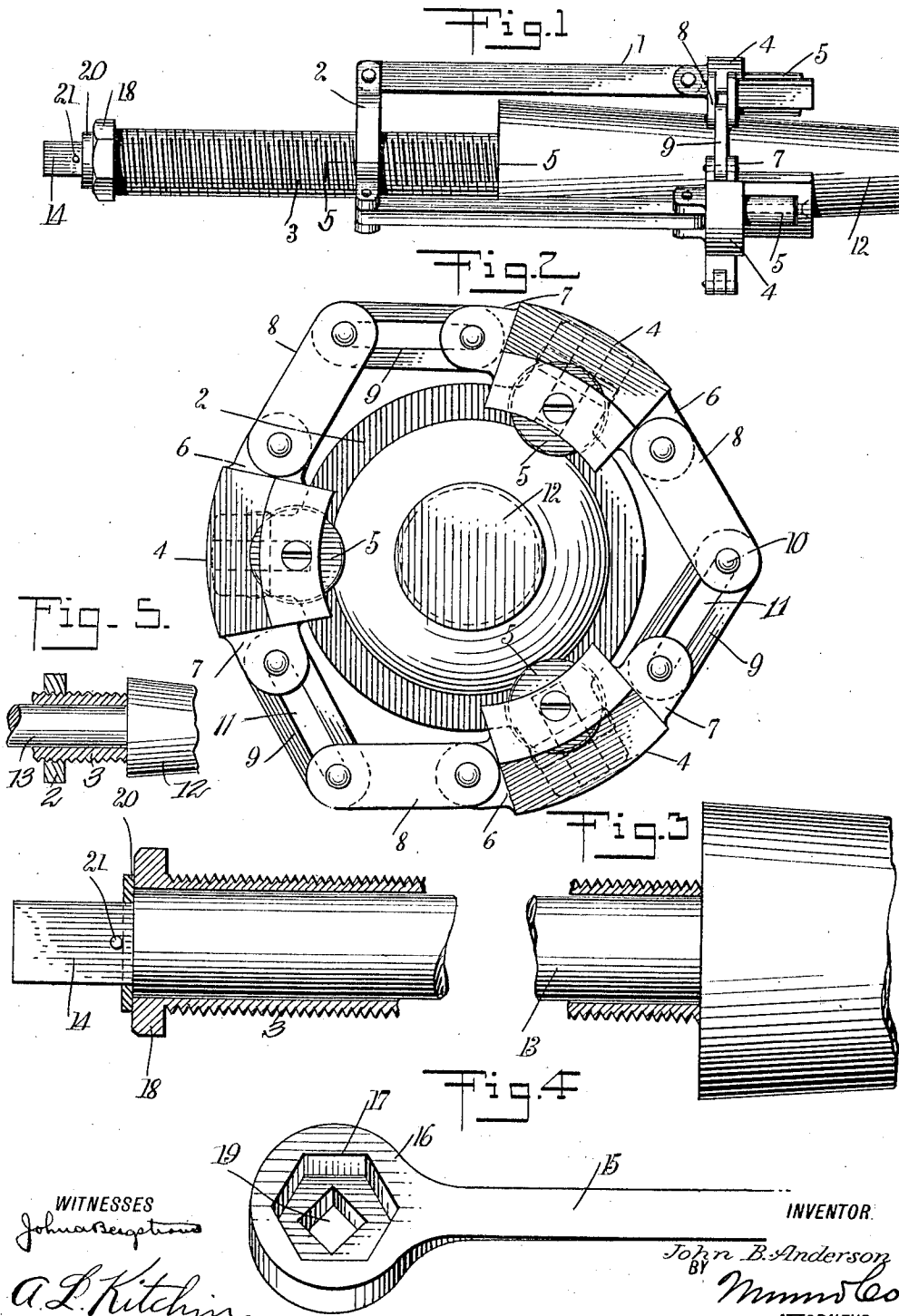


J. B. ANDERSON.
FLUE EXPANDER.
APPLICATION FILED APR. 10, 1912.

1,048,472.

Patented Dec. 24, 1912.



WITNESSES
John Anderson

A. L. Kitchin

INVENTOR.

John B. Anderson
BY *Mum & Co*
ATTORNEYS

UNITED STATES PATENT OFFICE.

JOHN BERNHARD ANDERSON, OF CLIPPER, WASHINGTON.

FLUE-EXPANDER.

1,048,472.

Specification of Letters Patent.

Patented Dec. 24, 1912.

Application filed April 10, 1912. Serial No. 689,746.

To all whom it may concern:

Be it known that I, JOHN B. ANDERSON, a citizen of the United States, and a resident of Clipper, in the county of Whatcom and State of Washington, have invented a new and Improved Flue-Expander, of which the following is a full, clear, and exact description.

This invention relates to improvements in flue expanders, and has for an object to provide an improved structure in which a screw construction is provided for feeding the device forward during the expanding of the tube.

Another object of the invention is to provide an improved structure having the usual expanding rollers associated with a wedge for operating the same, and a rotating screw which is adapted to feed the wedge forward for expanding the rollers when the device is loose, and is adapted to cause a rotation of the rollers when the rollers tightly press against a surrounding tube so as to expand the tube and in this manner cause a substantially continuous operation of feeding the device forward and expanding the tube.

In carrying out the objects of the invention, a framework is provided which carries the usual expanding rollers. Connected with the framework is a guiding link which holds the rollers properly in position for correct operation. Arranged to project through the framework and to expand or move radially the expanding rollers, is a tapering wedge structure formed with a projecting shaft or handle, around which is positioned a sleeve threaded through one of the plates of the framework. A wrench or suitable operating tool is provided which is adapted to fit the outer end of the shaft and the outer end of the threaded sleeve which is preferably squared for rotating the same, whereby the entire device is rotated at the proper time and the tapering wedge is fed forward at the proper time.

A practical embodiment of the invention is represented in the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a side view of an embodiment of the invention; Fig. 2 is a bottom plan view of the structure shown in Fig. 1, the same being shown on an enlarged scale; Fig. 3 is a side view of the tapering wedge, part of the same being broken away, the

feeding sleeve being shown in connection therewith; and Fig. 4 is a perspective view of the operating end of a driving tool for the structure shown in Fig. 1.

Referring to the accompanying drawings by numerals, 1 indicates a plurality of longitudinally arranged links pivotally connected to a plate 2 having a threaded aperture therein designed to accommodate a threaded sleeve 3, the members 1 and 2 forming a framework for supporting pivotally mounted pressure members 4. Each of the pressure members 4 has pivotally arranged therein an expanding roller 5 designed to press against the tube upon which the device is being operated for expanding the same when the entire device is rotated. The pressure members 4 are each provided with ears 6 and 7 for accommodating links 8 and 9, the links 8 of one pressure member being connected with the links 9 of the adjacent pressure member by a suitable pin 10 which is designed to move in the slots 11 of the respective links 9. In operation the rollers 5 are, of course, drawn together so as to properly enter the particular tube, and then are gradually expanded as the tube is expanded, the slots 11 in links 9 permitting this expansion and contraction of the device. Projecting centrally through the rollers 5 so as to expand the same is a tapering wedge or plug 12 which is provided with a shaft or operating handle 13. The shaft 13 extends upward and is preferably squared at 14 for receiving a tool 15. The tool 15 is formed with a head 16 having a socket 17 for accommodating the enlarged end 18 of the threaded sleeve 3, and with an aperture 19 for accommodating the squared portion 14 of the shaft 13. The sleeve 3 is loosely positioned on the shaft 13 and pressed at one end against the wedge 12 and at the opposite end bears against a washer 20 held in place by a suitable pin 21.

In operation the device is adjusted so as to fit into a particular tube and then the wrench 15 is fitted over the squared portion 14 and the hexagon portion 18, after which the wrench is rotated and also pressed inward so as to cause the rollers 5 to tightly engage the tube. The continued rotation of the wrench 15 will cause the wedge 12 to gradually move in and also cause the entire device to be rotated, whereby the rollers 5 will be rotated and expanded simultaneously. If desired, means may be provided for press-

ing against the end 16 of the wrench 15 during the operation, though ordinarily the same is not necessary. By constructing and arranging the sleeve as set forth, and the
 5 wedge 12, a single operation is sufficient for feeding the expander in and for rotating the expander.

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

1. In a flue expander of the class described, a plurality of expanding rollers, a support for each of said rollers, a pair of links pivotally connected to each of said sup-
 15 ports, and means for pivotally connecting each adjacent pair of links, an expanding member engaging said rollers for moving the same radially, and means for simultaneously moving forwardly and rotating said
 20 expanding member.

2. In a flue expander, a plurality of expanding rollers, pressure members for supporting the same, supporting links for supporting said pressure members, flexible
 25 means for holding said pressure members in the same relative position longitudinally but permitting a radial action thereof, an apertured plate for supporting said links, the aperture in said plate being threaded, a
 30 tapering wedge projecting between said rollers for causing the same to move radially when the wedge is moved longitudinally, and a threaded sleeve extending through said
 35 threaded aperture in said plate bearing against said wedge whereby when the threaded sleeve is rotated said wedge will be moved forward longitudinally, and said
 40 plate and devices associated therewith will be rotated for causing said pressure rollers to move radially and also in a substantially circular path.

3. In a flue expander a body portion comprising an internally threaded ring, roller supporting members and flexible means for
 45 connecting said roller supporting members together, expanding rollers mounted in said

roller supporting means, an expanding wedge arranged to engage and expand said rollers and part of said body portion, a shaft extending from said expanding means, and
 50 an externally threaded sleeve loosely fitting on said shaft and extending through the threaded ring of said body portion whereby when said shaft or said threaded sleeve is
 55 rotated said wedge will be simultaneously rotated and moved forward.

4. A flue expander comprising a framework having an apertured plate, said aperture being provided with threads, a plurality of pivotally mounted links connected
 60 with said plate, pressure members pivotally mounted on said links at the end opposite said plate, links connected to each of said pressure members, means for connecting
 65 said links whereby the pressure members are properly held at predetermined angles with respect to each other, a pressure roller connected with the links mounted in each of
 70 said pressure members, a tapering wedge arranged to project between said pressure members and said rollers, causing the pressure members and the rollers to move bodily
 75 radially, a shaft extending from said wedge through the aperture in said plate, a threaded sleeve surrounding said shaft and extending through the aperture in said plate,
 80 the threads on said sleeve engaging the threads in said aperture, and means for preventing a longitudinal movement of said sleeve independent of said shaft, whereby
 85 when said shaft and said sleeve are rotated said wedge will be moved longitudinally until the resistance to said movement is greater than the resistance to a rotary movement of the entire device.

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

JOHN BERNHARD ANDERSON.

Witnesses:

JENS P. PETERSEN,
 T. SULLAND.