

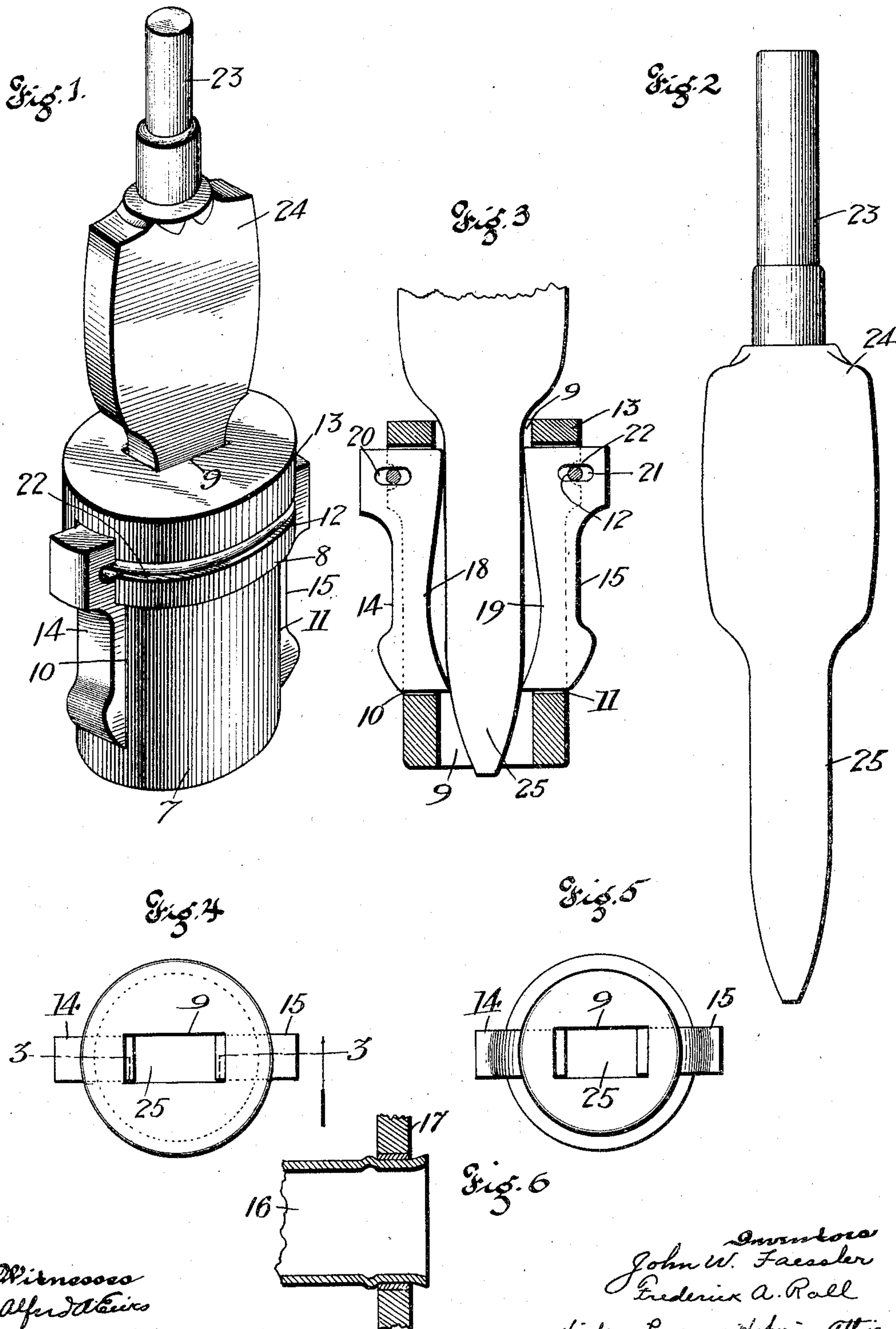
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J. W. FAESSLER & F. A. RALL.

FLUE EXPANDER.

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# UNITED STATES PATENT OFFICE.

JOHN W. FAESSLER, OF MOBERLY, MISSOURI, AND FREDERICK A. RALL,  
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## FLUE-EXPANDER.

SPECIFICATION forming part of Letters Patent No. 793,573, dated June 27, 1905.

Application filed November 7, 1904. Serial No. 231,821.

*To all whom it may concern:*

Be it known that we, JOHN W. FAESSLER, a resident of Moberly, Missouri, and FREDERICK A. RALL, a resident of Tyler, Texas, citizens of the United States, have invented certain new and useful Improvements in Flue-Expanders, of which the following is a specification containing a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

Our invention relates to improvements in flue-expanders; and it consists of the novel features herein shown, described, and claimed.

In the drawings, Figure 1 is a perspective of a flue-expander embodying the principles of our invention. Fig. 2 is a side elevation of the shank and expanding-core. Fig. 3 is a sectional detail on the line 3 3 of Fig. 4 looking in the direction indicated by the arrow, the expanding-core being in position for use. Fig. 4 is a top plan view of the mandrel and expanding-jaws, the core being removed. Fig. 5 is a bottom plan view of the parts shown in Fig. 4. Fig. 6 is a sectional detail of a boiler-flue and a flue-sheet and illustrating the work performed by our flue-expander.

Referring to the drawings in detail, the rigid core or mandrel 7 is a straight cylinder adapted to fit closely within the end of the flue up to the shoulder 8, there being a vertical polygonal core-opening 9 extending from end to end through the mandrel and there being slots 10 and 11 extending from the periphery and opposite sides of the mandrel to the core-opening 9 and there being an annular groove 12 around the enlarged upper end 13 of the mandrel. The flue-expanding jaws 14 and 15 are adapted to work freely in the slots 10 and 11, the outer faces of the side jaws being adapted to expand and set the flue 16 in the flue-sheet 17 and the inner faces 18 and 19 of said jaws being concave and there being horizontal elongated slots 20 and 21 through the upper ends of said jaws. A

spring-ring 22 is inserted through the slots 20 and 21 and seated in the annular groove 12 to hold the jaws 14 and 15 pivotally in the slots 10 and 11. The chuck-shank 23 extends upwardly from the head 24, and the expanding-core 25 extends downwardly from said head, said core 25 being adapted to pass downwardly into the slot 9 between the faces 18 and 19 and press the jaws 14 and 15 outwardly to expand and set the flue. The core 25 is polygonal to fit in the slot 9 and serve as a wrench for rotating the mandrel when the shank 23 is rotated.

The operation is obvious. The mandrel 7 is inserted into the end of the flue, the core 25 is inserted into the slot 9 to press the jaws 14 and 15 outwardly, and the shank 23 is rotated.

We claim—

1. In a flue-expander: the mandrel 7 having a vertical core-opening 9 from end to end; and having slots 10 and 11 from its sides into the core-opening, and there being an annular groove 12 around its upper end; the flue-expanding jaws 14 and 15 mounted in the slots 10 and 11; the outer faces of said jaws being adapted to expand and set the flue and the inner faces of said jaws being concave; and there being horizontal slots 20 and 21 through the upper ends of the said jaws; the spring-ring 22 inserted through the slots 20 and 21 and seated in the annular groove 12 to hold the jaws 14 and 15 pivotally in the slots 10 and 11; and the expanding-core 25 operating between the jaws 14 and 15 to expand the jaws and rotate the mandrel.

2. In a flue-expander: a mandrel having a vertical core-opening from end to end; and having slots from its sides into the core-opening; and having an annular groove around its upper end; flue-expanding jaws mounted in said slots; the outer faces of said jaws being adapted to expand and set the flue; and the inner faces of said jaws being adapted to be engaged by the expanding-core; and there



being horizontal slots through the upper ends  
of said jaws; a spring-ring inserted through  
the slots in the jaws and seated in the annu-  
lar groove in the upper end of the mandrel;  
5 and the expanding-core adapted to engage the  
inner faces of said jaws.

In testimony whereof we have signed our

names to this specification in presence of two  
subscribing witnesses.

JOHN W. FAESSLER.  
FREDERICK A. RALL.

Witnesses:

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