A. ALEXANDER.
EXPANSION SHELL REAMER AND ARBOR THEREOF.
APPLICATION FILED JULY 8, 1916.


Inventor
Andrew Alexander

By his Attorneys
To all whom it may concern:

Be it known that I, ANDREW ALEXANDER, a subject of the King of Great Britain, and residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Expansion Shell-Reamers and Arbors Therefor, of which the following is a specification, such as will enable those skilled in the art to which it appertains to make and use the same.

This invention relates to expansion shell reamers and the invention involves an improved method of expanding said reamers together with improved means by which said expansion is accomplished or said method carried into effect.

The invention is fully disclosed in the following specification, of which the accompanying drawing forms a part, in which the separate parts of my improvement are designated by suitable reference characters in each of the views, and in which—

Figure 1 is a side and sectional view of my improvement complete with part of the construction broken away; Fig. 2 a transverse section on the line 2—2 of Fig. 1; Fig. 3 a side view of an improved arbor which I employ with parts connected therewith in extension; and, Fig. 4 a view looking in the direction of the arrow 4 of Fig. 2 and showing only a part of the construction.

In Figs. 1 and 3 of the drawing, I have shown at α an arbor such as usually employed in connection with devices of this class, and one end of which is provided with reduced portions αα, αβ, αγ and αδ, the reduced portions αα and αβ being threaded as clearly shown, and the reduced portions αβ and αγ, αδ and αδ', and αβ and αδ respectively being joined by beveled portions αα', αα', αβ and αδ. Adjustably mounted on the reduced threaded portion αα' is an adjusting sleeve or nut b having in one side thereof an annular beveled recess b1, and mounted on the threaded reduced portion αα' is a lock nut or sleeve c, one side of which is provided with an annular beveled recess c1. Mounted on the reduced portions αβ and αβ' is an expansion shell reamer d of a well known construction and having a plurality of teeth or blade members d2, said reamer d being provided with oppositely arranged longitudinal saw cuts d2 and d2', whereby said reamer may be expanded as will be readily understood and the bore of said reamer is provided with beveled faces d5, d5 and d5 which operate respectively in connection with the beveled portions aα, aβ and aγ on the arbor a, or the reduced portions thereof, and the end portions thereof, the reamer d is provided with external beveled faces d6 and d6 which operate in conjunction with the annular beveled recesses b2 and c2 respectively. The bore of the reamer d is provided between the beveled faces d6 and d6 with a key slot or aperture d6' in connection with which a key αα' mounted on the reduced portion aα of the arbor a as clearly shown in Figs. 1 and 3 operates. With this construction the reamer d may be placed on the reduced portions of the arbor a as above described, and the nut or collar b adjusted to the desired position to govern the extent of the expansion of said reamer after which the lock nut c is operated to force the reamer d against, or in the direction of the nut or collar b in which operation the beveled faces d5, d6 and d6' operate in connection with the beveled portions aα, aβ and aγ to expand the reamer, or the perim-eter thereof, to the desired extent, it being understood that the extent of said expansion is within certain limits and with my improvement it will be seen that the said expansion is uniform, or will be the same throughout the full length of the reamer due to the arrangement of the beveled faces on the arbor, and within the reamer at the ends and centrally thereof.

From the foregoing description it will be seen that the parts aα, aβ, aγ and aδ constitute the operative parts of the arbor in the operation of adjusting and expanding the reamer, the nut or collar b and the nut c and the screw-threaded parts aα and aδ of the arbor being supplemental and constituting the parts whereby the reamer is adjusted on the arbor to effect its expansion.

It will also be understood that my invention is not limited to any specific form of reamer as to the cutting means, or the means for producing or permitting the expansion thereof, and changes therein and modifications of the details of construction herein shown and described may be made, within the scope of the appended claim, without departing from the spirit of my invention or sacrificing its advantages.

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

An apparatus of the class described, com-
prising an arbor provided with reduced cylindrical portions, the outer end portion being smaller than the inner end portion and being connected therewith by a central beveled part, the inner end portion being provided at its inner end with an enlarged bevel and a screw-threaded member on which is mounted a collar provided in its outer face with an annular beveled groove, and the outer end portion of the arbor being provided at its outer end with a reduced bevel and a screw-threaded extension on which is mounted a nut provided in its inner face with an annular groove the wall of which is beveled, in combination with an expansion reamer adapted to be mounted on the reduced cylindrical parts of the arbor and the bore of which is of different diameters to correspond with the different diameters of the reduced cylindrical portions of the arbor and the central part and ends of said bore being beveled to correspond with the beveled parts at the inner and outer ends of said portions of the arbor and centrally thereof, and the end portions of said reamer being also beveled to correspond with the annular beveled grooves in said collar and nut.

In testimony that I claim the foregoing as my invention I have signed my name in presence of the subscribing witnesses this 6th day of July 1916.

ANDREW ALEXANDER.

Witnesses:
C. E. Mulreany,
H. E. Thompson.