(No Model.)

H. LAUER.

DEVICE FOR REMOVING SCALE FROM BOILER FLUES.

No. 601,151. Patented Mar. 22, 1898.

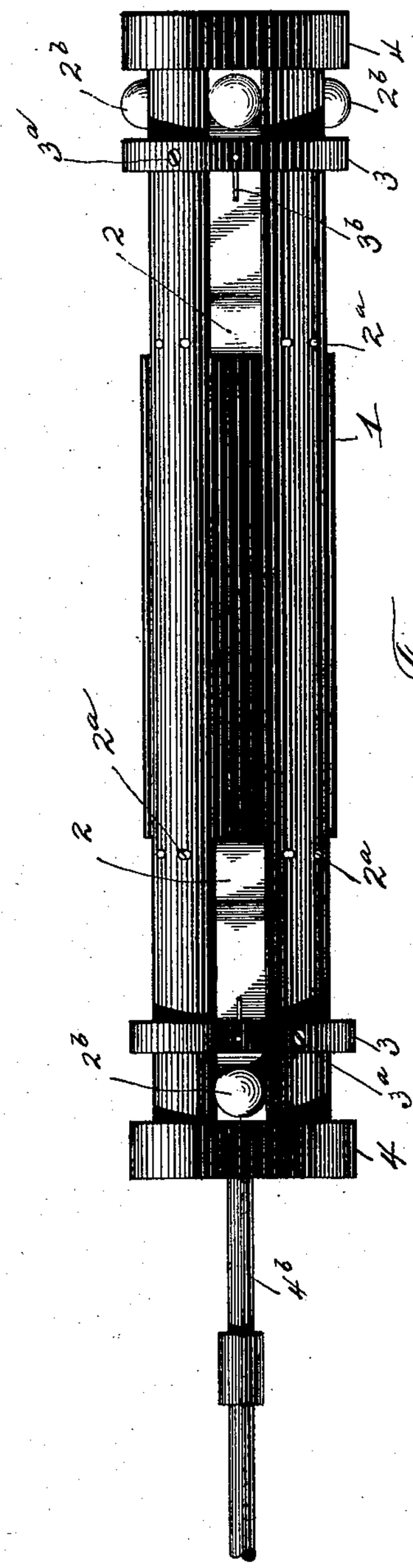

Fig. 1.

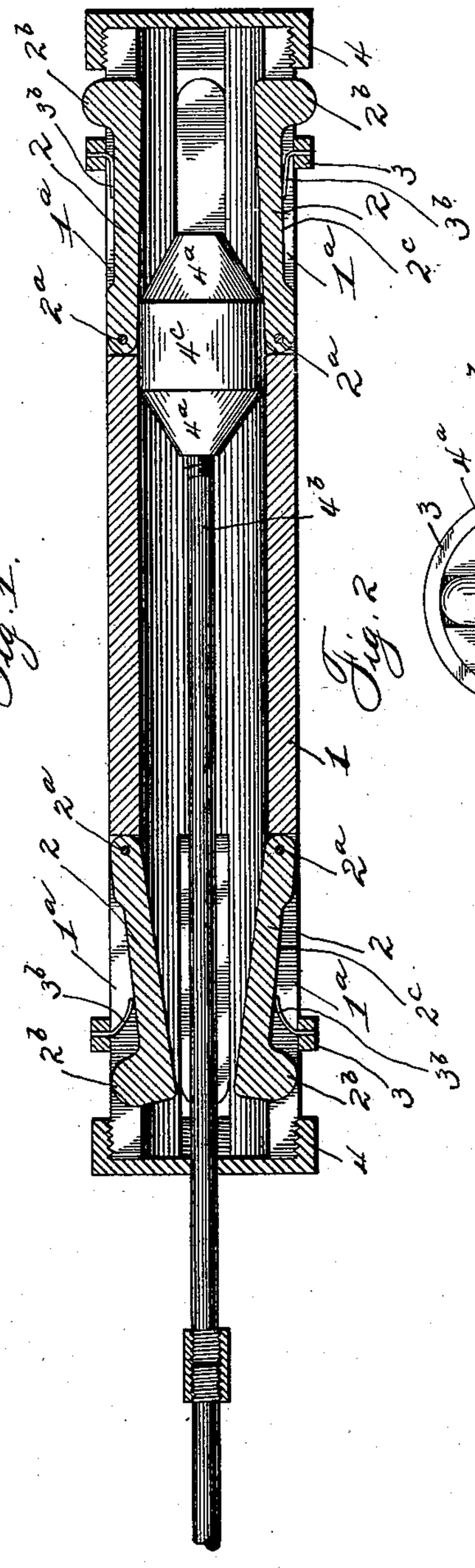

Fig. 2.

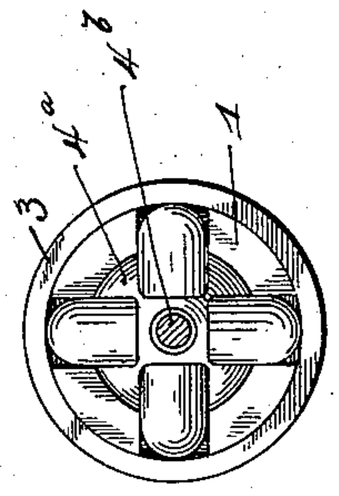

Fig. 3.

WITNESSES:

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

HENRY LAUER, OF COLUMBUS, OHIO, ASSIGNOR OF ONE-HALF TO WILLIAM H. SARTAIN.

DEVICE FOR REMOVING SCALE FROM BOILER-FLUES.

SPECIFICATION forming part of Letters Patent No. 601,151, dated March 22, 1898.

Application filed December 27, 1897. Serial No. 663,614. (No model.)

To all whom it may concern:

Be it known that I, HENRY LAUER, a citizen of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented certain new and useful Improvements in Devices for Removing Scale from Boiler-Flues; 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.

My invention consists of the improved device for removing scale from the tubes of boilers, hereinafter set forth and claimed.

In the annexed drawings, Figure 1 is a side view of a construction embodying my invention. Fig. 2 is a central longitudinal sectional view, the plunger or piston and its rod being in elevation; and Fig. 3 is an end view, the cap being removed.

Like characters of reference in the different views indicate corresponding parts.

1 designates the main cylinder or tube, which is made preferably of steel. This cylinder or tube has, preferably, four longitudinal slits 1^a, of equal length in each of its ends, said slits being located ninety degrees apart. In the inner ends of each of these slits is pivoted, by means of a pin 2^a, a hammer 2, made thicker and heavier at its outer end or head and preferably rounded at the outer side of said end, as shown at 2^b. The outer side of the hammer is also preferably recessed between the head and the place of pivoting, as shown at 2^c.

Fitting around each end of the cylinder, so as to lie over the recesses of the hammers, is a ring 3, that is fastened in position by a set-screw 3^a, and secured between the ring and each of the hammers is a spring 3^b of sufficient strength to hold the outer ends of the hammer-heads inward beyond the outer surface of the ring.

Upon each end of the cylinder is screwed a cap 4, one of which is perforated centrally for the passage of the plunger or piston rod. The caps 4 and rings 3 serve as a projection to prevent the tube 1 from coming in contact with the flue.

The plunger consists of a solid body of steel or iron cylindrical at its middle, as shown at 4^c, to fit and be slidable within the bore of the cylinder 1 and tapering or inclined at its ends, as shown at 4^a, and a rod 4^b, that passes through the centrally-perforated head hereinbefore referred to.

In operation the cylinder or tube is passed into a boiler-flue and the plunger violently reciprocated within the tube from end to end. As the under sides of the hammers normally project beyond the inner wall of the cylinder the plunger impels said hammers outward, and the heads thereof by their impact with the boiler-tube break off the incrusted scale on the outer side of said tube.

The piston or plunger rod may be connected with any appropriate power mechanism for reciprocating the plunger, or it may be operated directly by hand.

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

1. In a device for removing scale from boiler-flues, a tube, a movable hammer in each end of said tube, a plunger having a head with oppositely-inclined surfaces adapted to operate said hammer when the plunger is reciprocated in said tube, and means for returning the hammer after the stroke has been made, substantially as described.

2. In a device for removing scale from boiler-flues, a tube, a plurality of hammers in each end of said tube, springs for holding said hammers inward, a projection on said tube to sustain the tube from contact with the flue, and a plunger for throwing said hammer outward against the side of the tube, substantially as described.

In witness whereof I have hereunto set my hand this 9th day of December, 1897.

HENRY LAUER.

Witnesses:
GEORGE W. ALFRED,
GEO. M. FINCKEL.