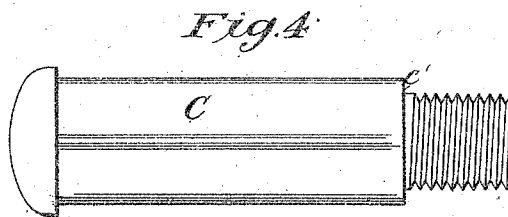
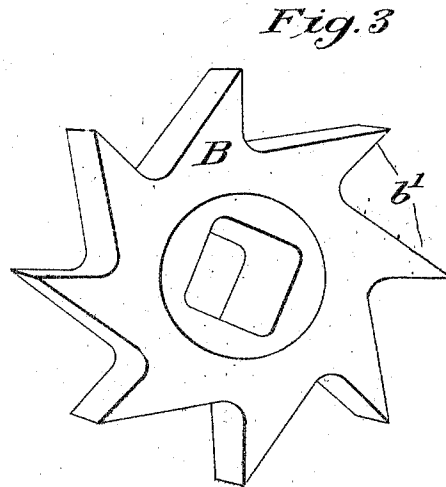
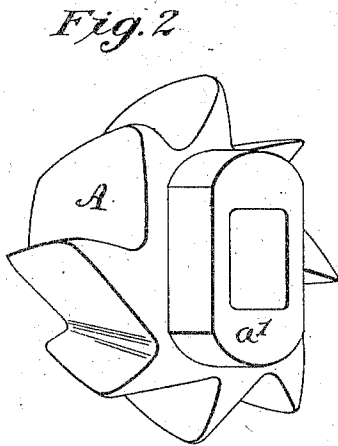
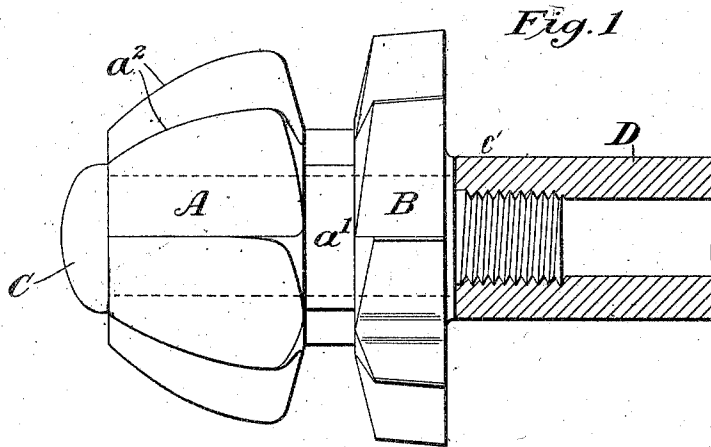


F. E. CARLSON.
BOILER TUBE CLEANER.
APPLICATION FILED DEC. 4, 1909.

966,998.

Patented Aug. 9, 1910.



Witnesses:
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Jenny Christensen

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UNITED STATES PATENT OFFICE.

FRANK EFRAIM CARLSON, OF BROOKLYN, NEW YORK.

BOILER-TUBE CLEANER.

966,998.

Specification of Letters Patent.

Patented Aug. 9, 1910.

Application filed December 4, 1909. Serial No. 531,330.

To all whom it may concern:

Be it known that I, FRANK EFRAIM CARLSON, a subject of the King of Sweden, and a resident of Brooklyn, county of Kings, and State of New York, have invented certain new and useful Improvements in Boiler-Tube Cleaners, of which the following is a specification.

The object of this invention is to make an efficient tube cleaner that can be renewed at small cost.

I am aware that many tube cleaners have been made in the general form of this invention, but the form of construction in this invention is new and has advantages in efficiency and economy.

In the accompanying drawing forming part of this specification Figure 1 is a plan of the cutter heads with a section of the driving shaft. Fig. 2 is a perspective of the forward member. Fig. 3 is a perspective of the rearward member. Fig. 4 is the bolt for connecting the members and securing them to the driving shaft.

Like figures refer to like parts.

A is a fluted conical steel casting having the general shape as shown and sharpened edges a^2 and having part of the casting forming a hub with flattened sides a' and having a square hole extending longitudinally through it; B is a cutter placed in the rear of the cutter A having a square hole there-through, and having ratchet shaped cutting edges b' on its outer face.

C is a bolt having a head and a squared

body the latter adapted to enter the holes in the cutters and threaded at its inner end so as to screw firmly into the driving shaft or bar D. Said threaded end is reduced in diameter so as to form a shoulder c' adapted to abut against the end of the driving bar or shaft D.

The purpose of the flattened hub on the forward cutter A is to apply a wrench for screwing into or out of the driving bar.

The advantages of this construction are the simple and cheaply made separable parts that can be renewed independent of each other.

What I claim and desire to protect by Letters Patent is:

In a flue cleaning device, the combination of a conical cutter having ratchet shaped cutting edges and having integral with it a flattened portion adapted to receive a wrench, and having an angular shaped hole longitudinally through it, another ratchet shaped cutter adapted to fit against the flattened portion of the first mentioned cutter, and having a similar angular shaped hole, a bolt having angular sides fitted to pass through the holes in the cutters and having a threaded end, and a shoulder and a driving bar secured to said threaded end and abutting against said shoulder, substantially as shown and described.

FRANK EFRAIM CARLSON.

Witnesses:

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