

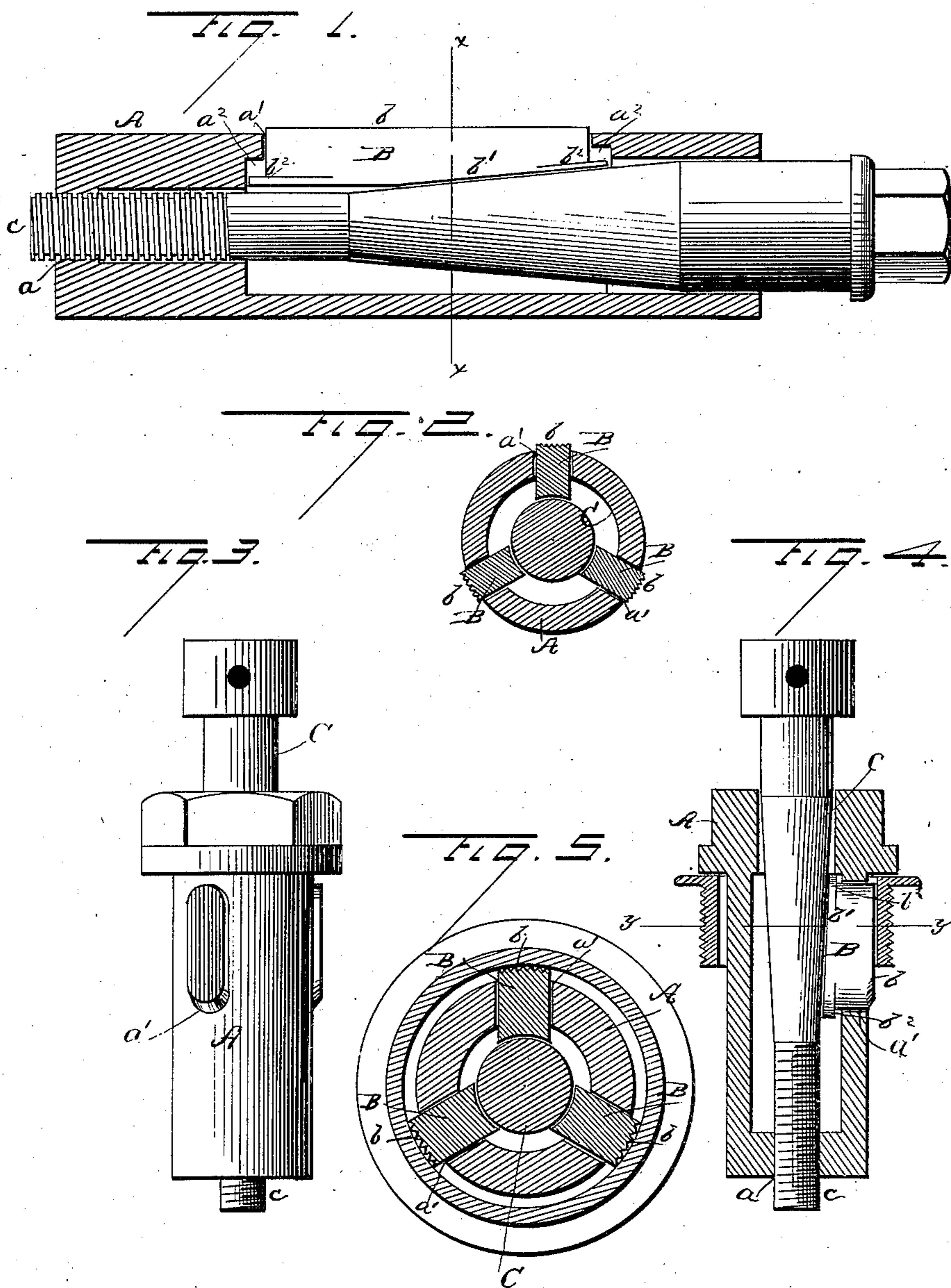
(No Model.)

A. E. LYTLE.

EXPANDING WRENCH AND MANDREL.

No. 305,035.

Patented Sept. 9, 1884.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

ALBERT E. LYTLE, OF CHICAGO, ILLINOIS, ASSIGNOR OF TWO-THIRDS TO JOHN H. VANHOUSEN, BEACH T. VANHOUSEN, AND GEORGE H. EATON, ALL OF SAME PLACE.

## EXPANDING WRENCH AND MANDREL.

SPECIFICATION forming part of Letters Patent No. 305,035, dated September 9, 1884.

Application filed December 13, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, ALBERT E. LYTLE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Expanding Wrenches and Mandrels, of which the following is a specification, to wit:

This invention relates to an improvement in inside wrenches and mandrels; and it consists in the peculiar construction and arrangement of the same, whereby a series of dogs having corrugated faces are expanded evenly in all directions to hold the work, substantially as will be hereinafter more fully set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the accompanying drawings, in which—

Figure 1 is a longitudinal section of my mandrel; Fig. 2, a transverse section of the same; Fig. 3, a side view of my wrench, and Fig. 4 a longitudinal section, and Fig. 5, a transverse section of the same, showing it clutching a bung-bushing.

A represents a steel shell or cylinder formed hollow, as shown, and having one end open and the other closed, and provided with a screw-threaded hole, *a*, as seen in Figs. 1 and 4. The shell A is formed with any suitable number of slots, *a'*, extending through its sides longitudinally for a suitable distance, in each of which is placed a dog, B, having a corrugated face, *b*, and its rear or inner side formed on an incline, or wedge-shaped, as at *b'*. These dogs are prevented from passing entirely through the shell by a small projecting flange, *b<sup>2</sup>*, at each end, which lies in a slot, *a<sup>2</sup>*, in the shell at the ends of the dog.

C represents a plug, circular in cross-section, and tapering for a suitable distance upon the same angle given to the adjacent faces of the dogs. This plug or expander is provided with a screw-threaded point, *c*, which passes through the threaded hole *a* in the end of the shell. The dogs having been placed in position and the plug or expander inserted, it is only necessary to screw it in to expand the dogs equally in all directions, and thus accommodate themselves to various sizes of work.

In the form shown in Fig. 1 this device is especially valuable in lathe work, as it can be placed in the lathe and the cylinder to be turned clamped firmly and properly centered at the same time, thus saving much time and work over the ordinary method of fitting a plug into the cylinder, and then centering it for attachment to the lathe. The mandrel is usually long enough to extend entirely through the object to be turned, and may then be clamped between the centers of the lathe and revolved by means of a lathe-dog, as usual with similar-shaped tools; or it may be clamped at one end in a chuck, such as ordinarily used in lathes. The smaller form shown in Fig. 4 can be used to great advantage as an inside wrench, and is especially adapted to inserting and removing the bushings from barrels.

It is obvious that the device may be made of any desired size for coarse or delicate work. The plug or expander is formed on one end with an angular portion for the attachment of a wrench, or a hole for using a spanner, and the shell may also be so formed, if desired, in order that one may be firmly held while the other is turned.

I am aware that it is not new, broadly, to construct a mandrel or wrench with expanding dogs, and do not desire to be understood as claiming such as my invention.

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

In an expanding wrench or mandrel, a shell or cylinder formed with longitudinal slots or openings in its sides having recesses at their ends, and a screw-threaded hole through the end of the shell, in combination with a series of dogs serrated upon their outer and inclined upon their inner faces, and having projecting flanges on their ends, and a tapering screw-threaded plug or expander adapted to expand the dogs equally as it is passed into the shell, substantially as and for the purpose set forth.

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

ALBERT E. LYTLE.

Witnesses:

W. C. McARTHUR,  
C. S. HARRISON.