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E. OLDMAN.

DEVICE FOR REPLACING FUSIBLE PLUGS.

APPLICATION FILED MAY 16, 1907.

Fig. 1.

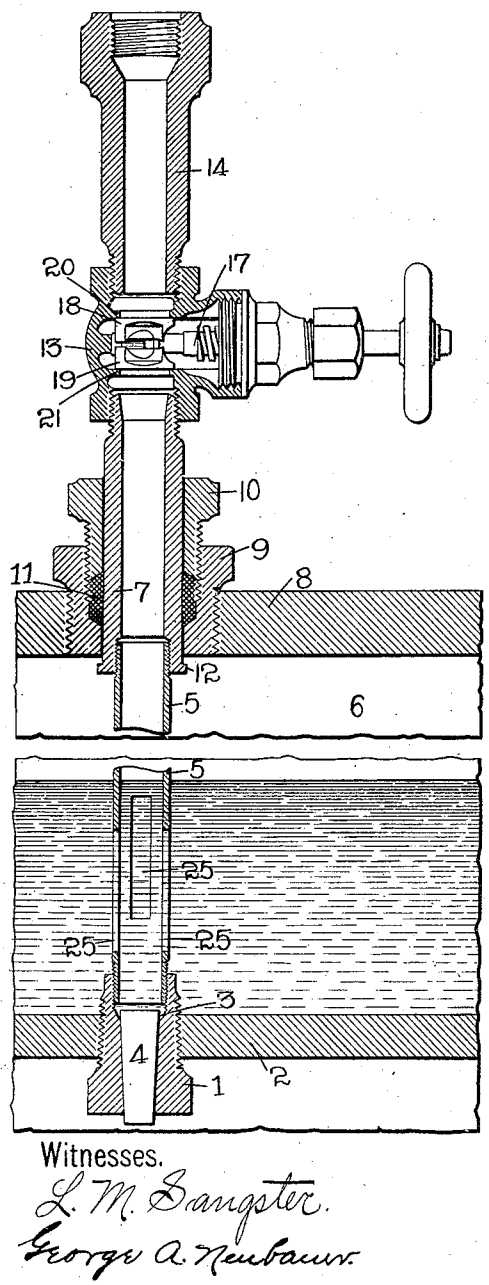
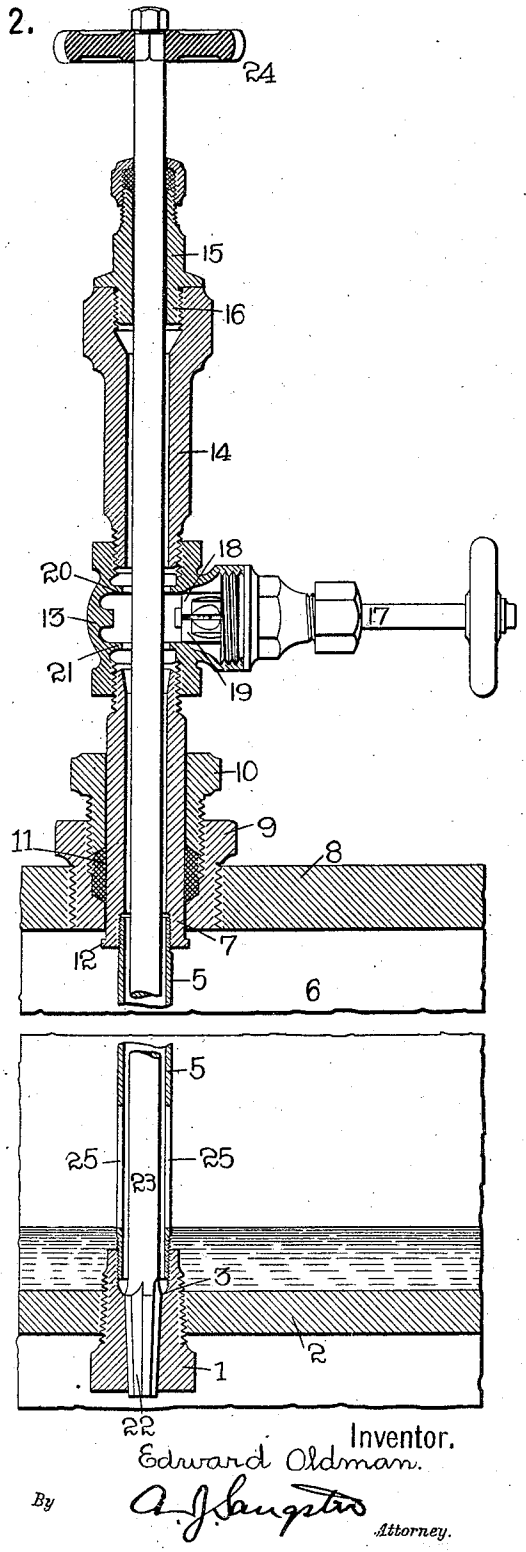


Fig. 2.



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DEVICE FOR REPLACING FUSIBLE PLUGS.

No. 881,143. Specification of Letters Patent. Patented March 10, 1908.

Application filed May 16, 1907. Serial No. 374,017.

To all whom it may concern:

Be it known that I, EDWARD OLDMAN, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Devices for Replacing Fusible Plugs, of which the following is a specification.

This invention relates to an improved device for replacing fusible plugs in steam boilers, and the object of the invention is to provide means for cleaning the plug seat and inserting a new plug without drawing the fire, in case the water in the boiler should get low enough to increase the heat sufficiently to melt the original plug.

The invention also relates to certain details of construction, all of which will be fully and clearly hereinafter described and claimed reference being had to the accompanying drawings, in which,

Figure 1 is a fragmentary section through a steam boiler equipped with the improved fusible plug replacing device, showing a central longitudinal section through the device. Fig. 2 is a similar view showing the reamer in position to clean the plug seat.

In referring to the drawings for the details of construction, like numerals designate like parts.

It is the practice in constructing steam boilers, and especially marine boilers, to place a fusible plug in the crown sheet, which melts when the water in the boiler gets low, and permits steam to enter the fire box and deaden the fire, thereby preventing the explosion of the boiler. Heretofore when this occurred, it has been necessary to draw the fire, at great risk to the stoker from the steam entering the fire box, allow the boiler to cool, then enter the boiler and remove the bushing in which the fusible plug is seated. After cleaning the plug seat and inserting a new plug, the whole must be replaced in the crown sheet. By means of this invention, however, the plug seat can be cleaned and a new plug inserted without in any way interfering with the fire or the use of the boiler.

In the preferred adaptation of the invention as illustrated in the accompanying drawings, a bushing 1, is screwed into the crown sheet 2, of the boiler in the usual manner and position. This bushing 1, has an opening 3, in which a fusible plug or bank of tin 4, is inserted. The opening 3, is tapered so as to be narrower at the bottom than at the top, and the fusible plug 4, is tapered in like manner so as to fit tightly in the opening, as shown in Fig. 1.

A tube 5, has its lower end screwed into the upper portion of the bushing 1, and extends vertically upward through the steam and water space 6. The upper end of this tube 5, screws into the lower end of a short tube 7, which extends through the boiler shell 8.

To provide a steam tight joint between the tube 7, and the boiler shell 8, and also allow for the expansion of the tubes, a stuffing box 9, is screwed into the boiler shell 8, and the tube 7, passed therethrough in the manner shown in the drawings. A gland 10, encircles the tube 7, and screws into the stuffing box by means of which the packing 11, may be compressed. The lower end of the tube is provided with an annular flange 12, of sufficient size to prevent the passage of the tube through the stuffing box.

A valve 13, is screwed upon the upper end of the short tube 7, and another tubular part 14, is screwed into the opposite side of the valve 13, so as to be in vertical alinement with the tubes 7 and 5, and the bushing 1.

The upper end of the tube 14, is enlarged and internally screw threaded, and a stuffing box 15, has a reduced lower portion 16, which screws into the screw threaded upper end of the tube 14, see Fig. 2.

The valve 13, is preferably of the kind commonly termed a gate valve, and has a screw threaded stem 17, on the inner end of which are two disks 18 and 19, which engage with upper and lower seats 20 and 21. When the disks 18 and 19, are in engagement with the seats 20 and 21, communication between the tubes 14 and 7, is closed as shown in Fig. 1.

A reamer 22, is provided, being formed integrally at the lower end of a rod 23, which has a hand wheel 24, at its upper end. This reamer is used to clean out the opening 3, in the bushing 1, before inserting a fusible plug therein.

The tube 5, has a series of slots 25, near its lower end through which the steam enters the tube.

The operation of the device is as follows,—normally, the device is as shown in Fig. 1, the opening 3, in the bushing 1, being filled with a fusible plug 4, of suitable metal, and the gate valve 13, closed. Should the water

in the boiler get low, the heat melts the fusible plug 4, and the steam passing through the opening 3, enters the fire box and deadens the fire. When this occurs the attendant immediately inserts the reamer 22, into the tube 14, screws the stuffing box 15, firmly into the upper end of said tube and then opens the gate valve 13, thereby permitting the reamer 22, to pass through the tubes 7, and 5, into the opening 3, in the bushing 1. The reamer is now rotated by means of the hand wheel 24, at the upper end of the rod 23, until the opening 3, is cleansed of all residue of the melted plug. The reamer 22, is now withdrawn into the tube 14, and the gate valve 13, closed to prevent the escape of steam. The stuffing box 15, is now unscrewed and the reamer 22, withdrawn from the tube 14, in which a new fusible plug is inserted. As the gate valve 13, is closed, it blocks the passage of the plug. The reamer 22, is now again inserted in the tube 14 and the stuffing box 15, screwed into place. The valve 13, is now opened and the fusible plug descends through the tubes 7 and 5, and finds its seat in the bushing 1. The reamer can be used to tap the plug lightly into the opening 3. The reamer is now withdrawn into the tube 14 and the valve 13, closed. The stuffing box 15, is now unscrewed and with the reamer 22, is removed from the tube 14.

The purpose of the flange 12, on the lower end of the tube 7, is to prevent the steam pressure in the boiler from blowing the tube 7, through the stuffing box 9, in case the tube 5, should be broken in any way.

By the aid of this improved device the fusible plug can be quickly replaced without throwing the boiler out of commission, or in any way endangering the attendant by drawing the fire while steam is entering the fire box.

I claim as my invention.

1. The combination with a boiler and its crown sheet, of a bushing fitted in an opening in the crown sheet and a slotted lower tube having its lower end screwed into the bushing and extending through the steam and water space of the boiler, an intermediate tube screwed to the lower tube and extending through a stuffing box in the boiler shell, an upper tube arranged vertically above the intermediate tube, a valve located between the intermediate tube and the upper tube for closing communication between them, and means for preventing the passage of the intermediate tube through the boiler shell in one direction, substantially as described.

2. The combination with a boiler and its crown sheet, of a bushing fitted in an opening in the crown sheet and constituting a plug seat, a slotted lower tube having its lower end screwed into the bushing and extending through the steam and water space of the boiler, an intermediate tube screwed to the lower tube and extending through a stuffing box in the boiler shell, an upper tube arranged vertically above the intermediate tube, a valve located between the intermediate tube and the upper tube for closing communication between them, and a flange on the intermediate tube for preventing its passage through the stuffing box in an outward direction, substantially as described.

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