

No. 671,416.

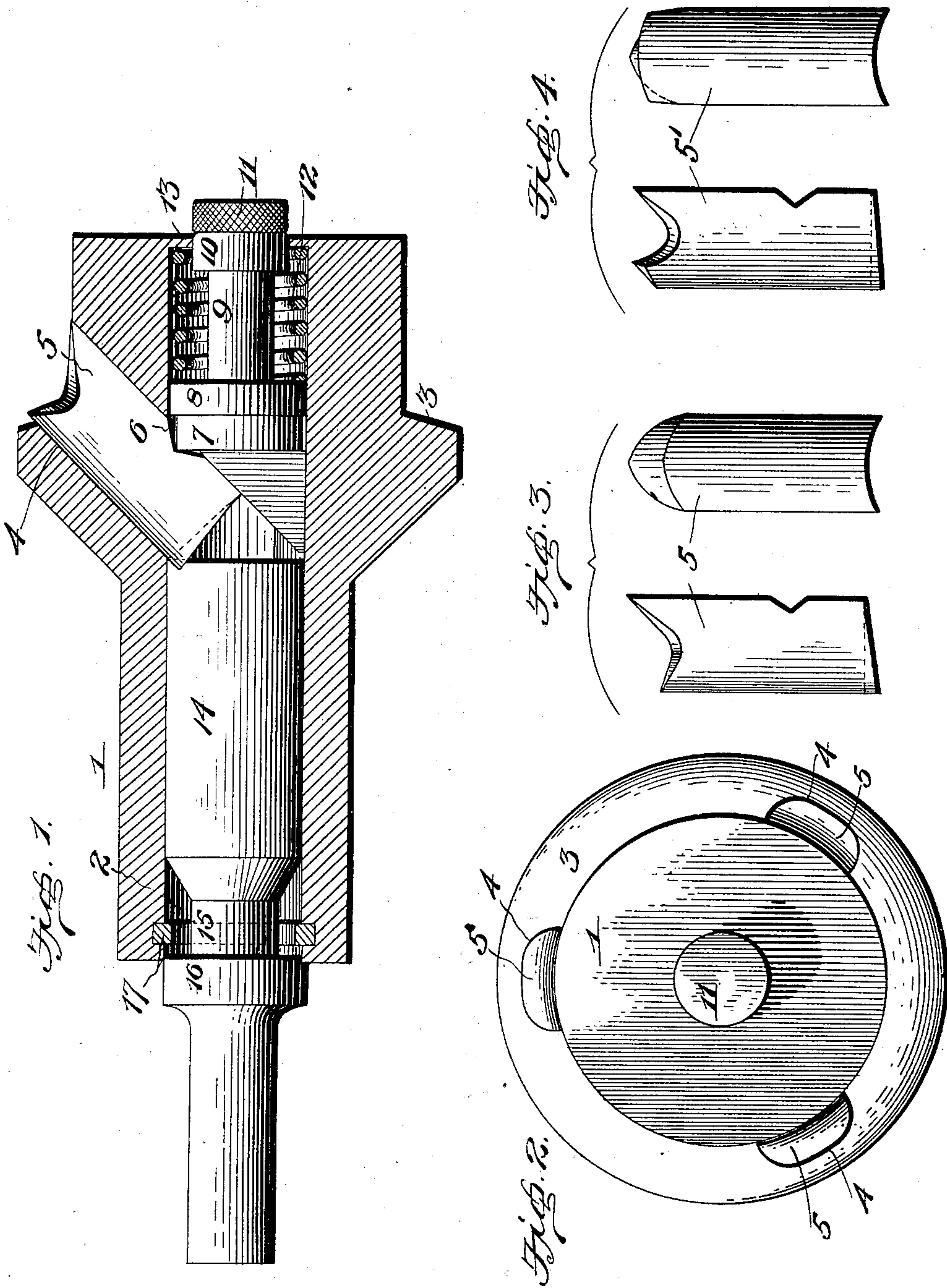
Patented Apr. 2, 1901.

M. S. DICKERT.

TUBE EXPANDER.

(Application filed Dec. 6, 1900.)

(No Model.)



Witnesses

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UNITED STATES PATENT OFFICE.

MORGAN S. DICKERT, OF CHATTANOOGA, TENNESSEE.

TUBE-EXPANDER.

SPECIFICATION forming part of Letters Patent No. 671,416, dated April 2, 1901.

Application filed December 6, 1900. Serial No. 38,936. (No model.)

To all whom it may concern:

Be it known that I, MORGAN S. DICKERT, a citizen of the United States, residing at Chattanooga, in the county of Hamilton and State of Tennessee, have invented certain new and useful Improvements in Tube-Expanders; and I do 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 relates to an improved tube-expander to be used in expanding tubes in boilers in course of construction in connection with which a pneumatic hammer is employed; and it consists in certain novel features of construction, combination, and arrangement of parts, which will be hereinafter more fully described, and particularly pointed out in the appended claims.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 is a vertical longitudinal section of a tube-expander embodying my invention. Fig. 2 is a front end elevation of the same. Fig. 3 shows side elevational and bottom plan views of the expanding-peen employed in my expander. Fig. 4 shows similar views of a beading-peen.

Referring now more particularly to the drawings, the numeral 1 represents the stock or body of the expander, which is provided with a longitudinal bore or passage 2, extending its full length and of like diameter throughout. At one end this stock is enlarged and is provided with an annular shoulder 3 and a series of diagonal openings 4, communicating with the said longitudinal bore 2. In these openings are fitted expanding-peens 5, which may be of the ordinary or any improved construction and which bear against the said shoulder 3. These peens are provided in their under sides with notches 6, with which engage a yoke or holding device 7, carried by a disk 8, mounted to slide in the open front end of the stock and in advance of the notched portions of the peens and connected with a stem 9, projecting forwardly and terminating in a head 10 and a milled-edged thumb-piece 11, by means of which the disk may be moved outwardly to disengage the said yoke or holding device from the notches in the expanding-peens to permit of

the latter being removed from their diagonal seats or sockets. A spiral spring 12 is inclosed in the bore 2 between the disk 8 and a flange 13, formed upon the front end of the stock, and this spring serves to force the disk and yoke or holding device inwardly to cause the latter to engage the notches in the expanding-peens to prevent withdrawal of the latter.

14 is a plunger or hammer-pin which is made to receive the hammer on the outer end and has its front end fitted within the bore 2 of the stock. The central portion of the hammer-pin or plunger is reduced to form an integral neck 15 and end shoulders 16, and around said neck extends a circular spring or washer 17, which fits within an annular groove intersecting the bore of the stock and is adapted to abut against said shoulders 16 to prevent disconnection of the said hammer-pin or plunger.

The expanding-peens 5, two or more in number, are made to fit the diagonal sockets or openings 4 and come in contact with the hammer-pin or plunger inside. The strokes of the hammer cause the hammer-pin to strike the expanding-peens 5, and said peens 5 are thereby driven outwardly against the boiler-tube and against the side of the tube-hole and the tube is tightened by the peening. The tubes are turned over ready for beading at the same operation, and then the expanding-peens 5 are removed, and the tubes are beaded by the substitution of beading-peens 5', such as shown in Fig. 4, for said expanding-peens 5.

From the foregoing description, taken in connection with the accompanying drawings, the construction and mode of operation of my improved tube-expander will be readily understood, and it will be seen that it provides a simple, durable, and effective device of this character in which the parts are arranged to permit of the expanding and beading operation being quickly effected.

While the preferred embodiment of the invention is as herein disclosed, it will of course be understood that changes in the form, proportion, and minor details of construction may be made within the scope of the invention without departing from the spirit or sacrificing any of the advantages thereof.

Having thus described my invention, what

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

1. In a tube-expander, a stock having two or more diagonal seats or openings, expanding devices fitted in said openings, means for retaining said devices in position, and a hammer-pin, substantially as set forth.

2. In a tube-expander, a stock having seats or openings, expanding-peens fitted in said openings, and a common holding device for retaining all of the said peens in position, substantially as set forth.

3. In a tube-expander, a stock having seats or openings, peens fitted in said openings, and a spring-pressed retaining device engaging said peens and retaining all of the peens in position, substantially as set forth.

4. In a tube-expander, a stock having two or more diagonal seats or openings, expanding-peens removably fitted in said openings and provided with notches, a holding device engaging the notches in the peens to retain them in position and having a finger-piece to permit of its withdrawal, a spring for forcing

said holding device into engagement with the notches, and a hammer-pin, substantially as set forth.

5. In a tube-expander, the combination of a stock having at its forward end an enlargement provided with a series of diagonal seats or openings and a longitudinal bore in connection therewith, expanding-peens fitted in said openings, a hammer-pin or plunger extending into the longitudinal bore of the stock through the rear end thereof, and a holding device extending into the longitudinal bore of the stock from the front end thereof and engaging the expanding-peens to retain the same in position, substantially as set forth.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

MORGAN S. DICKERT.

Witnesses:

OLIVER P. STEWART,
J. E. CROSBY.