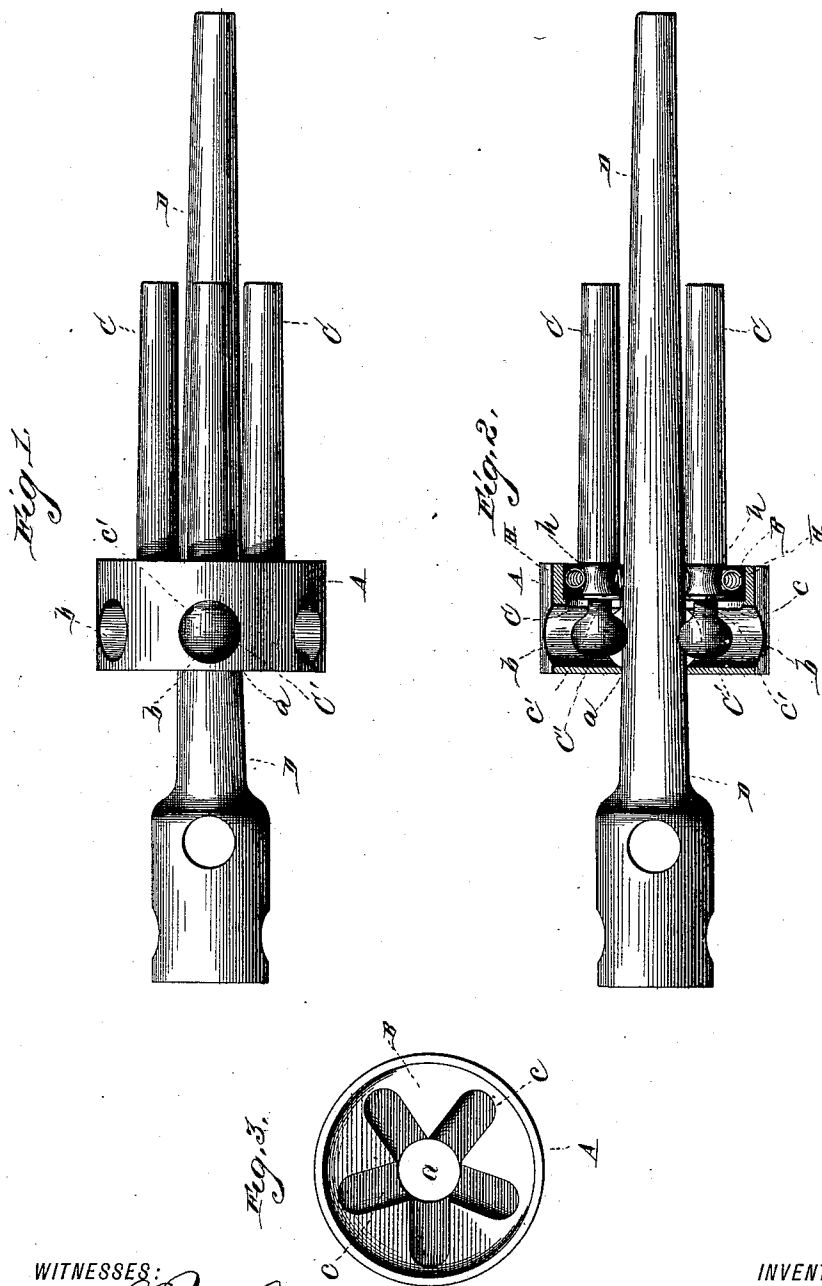


(No Model.)

O. JOHNSON.
BOILER TUBE EXPANDER.

No. 453,147.

Patented May 26, 1891.



WITNESSES:
Charles B. Ray
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UNITED STATES PATENT OFFICE.

OLIVER JOHNSON, OF KINGSTON, PENNSYLVANIA, ASSIGNOR OF TWO-THIRDS
TO MAT. SLOAN AND WILLIAM P. SOMERS, BOTH OF SAME PLACE.

BOILER-TUBE EXPANDER.

SPECIFICATION forming part of Letters Patent No. 453,147, dated May 26, 1891.

Application filed February 6, 1891. Serial No. 380,415. (No model.)

To all whom it may concern:

Be it known that I, OLIVER JOHNSON, a citizen of the United States, and a resident of Kingston, in the county of Luzerne and State of Pennsylvania, have invented certain new and useful Improvements in Boiler-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, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

Figure 1 of the drawings is a side view. Fig. 2 is a vertical section, and Fig. 3 is a detail view.

This invention relates to certain improvements in boiler-tube expanders; and it consists of the novel construction and combination of parts, as will appear from the following description.

The object is to provide a device of this character simple in form and composed of few parts that are easily operated and remain connected as a compact tool when removed from the tube or flue, and also one that may be adjusted to different tubes or flues.

In the accompanying drawings, the letter A represents the circular body portion, provided with the central perforation *a*. On one surface this portion A has an annular chamber or recess B, and also a series of radial perforations *b*, extending from its circumference to the central perforations and communicating with the chamber B by a series of radial slots *c*.

C C are a series of slightly-tapering rollers, having near their inner ends the annular groove *c'*, and terminating in the rounded head or ball *C'*, adapted to have a bearing in the sockets or perforations *b*, the shoulders being against the walls of the slots *c*. The rollers are put in position by first inserting in the central perforation *a* and then passing each into its respective slot.

D is a slightly tapering mandrel-like pin, and adapted, by insertion in the perforation *a*, to engage the several rollers C, whose ad-

jacent surfaces are also in contact when in operative position. Said rollers being all of equal diameter, it will be seen that they will act uniformly over the walls of the tube in which they are placed when acted upon by the pin. The mandrel-pin D is introduced through the central opening *a* of the body portion, but is left withdrawn sufficiently to permit the rollers B to enter the tube or flue. As soon as the mandrel is turned, the rollers by means of their ball-and-socket bearing and their frictional contact with said mandrel will be rolled in the tube, the mandrel at the same time passing farther between the rollers. Shortly below the groove *c'* of each roller is a second smaller annular groove *h*, which is adapted to receive a circular coiled or helical spring H, which passes around the entire series, holding them in close contact with each other and with the mandrel, and preventing their falling out when the mandrel is removed. By removing one or more of the rollers the device can be adjusted to fit a smaller-sized tube or flue. It will be seen that by means of this construction I provide a right or left hand self-feeding device.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

The boiler-tube comprising the body portion having the central perforation, the recess or chamber, and the series of radial sockets, the series of tapering rollers provided at their larger end with a ball adapted to bear in said sockets, and having each an annular groove adapted to receive a circular coiled or helical spring surrounding said series and lying in said recess or chamber, and the tapering mandrel adapted to be inserted in said central perforation of the body and have frictional contact with the rollers, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

OLIVER JOHNSON.

Witnesses:

MATTHEW SLOAN,
WILLIAM P. SOMERS.