

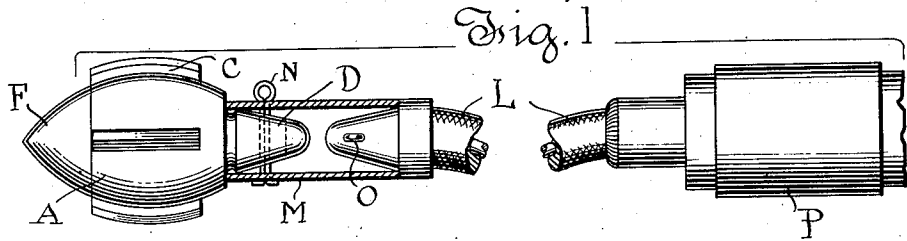
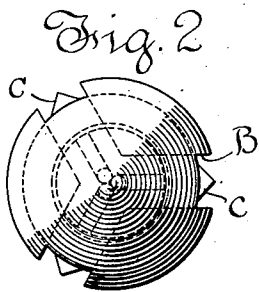
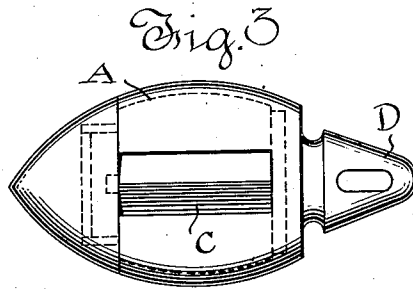
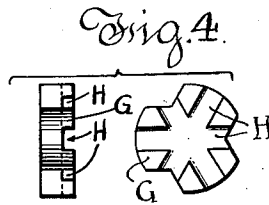
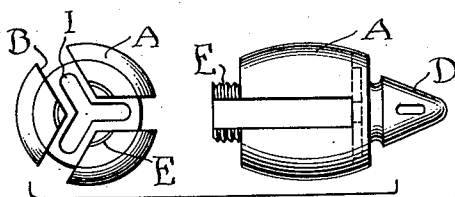
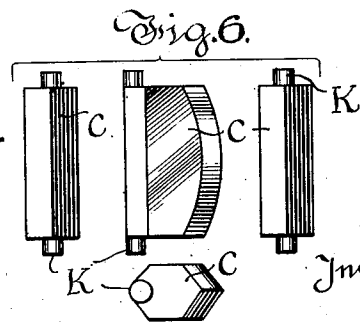
March 12, 1929.

L. TARICCO

1,705,451

TUBE CLEANING AND SCALE REMOVING DEVICE

Original Filed May 10, 1926



Inventor

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Patented Mar. 12, 1929.

1,705,451

UNITED STATES PATENT OFFICE.

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TUBE-CLEANING AND SCALE-REMOVING DEVICE.

Application filed May 10, 1926, Serial No. 108,194, and in Italy May 11, 1925. Renewed November 1, 1928.

This invention relates to tube cleaning devices for removing scale and incrustation from boiler and other tubes and has for its object to provide an improved and simplified construction of such devices which will be efficient in operation, can be easily introduced into and withdrawn from tubes, and can be caused readily to follow curved tubes and remove scale or incrustation therefrom without danger and fear of jamming.

In accordance with one feature of the invention in the improved tube cleaning device which comprises a cleaning head of streamline or ovoidal form, having a plurality of slots in which are guided radially movable scrapers, which are caused to move outwards by centrifugal force and to strike against and contact with the tube surface, the scrapers are formed as blades with wedge-like edges and lateral projections engaging in and freely moving within the slots formed in the head or body by a star-shaped washer and a screw cap. In accordance with a further feature the cleaning head is connected by a form of universal joint with a flexible transmission shaft suitably driven. Other features will hereinafter appear and will be pointed out in the claim.

The invention is illustrated in the accompanying drawing in which

Fig. 1 is a view showing a general arrangement of a preferred form of the apparatus.

Fig. 2 is a front view of the cleaning head.

Fig. 3 is a side elevation,

Fig. 4 shows in side view and in front view a star-shaped guide adapted to be retained in position by the cap and having grooves in which fit projections on the blades.

Fig. 5 shows in side and in end view the body of the tool head with the blades omitted showing the radial slots and the guide grooves in the body for the blades.

Fig. 6 is a series of views of the blades in detail.

Referring to the drawings, it will be seen that the improved tube cleaning and scale removing device comprises a body portion or head —A—, formed with a plurality of radially disposed slots —B— in which are adapted to slide scraper blades —C— formed with wedge shaped and curved edges, which serve to remove the scale from the tubes to be cleaned. The head —A— is formed at its rear end with a tail piece

—D— formed with an opening or slot for connection to the transmission shaft, and is formed at its forward end with a screw-threaded boss —E— to receive a conoidal nose cap —F— with an internal screw thread. The nose cap —F— serves to hold in place a star-shaped washer —G— formed with radial grooves —H— which, in conjunction with grooves I, at the rear ends of the radial slots in the body —A—, serve to guide the scraper blades in their radial movement, lugs —K— on the blades —C— fitting in such grooves for this purpose.

It will be seen that the head is assembled by placing therein radial scraper blades, with the lugs —K— at one end, lying within the grooves I. The star-shaped washer —G— is now placed in position enclosing the other lugs —K— on the blades; this star-shaped washer fits within the screw-threaded boss —E— on the body A and is retained and covered by the conoidal cap —F— which is then screwed to the body —A—.

The device is connected to the flexible driving shaft —L— by means of the tubular coupling —M— (Fig. 1) one end of which is connected by a pin —N— or the like, with the tail of the device—which is formed with an elongated opening to allow of movement relatively thereto—while the other end is connected by a pin —O— extending through the coupling with the transmission shaft.

The driven end of the flexible shaft is connected to the motor drive, preferably through a friction clutch —P— which, if the head becomes stuck or jammed for any reason, yields and thus gives warning.

On rotation of the body —A—, within the tube to be cleaned, the scraper blades fly outwards due to centrifugal force and, impinging on any deposit, scrape it from the tube wall. If the scraper blades meet with too much resistance, they move inwards and are again thrown outward repeatedly, thus breaking up the scale and effecting its removal.

The device will operate on somewhat elliptical tubes or even on slightly flattened tubes.

It will be appreciated that the invention provides a tube cleaning device of robust construction without delicate parts liable to become deranged.

Having now particularly described and ascertained the nature of my said invention

and in what manner the same is to be performed, I declare that what I claim is:

A tube cleaning and scale removing device comprising a body of ovoidal form having a tail piece with a slot for connection to a flexible transmission at one end, and a screw threaded boss at the other end and having elongated radially disposed slots; scraper blades slidable in said slots having curved, wedge shaped scraping edges, lugs projecting from the ends of said blades, grooves

formed inwardly of the body in one end of the radial slots and in which the lugs at one end of the blades are adapted to slide and a conoidal threaded cap fitting on said threaded boss at the other end of said body, a radially grooved washer inserted between said cap and said body, to receive the lugs from the other ends of said blades.

In testimony whereof I have affixed my signature.

LUIGI TARICCO.