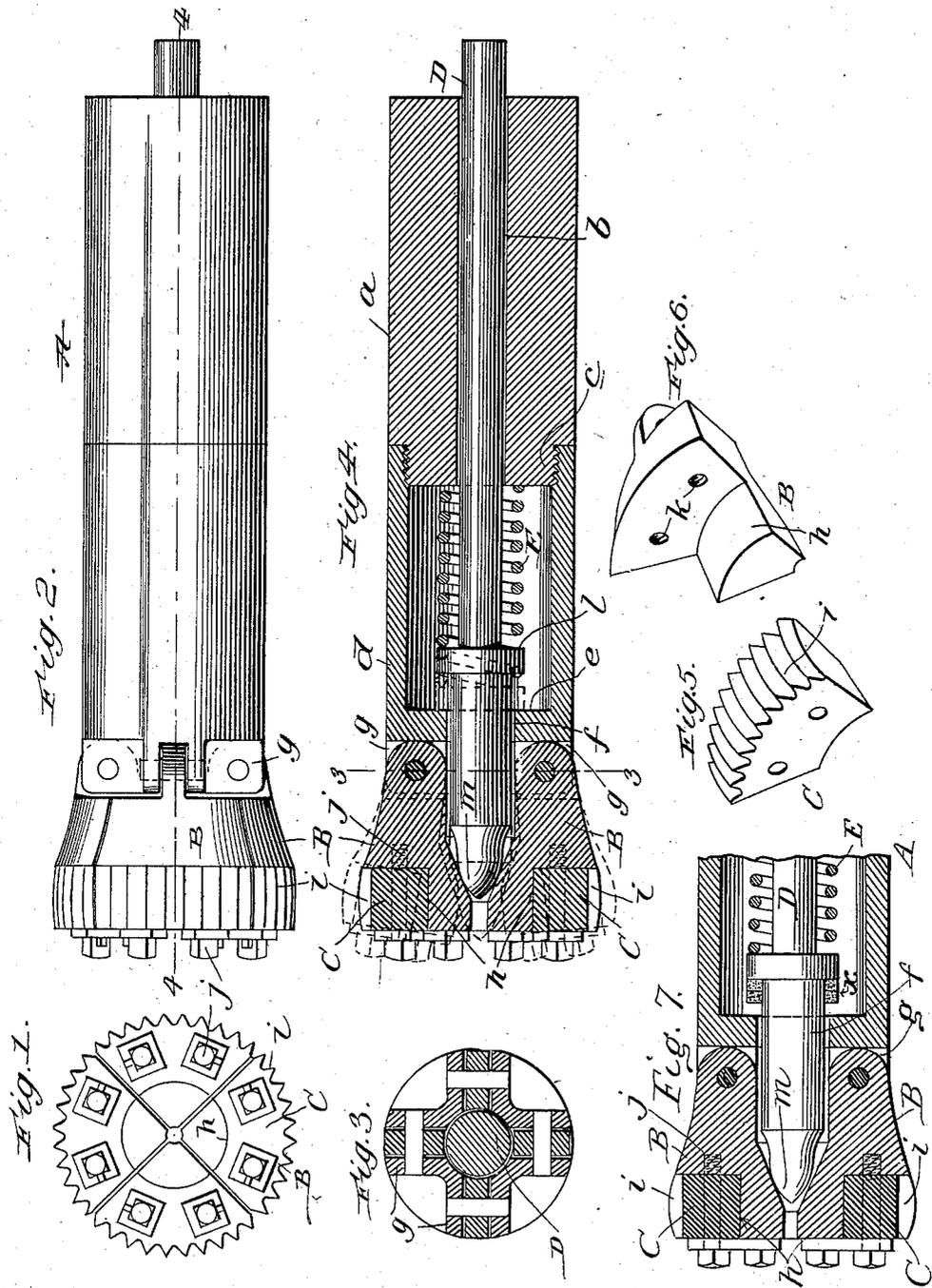


E. JOHN.
TUBE CLEANER.

APPLICATION FILED MAR. 27, 1903.

NO MODEL.



Witnesses
A. B. ...
W. C. Akely

Inventor
 Evan John
 By *James Whaley* Attorney

UNITED STATES PATENT OFFICE.

EVAN JOHN, OF LORAIN, OHIO.

TUBE-CLEANER.

SPECIFICATION forming part of Letters Patent No. 748,283, dated December 29, 1903.

Application filed March 27, 1903. Serial No. 149,906. (No model.)

To all whom it may concern:

Be it known that I, EVAN JOHN, a citizen of the United States, residing at Lorain, in the county of Lorain and State of Ohio, have invented new and useful Improvements in Tube-Cleaners, of which the following is a specification.

My invention pertains to implements for cleaning steam-boiler and other tubes; and it has for its object to provide a simple and substantial device adapted to be quickly and easily placed in and removed from tubes and one which when properly operated is highly efficient in removing incrustation from the walls of tubes without weakening or otherwise injuring the tubes.

With the foregoing in mind the invention will be fully understood from the following description and claims, when taken in connection with the accompanying drawings, in which—

Figure 1 is an elevation of the forward end of the tube-cleaner constituting the preferred embodiment of my invention; Fig. 2, a side elevation of the same; Fig. 3, a transverse section taken in the plane indicated by the broken line 3 3 of Fig. 4; Fig. 4, a longitudinal central section taken in the plane of the broken line 4 4 of Fig. 2, with the plunger of the device in elevation; Fig. 5, a slightly-enlarged perspective view of one of the cutters of the cleaner removed; Fig. 6, a similar view of one of the cutter-bearing arms, and Fig. 7 a detail section illustrating a modification.

Similar letters designate corresponding parts in all of the several views of the drawings, referring to which—

A is the body of my improved tube-cleaner.

In the preferred embodiment of my invention the said body is tubular and comprises a rear section *a*, having a longitudinal central bore *b*, and a reduced and threaded forward end *c* and a hollow forward section *d*, screwed on the end *c* of section *a* and having a forward end wall *e*, provided with an aperture *f*, coincident with the bore *b*, and also having four (more or less) pairs of apertured lugs *g* on the forward side of said wall *e*, Fig. 3.

B B are radially-movable arms having reduced rear ends pivoted between the lugs *g*

of the body and also having sector-shaped forward ends and recesses *h* in the outer portions thereof, Fig. 6; C C, cutters, each of which describes an arc of a circle, is provided with an outer toothed edge *i*, and is detachably secured in the recess *h* of one arm B, preferably through the medium of screws *j*, which extend through it and into threaded apertures *k* in the arm; D, a plunger movable in the bore *b* and aperture *f* of the body and having a shoulder *l* disposed in the hollow section *d* of the body and also having a forward tapered end *m*, arranged between the inner forward portions of the arms B, and E a coiled spring surrounding the plunger D within the hollow body-section *d* and interposed between the collar *l* of the plunger and the forward end of the body-section *a*.

In the practical use of my improved cleaner the plunger D is drawn rearwardly against the action of the spring E to permit the arms B to assume the positions shown by full lines in Fig. 4, and the device is gradually introduced into the tube to be cleaned. The plunger is then released, when the spring E will operate to expand the cutters against the wall of the tube and hold the cutters in place. With the cutters in the position last stated the rear end of the plunger is struck a number of blows per minute by a pneumatic tool or other appliance, (not shown,) when, as will be readily observed, the cutters will be forced outwardly, and will in consequence operate to quickly remove incrustation from the wall of the tube.

When desired, washers *x*, Fig. 7, may be interposed between the collar *l* on the plunger and the forward wall *e* of the body-section *d* with a view of regulating the blow and rendering it impossible for the cutters to injure the tube.

The cutters C are the only parts of my improved cleaner subjected to wear, and any one of them may obviously be removed when worn or broken and replaced with a new cutter.

It will be appreciated from the foregoing that my improved tube-cleaner, notwithstanding its advantages, is at once simple, substantial, and inexpensive in construction.

I have entered into a detailed description

of the construction and relative arrangement of the parts embraced in the present and preferred embodiment of my invention in order to impart a full, clear, and exact understanding of the same. I do not desire, however, to be understood as confining myself to such specific construction and arrangement of parts, as such changes or modifications may be made in practice as fairly fall within the scope of my invention as claimed.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a tube-cleaner, the combination of a body having a bore extending throughout its length, radially-swinging arms pivoted on the forward end of the body, and bearing cutters, a plunger arranged in the bore of the body, with its forward end resting between and in engagement with the inner sides of the arms, and its rear portion extending beyond the rear end of the body; said plunger having a shoulder at an intermediate point of its length, a coiled spring surrounding the plunger and interposed between the shoulder thereof and the body, and a washer arranged on the plunger, between the shoulder thereof

and a portion of the body in front of said shoulder.

2. In a tube-cleaner, the combination of a body, having a bore extending throughout its length, radially-swinging arms having reduced rear portions, pivoted to the body, and sector-shaped forward ends, and also having recesses in the outer portions of said forward ends, segmental cutters arranged in said recesses of the arms, longitudinally-disposed screws extending through the cutters and into the arms, a plunger arranged in the bore of the body, with its forward end resting between and in engagement with the inner sides of the arms, and its rear portion extending beyond the rear end of the body; said plunger having a shoulder at an intermediate point of its length, and a coiled spring surrounding the plunger, and interposed between the shoulder thereof and the body.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

EVAN JOHN.

Witnesses:

GUS L. GLITSCH,

LEWIS J. LLEWELLYN.