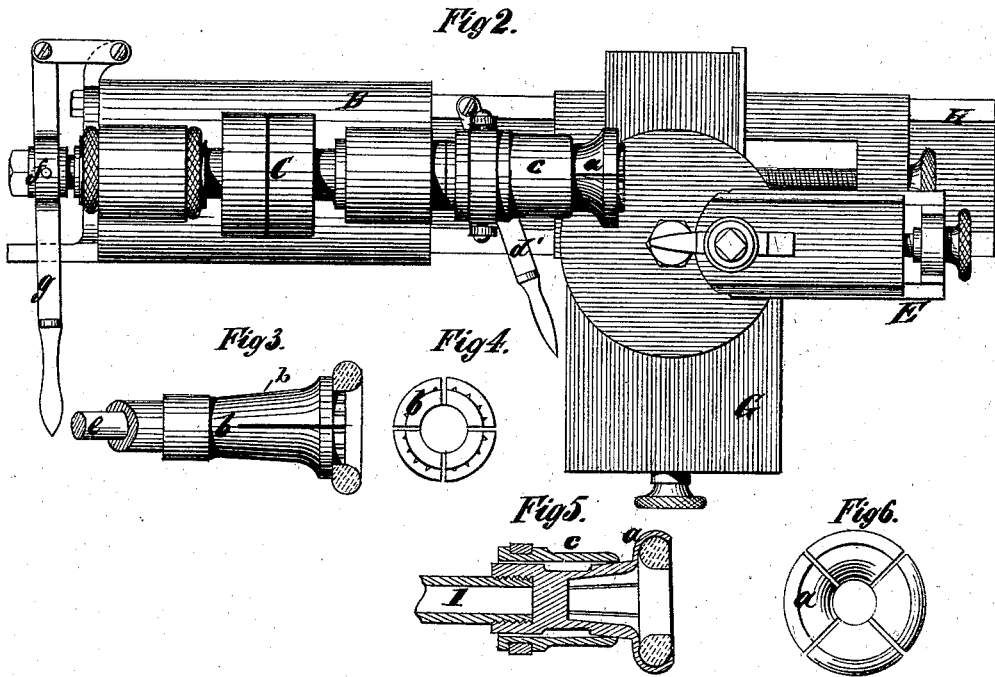
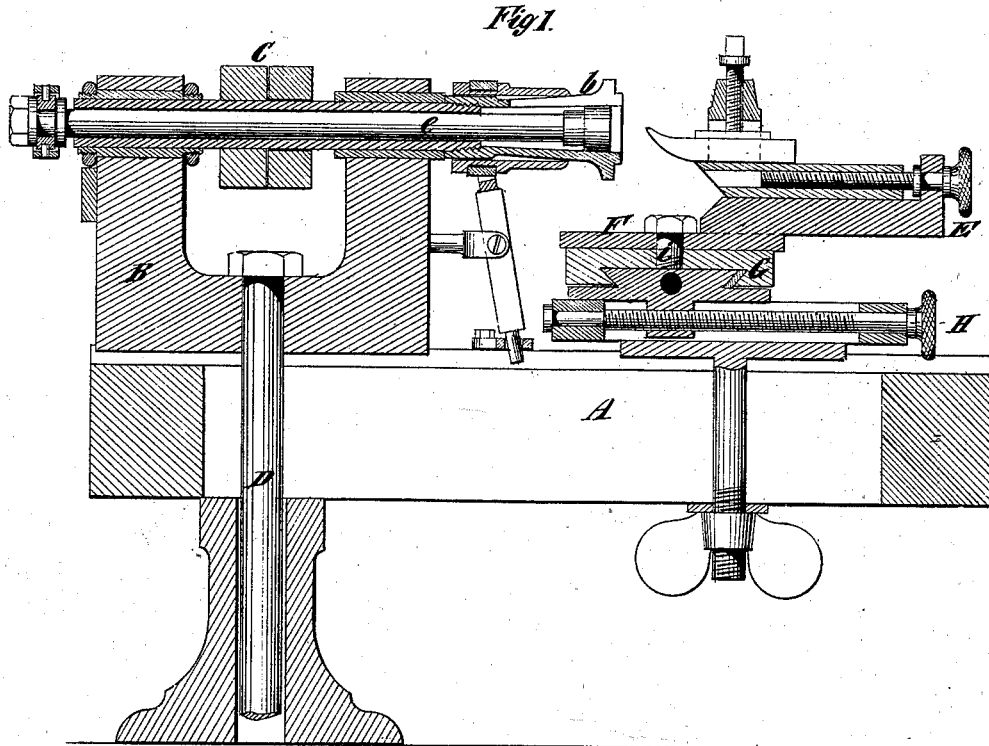


T. KAYS & W. H. HALSEY.
 Lathe for Turning Rings of Celluloid and
 Other Material.
 No. 214,665. Patented April 22, 1879.



Witnesses:
 Ernest C. Wood
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UNITED STATES PATENT OFFICE

THOMAS KAYS, OF NEWTON, AND WILLIAM H. HALSEY, OF NEWARK, NEW JERSEY, ASSIGNORS TO THE RUBBER AND CELLULOID HARNESS TRIMMING COMPANY.

IMPROVEMENT IN LATHES FOR TURNING RINGS OF CELLULOID AND OTHER MATERIALS.

Specification forming part of Letters Patent No. 214,665, dated April 22, 1879; application filed December 31, 1878.

To all whom it may concern:

Be it known that we, THOMAS KAYS, of Newton, in the county of Essex and State of New Jersey, and WILLIAM H. HALSEY, of Newark, in the county of Essex and State of New Jersey, have invented a new and Improved Lathe for Turning Rings of Celluloid and other Material, of which the following specification is a description.

The said invention has for its object the construction of a lathe for turning and trimming composition rings, (principally celluloid rings;) and the invention consists, first, of a novel arrangement, adjustment, and operation of the cutter, cutter-holder, swiveled table, and guide-rests, whereby the cutter can be fixed or adjusted to operate within a given radius, and to obviate the necessity of readjusting the tool for the second operation of cutting or turning the partially-completed ring, so as to form a true smooth ring; second, of a pair of spring-chucks of novel construction and operation, and a hollow spindle, and an adjustable rod which can be inserted through the hollow spindle for the purpose of expanding and contracting one of the said chucks, and an independent movable sleeve for contracting and expanding the other chuck; third, of a peculiar arrangement of levers for expanding and contracting the chucks by means of the adjustable rod in one case and the independent movable sleeve in the other, and in various other features of improvement, all as will be hereinafter more fully described.

In the accompanying drawings, Figure 1 is a central longitudinal section of our improved lathe; Fig. 2, a plan view. Fig. 3 is a side view of one form of chuck, and Fig. 4 a face view thereof. Fig. 5 is a longitudinal section of another form of chuck, and Fig. 6 a face view thereof.

Similar letters of reference indicate corresponding parts in all the figures.

The letters A, B, C, and D represent in the drawings the various parts of a lathe of the usual construction. E designates the cutter-holder and cutter; F, the swiveled table; G, the lateral guide-rest, and H the longitudinal guide-rest, of our improved lathe. *a* designates one form of our improved chuck, and *b*

the other.

The parts E, F, G, and H form a combination of four distinct movements in one tool—to wit, the forward and backward movement of cutter E, the revolving or circular movement of the swivel-table F, carrying with it the cutter and cutter-holder E, the lateral movement of the guide-rest G, carrying with it the parts E and F, and the longitudinal movement of the guide-rest H, carrying with it the parts E, F, and G, all as will be hereinafter more fully described.

The chuck *b* is a hollow split spring-chuck, slightly tapered on the inside, and provided with a row of teeth on its outer end, and constructed so as to impinge on the inner surface of the ring or blank to be turned, and a rod, *e*, being forced in on the taper by means of a lever, *g*, the chuck *b* is expanded, so as to firmly hold the ring or blank in position while being turned.

The chuck *a*, which is firmly secured to a spindle, I, by being screwed on the same, is a hollow split spring-chuck, slightly tapered on the outside, and constructed so as to grasp the outer surface of the partially-turned ring by means of the independent movable sleeve *c*, which is forced forward on the taper of the chuck *a* by means of the lever *d*, thereby contracting the chuck *a*, so as to firmly grasp and hold the partially-turned ring while making the finishing or second cut.

The rod *e* is provided with an adjustable plug or head larger in diameter than the rod, which is forced into the chuck *b*, thereby expanding the same, so as to force the teeth into the ring and firmly hold the same in position.

The sleeve *c* is secured to a collar of suitable form, and is moved to contract or expand the chuck *a* by means of the lever *d*.

The operation of our improved lathe is as follows: The rod *e* is inserted through the spindle I, one end being inserted in and secured to the yoke *f* on the lever *g*. The chuck *b* is then slipped over the other end, and the head screwed on. A roughly-shaped ring or blank of material is then adjusted on the chuck, and the lever *g* moved to the left until the plug or head ex-

pands the chuck enough to firmly hold the ring in position while the machine is in operation. The operator then adjusts the cutter to the desired position by means of the cutter-holder E, lateral guide-rest G, and longitudinal guide-rest H, and power is applied in the usual way. The cutter-holder is then moved by the operator by means of the swiveled table F, and describes an arc of three-fourths of a circle from *i* as a center. Thus by means of the chuck *b* three-fourths of the ring is turned. After a suitable or any desired number of rings have thus been partly turned, the lever *g* is moved to the right, the end attached to the collar or yoke *f* is detached, the head unscrewed, the chuck *b* removed from the rod *e*, and the rod *e* withdrawn from the spindle I. Then the chuck *a* is passed through the sleeve *c* and screwed on the spindle I. The partially-turned rings are adjusted one after another on the chuck *a*, which receives the part that has been turned by the chuck *b*, and exposes to the action of the cutter the one-fourth of the surface of the ring which remains to be turned. The lever *d'* is then moved to the left, throwing the sleeve *c* forward on the taper of the chuck until the chuck is contracted, so that it will firmly grasp and hold the rings in position. Power is then applied and the operation continued without any readjustment of the cutting-tool. Thus, by the combination of four distinct movements in one cutter or cutting-tool, it will, when once adjusted, move within the same radius, and thereby will neither overcut or undercut when it is desired to turn that portion of the surface exposed to the action of the cutter by the chuck *a*; but on the other hand, no matter what the excess of material may be, the cutter will describe precisely the same circle as before, and will cut the surface of the ring to correspond exactly with the surface cut by the first operation, when the ring is held by the chuck *b*, and will thus turn a perfectly true smooth ring in less time, with less waste of material and with less labor than could heretofore be done by any lathe in use before our said invention.

We claim as our invention and desire to secure by Letters Patent—

1. In a lathe for turning celluloid or other rings, the cutter or cutting-tool capable of having four distinct movements for adjusting the same, substantially as specified.

2. In a lathe for turning celluloid or other rings, the combination, with the cutter-holder and cutter, of a swiveled table, a lateral guide-rest and longitudinal guide-rest, substantially as and for the purposes specified.

3. The adjustable hollow spring-chuck *a*, for holding the rings to be turned in position by grasping the outer surface of the ring and exposing to the action of the cutter about one-fourth of the surface of the ring, substantially as specified.

4. The adjustable hollow spring-chuck *b*, for holding the rings to be turned in position by impinging on the inner surface of the ring and exposing to the action of the cutter about three-fourths of surface of the ring, substantially as specified.

5. The hollow spindle I, substantially as and for the uses and purposes described.

6. The combination, with the chuck *a*, of the movable sleeve *c* and lever *d'*, substantially for the purpose specified.

7. The combination, with the chuck *b*, of the rod *e*, having an adjustable head larger than the diameter of the rod, the lever *g*, and yoke or collar *f*, substantially for the purposes specified.

8. In a lathe for turning celluloid and other rings, the combination, with the parts A, B, C, and D, of the cutter-holder and cutter E, the swiveled table F, lateral guide-rest G, and the longitudinal guide-rest H, and of the chuck *a*, having the movable sleeve *c* and lever *d'*, the chuck *b*, having the rod *e*, lever *g*, and yoke or collar *f*, and of the hollow spindle I, substantially as and for the uses and purposes specified.

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Witnesses:

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