G. RESTUCCI.

SCRAPER FOR WATER TUBE BOILERS, WATER PIPES, &c.

APPLICATION FILED DEC. 23, 1913.

1,097,673. Patented May 26, 1914.

Fig. 1

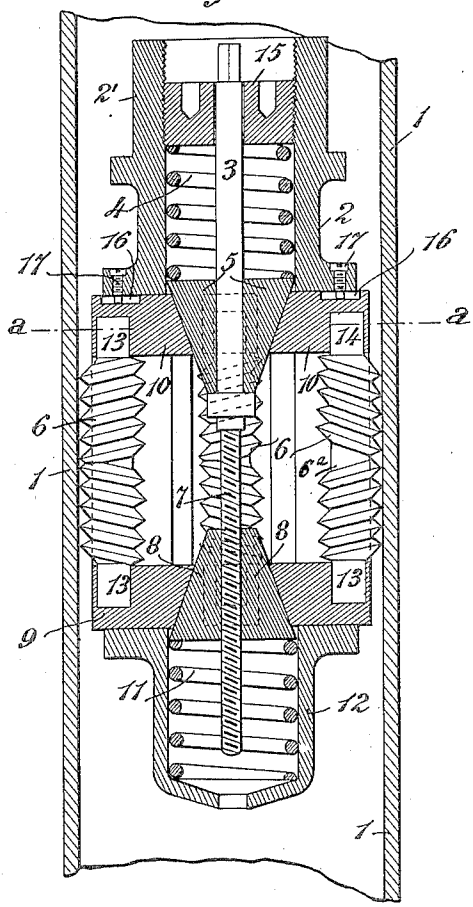
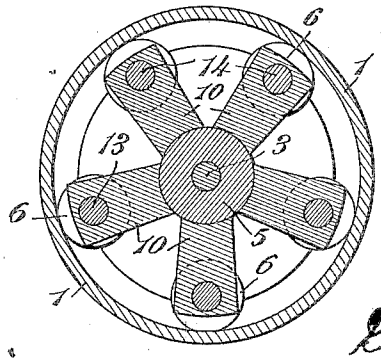


Fig. 2



Witnesses:-
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UNITED STATES PATENT OFFICE.

GIUSEPPE RESTUCCI, OF NAPLES, ITALY.

SCRAPER FOR WATER-TUBE BOILERS, WATER-PIPES, &c.

1,097,673. Specification of Letters Patent. Patented May 26, 1914.

Application filed December 23, 1913. Serial No. 808,323.

To all whom it may concern:

Be it known that I, GIUSEPPE RESTUCCI, a subject of the King of Italy, residing at Naples, Italy, mechanical engineer, (whose post-office address is 156 Nuovo Corso Garibaldi, Naples, Italy,) have invented a new and useful Scraper for Water-Tube Boilers, Water-Pipes, &c., of which the following is a specification.

My invention relates to an improved pipe and tube cleaner, adapted particularly for the removal of incrustation from the interior of water mains, boiler pipes, and the like.

One of the objects of the invention is to provide removably supported cutting or scraping tools of novel form, adapted to act against the incrustation upon a pipe and effectively remove the same.

Another object of the invention is to provide means for removably retaining the cutters or scrapers in position in the apparatus.

Another object of the invention is to simplify and generally improve the structure of such pipe cleaning devices.

The invention consists of the several novel features and combinations of parts hereinafter claimed, and described in detail in the following specification, reference being made to the accompanying drawing, wherein,

Figure 1 is a longitudinal sectional view of my preferred form of device; and Fig. 2 is a transverse sectional view thereof on the line *a*—*a* of Fig. 1.

Referring in detail to the accompanying drawing, the numeral 2 denotes the hollow, substantially cylindrical, head of a suitable frame, 12 being the tail portion of the frame, and these two members being connected by the spaced rods or bars 19. Extending axially through the frame is a shaft 3, approximately one half thereof being threaded as indicated at 7, and the other half being smooth and substantially cylindrical, except at 3^a where the shaft is formed into a polygonal end to receive a suitable key. Engaging the shaft are the oppositely disposed frusto-conical blocks 5 and 8 having their apices directed toward each other. The block 8 engages the threaded portion 7 of the shaft, while the block 5 engages the smooth portion of the shaft 3 and is held in position on said shaft by means of a collar 18 secured to or formed integrally with the shaft.

Engaging the conical surface of the block 5 are several radially extending arms 10, and engaging the conical surface of the block 8 are similar radially extending arms 9. These arms serve to retain in position the cutting or scraping members 6, which comprise, preferably, oppositely extending whirls or cutters mounted upon or formed integrally with shafts 6^a. The preferred arrangement is best seen in Fig. 1, where one half of the cutters of each shaft are formed somewhat like a right hand thread, and the other half are formed like a left hand thread. The opposing faces of the arms 9 and 10 are preferably hollowed out or apertured, to receive studs 13 and 14 formed at the ends of the shafts 6^a upon which the cutters are formed. The upper sets of arms 10 are also preferably grooved at 16 to receive the ends of screws or nuts 17 which project through the head 2 and into these grooves 16.

Mounted in the hollow head 2 of the frame is a spring 4, and mounted in the tail member 12 is a similar spring 11, these springs having a normal tendency to force the cone members 5 and 8 toward each other. The inner surface of the upper part of the head 2 is threaded and adapted to be engaged by a correspondingly threaded nut 15 serving to hold the spring 4 under adjusted tension.

By rotating the shaft 3 the cones 5 and 8 may be made either to approach each other or to recede from each other. By causing the cones to approach each other, the sets of arms 9 and 10 are formed to glide along the cone surfaces and thus project the cutters outwardly in the space between the bars 19. When the cones recede from each other the arms 9 are permitted to collapse or glide along the cone surfaces, and the cutters recede to a greater or less extent within the space defined by the bars 19. The shaft 3, it will be understood, may be rotated by a suitable key engaging the polygonal end 3^a.

Assuming that the device is to be operated, to remove incrustation from the interior of pipe 1, the device, after being inserted in said pipe has rotation imparted thereto by a suitably formed motor shaft designed to take over the suitably formed part 2^1 of the head 2 of the frame. As the device rotates within the pipe the cutters 6 cut and scrape the incrustation therefrom.

I claim:—

1. Pipe cleaning apparatus, embodying a

frame having longitudinal apertures therein, oppositely disposed scraper-securing-members in said frame, scrapers adapted to be held between said securing-members and extending lengthwise of said frame, and means for projecting said scrapers to a greater or less extent through the apertures in said frame.

2. Pipe cleaning apparatus, embodying a frame comprising end members and a series of spaced bars connecting said members, scraper-securing-members adapted to rest, respectively, against said end members, scrapers adapted to be clamped between said scraper securing-members, and means for adjusting the extent to which said scrapers project through the spaces between the rods connecting the said end members together.

3. Pipe cleaning apparatus, embodying a frame consisting of end casings and spaced bars connecting said casings, a plurality of radially projecting arms resting, respectively, against the end casings, scraper members clamped between the outer ends of said arms, and means for adjusting the distance of one set of arms from the other whereby the extent to which said scraper members project beyond said bars is determined.

4. Pipe cleaning apparatus, embodying a frame consisting of end casings and spaced bars connecting said casings together, a cone member projecting into each of said end casings, radially projecting arms having inclined faces resting against said cones, respectively, scraper members clamped between the outer ends of said arms, and means for varying the distance of said cones from each other whereby said sets of arms are caused to move toward or from each other to determine the distance which said scraper members project beyond the body of the frame.

5. Pipe cleaning apparatus, embodying a frame comprising hollow end casings and spaced bars connecting said casings, a cone projecting into each of said casings, a spring in each of said casings normally exerting pressure against the base of the cone in said casing, a shaft passing through said casings and through said cones, a portion of said shaft being threaded, radially projecting arms engaging each of the cones and having apertures in their outer ends, and scraper members having means for entering the apertures in said arms.

6. Pipe cleaning apparatus, embodying hollow end casings, and spaced bars connecting said casings together, a frusto-conical block adjacent each of said hollow casings and having its base directed toward said casing and the apices of said blocks being directed toward each other, a shaft passing through said casings and through said blocks, a portion of said shaft being threaded, a plurality of arms projecting radially from each of said blocks, said arms having their outer ends apertured, a series of scraper members each embodying a shaft having oppositely cut threads thereon and provided with ends designed to project into the apertures in said arms, and a spring in each casing adapted to exert pressure on said cone members.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GIUSEPPE RESTUCCI.

Witnesses:
DUILIO NARDONI,
TOMMASO BORBOLUZZI.