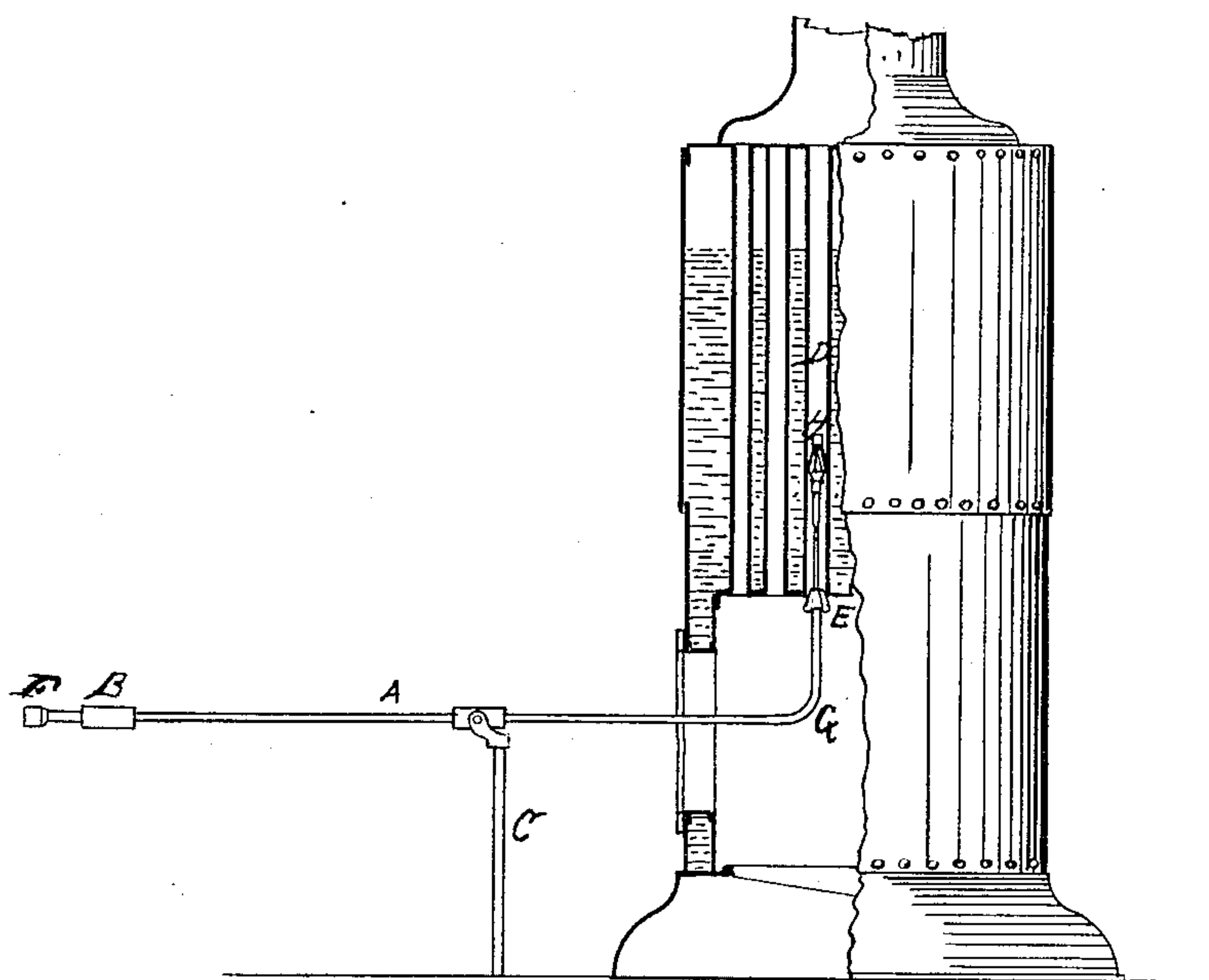


Fig. 1.

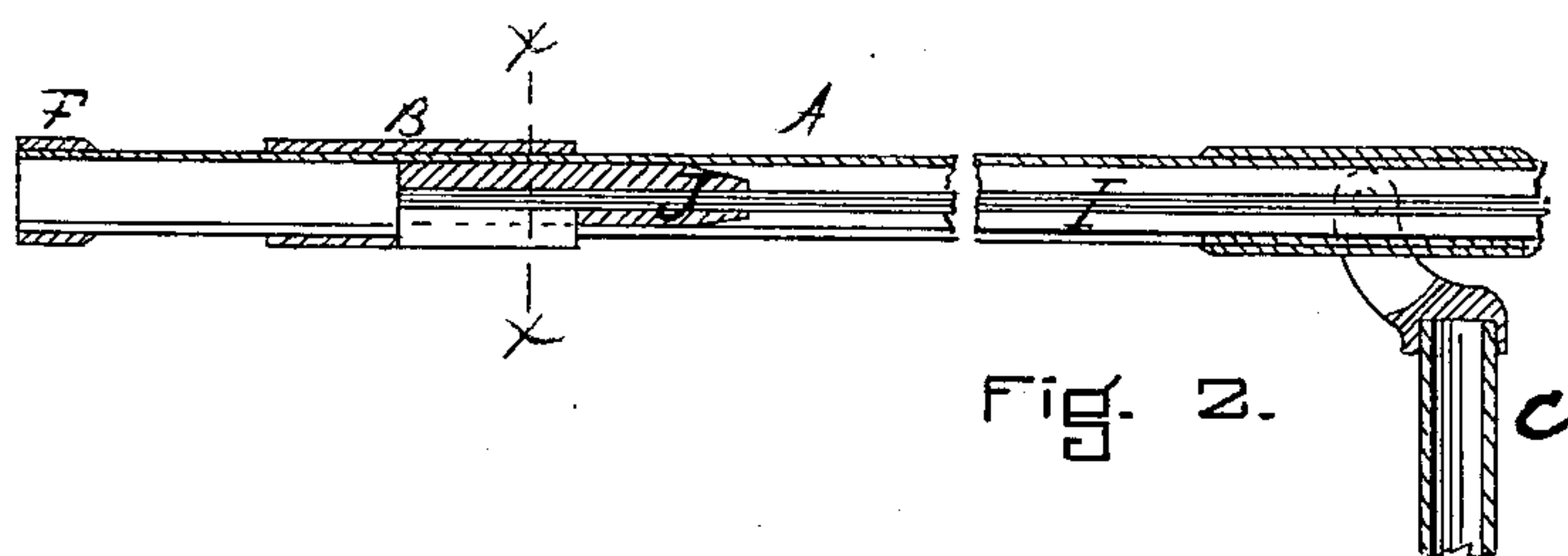


Fig. 2.

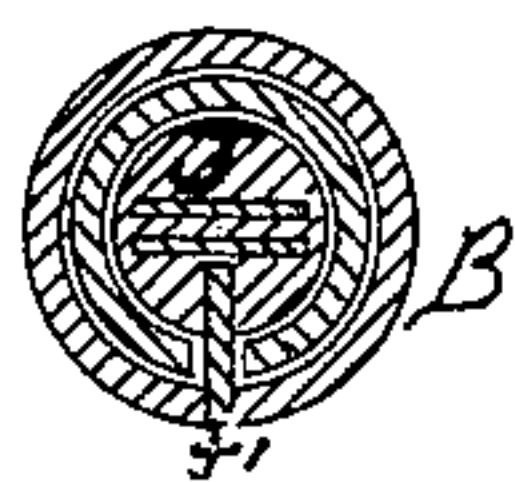


Fig. 3.

WITNESSES.

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UNITED STATES PATENT OFFICE.

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BOILER-TUBE CLEANER.

SPECIFICATION forming part of Letters Patent No. 336,292, dated February 16, 1886.

Application filed February 23, 1885. Serial No. 157,339. (No model.)

To all whom it may concern:

Be it known that we, FRANK M. CLARK and FRED. R. LOW, citizens of the United States, and residing, respectively, at the town of Tilton, county of Belknap, and State of New Hampshire, and at the city of Chelsea, county of Suffolk, and State of Massachusetts, have invented a new and useful Improvement in Tube-Cleaners for Vertical Tubular Boilers, of which the following is a specification, reference being had to the accompanying drawings, forming part thereof, and which we do hereby declare to be a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

Heretofore cleaning out the tubes of a vertical tubular boiler from the fire-box has been an inconvenient and tedious process, and in most cases such tubes have been cleaned by removing the cap or bonnet from the top of the boiler and introducing the scraper from the top, and such expedients as dropping a weight to which a rope was attached through the tube, and then drawing the scraper through by the rope into the fire-box and back by another rope, pushing the scraper through by telegraph-wire, running through chains, &c., were resorted to. Such boilers have also been cleaned from the fire-box, when there is no fire on the grate, by reaching in and introducing the scraper into a tube, screwing on a short length of pipe, pushing the scraper up as far as this pipe will admit, screwing on another length, and so on until the top of the tube is reached, the scraper being withdrawn by unscrewing the lengths as they are drawn down.

In the drawings, Figure 1 is an elevation of the apparatus and a boiler on which it is put in use, the boiler being partly in section. Fig. 2 is a longitudinal section of the appliance. Fig. 3 is a cross-section at the line *xx* of Fig. 2.

Like letters indicate like parts in all the figures.

A is a guide-pipe. It has a bend or curve in it at G and a rosette or winged nozzle to center it in a boiler-tube at E. The part from A to G is straight for most of its length, and the part from G to E is straight for the last part of its length, and the curve at G is about a quadrant for vertical tube-boilers, but may

be of any convenient degree of curvature demanded by the situation. Thus the straight parts of this guide-tube on the two sides of the curve G are at an angle with each other—in most cases for ordinary work about at a right angle.

The tube to be scraped is lettered D in Fig. 1. The guide-tube has a foot hinged or fastened to it, or may be supported in any proper way outside of the fire-door of the boiler. A scraper, H, of any proper form, is fastened to a flexible metallic connecting-rod, which is capable of following around the bend G, and this flexible metallic connecting-rod is passed into the guide-tube around the bend G, and is made fast to a plunger, J, on the interior of said guide-tube, near its outer end. At the point where the plunger is situated, and for a distance equal to the length of the tubes to be cleaned, the guide-tube A is slotted, and it is here surrounded by a sliding sleeve, B, which is connected through the slot in A with the plunger J by means of the spline J', or other proper fastening device.

The flexible connecting-rod which we have used is composed of two ribbons of sheet-steel a little narrower than the diameter of the guide-tube and much thinner, and slightly separated from each other; but it is obvious that one of such ribbons or that more than two could be used.

We usually provide a knob, F, on the end of guide-tube A, to take hold of with one hand, while the slide B is reciprocated with the other.

By means of this invention a boiler of the class described may be cleaned without the removal of the bonnet or any other portion, and while the boiler is under steam and the fire is on the grate.

Having thus fully described our invention, what we desire to claim and to secure by Letters Patent is—

1. In a tube-cleaning device, the combination of a curved tubular guide, suitably supported outside the fire-box and longitudinally slotted near its outer end, with an internal flexible connecting-rod carrying a scraper at its end, and with an external sleeve fastened to said connecting-rod through said slot, and adapted to be reciprocated longitudinally on said guide-tube and to reciprocate the connect-

ing-rod longitudinally of said tube, substantially as described.

2. The combination of the curved guide-tube and the interior flexible connecting-rod carrying at one end the scraper H, and attached at the other end to a handle, whereby said connecting-rod may be reciprocated to and fro along the axis of said guide-tube, substantially as described.

10 3. The combination of a curved guide-tube,

the ribbon connecting-rod, the tube-scraper, the handle for actuating the connecting-rod and scraper, and the foot for supporting the guide-tube, all substantially as described.

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Witnesses:

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