I. DIVIRGLIO.

FIRE TUBE CLEANER.

APPLICATION FILED JAN. 15, 1921.

1,383,291. Patented July 5, 1921.

Fig. 1.

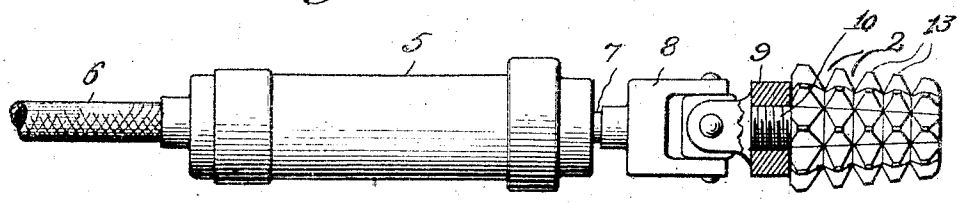


Fig. 2.

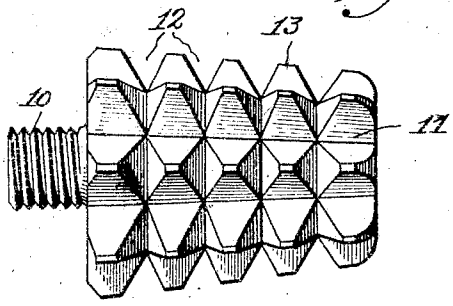
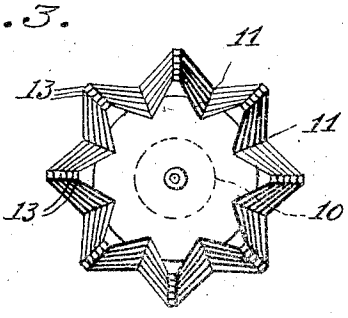


Fig. 3.



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UNITED STATES PATENT OFFICE.

IGNAZIO DIVIRGLIO, OF PITCAIRN, PENNSYLVANIA.

FIRE-TUBE CLEANER.

1,383,291. Specification of Letters Patent. Patented July 5, 1921.

Application filed January 15, 1921. Serial No. 437,413.

To all whom it may concern:

Be it known that I, IGNAZIO DIVIRGLIO, a citizen of the United States of America, and a resident of Pitcairn, county of Allegheny, and State of Pennsylvania, have invented certain new and useful Improvements in Fire-Tube Cleaners, of which the following is a full and clear specification.

This invention relates to fire-tube cleaners of that class wherein a small turbine, on the end of the pipe which conducts the motive fluid, is inserted in the pipe and moved back and forth therein, the driven shaft of the turbine being provided with a tool which upon rotation of the pipe knocks and scrapes off the incrustation; and the special object of the present invention is to provide a form of tool or head which will be especially effective in dislodging the accumulated matter and which will not get stuck in the tube, as more fully hereinafter set forth.

In the drawing—

Figure 1 is a side elevation, partly in section, of a well-known form of turbine tube cleaner provided with my device;

Fig. 2 is a side elevation with my tool or head detached;

Fig. 3 is an end view looking at the inner end of the tool.

In the drawing, 5 designates the turbine, which may be a steam turbine or air or water driven, and which may be of any suitable type adapted to enter the fire-tube to be cleaned. The motive fluid is conducted into one end of the turbine by means of a pipe 6, and extending out from the other end of the turbine is the driven-shaft 7 thereof. Affixed to the projecting end of the driven-shaft is one member 8 of a universal coupling, the other member 9 of this coupling being provided with a threaded hole for the reception of the threaded shank of the tool or head, the shank being screwed into the coupling 9 far enough to bring the inner end of the tool into abutting relation with the coupling-member 9. With this construction, it will be seen that the tool is free to adjust itself in all directions radially during rotation within the tube.

The tool consists of an integral steel body approximately the shape of the frustum of a cone with the base at the shank-end. The tool is provided with a series of longitudinal V-shaped grooves 11 equally spaced around the circumference of the tool, and also with a series of annular grooves 12 similar in shape. These intersecting grooves form a multiplicity of pyramidal radial projections 13 which are arranged in rows longitudinally of the tool and also circumferentially. With a tool of this type, especially when, as in the present case, it is driven through a universal joint, the incrustation is quickly disintegrated, and sticking of the tool in a heavy deposit of products of combustion in the tube is entirely avoided by tapering the tool toward its forward end.

The nature and scope of the invention having been thus indicated and its preferred embodiment having been specifically described, what is claimed as new is:

A tube cleaner comprising a head formed solid throughout its diameter and length and tapered toward its front-end and provided at its rear or large end with a device adapting it to be engaged with one member of a universal coupling, the surface of said head being grooved both longitudinally and annularly to form a multiplicity of pyramidal radial projections which are arranged in alinement both circumferentially and longitudinally of the tool.

In testimony whereof I hereunto affix my signature.

IGNAZIO DIVIRGLIO.

Witness:
M. L. KECK.