Oct. 21, 1930. H. A. LACERDA 1,779,323

BOILER MAKER'S TOOL

Filed July 1, 1927

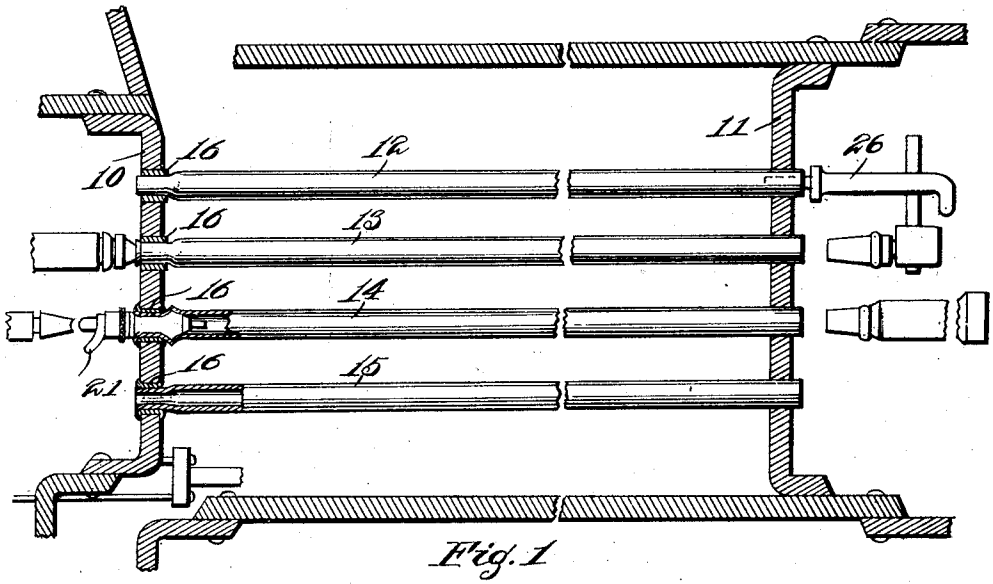


Fig. 1

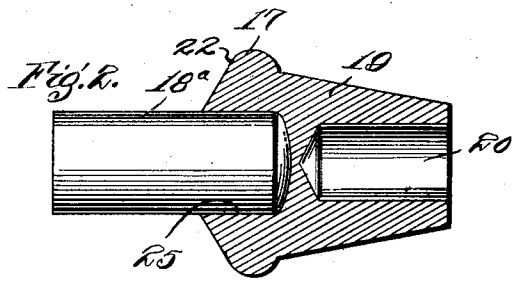


Fig. 2.

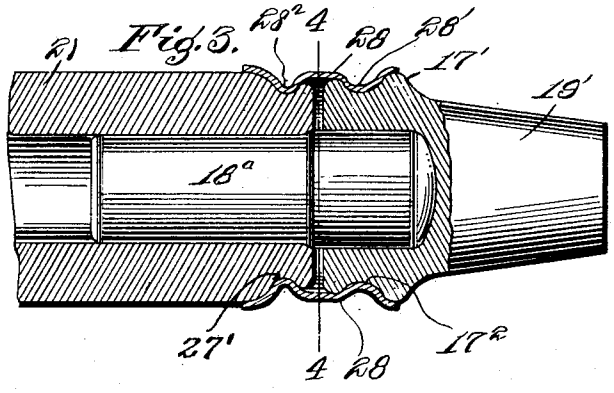


Fig. 3.

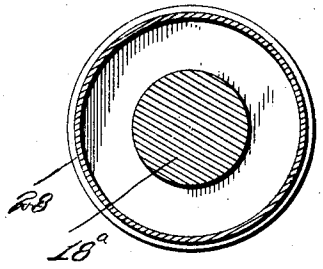


Fig. 4.

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UNITED STATES PATENT OFFICE

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BOILERMAKER'S TOOL

Application filed July 1, 1927. Serial No. 202,901.

This invention relates to tools or implements of the class employed in constructing and repairing steam generators and the like, and has for one of its objects to provide a simply constructed implement to facilitate the securing of the flues in the flue sheets.

A further object is the provision of a tool or flue pin of the character described which is adapted for use with a pneumatic hammer or like percussive power device to simultaneously flare and set an end of a flue tube of a locomotive, and more particularly a tool provided with a detachable shank.

A further object of the invention is the provision of a clip for holding the tool or flue pin to the end of an air hammer.

With the above and other objects in view the invention consists in certain constructions, arrangements and combinations of parts as will be hereinafter described and pointed out in the claims, reference being had to the accompanying drawing, in which—

Figure 1 is a sectional view of a portion of a conventional steam generator including a section of the fire-box flue sheet, and the smoke-chamber flue sheet, together with a plurality of the improved flue pins employed for seating the flues in the flue sheet;

Figure 2 is a sectional view showing a flue pin;

Figure 3 is a sectional view showing a clip for holding the flue pin to the end of an air hammer; and

Figure 4 is a transverse section on the line 4—4 of Figure 3.

Figure 1 shows a portion of a conventional steam generator to illustrate the operation of the improved implement, and includes a portion of the fire-box flue sheet at 10, a portion of the smoke-chamber flue sheet at 11, and a plurality of flues at 12, 13, 14 and 15.

The flue 12 is shown disposed in the flue openings in the flue sheets as first inserted with the usual copper ferrule 16, before being rolled. The flue 13 is shown after being flared and set, and ready for the rolling. The flue 14 is shown after being rolled, and the flue 15 is shown completely rolled and processed.

In the present application the flue pin comprises a stock or body enlarged intermediate its ends to provide an impact flange as indicated at 17, and adapted to be subjected to an impacting and a rolling force applied to the shank 18^a.

The head of the pin 19 shown in Figure 2 is provided with a central cutout portion 20 to decrease the weight without decreasing the efficiency; said head is also provided with an axial socket 25 for the reception of an end portion of the shank 18^a of the tool so that the shank 18^a is detachably engageable with the head of the pin. The conical end 22 of the pin which is truncated by the socket 25 formed therein merges with the flange 17 to constitute an impact portion and to reinforce the pin in proximity to the socket. The tool shown in Figure 2 is especially adapted for use when the operator must manipulate the actuating pneumatic hammer in a space of restricted area, as in the space at the back of the steam pipes of a locomotive where the hammer cannot be held securely square with the tool. The pin constitutes a driver-plunger by which the shank 18^a is regarded as self-contained, the protruding end of the shank being insertable into the nozzle of an air hammer.

In Figure 3 I have shown a slightly different pin 19^1, it having the flange 17^1 and the annular groove or channel in which seats one end of a spring clip 28 for holding the flue pin to the pneumatic hammer.

With a pin as above set forth the operation of setting and flaring the flue ends in the flue sheets is materially improved and the danger of splitting the flues avoided; it also obviates any tendency to breakage, avoids abnormal strain upon the impacting and rotating element, for instance, a pneumatic hammer, as the resistance on the relatively short detachable shank 18^a is less than exerted on the ordinary formed shank.

In practice the flue to be set and flared at the smoke chamber end is held by a bucking-up bar indicated at 26, from end movement against the force of the air hammer or other

impacting and rotating device, a portion of which is indicated at 21, as disclosed in Patent 1,707,124, March 26, 1929, of Harry A. Lacerda. After the flues are set and rolled at the fire-chamber end they are flared and set at the smoke-chamber end by the same implement, as illustrated in Figure 1.

The clip 28 illustrated in Figure 3 is a spring-metal sleeve which flares at its mouth to slip over the head of the pin 19^1, it being provided with the annular internal beads 28^1 and 28^2 which snap into annular grooves 17^2 and 27^1 of the pin 19^1 and the hammer 21 respectively. These grooves are rolling in contour when viewed cross-sectionally, as in Fig. 3. In other words, the grooves and the adjoining high parts are gracefully rounded thus to enable an easy application of the clip 28 which is held none the less firmly because of the aforesaid cross-sectional contour.

What I claim is:

1. A boiler maker's tool comprising a pin having a socket in one end and an annular flange reinforcing the pin in proximity to the socket and constituting an impact portion, and a detachable shank constituting a driver-plunger self-contained by the pin, having one end partly inserted in the socket, the protruding end being insertable into the nozzle of an air hammer.

2. A boiler maker's tool comprising a pin having a socket in one end, an annular flange merging with a cone which is truncated by the presence of the socket therein, said cone and flange constituting an impact portion, and a shank having one end inserted into the socket.

3. A boiler maker's tool comprising a pin having a socket in one end and an annular flange reinforcing the pin in proximity to the socket and constituting an impact portion, a detachable shank constituting a driver-plunger self-contained by the pin, having one end partly inserted in the socket, the protruding end being insertable into the nozzle of an air hammer, and a clip applicable to the flange and to said nozzle to hold the pin immovable against the nozzle.

4. The combination of a nozzle with a bore and a pin with a socket, a clip holding the nozzle and pin together so that the bore and socket communicate, annular grooves and flanges on the nozzle and pin being cross-sectionally of rolling contour in the axial direction, similarly shaped beads at the ends of the clip being applied to the grooves and flanges to hold the nozzle and pin relatively immovable, and a shank in the bore having an extending end fitting the socket.

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