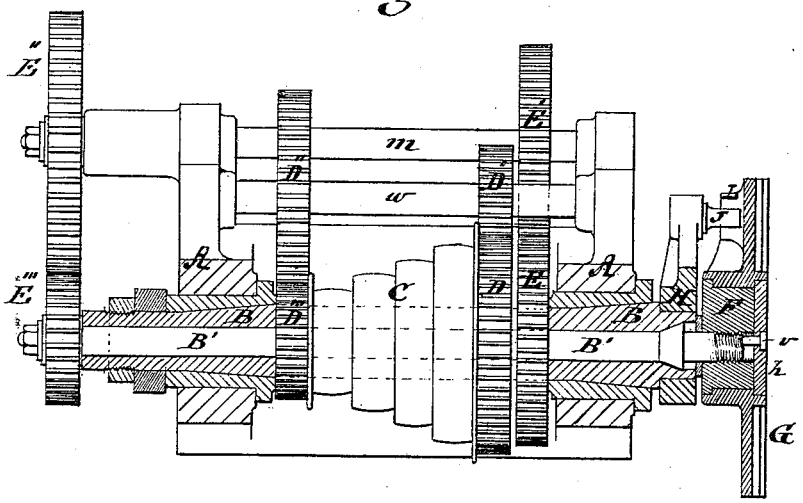
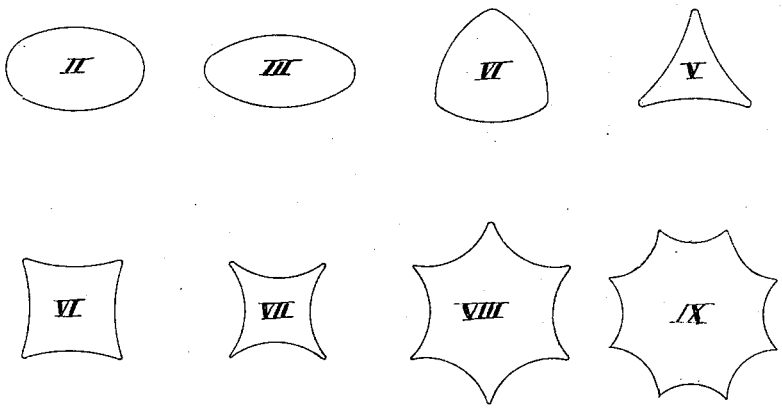
R. KOCH & H. MÜLLER.

Universal Turning-Lathe.

No. 167,614. Patented Sept. 14, 1875.

Fig. I.





Witnesses.

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UNITED STATES PATENT OFFICE.

RICHARD KOCH AND HERMANN MÜLLER, OF DORTMUND, PRUSSIA.

IMPROVEMENT IN UNIVERSAL TURNING-LATHES.

Specification forming part of Letters Patent No. **167,614**, dated September 14, 1875; application filed March 12, 1875.

To all whom it may concern:

Be it known that we, RICHARD KOCH and HERMANN MÜLLER, both of the city of Dortmund, in Prussia, have invented an Improvement in Universal Turning-Lathes, of which the following is a description:

In the accompanying drawing, Figure I represents a top view of the head-stock and gearing.

The head-stock A is provided with two mandrels, B B′, the latter situated and turning inside the first. C is the cone-pulley, provided with a wheel, D, placed loose upon the mandrel B. The wheel D gears into a wheel, D′, fast to a shaft, *w*, upon which, likewise, a wheel, D″, is fastened, gearing into the pinion D‴, fast on the mandrel B, and constructed in the usual manner, to diminish the number of revolutions of said mandrel B, as may be desired. Upon the mandrel B a wheel, E, is fastened, gearing into a similar wheel, E′, attached to a shaft, *m*. The wheels E and E′ are both of the same diameter. Upon the end of the shaft *m* a wheel, E″, is fastened, gearing into a wheel, E‴, fastened upon the after end of the interior mandrel B′. By changing the sizes of the wheels E″ and E‴ the number of revolutions of this interior mandrel B′ may be increased or diminished. Upon the forward end of the interior mandrel B′ an eccentric, F, is fixed, upon which the face-plate G is placed, capable of turning freely on said eccentric F, and held in its position by the washer *h*, secured to the end of the eccentric by the screw *v*. Upon the forward end of the exterior mandrel B an arm, H, is firmly attached, connected by means of a suitable rod with the face-plate G, or provided with a projection, J, acting against a suitable projection, L, on the bank of said face-plate, for the purpose of communicating motion to the same.

The work to be turned is fastened to the face-plate G in the usual manner. The wheel E‴, as represented in the drawing, is one-half the diameter of the wheel E″; consequently, the mandrel B′, with the eccentric F, makes two revolutions, while the mandrel B with its arm H, and consequently the face-plate G, makes one revolution. The form or shape of the turned work will therefore be similar to the designs shown at Figs. II and III, according to the size of the eccentric disk F.

By changing the wheels E″ and E‴ for wheels of different proportions, forms similar to those represented at Figs. IV, V, VI, VII, VIII, or IX can be obtained.

The chief difference between our lathe and others, as made at present, consists in the application of two mandrels, B and B′, revolving at different velocities, the first giving the rotating motion to the work to be turned, and the latter moving the work in a different manner to and from the turning-chisel.

What we claim as our invention, and desire to secure by Letters Patent, is—

A head-stock, A, with two mandrels, B and B′, having a common center, in combination with the wheels E E′, shaft *m*, wheels E″ and E‴, eccentric F, face-plate G, and arm H, connected with said face-plate, the whole being arranged and operating together in the manner and for the purpose substantially as herein described.

RICHARD KOCH.
HERMANN MÜLLER.

Attest:
HEINRICH TULBROCK,
FERDINAND PROHMANN.