(No Model.)

H. H. BENEDICT.

TUBE CLEANER FOR BOILERS.

No. 308,822. Patented Dec. 2, 1884.

Fig. 1.

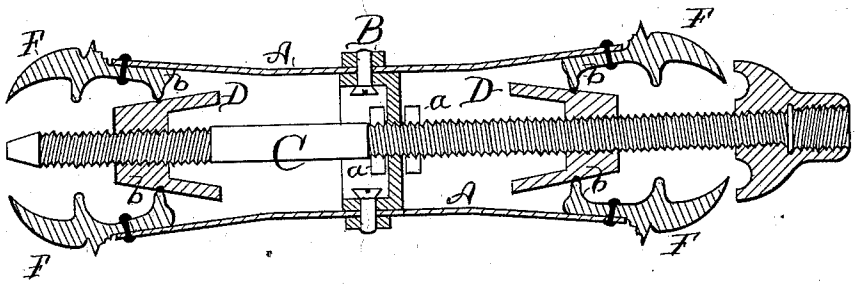
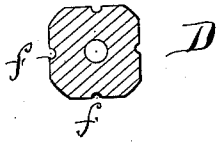


Fig. 2.



Witnesses:
D. H. Parsons.
J. R. Drake.

Horace H. Benedict,
Inventor, by
J. R. Drake,
Atty.

N. PETERS. Photo-Lithographer. Washington, D. C.

UNITED STATES PATENT OFFICE.

HORACE H. BENEDICT, OF BUFFALO, NEW YORK, ASSIGNOR TO CHAUNCEY E. KENDALL, OF SAME PLACE.

TUBE-CLEANER FOR BOILERS.

SPECIFICATION forming part of Letters Patent No. 308,822, dated December 2, 1884.

Application filed February 27, 1884. (No model.)

To all whom it may concern:

Be it known that I, HORACE H. BENEDICT, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Tube-Cleaners for Boilers, of which the following is a specification, reference being had therein to the accompanying drawings.

This improvement relates to boiler-flue cleaners that are expanded and contracted by a central screw-rod, and with the scrapers attached to flat springs; and my invention consists in two circular conical long nuts or expanders, each working on or near the ends of the screw-rod, their conical peripheries coming in contact with the inner ends of the cleaners or tips, which are formed into a projection for that purpose, setting in grooves on the cones, and the central rod having a right-hand thread at one end, and a left-hand thread at the other, on which the nuts move, so that when the rod is turned one way the cones expand the scrapers, and when turned the other the scrapers are contracted, so as to fit various-sized flues.

In the drawings, Figure 1 represents a vertical longitudinal section through the center of two springs and their tips, the expanding cones, the center piece, and handle-coupling; Fig. 2, a vertical cross section through an expander.

A A represent two of the flat springs. B is the center piece, to which all the springs are securely fastened. C is the screw-rod running through the middle of the device and through the center piece, B, and held thereto by nuts *a a*. The outer end of the rod is cut with a left-hand screw-thread and the other end with a right-hand thread. On these are screwed long conical-shaped nuts D D, acting as expanding or contracting devices by their conical surfaces coming in contact with inner projections, *b b*, of the tips F F, so that when the rod is turned the projections *b b* ride up and down in grooves *f f* in the outside of these expanders, and thus throw out or in the scrapers in connection with the springs A, these grooves preventing the expanders from turning.

I disclaim any invention in the scrapers, the curved flat springs, the center rod, or center piece, D; but I believe the inner projections, *b b*, and the conical expanding nuts D D to be new, also the long incline on these nuts, with the projections *b* working in their grooves, by which the cones act directly on the scrapers instead of on the springs, as is usual, thereby getting a more direct action, the expansion and contraction of the cleaner depending on the incline of the cone-nuts instead of on the curve of the springs. By my device the springs A need not necessarily be curved.

The projections *b* or their equivalents can be put on the springs instead of the scrapers; but I prefer them as shown and claimed.

I claim—

1. In boiler-flue cleaners, the combination of the springs A A, having scraper-tips F, with the projections *b b* thereon, and the conical nuts D D on screw-rod C, by which the scrapers are directly expanded or contracted, substantially as specified.

2. In a boiler-flue cleaner, the inclined conical expanders D D, with grooves *f f*, adapted to receive projections on the shanks of the scraper thereon, working on the central rod, C, substantially as and for the purpose specified.

In testimony whereof I affix my signature in presence of two witnesses.

HORACE H. BENEDICT.

Witnesses:
J. R. DRAKE,
T. H. PARSONS.