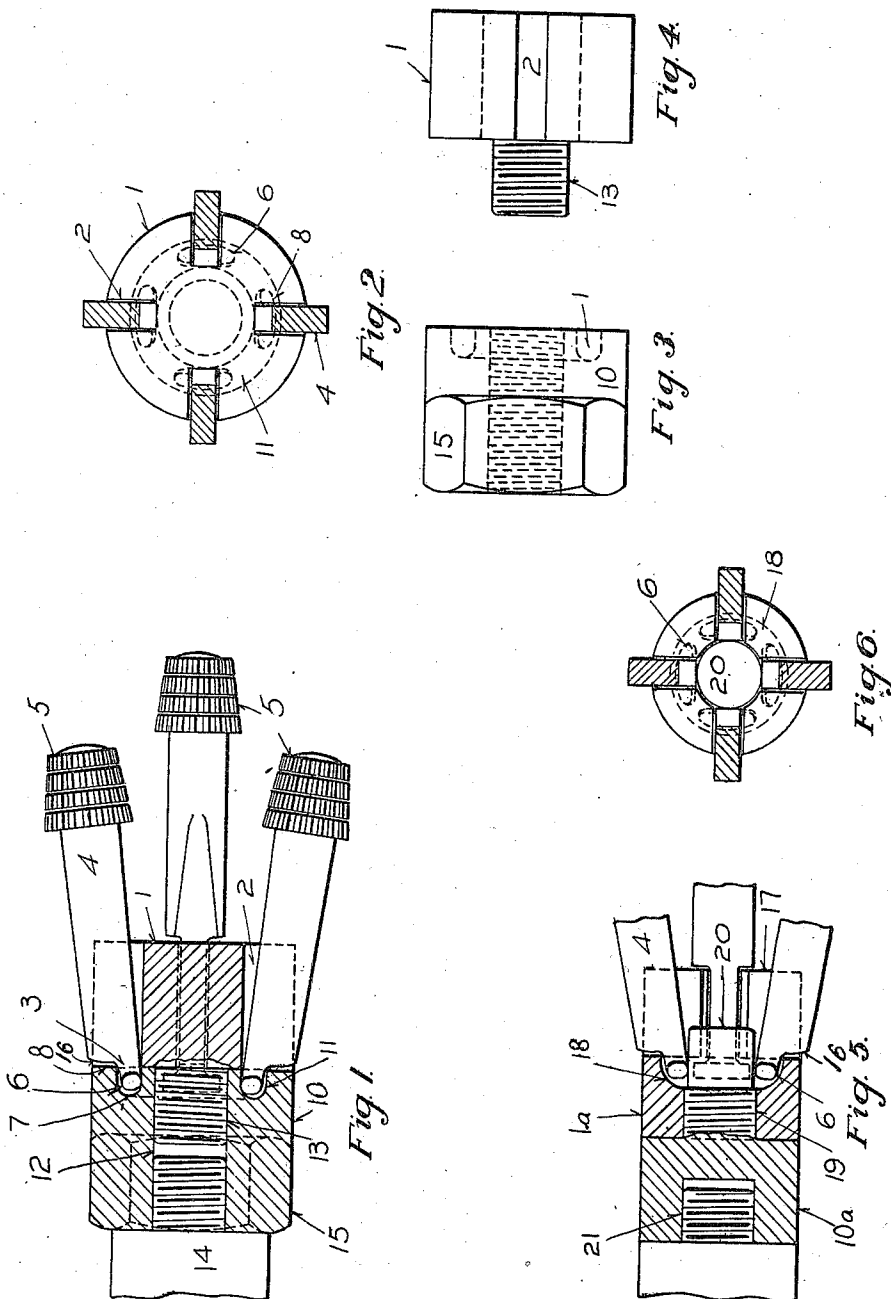


R. G. JAMISON.
 ROTARY TUBE CLEANER.
 APPLICATION FILED AUG. 9, 1909.

973,046.

Patented Oct. 18, 1910.



WITNESSES:
Stephen Mack
Jas. J. W. D. am

INVENTOR
Robert G. Jamison
 BY
Fred'k W. Hinton
 ATTORNEY

UNITED STATES PATENT OFFICE.

ROBERT G. JAMISON, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR TO THE LIBERTY MANUFACTURING COMPANY, OF PITTSBURG, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

ROTARY TUBE-CLEANER.

973,046.

Specification of Letters Patent.

Patented Oct. 18, 1910.

Application filed August 9, 1909. Serial No. 511,914.

To all whom it may concern:

Be it known that I, ROBERT G. JAMISON, a resident of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Rotary Tube-Cleaners, of which the following is a specification.

This invention relates to what are known as cleaner heads or tube cleaning tools, that is, devices for removing scale and incrustation from boiler and similar tubes.

The device is particularly designed to be used in combination with a turbine or other rotary fluid actuated motor.

The object of the invention is to provide a cleaner head having swinging arms and which is of simple construction and cannot get out of order or easily break, and particularly so constructed as to dispense with rivets or pins forming the pivots of the swinging arms.

The invention comprises the construction and arrangement of parts hereinafter described and claimed.

In the accompanying drawing Figure 1 is a longitudinal section of one form of my device; Fig. 2 is an end view thereof showing the cutter carrying arms in transverse section; Figs. 3 and 4 are side views showing the main parts separated; Fig. 5 is a longitudinal section showing a modification; and Fig. 6 is an end view thereof with the cutter carrying arms in transverse section.

The head illustrated in Figs. 1 to 4 comprises a main body portion 1 provided externally with one or more open grooves or slots 2, the particular form illustrated having four such grooves or slots, providing seats for the reduced shanks 3 of the arms 4 which at their outer ends carry cutters or tools 5 of any suitable description. The arms 3 at their inner ends are provided with integral heads 6 in the form of trunnions or cross heads having their forward faces rounded and seating against the rear face 8 of the body 1, said trunnions serving as the pivots or fulcrums of the swinging arms so as to permit the tools to fly outwardly and engage the tube. The arms are held in place by means of the clamping member 10 which in its forward face is provided with a groove 11 for receiving and confining the heads or trunnions of the arms 4. This

clamping member may be secured to the body 1 in any suitable way. As shown the member 10 is provided with a threaded axial hole 12 for receiving a threaded projection 13 on the rear end of body 1, which projection only extends part way through the axial hole in the member 10, the opposite end of the hole being adapted to receive the threaded end of the motor piston or spindle 14 as is the usual practice. The part 10 has flattened faces as at 15 to receive a wrench by means of which the tool may be screwed onto or off the motor spindle. The body 1 is of strong construction and the part 10 is of a similar character. The arms have their trunnions confined so that they cannot escape, but the arms are nevertheless capable of swinging outwardly to a certain degree, being limited by the shoulders 16 on the arms contacting against the front face of the member 10. No rivets or loose pins of any character are employed so that the nuisance of displaced pins or rivets is entirely obviated. At the same time the parts can be very readily disassembled when necessary to replace or renew an arm.

Fig. 5 shows a modification in which the body 1^a is provided with a central opening 17 and an internal annular groove 18 for receiving the trunnions 6 of the arms, the arms in this case being inserted through the central opening, the longitudinal grooves 2 intersecting the annular grooves so that the arms can be inserted and removed. The inner ends of the arms are held from displacement by means of a member 10^a which is threaded at 19 into an opening in the rear end of the body 1 and provided with a projection 20 extending forwardly beyond the annular groove 18 and serving to hold the trunnions of the arms against displacement. The rear end of member 10^a is provided with a threaded opening 21 for attachment to the motor spindle.

Both forms of my device are of simple and solid construction and effectually hold the swinging arms in position while dispensing with loose or separate rivets or pivot pins.

The heads illustrated are shown with four arms, but it is obvious that any number of arms, one or more, can be used. It is also obvious that instead of providing the arms

with trunnions they might be provided with enlarged spherical or other forms of heads which would serve as pivots for the arms.

What I claim is:

- 5 1. A rotary tube cleaner comprising a body provided with longitudinal slots opening on the exterior thereof and extending to its forward end, arms having shanks lying in said slots and provided on their inner ends with integral heads having a bearing on the 10 body, a clamping member having a threaded engagement with the body and engaging the heads on the arms and confining the same to their bearings and provided on its rear end with an axially threaded portion for attachment to a motor spindle, and toothed cutters 15 on the outer free ends of said arms.
2. A rotary tube cleaner comprising a body provided with longitudinal slots opening on the exterior thereof, arms having 20 shanks lying in said slots and provided on their inner ends with integral trunnions bearing against the body, a clamping member having threaded engagement with the body and provided with a groove arranged to receive the arm trunnions and form seats therefor, and provided with means for attachment to a motor spindle, and toothed 25 cutters on the outer ends of the said arms.
3. A rotary tube cleaner comprising a 30 body provided with longitudinal slots opening on the exterior thereof and extending to

its forward end, arms having shanks lying in said slots and provided on their inner ends with integral heads having bearing on the 35 body, a clamping member having threaded engagement with the body and engaging the heads on the arms and confining the same to their bearings and provided on its rear end with an axially threaded portion for attachment to a motor spindle, said body and 40 clamping member forming a substantially cylindrical body, and toothed cutters on the outer free ends of said arms.

4. A rotary tube cleaner comprising a 45 body provided with longitudinal slots opening on the exterior thereof, arms having shanks lying in said slots and provided on their inner ends with integral trunnions having a bearing against said body, said body 50 being provided with a threaded rearward projection, a clamping member arranged to confine the arm trunnions and provided with an axially threaded opening therethrough for receiving into one end the threaded 55 projection on the body and into the other end a threaded motor spindle, and toothed cutters on the free ends of said arms.

In testimony whereof, I have hereunto set my hand.

ROBERT G. JAMISON.

Witnesses:

JAS. L. WELDON,
F. W. WINTER.