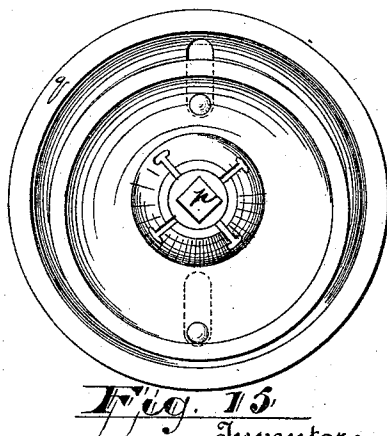
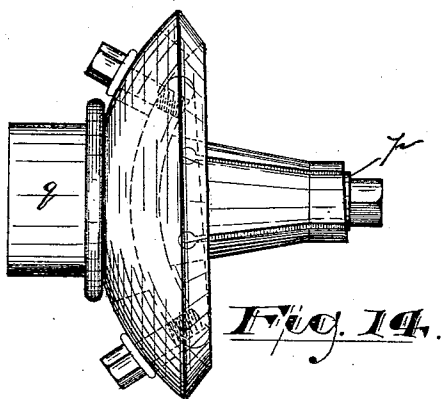
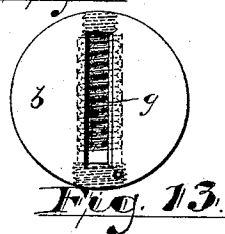
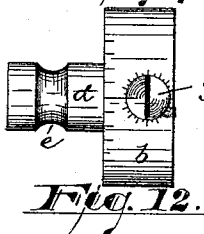
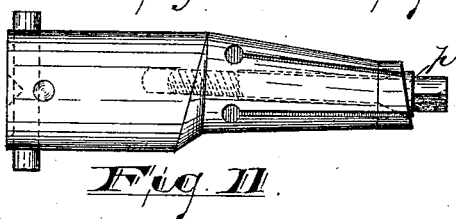
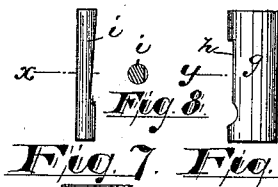
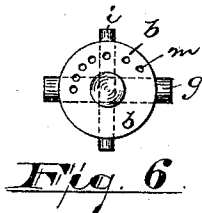
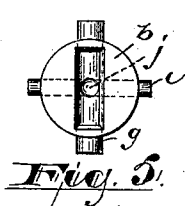
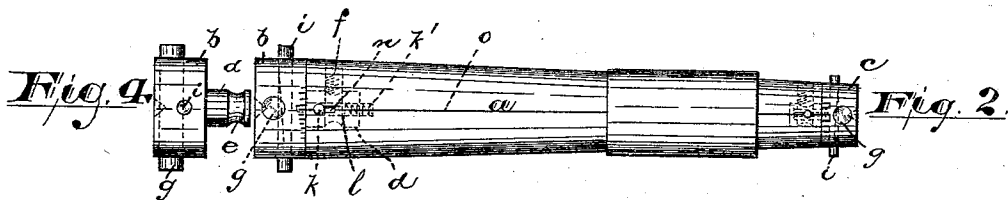
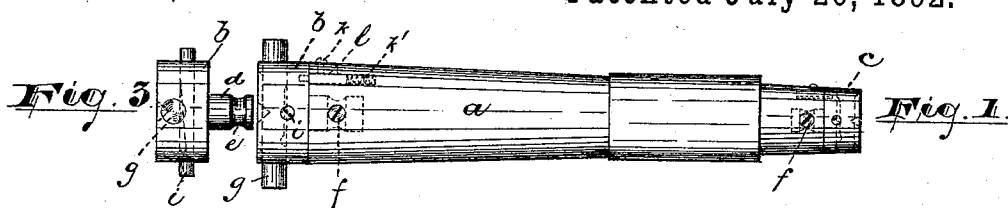


(No Model.)

W. O. DIXON.
MANDREL.

No. 479,634.

Patented July 26, 1892.



Witnesses

Oscar A. Michel.
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By Drake & Co. Attys.

UNITED STATES PATENT OFFICE.

WILLIAM O. DIXON, OF NEWARK, NEW JERSEY.

MANDREL.

SPECIFICATION forming part of Letters Patent No. 479,634, dated July 26, 1892.

Application filed February 6, 1892. Serial No. 420,574. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM O. DIXON, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Mandrels; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

The object of this invention is to facilitate the operation of turning irregular rings for cams, eccentrics, and other purposes; and it consists in the improved mandrel and in the arrangements and combinations of parts, substantially as will be hereinafter set forth, and finally be embodied in the clauses of the claim.

Referring to the accompanying drawings, in which like letters indicate corresponding parts in each of the several figures, Figure 1 is a view of the mandrel complete arranged in connection with suitable centers. Fig. 2 is another view of the same turned one-quarter of a revolution. Figs. 3 and 4 are detail views of one of the end pieces detached from the body of the mandrel. Figs. 5 and 6 are end views of the larger end piece. Fig. 7 is a side view of a certain key, and Fig. 8 is a section of the same on line *x*. Fig. 9 is a side view of an adjustable bearing, and Fig. 10 is a section of the same on line *y*. Figs. 11, 14, and 15 illustrate modified mandrels, and Figs. 12 and 13 modified end pieces.

In said drawings, *a* indicates a tapering mandrel having at its opposite ends adjustable end pieces *b c*, providing movable centers to receive the live and dead centers of the lathe. The said end pieces consist of integral metallic pieces having shanks *d*, adapted to enter recesses formed in the axial centers of the mandrel, as indicated in one line in Figs. 1 and 2, the said shanks being recessed or grooved, as at *e*, to receive a set-screw *f*, by means of which the end piece is firmly held in position. The outer ends of the end pieces are transversely slotted and bored, as indicated in Fig. 5, to receive a sliding center-bearing *g*, which is preferably provided with a flat key-bearing *h*, Figs. 9 and 10, against

which a wedge-like key *i* may be forced to hold said sliding center-bearing in position in the end piece. The said key also is arranged in a transverse boring in the end piece at right angles to the sliding bearing. On the opposite side of the sliding bearing from the key-seat the former is provided with a center recess *j* to receive the points of the lathe center.

To prevent the end pieces from turning on the shanks from proper position under the strain in the turning processes, I have provided an eccentric-catch *k*. (Shown more clearly in Fig. 1, where the mandrel is shown to be provided with a longitudinal boring, in which first a spring *k'* and then a sliding bar *l* is placed, the said bar being adapted to project from the end of the mandrel into one of a series of notches or recesses *m*, Fig. 6.)

The operation of the bar is controlled by a finger-piece, which works in a slot *n*, as shown in Fig. 2.

On the periphery of the mandrel is a longitudinal line *o*, extending from one end piece to the other, which serves as a gage by which to properly adjust the ring or other work on the mandrel. This coincides with other lines on the end piece which correspond with the centers of the sliding center-bearings, as will be understood upon reference to Fig. 2. The adjustable end pieces are provided with a series of graduation-marks, which are adapted to register with the line *o* of the mandrel, and thus the desired degree of eccentricity of the ring is secured with facility.

By changing the positions of the sliding bearings and throwing the notch or recess *j* for the lathe-centers out of the axial center of the mandrel an eccentric movement is given to the mandrel, by means of which the rings to be turned are given the desired irregularity or eccentricity of shape.

It is very evident that various modifications of the principles of construction may be employed without departing from the spirit or scope of the invention, and I have in the drawings shown some modifications of practical value; but others can be made with good effect.

In Fig. 11 I have shown a construction in which the adjustable center-bearing is formed at one end only of the mandrel, the opposite

end being made eccentric by the construction of the mandrel and provided with a center formed in the head of the expanding-screw *p*. The ring to be turned is placed on the split 5 end of the eccentric taper and the split ends are forced outward to firmly hold the ring in place, as will be understood.

In Figs. 12 and 13 another variety is shown to consist of a threaded screw, the threads of 10 which serve to receive lathe-centers. By simply turning the screw in its bearings micrometer adjustments are secured. In Figs. 14 and 15 still another variety is shown in which a head *q* is chucked upon the lathe. This is 15 provided with concave quadrant-bearings, in which the mandrel is made eccentrically adjustable by means of bolts or set-screws and slots formed in a coincident quadrant.

Having thus described my invention, what 20 I claim as new, and desire to secure by Letters Patent of the United States, is—

1. The improved mandrel for turning eccentric-rings, which consists in a tapering mandrel having at its opposite ends rotatively- 25 adjustable end centers for the lathe, substantially as set forth.

2. The improved mandrel consisting of a tapering body portion provided at the opposite ends with laterally-sliding end centers for 30 the lathe, arranged in rotatively-adjustable end pieces, said end pieces, and means for holding the same, substantially as set forth.

3. In combination with the tapering mandrel, end pieces arranged at opposite ends of said mandrel and rotatively adjustable in relation to the said mandrel, and transverse center-bearings arranged in passages in said end 35 pieces, a wedge or key for holding said center-bearings in place, and means for holding the rotative end pieces in fixed relation to the 40 mandrel, substantially as set forth.

4. In combination with the mandrel, an end piece having a shank adapted to be set or secured in said mandrel and a transverse sliding center-bearing to receive the lathe-center, 45 substantially as set forth.

5. In combination with the mandrel, an end piece rotatively adjustable in its relation to said mandrel, a catch to hold said end piece as adjusted, a sliding center-bearing, and a 50 key for holding said sliding center-bearing, substantially as set forth.

6. In combination with the mandrel, an end piece rotatively adjustable in its relation to the mandrel and a center-bearing piece ad- 55 justable in its relation to said end piece, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 12th day of January, 1892.

WILLIAM O. DIXON.

Witnesses:

CHARLES H. PELL,
OSCAR A. MICHEL.