T. R. HAND.

BOILER TUBE PLUG.

No. 188,625. Patented March 20, 1877.

Fig. 1.

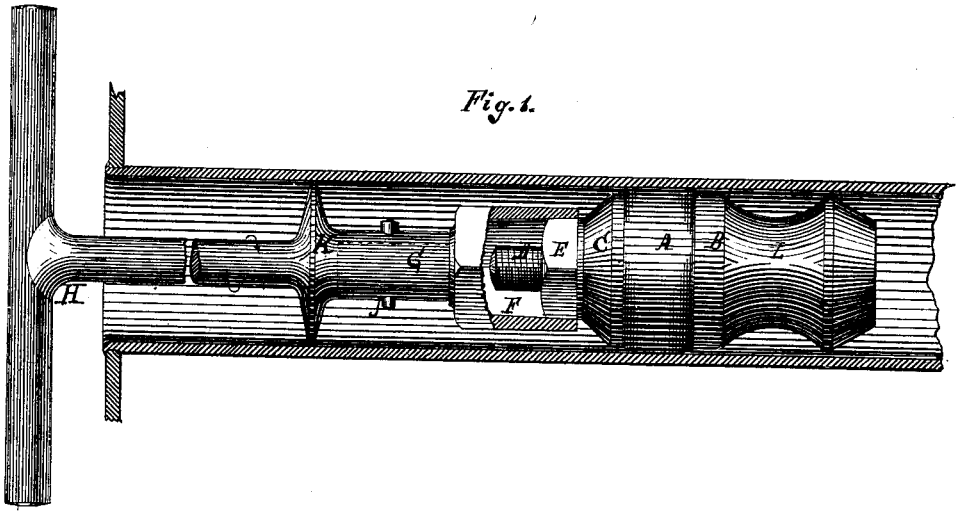


Fig. 2.

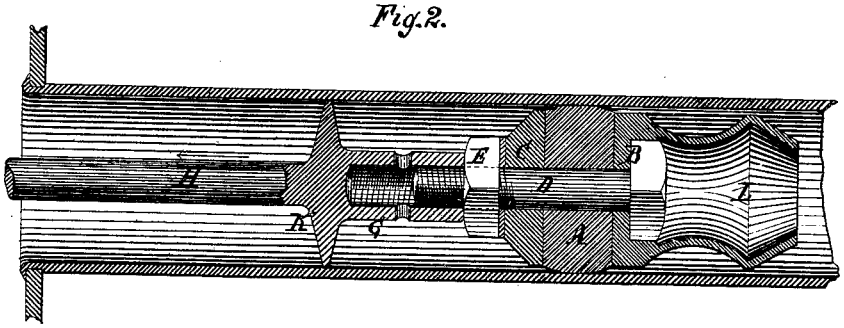
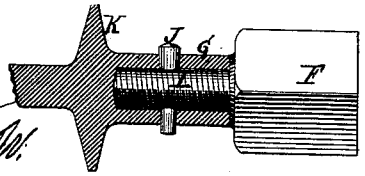


Fig. 3.



Witnesses.

Otty Schofield

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UNITED STATES PATENT OFFICE

THOMAS R. HAND, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN BOILER-TUBE PLUGS.

Specification forming part of Letters Patent No. **188,625**, dated March 20, 1877; application filed February 22, 1877.

To all whom it may concern:

Be it known that I, THOMAS R. HAND, of the city and county of Philadelphia, and State of Pennsylvania, have invented a new and useful Improvement in Boiler-Tube Pluggers, which invention is fully set forth in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 represents a side view of my improvement applied to a boiler-tube, and illustrating the method of securing the plug in the tube. Fig. 2 is a like view thereof, illustrating the manner of removing the plug. Fig. 3 is a longitudinal section of a portion of the wrench.

Similar letters indicate corresponding parts.

My invention consists, mainly, in a tool or wrench which is designed to be used in conjunction with that class of plugs consisting of an elastic disk, which is arranged between a head and a washer, and compressed and expanded in the boiler-tube by means of a screw-bolt, in such a way that a tight joint is made between the elastic disk and the tool. My said tool or wrench is composed of a polygonal socket, which fits the nut on the screw-bolt of the plug above named, and of a tubular stem having an internal screw-thread, which fits the shank of the screw-bolt, the polygonal socket being so arranged that it can be attached to the tubular screw-stem and detached therefrom at will, and the whole being combined with a suitable handle, so that when the plug is driven into the boiler-tube, and the polygonal socket is made to catch over the nut on the screw-bolt, the bolt can be tightened by its means, and thereby the elastic disk of the plug is compressed and expanded, while, when the socket is detached and the tubular stem is screwed on the shank of the bolt, the plug can be readily drawn out of the tube. It consists, also, in combining, with the tubular screw-stem of the wrench, a flange equal to the diameter of the boiler-tube in which the plug is inserted, or nearly so, for the purpose of guiding the wrench in the tube. It consists, further, in combining a scraper with the head of the plug, by the action of which scraper the boiler-tube is cleared of ashes and other substances when the plug is inserted in the tube.

In the drawing, the letter A designates an elastic disk, which is arranged between a head, B, and a washer, C, and through which, as well as the head B and washer C, passes a screw-bolt, D, on one end of which is fitted a nut, E. The elastic disk A, head B, and washer C are of such diameter as will permit of their being readily introduced in a boiler-tube, as shown, and when the same have been introduced in the tube, and the nut E is turned so as to tighten the bolt D, the elastic disk A is compressed and expanded, and is made to tightly hug the inner surface of the tube. The said elastic disk A and its concomitant parts thus form a very effective plug for the tube.

For the purpose of tightening the screw-bolt D, as well as for withdrawing the plug from the tube, I make use of a wrench consisting of a socket, F, a tubular stem, G, and a handle, H. The socket F is made of square or polygonal shape, and of such size that it fits over the nut E on the screw-bolt D, while the tubular stem G is provided with an internal screw-thread corresponding to the thread on the screw-bolt D, and made of a corresponding interior diameter to the diameter of the screw-bolt, so that the stem can be screwed on the end of the bolt.

In order that the socket F may be attached to the tubular stem G and detached therefrom at pleasure, I provide said socket with a screw-shank, I, which is fitted in the tubular stem G, and inserted therein when it is desired to attach the socket to the said stem, and vice versa, a pin, J, being passed through the stem and the screw-shank I, for the purpose of holding the socket in place, and to cause it to turn with the screw-shank.

If, after the socket F is attached to the tubular stem G, it is made to catch over the nut E, (the plug having been previously inserted in the boiler-tube,) as seen in Fig. 2, and the socket is turned in the proper direction by turning the handle H, the screw-bolt D is tightened and the elastic disk A is expanded in the tube. On the other hand, when the socket F is detached from the tubular stem G, and the latter is screwed on the end of the screw-bolt D, as seen in Fig. 2, the entire plug can be drawn out of the tube by pulling on the handle H.

On a suitable part of the tubular stem G is formed a flange, K, of equal diameter to the interior of the boiler-tube in which the plug is inserted, or nearly so, as shown. By this flange K the wrench is guided when it is introduced in the tube, and hence no trouble is had in centering the socket F.

The head B is made with a projection, L, which has an angular edge, and is made hollow, so that the head of the bolt D can pass through it. This projection L forms a scraper, and by its action the boiler-tube in which the plug is inserted is cleaned of ashes and other substances that may be found therein, and thus an unobstructed passage is made for the plug.

What I claim as new, and desire to secure by Letters Patent, is—

1. A tool or wrench for plugging boiler-tubes, composed of a detachable socket, F, of polygonal shape, of a tubular stem, G, having an internal screw-thread, and of a handle, H, in combination, and adapted to operate in conjunction with a plug of the character hereinbefore described.

2. The combination of a guide-flange, K, with the tubular screw-stem G of the pluggining tool or wrench, substantially as described.

3. The combination of a scraper, L, with the head B of the plug, substantially as described.

In testimony that I claim the foregoing I have hereunto set my hand and seal this 19th day of February, 1877.

THOS. R. HAND. [L. S.]

Witnesses:

W. HAUFF,

E. F. KASTENHUBER.