

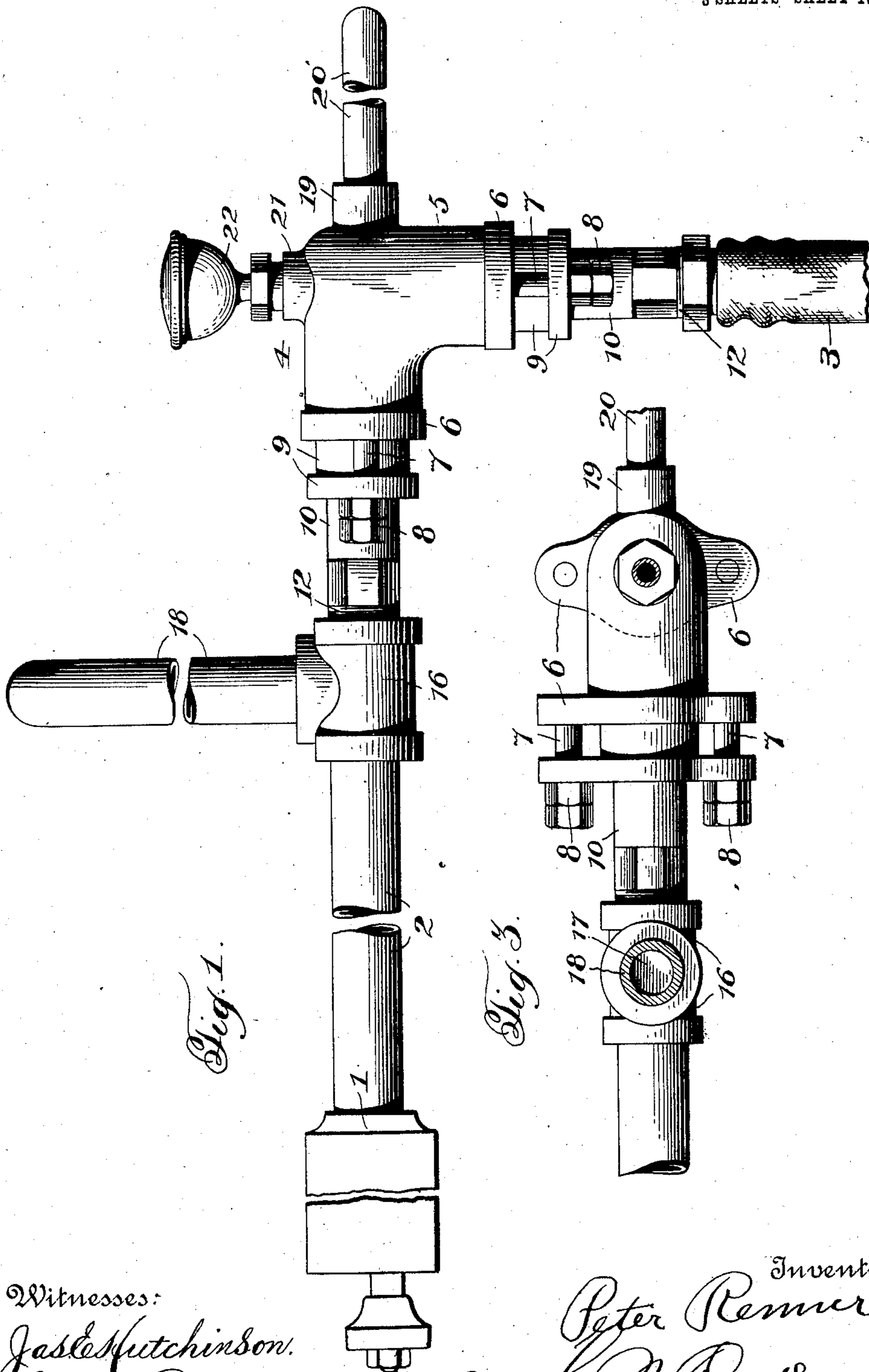
No. 859,520.

PATENTED JULY 9, 1907.

P. RENNER.  
BOILER TUBE CLEANING APPARATUS.

APPLICATION FILED FEB. 28, 1907.

3 SHEETS—SHEET 1.



Witnesses:  
Jas. Hutchinson.  
J. A. Reid.

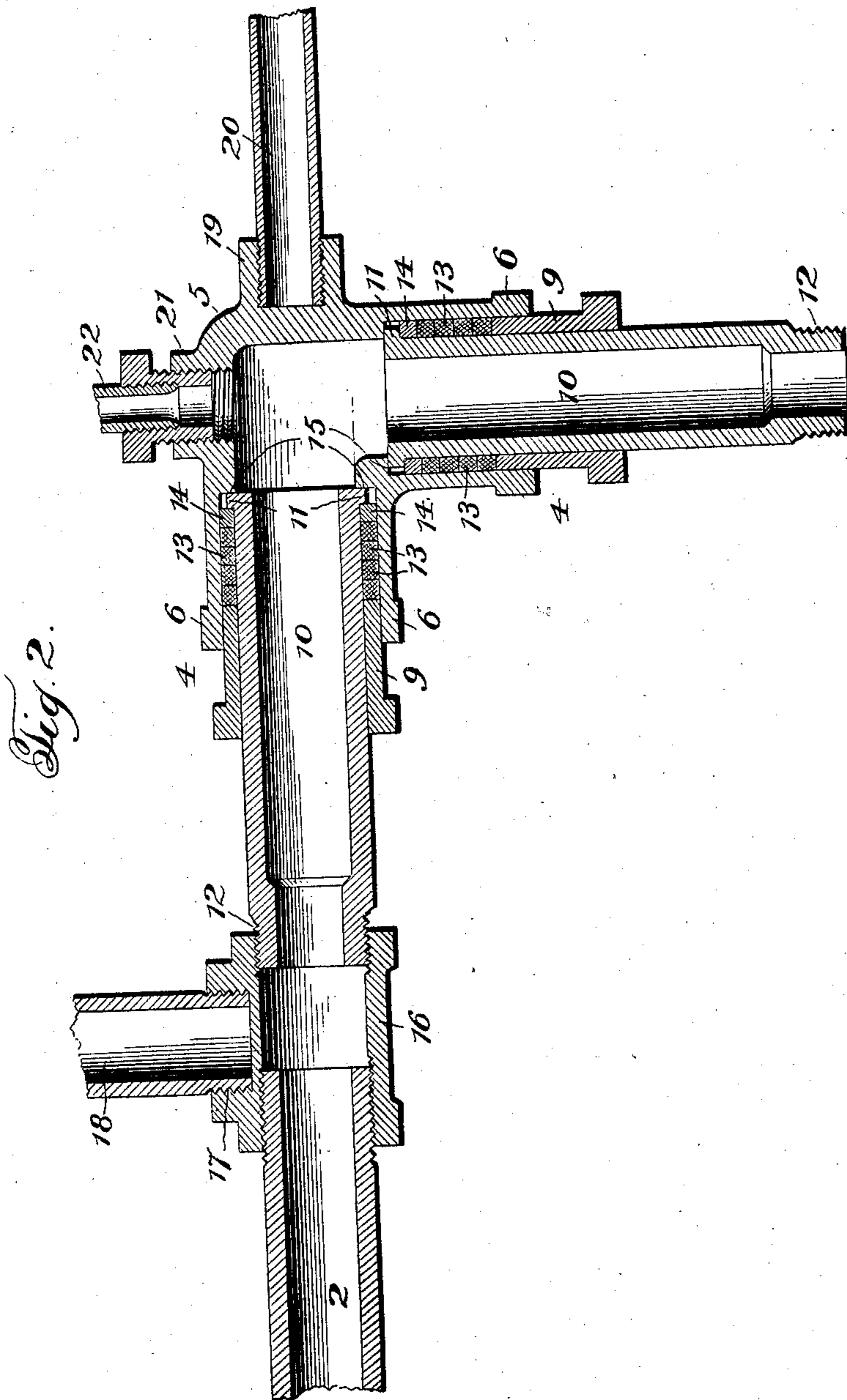
Inventor.  
Peter Renner  
By *[Signature]* Attorney.

No. 859,520.

PATENTED JULY 9, 1907.

P. RENNER.  
BOILER TUBE CLEANING APPARATUS.  
APPLICATION FILED FEB. 28, 1907.

3 SHEETS—SHEET 2.



Witnesses:

James Hutchinson:  
J. H. Reid.

Inventor

Peter Renner

By *[Signature]* Attorney:

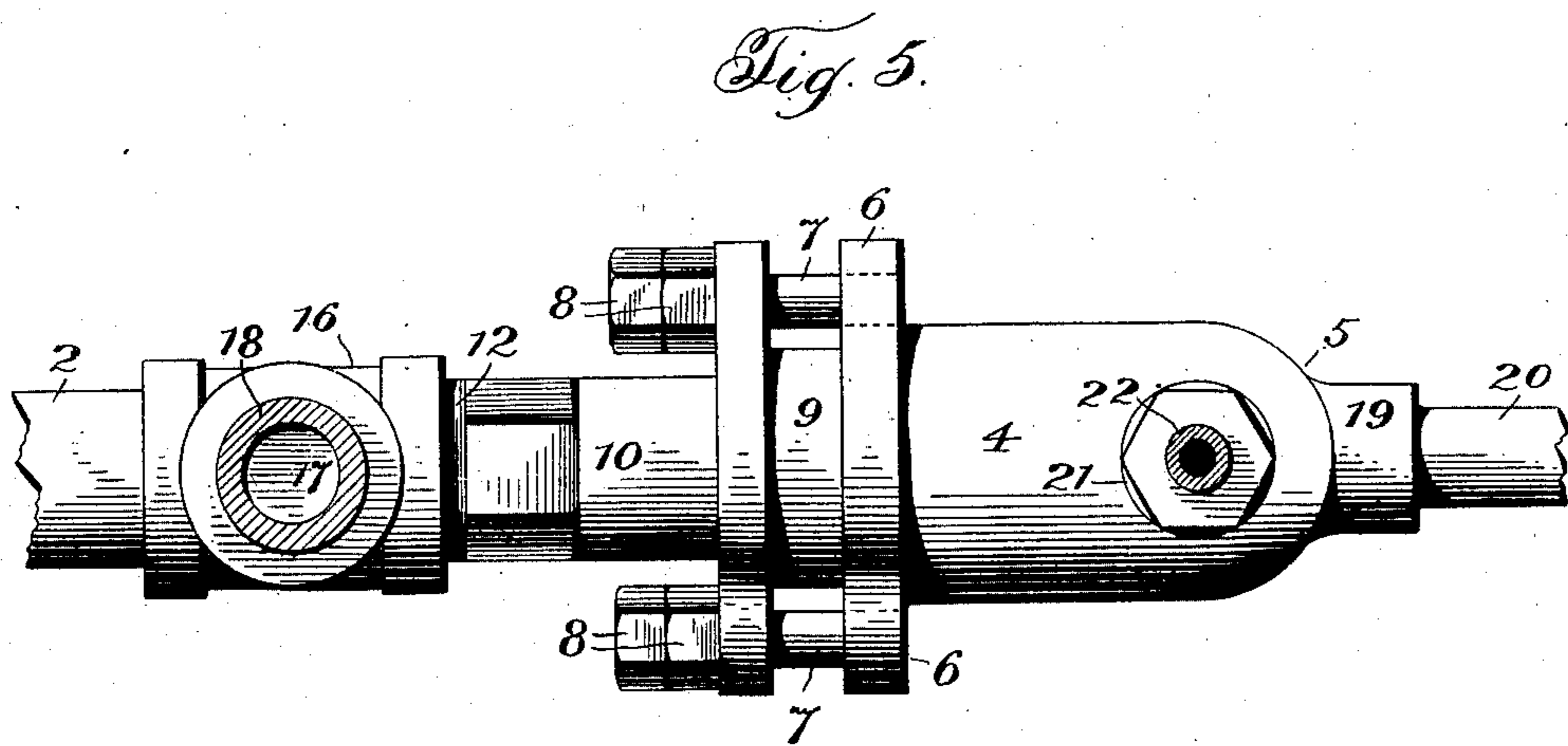
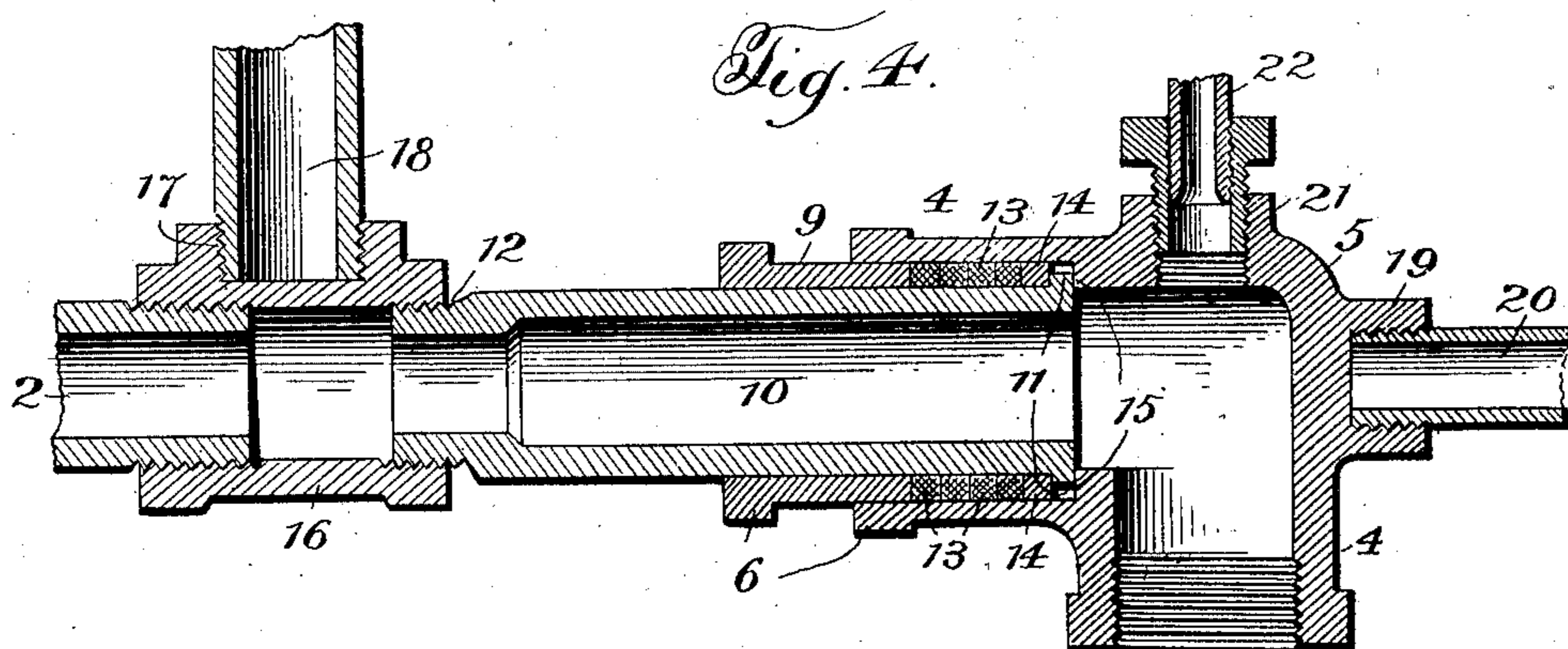
No. 859,520.

PATENTED JULY 9, 1907.

P. RENNER.  
BOILER TUBE CLEANING APPARATUS.

APPLICATION FILED FEB. 28, 1907.

3 SHEETS—SHEET 3.



Witnesses:

James Hutchinson.  
J. H. Reid.

Inventor:

Peter Renner.  
By *John A. Connelley* Attorney.

# UNITED STATES PATENT OFFICE.

PETER RENNER, OF CINCINNATI, OHIO.

## BOILER-TUBE-CLEANING APPARATUS.

No. 859,520.

Specification of Letters Patent.

Patented July 9, 1907.

Application filed February 28, 1907. Serial No. 359,919.

*To all whom it may concern:*

Be it known that I, PETER RENNER, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain  
5 new and useful Improvements in Boiler-Tube-Cleaning Apparatus; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

10 This invention relates to improvements in boiler tube cleaning apparatus, and more especially to apparatus of that class designed for removing accumulations of scale from boiler tubes.

In the construction of apparatus commonly employed  
15 a flexible pipe, such as a hose, connects the fluid supply pipe with the pipe carrying the cleaner head. Therefore, in the operation of the cleaner head, it is necessary to repeatedly turn the hose in opposite directions in order to properly position the cleaner head  
20 in relation to the tubes. This repeated turning movement, there being no flexible connection between the hose and the pipe carrying the cleaner head, greatly wears the hose and the life of the latter, at its point of connection with the pipe carrying the cleaner head,  
25 is but short. Moreover, by reason of the construction commonly employed, the operator is greatly inconvenienced in handling the cleaner, and when steam is employed as the motive agent for the cleaner, operators are frequently burned unless extreme caution is  
30 observed in handling the apparatus. Furthermore, the form of apparatus commonly employed requires that the lubricant for the cleaner head shall traverse the entire length of the hose in order to reach the cleaner head, under which conditions an extraordinary amount of lubricant is required by reason of much  
35 being lost in its transit through the hose, and the latter is also injured by the oil.

To overcome the foregoing objections the present invention aims to provide an apparatus of exceedingly  
40 simple construction, the parts of which are so related and combined as to enable the hose at its point of connection remaining in substantially a fixed position, thus preventing undue wear thereon; also whereby the apparatus may be conveniently manipulated without  
45 liability of injury to the operator, and also by which the lubricant for the cleaner head may be introduced at the most advantageous point, and thus prevent unnecessary loss thereof, and injury to the hose by the action of the oil.

50 Having these general objects in view, and others that will appear as the nature of the improvements is better understood, the invention consists substantially in the novel construction, combination and arrangement of parts hereinafter fully described, illustrated in the

accompanying drawings, and pointed out in the appended claims.

In the drawings—Figure 1 is a side elevation of a boiler tube cleaning apparatus constructed in accordance with the present invention. Fig. 2 is a longitudinal sectional view, on an enlarged scale, of the coupling. Fig. 3 is a plan view of the latter. Fig. 4 is a view similar to Fig. 2 of another form of coupling. Fig. 5 is a plan view of the form shown in Fig. 4.

Referring in detail to the drawings, the numeral 1 designates the cleaner head of the hereindescribed apparatus. This cleaner head may be of any approved form now commonly employed for the purpose of removing the accumulations of scale from boiler tubes, which devices are operated either by steam or compressed air. Connected to the cleaner head 1 is a pipe  
65 2 also commonly employed in apparatus of this character, and through the medium of the pipe 2 the cleaner head 1 is moved along the boiler tubes, and supplies the cleaner head with the motive agent.

The numeral 3 designates a flexible tube, preferably hose, by which the motive agent is led from the source of supply to the pipe 2, and to the hose 3 is connected the usual controlling devices commonly employed for regulating the flow of the motive agent to the cleaner head.

As before premised, it is the aim of the present invention to provide means that will prevent undue wear upon the hose 3, occasioned by the repeated turning of the pipe 2 in opposite directions in order to present the cleaner head 1 in proper relation to the boiler tubes for action thereon, and to this end a coupling 4 is interposed between the flexible tube 3 and the pipe 2. This coupling comprises an elbow  
85 the ends of which are flanged, as at 6, and said flanges are perforated for the reception of securing bolts 7 provided with locking nuts 8, and upon which bolts are mounted packing glands 9. Within each of the glands 9 is arranged a nipple 10, the inner end of each of said nipples being flanged, as at 11, in order to hold the nipples within the elbow 5, to permit the same having free turning movement therein, and the  
95 outer end of each of said nipples is screw-threaded as at 12. Between the flanges 11 of the nipples 10 and the inner ends of the glands 9 is arranged packing 13 to form a fluid tight joint between the nipples and the elbow, metallic washers 14 being employed at the inner ends of the packing in order to prevent the turning movement of the flanges 11 wearing upon the packing, and it will also be noted that the interior of each end of the elbow 5 is cored out to form a shoulder or seat 15 against which the flanges 11 may be projected, and thus not only limit inward movement of the nipples 10, but also prevent their interference

with each other. The shoulders or seats 15 and the glands 9, in the normal condition of the apparatus, prevent the nipples 10 slipping in either direction longitudinally of the ends of the elbow, although permitting the nipples to freely turn. This is of decided advantage in connection with the upper nipple 10 which is connected to the pipe carrying the cleaner head, which obviously, in passing the cleaner head through the tubes, would cause a sliding movement of the upper nipple in relation to the elbow, were not the shoulder or seat 15 in the upper end of the nipple employed. To the screw-threaded end 12 of the lower nipple is connected one end of the flexible tube 3, and thus it will be seen that when the cleaning apparatus is in use the elbow 5 has free movement in a horizontal plane in relation to the tube 3, and the latter remains in substantially a fixed position, so that any turning movement of the elbow 5 will be absolutely free of the tube 3, and the latter, at its point of connection with the coupling, will remain fixed.

To the screw-threaded end 12 of the upper nipple 10 is connected a T-coupling 16. It is to be observed, however, that the socket 17 forming a part of the coupling 16 has no communication with the bore of the coupling, and consequently the motive fluid in passing through the the coupling 16 will not enter the socket 17. Threaded into the latter is a handle 18, the same being of a suitable length to enable the coupling 16 being turned upon the elbow 5 in order to turn the pipe 2 in opposite directions for positioning the cleaner head 1 in proper relation to the tubes. As is manifest, the coupling 16 is connected to the pipe 2 and conveys the motive agent from the coupling to said pipe.

A screw-threaded socket 19 is carried by the elbow 5 into which socket is placed a handle 20 the length of which is such as to enable the cleaner head 1 being readily introduced to each tube, passing through the same for cleaning the tube of scale, and then withdrawn for introduction into a further tube. It is through the medium of the handle 20 that the cleaner head 1 is caused to traverse the tube, and through the medium of the handle 18, which projects at right angles to the coupling 16, the cleaner head 1 is caused to be rotated in opposite directions as previously stated.

At the top of the elbow 5 is arranged an internally-screw-threaded nipple 21. To this nipple is connected an oil cup 22 for receiving the lubricant for the cleaner head 1, and by positioning the cup 22 at the point indicated it is apparent that the oil introduced therefrom to the interior of the elbow 5 will be taken up by the motive agent after the latter has passed completely through the flexible tube 3, and carried by this agent to the cleaner head 1 for lubricating the latter. Thus it is unnecessary for the oil to enter any portion of the tube 3, and consequently a saving of the lubricant is effected by reason of the introduction at the point of greatest advantage in relation to the flow of the motive agent. The hose is also thus prevented being injured by the action of the oil thereon, especially the action of the oil and steam, when the latter is employed as the motive agent.

In Figs. 4 and 5 is illustrated another form of the coupling. This is precisely the same as illustrated in Figs.

1, 2 and 3, but the lower end of the elbow 5 is not provided with a nipple connection, the tube 3 being directly connected to the lower end of the elbow. It will thus be seen that there is no independent movement between the elbow 5 and the tube 3 in this form.

In the use of the hereindescribed apparatus, the motive fluid having been first turned into the flexible tube 3 by the controlling devices, the cleaner head commences to operate, and as it passes along the boiler tubes the accumulations of scale are freed therefrom in the ordinary manner. During this passage, however, the pipe 2 is rotated in opposite directions by the handle 18, the nipple connection 10 permitting this in relation to the elbow 5 without deranging position of this elbow. When the cleaner head 1 has been withdrawn from the tube the elbow 5 is capable of movement in a horizontal plane in relation to the tube 3 by reason of the lower nipple connection 10, and thus it will be seen that in any movement of the cleaner head 1 in relation to the flexible tube 3 the latter remains in substantially a fixed position. Consequently, there is no undue wear upon the tube 3 and the life thereof is greatly prolonged.

When necessary the lubricant is introduced to the nipple 5 from the cup 19, this lubricant being taken up by the motive agent and carried to the cleaner head as previously described.

By reason of the handles 18 and 20 the operator is freed from the necessity of grasping the pipe 2, as in the form of apparatus commonly employed, and thus liability to burning, as when the steam is used as a motive agent, is reduced to a minimum.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is:—

1. In an apparatus of the class described, a cleaner head, a flexible tube for conveying the motive agent to said cleaner head, and a flexible coupling interposed between said cleaner head and said flexible tube to prevent movement of the cleaner head being imparted to said flexible tube.

2. In an apparatus of the class described, a cleaner head, a flexible tube for conveying the motive agent to said cleaner head, a flexible coupling interposed between said cleaner head and said flexible tube to prevent movement of the cleaner head being imparted to said flexible tube, and means for rotating said cleaner head in relation to said flexible tube without transmitting movement of the cleaner head to the flexible tube.

3. In an apparatus of the class described, a cleaner head, a flexible tube for conveying the motive agent to said cleaner head, a flexible coupling interposed between said cleaner head and said flexible tube to prevent movement of the cleaner head being imparted to said flexible tube, and a lubricator for the cleaner head associated with said coupling for introducing a lubricant into the motive agent during its transit through said coupling.

4. In an apparatus of the class described, a cleaner head, a flexible tube for conveying the motive agent to said cleaner head, a flexible coupling interposed between said cleaner head and said flexible tube to prevent movement of the cleaner head being imparted to said flexible tube, means for rotating said cleaner head in relation to said flexible tube without transmitting movement of the cleaner head to the flexible tube, and a lubricator associated with said coupling for introducing a lubricant into the motive agent for transmitting the same therewith to the cleaner head.

5. In an apparatus of the class described, a cleaner head, a flexible tube for conveying the motive agent to said cleaner head, a flexible coupling interposed between said cleaner head and said flexible tube to prevent movement of the cleaner head being imparted to said flexible

5 tube, a nipple connection between the cleaner head and the flexible coupling, a handle associated with said nipple connection for rotating the cleaner head in relation to the flexible tube without transmitting movement of the cleaner head to the flexible tube, and a lubricator associated with said coupling for introducing a lubricant into the motive agent during its transit through said coupling.

10 6. In an apparatus of the class described, a cleaner head, a flexible tube for conveying the motive agent to said cleaner head, a flexible coupling interposed between said cleaner head and said flexible tube to prevent movement of the cleaner head being imparted to said flexible tube, and a handle connected to the flexible coupling for causing the cleaner head to traverse the boiler tube.

15 7. In an apparatus of the class described, a cleaner head, a flexible tube for conveying the motive agent to said cleaner head, a flexible coupling interposed between said cleaner head and said flexible tube to prevent movement of the cleaner head being imparted to said flexible tube, a handle associated with said coupling for causing the cleaner head to traverse the boiler tube, means for rotating said cleaner head in relation to said flexible tube without transmitting movement of the cleaner head to the flexible tube, and a lubricator associated with said coupling for introducing a lubricant into the motive agent during its transit through said coupling to transmit the lubricant to the cleaner head.

20 8. In an apparatus of the class described, a cleaner head, a flexible tube for conveying a motive agent to said cleaner head, a flexible coupling interposed between said cleaner head and said flexible tube to prevent movement of the cleaner head being imparted to said flexible tube, and a handle associated with the cleaner head for rotating the latter in relation to the flexible tube.

25 9. In an apparatus of the class described, a coupling comprising an elbow, connections at the ends thereof to permit the motive agent passing therethrough, and a lubricator associated with said elbow intermediate said connections for introducing a lubricant to the interior of said elbow.

40 10. In an apparatus of the class described, a coupling comprising an elbow, connections at the ends thereof to permit the motive agent passing therethrough, one of said connections being rotatable with respect to the elbow, whereby the same may be operated without its movements being transmitted to the other connection, and a lubricator associated with said elbow intermediate said connections for introducing a lubricant to the interior of said elbow.

45 11. In an apparatus of the class described, a coupling comprising an elbow, connections at the ends thereof to enable the motive agent passing therethrough, one of said connections being movable in relation to the elbow, a handle associated with said movable connection for rotating the latter, and a lubricator associated with said elbow intermediate said connections for introducing a lubricant to the interior of said elbow.

50 12. In an apparatus of the class described, a coupling comprising an elbow, connections at the ends thereof to enable the motive agent passing therethrough, one of said connections being movable in relation to the elbow, a handle associated with said movable connection for rotating the latter, a lubricator associated with said elbow intermediate said connections for introducing a lubricant to the interior of said elbow, and a socket carried by the elbow and adapted to receive a handle for manipulating the elbow.

55 60 65 In testimony whereof I affix my signature, in the presence of two witnesses.

PETER RENNER.

Witnesses:

ROY MANOGUE,  
ALFRED B. CLARK.