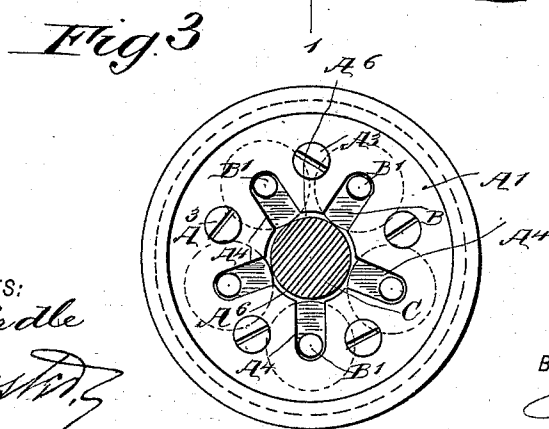
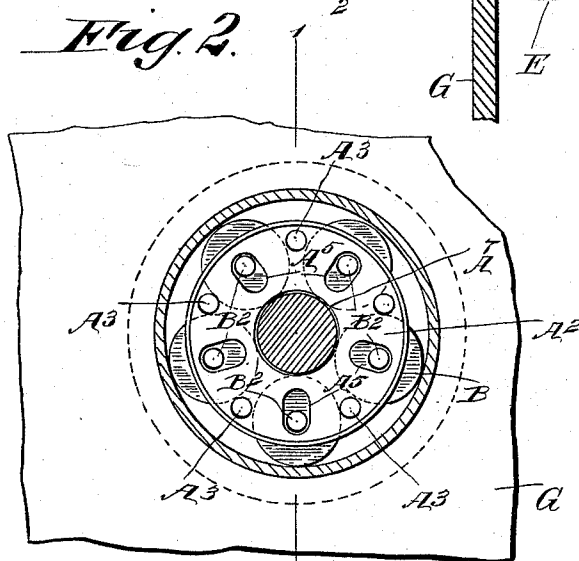
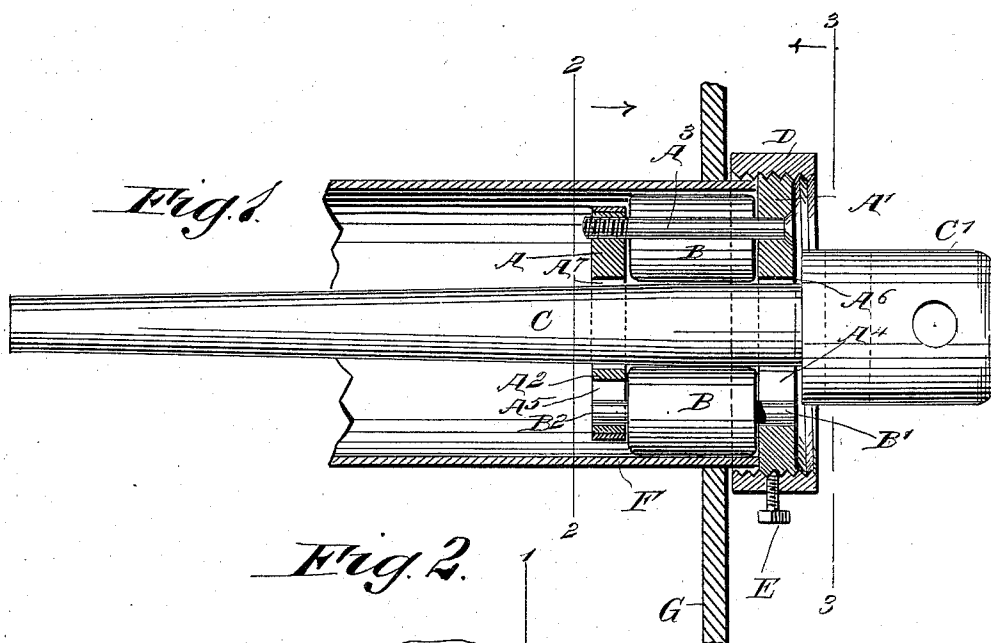


(No Model.)

D. W. PATTON.
FLUE EXPANDER.

No. 533,317.

Patented Jan. 29, 1895.



WITNESSES:

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UNITED STATES PATENT OFFICE.

DAVID WILLIAMSON PATTON, OF HANNIBAL, MISSOURI.

FLUE-EXPANDER.

SPECIFICATION forming part of Letters Patent No. 533,317, dated January 29, 1895.

Application filed May 25, 1894. Serial No. 512,417. (No model.)

To all whom it may concern:

Be it known that I, DAVID WILLIAMSON PATTON, of Hannibal, in the county of Marion and State of Missouri, have invented a new and Improved Flue-Expander, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved flue expander which is comparatively simple and durable in construction, very effective in operation, and arranged to conveniently and quickly expand the flue to prevent leakage.

The invention consists of certain parts and details, and combinations of the same, as will be fully described hereinafter, and then pointed out in the claim.

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. 2. Fig. 2 is a transverse section of the same on the line 2—2 of Fig. 1; and Fig. 3 is a similar view of the same on the line 3—3 of Fig. 1.

The improved flue expander is provided with a stock A having the outer head A' and the inner head A² connected with each other by longitudinally extending rods or connecting bars A³. In the head A' are arranged the radially extending recesses A⁴, and radially extending slots A⁵ are formed in the head A², in such a manner that the slots and recesses in the two heads are in longitudinal alignment with each other to receive the trunnions B' and B² of a corresponding roller B, as is plainly illustrated in the drawings. As shown, five sets of such aligned recesses and slots A⁴ and A⁵ are formed in the heads A' and A² to receive the trunnions of five rollers placed equal distances apart and arranged between the rods or longitudinal connecting bars A³. The inner ends of the recesses A⁴ lead to a central aperture A⁶ formed in the head A', and a similar central aperture A⁷ is formed in the head A², the said apertures forming a passage for the tapering spindle or mandrel C, provided on its outer end with a head C' adapted to be taken hold of by a suitable tool in the hands of the operator, to force the mandrel inward to press the rollers B outward, and to rotate the same by turning the mandrel. When the mandrel C is withdrawn the rollers B can be readily taken out of the stock A and replaced therein, by pressing the outer

ends of the rollers inward, so that the trunnions pass from the recesses A⁴ into the central aperture A⁶, and by then pushing the rollers longitudinally they pass through the central aperture A⁶ to the outside of the stock. In replacing the rollers the same are first put through the aperture A⁶ and then pushed away from the said aperture at their inner ends, to engage the trunnion B² with the corresponding slot A⁵, after which the roller is pressed away from the central aperture at its outer end to engage the other trunnion B' with the corresponding recess A⁴.

The head A' extends a suitable distance beyond the peripheral surface of the rollers B, so as to form, at its inner face, an abutment for the projecting end of the flue or pipe F to be expanded. See Fig. 1. On this head A' is formed a peripheral screw thread on which screws the internally threaded sleeve D, adapted to be secured in place by a set screw E. The inner edge of this sleeve D is adapted to abut against the outer face of the flue sheet G, and by adjusting the said sleeve on the head A' inward or outward, it can be readily moved the proper distance, so as to abut against the pipe F on the inner face of the head A' and the inner edge of the sleeve D on the face of the sheet G. When this adjustment has been made on the flue sheet, the operator manipulates the mandrel C as previously described, so as to actuate the rollers B, to expand the flue in the usual manner, to prevent leakage.

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

A flue expander, comprising two spaced, connected heads each provided with a central aperture for the passage of a mandrel, and a series of radial slots, the slots in one of the heads being closed at their inner ends, while those in the other head extend to the said central aperture, rollers journaled in the said slots, one of the heads extending outward beyond the rollers to engage the end of the flue and being provided with an external screw thread, and a female threaded sleeve screwing on the said head and adapted to engage the flue sheet, substantially as described.

DAVID WILLIAMSON PATTON.

Witnesses:

A. J. LOWER,
JOHN G. FOSS.