

L. SMITH & G. D. MULLIHAN.
BOILER CLEANING DEVICE.
APPLICATION FILED APR. 25, 1908.

981,701.

Patented Jan. 17, 1911.

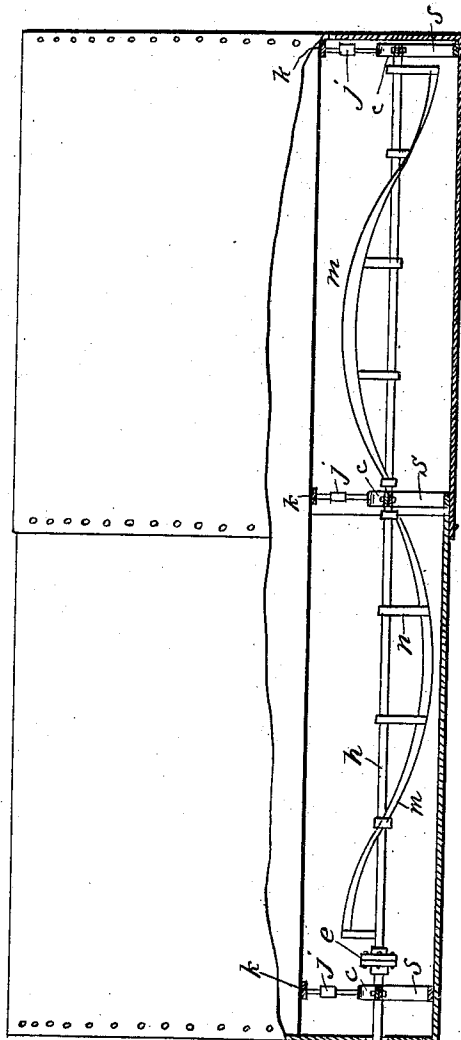


Fig. 1.

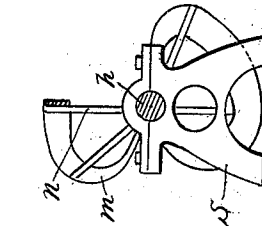


Fig. 4.

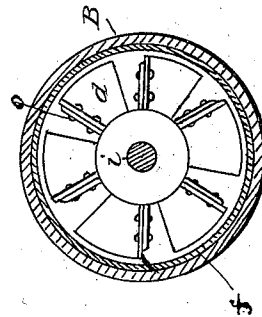


Fig. 3.

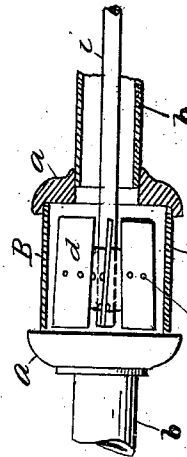


Fig. 2.

Witnesses
J. L. O'Rand
[Signature]

Inventor
Laurence Smith and
George D. Mullihan,
By [Signature]
John A. Paul
Attorney

UNITED STATES PATENT OFFICE.

LAURENCE SMITH AND GEORGE D. MULLIHAN, OF WEBB CITY, MISSOURI.

BOILER-CLEANING DEVICE.

981,701.

Specification of Letters Patent.

Patented Jan. 17, 1911.

Application filed April 25, 1908. Serial No. 429,290.

To all whom it may concern:

Be it known that we, LAURENCE SMITH and GEORGE D. MULLIHAN, of Webb City, in the county of Jasper and State of Missouri, have invented certain new and useful Improvements in Cleaners for Steam-Boilers; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification.

Our invention relates to boiler cleaning devices, and consists of spiral blades, or the like, attached to a shaft and adapted to be placed in a boiler, as shown, in conjunction with a propeller screw on a shaft in the blow-off pipe between its valve and the boiler.

The object thereof is to so construct the same that it will automatically clean boilers when they are in operation; and will effectively remove all scale, mud, sediment, and the like from the receptacle in which it is placed.

In the drawings forming a part of this specification, and in which like symbols of reference represent corresponding parts in the several views:—Figure 1 is an elevation showing our rotary boiler cleaner in operative position; Fig. 2 is an enlarged view of the blow-off pipe, with propeller therein, said parts being partly in section; Fig. 3 is a transverse section of the propeller, on the line 3—3, of Fig. 1; and, Fig. 4 is a sectional view of shaft and shaft supports, with cleaning blades thereon.

As shown in Fig. 1, our cleaner is supported in the bottom of the boiler and extends the whole length of the same. The blades *m* preferably have a pitch equal to one-and-one-half times around the length of shaft *h*, and are fastened to shaft *h* by arms *n*. Shaft *h* is located on stands *s* and secured thereon by caps *c*. Stands *s* are secured in place between the tubes and the

bottom of the boiler preferably by turn-buckles *j* and cross-pieces *k*. Shaft *h* is fastened to propeller screw shaft *i* by coupling *e*.

The propeller which operates in the blow-off pipe is composed of blades *d* secured to shaft *i* by lugs *o*, inclosed in an enlarged portion or casing of blow-off pipe *B*, formed by collars *a* connected by pipe or sleeve *f*. The casing proper, *B*, is connected to boiler and gate valve by sleeves *b b*.

When our cleaner is installed, and it is desired to clean the boiler, the operator turns valve *g* in blow-off pipe *b*, allowing the passage of steam and water from inside of boiler to bear against and revolve the propeller screw, in its passage to the atmosphere, and the propeller revolves shaft *h*, while the blades attached to the shaft, in its revolution agitate the water, thus, stirring the sediment and moving it to the blow-off pipe.

Having now fully described our invention, what we claim as new and desire to secure by Letters-Patent, is:—

1. The combination with a boiler having a blow-off pipe and a valve therein, a shaft in said boiler, spiral cleaner blades secured by arms to said shaft, and a propeller wheel on said shaft within said blow-off pipe between said valve and said boiler.

2. A boiler cleaner, consisting of a main shaft carrying blades adapted for operation in a boiler, means for supporting and securing the shaft in a boiler, a blow-off pipe, a blow-off on said pipe, an enlarged casing on the blow-off pipe, and a propeller connected to the main shaft and within said casing.

LAURENCE SMITH. [L. s.]
GEORGE D. MULLIHAN. [L. s.]

Witnesses:

IRA T. HARRIS,
L. M. HARRIS.