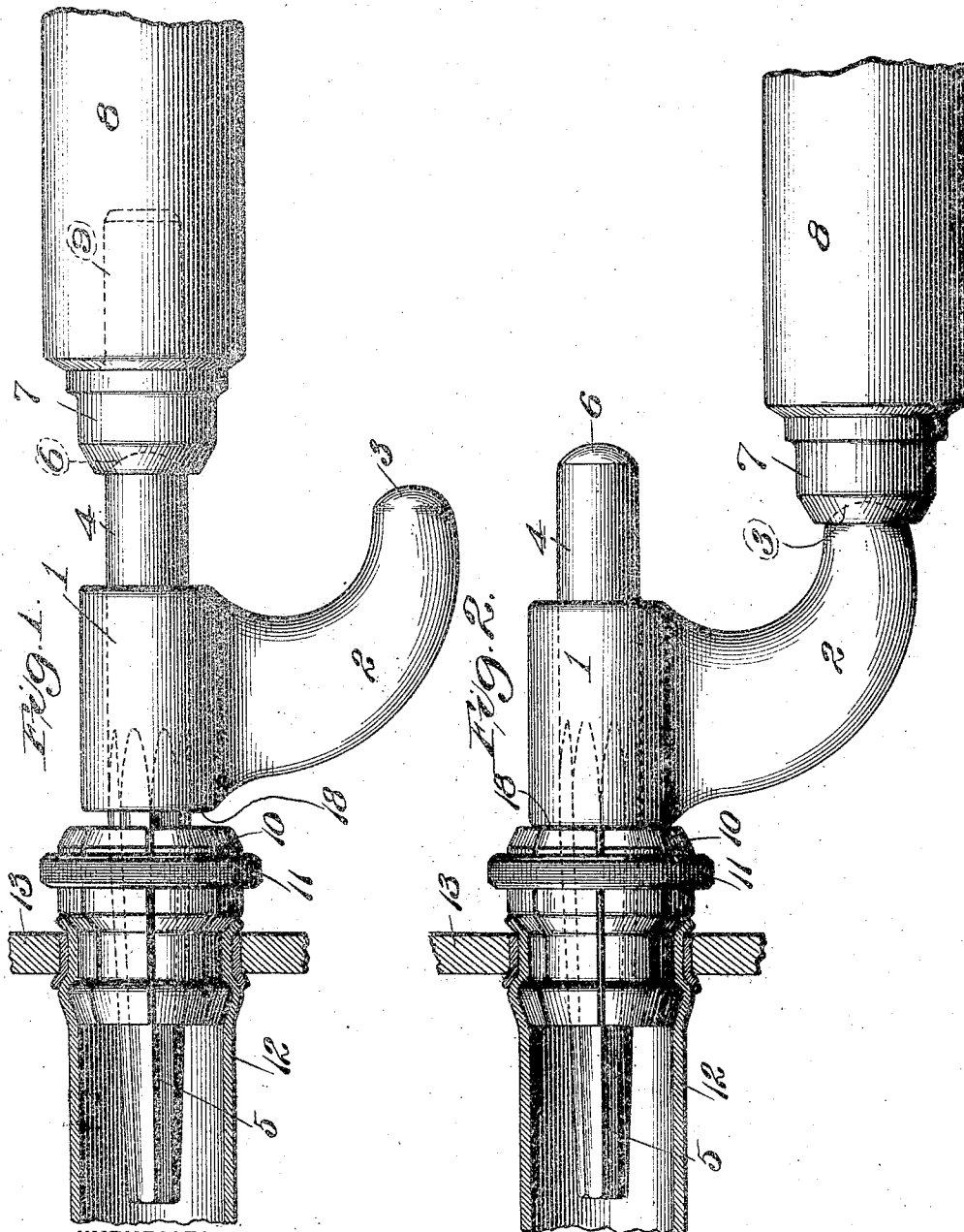


J. W. FAESSLER.
 MANDREL EXTRACTOR FOR BOILER TUBE OR FLUE EXPANDERS.
 APPLICATION FILED FEB. 19, 1912. RENEWED NOV. 16, 1912.

1,053,373.

Patented Feb. 18, 1913.

2 SHEETS—SHEET 1.



WITNESSES:

Wm. H. Scott
E. L. Wallace

INVENTOR.

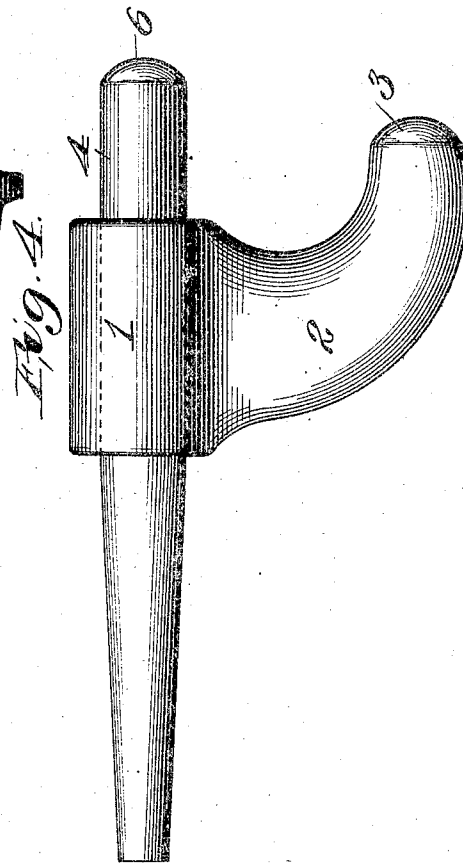
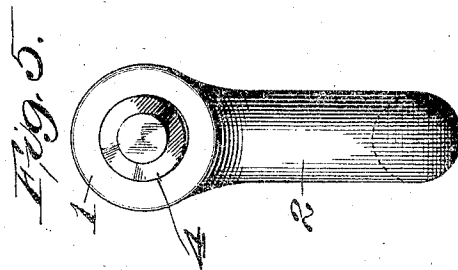
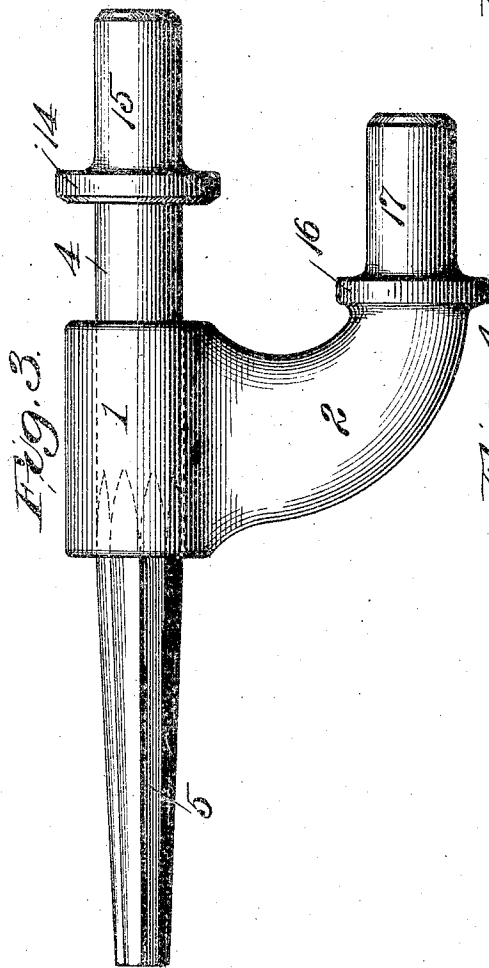
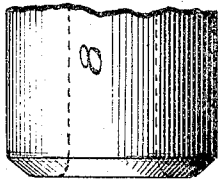
John W. Faessler
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 ATTORNEYS.

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UNITED STATES PATENT OFFICE.

JOHN W. FAESSLER, OF MOBERLY, MISSOURI.

MANDREL-EXTRACTOR FOR BOILER TUBE OR FLUE EXPANDERS.

1,053,373.

Specification of Letters Patent.

Patented Feb. 18, 1913.

Application filed February 19, 1912, Serial No. 678,530. Renewed November 16, 1912. Serial No. 731,896.

To all whom it may concern:

Be it known that I, JOHN W. FAESSLER, a citizen of the United States, and resident of Moberly, Randolph county, Missouri, have invented certain new and useful Improvements in Mandrel-Extractors for Boiler Tube or 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.

My invention relates to improvements in mandrel extractors for boiler tube or flue expanders, and the object of my invention is to construct an extractor in the form of a sleeve adapted to loosely embrace the mandrel and having an arm extended therefrom arranged to receive impacts from a hammer or the like, so that a part of the force of each impact will be imparted to the flue expander to loosen it from the mandrel and a part of the force of the impact be imparted to the side of the mandrel to thereby tend to loosen the mandrel without marring.

With the above purposes in view my invention consists in certain novel features of construction and arrangement of parts as will be hereinafter more fully described, pointed out in the claims and illustrated by the accompanying drawings, in which—

Figure 1 is an elevation of an expander having my extractor thereon, the hammer being shown in a position to seat the mandrel; Fig. 2 is an elevation of an expander showing the mandrel fully seated and the hammer in a position to act against the extractor for the removal of the mandrel; Fig. 3 is an elevation of a modified form of extractor and a different form of mandrel, the mandrel and extractor each having a shank or stem to be fitted into the pneumatic hammer; Fig. 4 shows in elevation the extractor as applied to a common tapering mandrel; and Fig. 5 is an end elevation of the extractor and mandrel shown in Fig. 4.

Referring by numerals to the accompanying drawings: 1 designates the tubular body portion or sleeve of my improved extractor, and 2 designates an arm formed integral with the sleeve. The arm is preferably shaped so that its extremity 3 extends in a plane parallel with the sleeve.

4 designates a mandrel, the inner end 5 of which is tapered and preferably formed polygonal in cross section, and the outer end 6 of which is rounded so as to fit the cavity formed in the end of the tool 7 of the pneumatic hammer 8, the tool being provided with a stem 9 which fits into the end of the body of the hammer.

10 designates the expander proper, the form shown being one made up of a plurality of segmental sections, the outer faces of which are arc-shaped and the inner faces of which incline longitudinally.

11 designates a ring which embraces the segments of the expander to hold them in place. When assembled these segments each engage one of the faces of the tapered and polygonal end 5 of the mandrel and their outer faces form substantially a cylinder.

12 designates a flue, the end of which is placed through an opening formed in the sheet 13.

In the modified form, shown in Fig. 3, the mandrel 4 is provided with a collar 14 and a stem 15. This form of mandrel may be employed without the tool 7, as shown in Fig. 1.

The extractor, shown in Fig. 3, is also provided with a collar 16 and a stem 17, so that the extractor may be placed in the pneumatic hammer without the use of a tool, such as 7.

In the practical operation of my device, the sleeve or tubular body portion of the extractor is placed over the mandrel 4 and, for the economy of time, the extractor may be at all times left to remain upon the mandrel either in the operation of expanding the flue or extracting of the mandrel.

As shown, the extractor in no wise interferes with the operation of the pneumatic hammer against the mandrel for the purpose of expanding the segments to produce a perfect joint between the flues and the sheet.

When it is desired to extract the mandrel the pneumatic hammer is removed from the end of the mandrel and placed against the end of the extractor arm. The impacting of the hammer is then exerted against the ends of the segmental expander members, tending to loosen the expander from the tapered end of the mandrel. At this point I desire to call particular attention to the

fact that the bore in the sleeve is slightly larger than the diameter of the mandrel. In other words, there is a loose fit between the sleeve and the mandrel, as is clearly shown in dotted lines in Figs. 1 and 2.

The ring 11, which holds the members of the expander together, is usually of the type having elasticity which permits relative end-wise movements of the segments of the expander.

Each impact of the hammer forces the shoulder 18 against the adjacent segmental member of the expander and moves it lengthwise before the balance of the sleeve acts upon the remainder of the segments. The shoulder 18 further serves as a fulcrum over which the entire sleeve moves so that the opposite end of the sleeve imparts to the mandrel a slight lateral movement which further tends to loosen the mandrel from the expander segments.

I make no claim on the construction of the mandrel or the expander proper, as they are each shown in United States Letters Patent issued to me on December 19, 1905, No. 808,030.

In a co-pending application of even date herewith, (Serial No. 678,531) I have broadly claimed my mandrel-extractor in its simplest form, the arm 2 being omitted therefrom.

I claim:

1. In combination with a flue expander and a mandrel therefor, an extractor having a sleeve to embrace the mandrel, and an

arm carried by the sleeve, for the purposes stated.

2. In combination with a flue expander and a mandrel, an extractor for the mandrel comprising a sleeve loosely fitting over said mandrel, and an integral arm carried by the sleeve, for the purposes stated.

3. In combination with an expander and a mandrel therefor, an extractor comprising a sleeve arranged to loosely embrace the mandrel and an arm, formed integral with the sleeve, arranged to be impacted in such manner that a portion of the impact will be exerted against the expander to move it longitudinally relative to the mandrel and a portion of the impact be exerted upon the side of the mandrel to tend to loosen it from the expander.

4. As a new article of manufacture, a mandrel extractor for boiler flue or tube expanders, comprising a sleeve arranged to loosely embrace the mandrel, and a curved arm formed integral with the sleeve whereby when the extremity of the curved arm is impacted the expander will be longitudinally moved relative to the mandrel and the mandrel laterally moved relative to the expander.

In testimony whereof, I have signed my name to this specification, in presence of two subscribing witnesses.

JOHN W. FAESSLER.

Witnesses:

GRAVIS R. MAUPIN,
GEORGE BESTER, Jr.