(No Model.) 2 Sheets—Sheet 1.

L. BIDDLE.

BOILER FLUE EXPANDER.

No. 500,466. Patented June 27, 1893.

Fig. 1

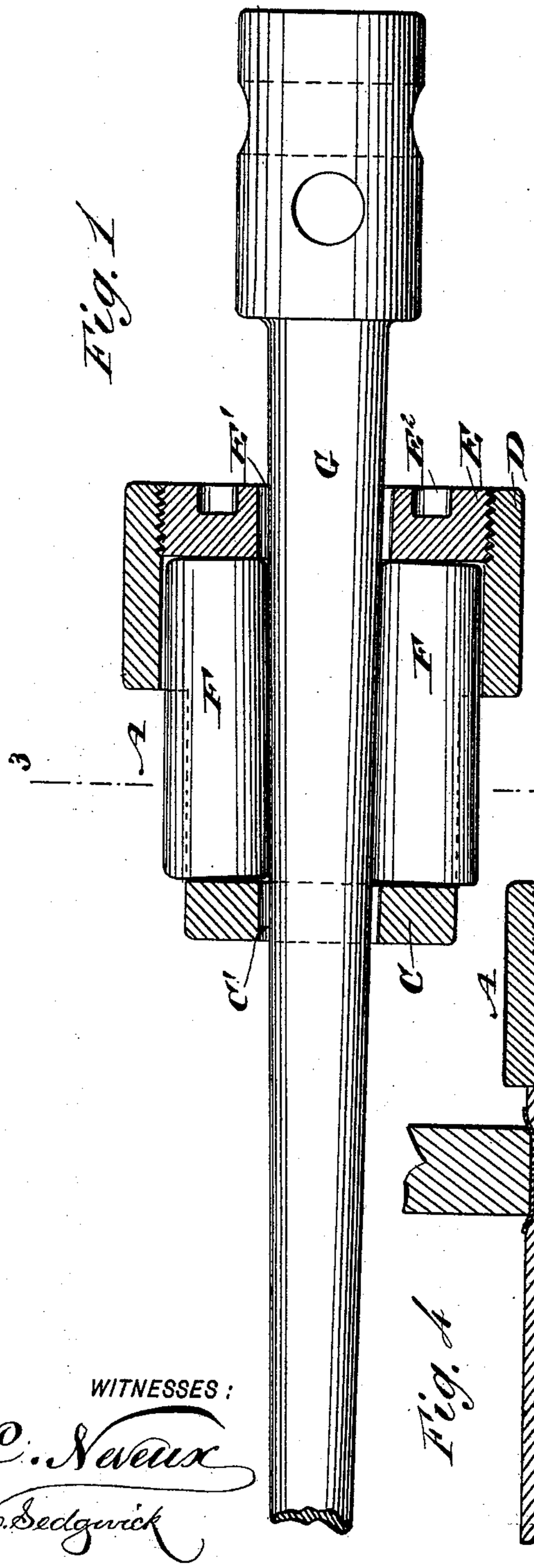


Fig. 2

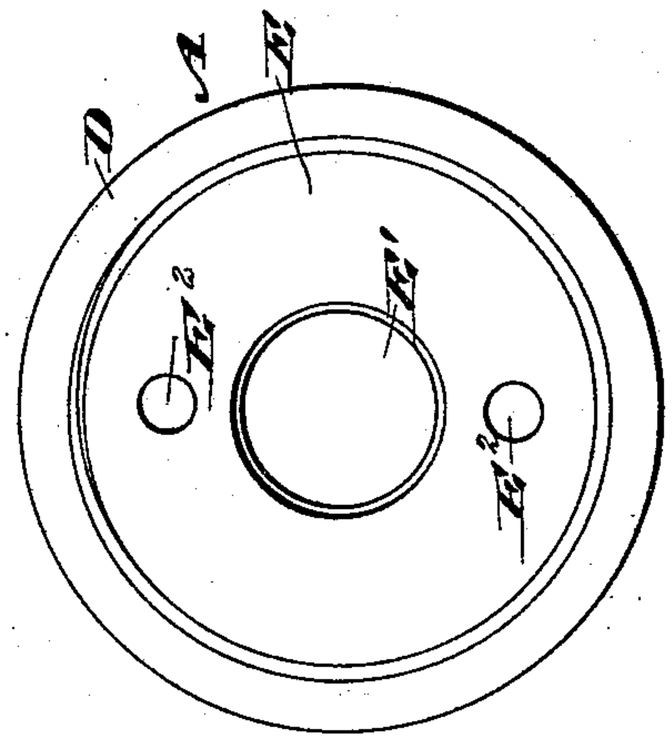


Fig. 3

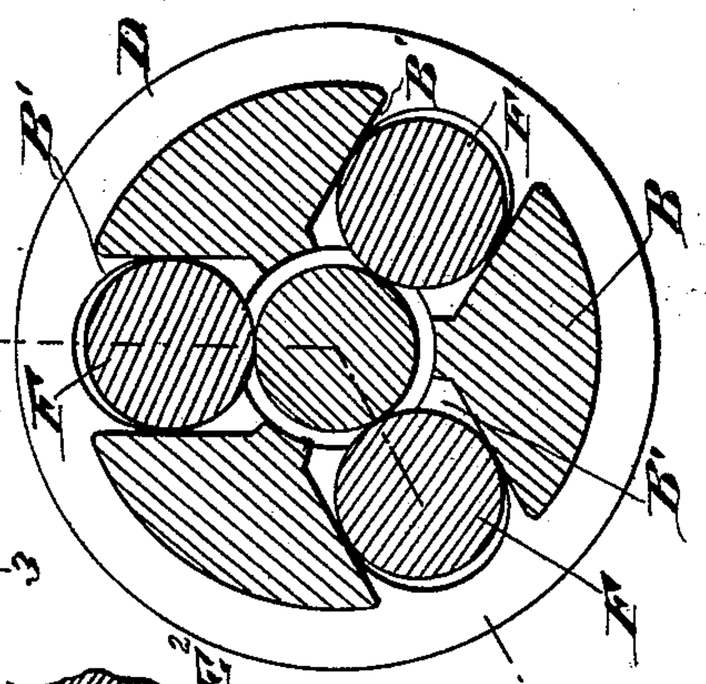
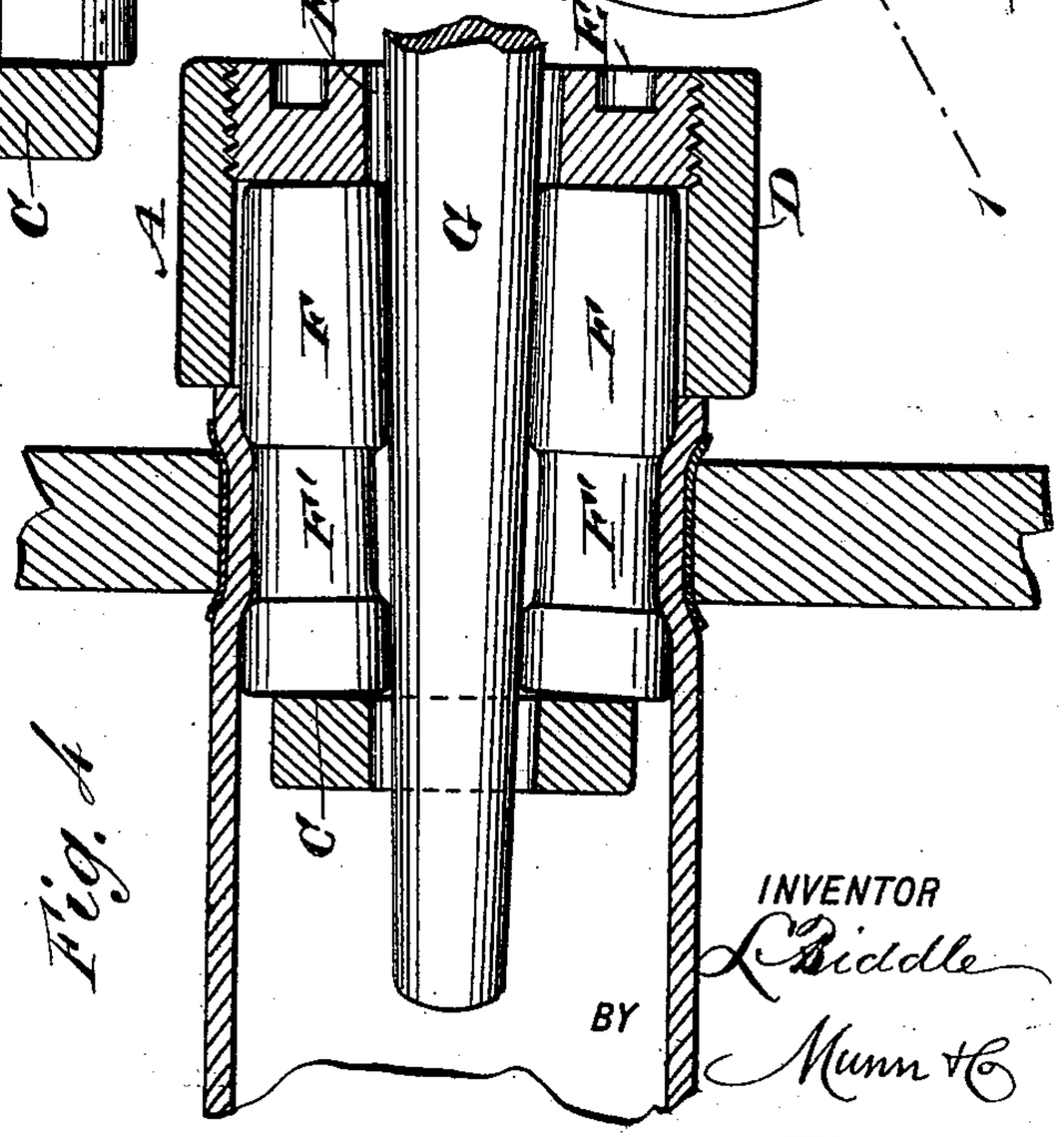


Fig. 4



WITNESSES:

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C. Sedgwick

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ATTORNEYS.

(No Model.) 2 Sheets—Sheet 2.

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BOILER FLUE EXPANDER.

No. 500,466. Patented June 27, 1893.

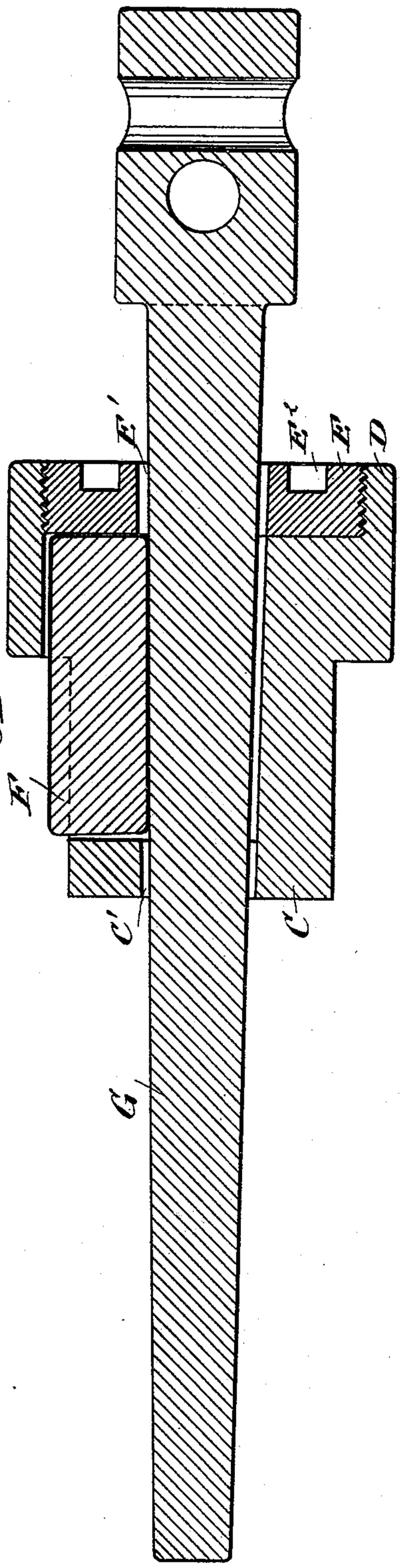

Fig. 5.

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UNITED STATES PATENT OFFICE.

LEOPOLD BIDDLE, OF RATON, TERRITORY OF NEW MEXICO.

BOILER-FLUE EXPANDER.

SPECIFICATION forming part of Letters Patent No. 500,466, dated June 27, 1893.

Application filed January 14, 1893. Serial No. 458,355. (No model.)

To all whom it may concern:

Be it known that I, LEOPOLD BIDDLE, of Raton, in the county of Colfax and Territory of New Mexico, have invented a new and Improved Boiler-Flue Expander, of which the following is a full, clear, and exact description.

The invention relates to boiler makers' tools, and its object is to provide a new and improved roller expander for boiler flues, which is simple and durable in construction, very effective in operation and arranged to reduce the wear and tear of the tool to a minimum.

The invention consists principally of a roller casing formed with an apertured end and provided with longitudinal slots to receive the rollers, and an apertured cap screwing in the head of the casing and adapted to abut against the ends of the rollers to hold the latter in place within the casing and to take up the strain.

The invention also consists of certain parts and details and combinations of the same as will be hereinafter described and claimed.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a sectional side elevation of the improvement on the line 1—1 of Fig. 3, the rollers and tapering spindle being shown in elevation. Fig. 2 is an end view of the casing. Fig. 3 is a transverse section of the improvement on the line 3—3 of Fig. 1. Fig. 4 is a sectional side elevation of the improvement as applied and with a modified form of rollers; and Fig. 5 is a longitudinal section.

The improved boiler flue expander is provided with a casing A, preferably made of steel and formed with the cylindrical body part B, an end C, and a head D, also made cylindrical and somewhat larger in diameter than the body part B. In the outer end of the head D screws a cap E, adapted to abut against the ends of the rollers F, resting with their lower ends on the end C of the casing A, as will be readily understood by reference to the drawings.

In the body part B of the casing are arranged longitudinal slots B′ into which fit the rollers F and which are arranged to permit the rollers to slide outwardly to engage the inside of the flue to be expanded. The end C of the casing as well as the cap E are formed in their centers with apertures C′ and E′ respectively for the passage of the tapering spindle G, adapted to drive the rollers F outward in the usual manner.

It will be seen by reference to Fig. 1, that the ends of the rollers F extend a short distance within the head D and abut against the inside of the cap E, which latter is made sufficiently strong to readily resist all strain caused by blows on the head of the spindle G when using the tool in the usual manner. It will be seen that when the tool is used, the inner edge of the enlarged head D abuts against the end of the flue to be expanded so that the rollers F extend into the flue throughout the length of the body part B of the casing A.

The cap E is formed at its outer face with openings E^2 adapted to be engaged by a pin wrench for conveniently screwing up or unscrewing the said cap E in the head D. It will be seen that by this construction of the body B and head D, the latter prevents the casing from passing into the flue, it being understood that only the body part with the end C extends into the flue when the tool is used.

When it is desirable to raise or form a bead within the flue on the inside of the flue sheet then the rollers F are formed with annular grooves F′, the said grooves corresponding in width to the thickness of the flue sheet and the rollers taper one half of the taper of the spindle G, so that when the spindle is used in the usual manner the beading is formed on the inside of the flue sheet as will be readily understood by reference to Fig. 4.

It will be seen that the tool on being revolved will cause the rolls to settle on the proper place automatically and the danger of cutting or weakening the flue is avoided. It will further be seen that this device is very simple and durable in construction, is constructed of but a few parts and is hence not liable to get out of order. It will further be seen that the casing is composed of but two parts readily fitted together and capable of standing firm under a very heavy strain, put

upon the rolls; at the same time, the rolls cannot become detached or separated when the spindle is withdrawn.

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

1. A flue expander provided with a casing having a body part formed with an apertured end, and an open ended head, and an apertured cap screwing in the said head and adapted to abut against the ends of the rollers to hold the latter in place within the casing, substantially as shown and described.

2. A flue expander provided with a casing comprising a body part formed with longitudinal slots, an apertured end integral with the said body part, a head integral with the said body part and of a larger diameter than the same so as to form a shoulder to abut against the flue to be expanded, and a cap secured in the said head and serving to abut against the rollers to hold the same in place within the longitudinal slots, substantially as shown and described.

3. A boiler flue expander comprising rollers, a spindle, and a casing provided with a body part formed with longitudinal slots to receive the rollers, an apertured end formed on the said body part, a head formed integral on the said body part and adapted to receive part of the rollers, and a cap screwing in the outer end of the said head, substantially as shown and described.

LEOPOLD BIDDLE.

Witnesses:
JAMES H. WALKER,
F. A. BOGGS.