(No Model.)

# A. E. LYTLE.

## EXPANSION ARBOR.

No. 301,905. Patented July 15, 1884.

Fig. 1.

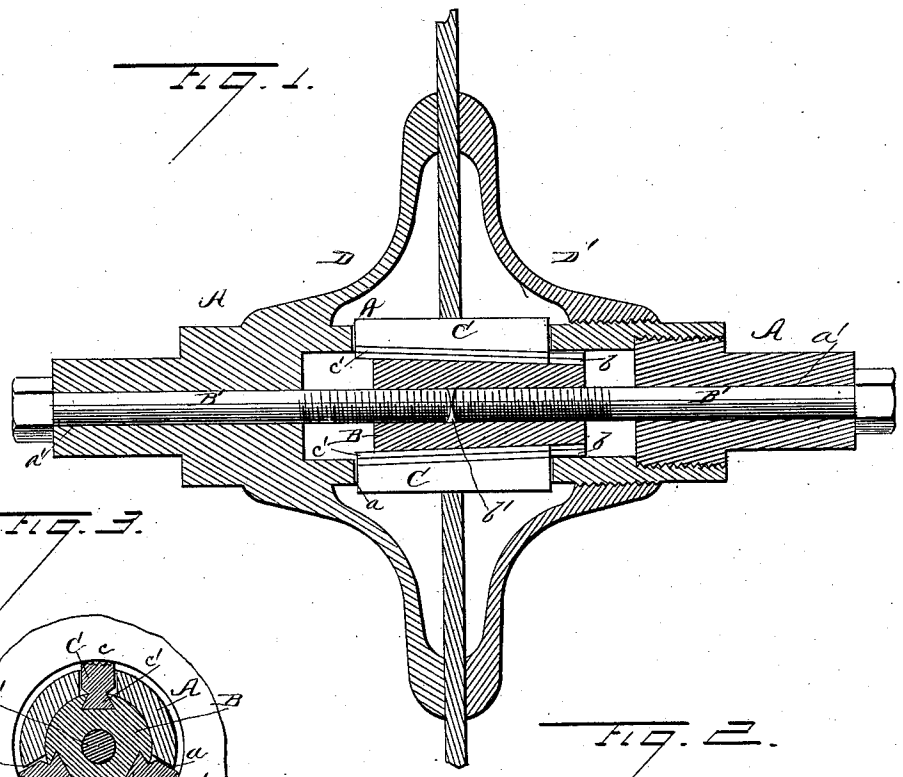



Fig. 3.

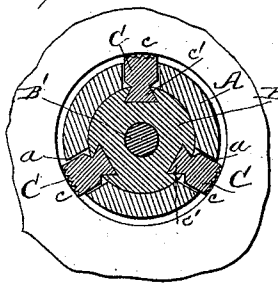
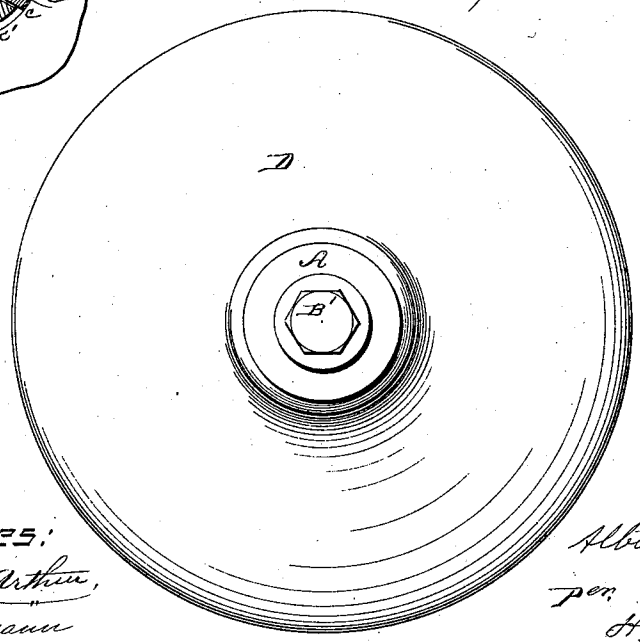



Fig. 2.




Witnesses:
H. C. McArthur,
Chas. Kreusmann

Inventor.
Albert E. Lytle
per
H. Harrison
Attorney.

N. PETERS. Photo-Lithographer, Washington, D. C.

# 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.

## EXPANSION-ARBOR.

SPECIFICATION forming part of Letters Patent No. 301,905, dated July 15, 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 Expansion-Arbors, of which the following is a specification, to wit:

This invention relates to an improvement in expanding-arbors; and it consists in the combination, with a hollow journal, of a series of dogs projecting through the sides of the same, and means of expanding them to clutch the saw or other article, substantially as will be hereinafter more fully set forth, and pointed out in the claims.

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 central vertical section of the device applied to a saw. Fig. 2 is a side view of the same, and Fig. 3 a transverse section of the journal and its clutching-dogs.

A represents a hollow journal or shaft, formed in its center with a series of longitudinal slots, *a*, and having a hole, *a'*, formed longitudinally through each end. Within the hollow journal is placed a movable plug, B, closely fitting the shell, and formed with a series of inclined dovetail grooves, *b*, corresponding in number and location with the slots *a*. The plug B is provided with a screw-threaded hole, *b'*, into which are screwed two rods, B', from opposite ends of the shaft.

C C represent dogs, one of which is placed in each of the slots *a*, and are formed with serrations on their outer faces, as at *c*. The inner sides of the dogs are inclined and formed with a tongue, *c'*, which engages with the grooves *b* in the movable plug B. Two strengthening-disks, D D', are provided, one of which is screwed upon the shaft, and the other may be either screwed upon or formed with the shaft, as may be desired. This device forms an expansion-arbor for saws, grinding-wheels, or other tools, and when placed in position one of the rods B' is loosened and the other tightened, thus drawing the plug B along and expanding the dogs to firmly hold the tool, and dispenses with the ordinary bushing used in such cases. It is applicable to a variety of uses, and may be made of any desired size.

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

1. In an expansion-arbor, a hollow shaft or journal provided with a series of dogs projecting through slots in its sides, in combination with a plug placed within the journal and adapted to expand the dogs as it slides, and means for moving this plug longitudinally, as and for the purpose set forth.

2. In an expanding-arbor, a hollow shell or journal provided with the usual clamping-disks, and formed with slotted sides, through which project movable dogs, in combination with an interior plug, formed with inclines, and suitable screw-rods entering from opposite directions and adapted to move the plug back and forth, substantially as and for the purpose set forth.

3. In an expanding-arbor, the journal or shell A, having slots *a* and holes *a'*, and the clamping-disks D D', in combination with the dogs C, having serrated faces, and a tongue, *c'*, formed on their backs, the plug B, having inclined grooves *b*, and the screw-rods B', all constructed and arranged to operate 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.