

No. 742,599.

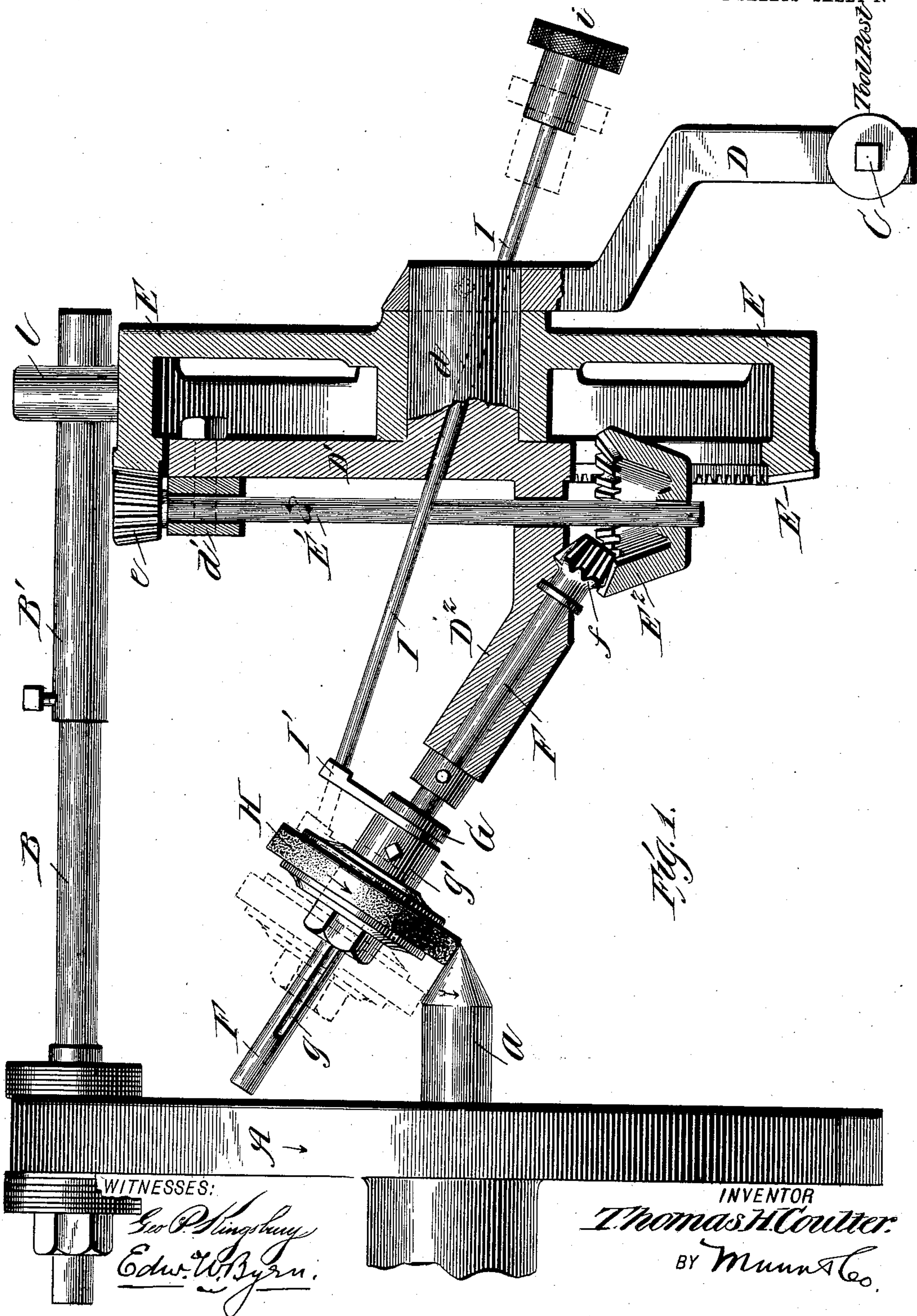
PATENTED OCT. 27, 1903.

T. H. COULTER.
CENTER GRINDER FOR LATHES.

APPLICATION FILED DEC. 20, 1902. RENEWED SEPT. 3, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



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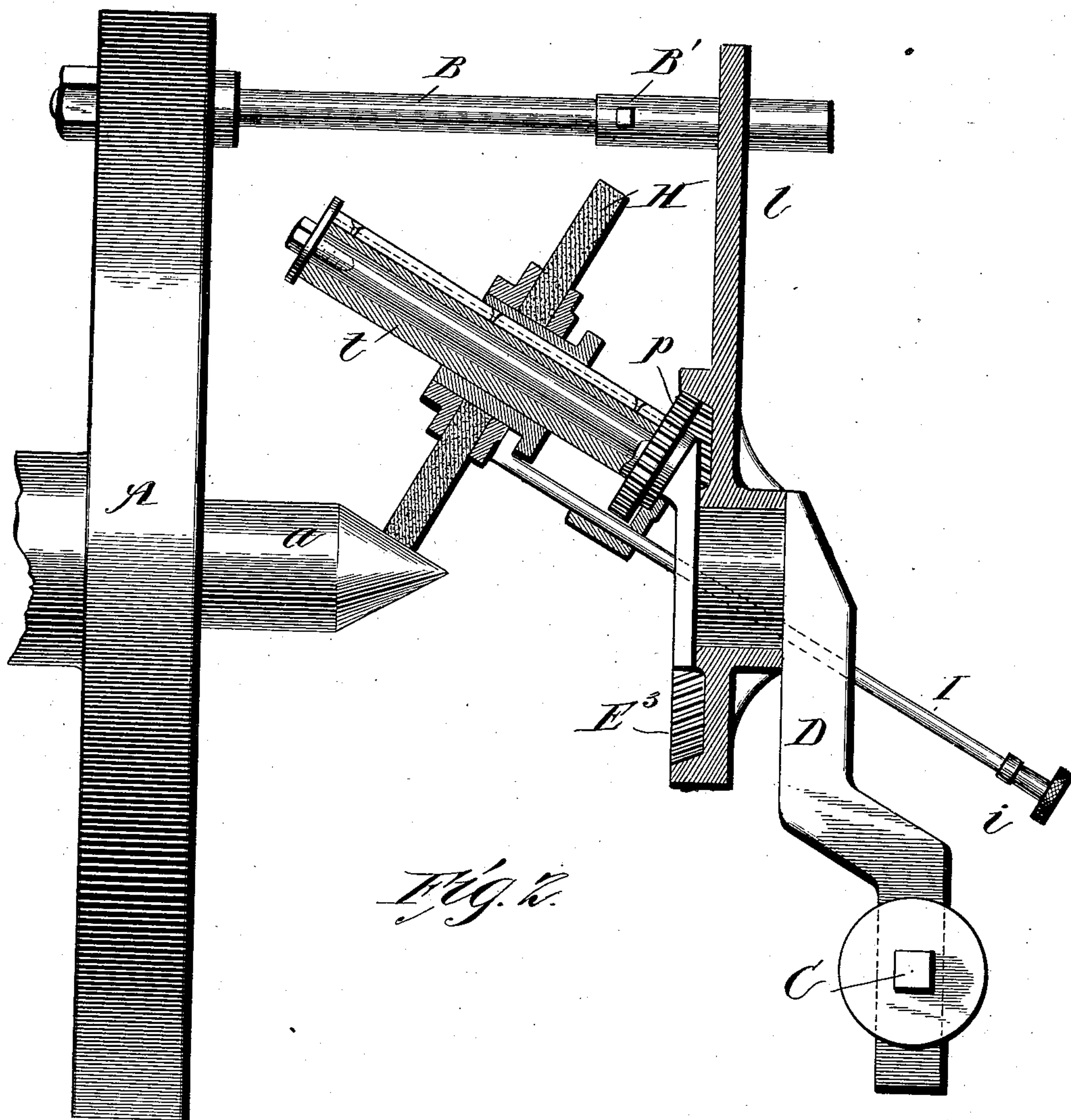
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2 SHEETS—SHEET 2.



WITNESSES:

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UNITED STATES PATENT OFFICE.

THOMAS H. COULTER, OF BROOKLYN, OHIO, ASSIGNOR OF ONE-HALF TO
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CENTER-GRINDER FOR LATHES.

SPECIFICATION forming part of Letters Patent No. 742,599, dated October 27, 1903.

Application filed December 20, 1902. Renewed September 3, 1903. Serial No. 171,783. (No model.)

To all whom it may concern:

Be it known that I, THOMAS H. COULTER, of Brooklyn, in the county of Cuyahoga and State of Ohio, have invented a new and useful
5 Improvement in Center-Grinders for Lathes, of which the following is a specification.

My invention relates to that class of lathe attachments which are used for regrinding the small cone projecting from the center of
10 the face-plate of a lathe and commonly known as "centers," being the point upon which the work is held while being turned in the lathe. These centers from wear and other causes become in time untrue, so that the apex of
15 the cone is no longer in the true longitudinal axis of the lathe, and they have to be reground to correct this defect. Devices for doing this work have heretofore been provided which comprehend an emery-wheel mounted upon a
20 suitable frame supported upon the tool-post and having an adjustment that allows it to be laterally moved in a line parallel with the sides of the conical center, said emery-wheel being connected to and driven by gears that
25 are actuated by arms projecting from the face-plate. My invention comprehends these general features, but provides a very simple and convenient construction which is easily and quickly applied to any lathe and is so organized as to get a high speed and an effective
30 grinding action, as will be hereinafter fully described with reference to the drawings, in which—

Figure 1 is a sectional view of my center-grinder shown applied to a lathe, and Fig. 2 is a similar view of a modification.

In the drawings, A represents the face-plate of the lathe, having the conical center *a* which is to be reground.

40 B is a detachable arm rigidly connected to the face-plate, so as to project at right angles to the same or in a direction parallel with the axis of revolution from a point near the outer circumference of the face-plate.

45 C is the tool-post of the lathe, upon which my attachment is to be supported.

D is a stout bracket-arm firmly clamped to and supported by the tool-post and having a wrist portion *d*, upon which is mounted to rotate a crown-wheel E, whose ring of teeth are

arranged upon the side of the wheel next to the face-plate of the lathe. On the same side of the wheel E bearing the crown-teeth is arranged a stationary frame *D' D²*, rigidly fixed to the wrist *d* of bracket-arm D and
55 supported thereby. One member, *D'*, of this frame lies in the plane of the wheel E and parallel with the same and the other projects in toward the face-plate at an oblique
60 angle.

E' is a shaft arranged parallel to the plane of the wheel E and journaled in a bearing in the inner end of arm *D²* of the stationary frame and also in a lug *d'*, projecting from the arm *D'* of the said frame at a point near
65 the outer periphery of the wheel E. This shaft E' has rigidly keyed upon its outer end a pinion *e*, that meshes with and derives motion from the crown-teeth of wheel E, and at its inner end, beyond the arm *D²*, has a cup-
70 shaped bevel-wheel E², with teeth on the inner surface of the same. With this cup-shaped bevel-wheel there meshes a bevel-pin-
75 ion *f*, rigidly keyed to a shaft F, which extends obliquely to the axis of wheel E and is journaled in a bearing in the obliquely-projecting arm *D²* of the stationary frame. This shaft F projects beyond the inner end of arm *D²* of the frame and carries a loose hub G,
80 on which is rigidly clamped an emery-wheel H. This hub G is mounted on the shaft F, so as to slide thereon, but rotate with it, this being effected by a pin *g'* in the hub entering a longitudinal groove *g* in the shaft F or by
85 other equivalent connection, such as a square shaft or a feather and groove. The hub G has a circular groove around it which is embraced by a fork I' on an adjusting-rod I,
90 which extends through the arm *D'* of the stationary frame and also through the wrist *d* of the supporting-arm D. This rod I is provided on its outer end with a knob or handle
95 *i*, by which the shaft is pushed in and out to cause the emery-wheel H to travel along the end of shaft F. The shaft F sets at an angle to the axis of the rotation of the face-plate of the lathe corresponding to the taper of the cone-face of the lathe-center *a*.

On the outer circumference of the wheel E is rigidly fixed a projecting pin or lug *l*, which

100

extends radially outward and is directly in the path of the rigid arm B projecting from the face-plate of the lathe.

The operation of the parts is as follows:

- 5 When the face-plate of the lathe rotates, its single rigid arm B strikes the lug or pin l on the wheel E and causes the same to rotate. The large circle of crown-teeth of said wheel meshing with the relatively small pinion e
- 10 imparts rapid rotation to shaft E' in its stationary bearings, and this speed is further augmented as it is transmitted to shaft F by the relative size of bevel-gears E^2 and f , E^2 being larger than f . This gives a high speed
- 15 to the shaft F and to the emery-wheel carried by it, and by adjusting the rod I in or out the emery-wheel is made to traverse the side of the cone of the lathe-center a and grind it with a rapid and true action to a correct con-
- 20 tour. The direction of rotation given by the gears to the wheel H is such that wheel H rotates at the grinding-point in a direction reverse to the direction of rotation of the center a , which gives a greatly-increased effi-
- 25 ciency for the grinding action.

It will be seen that my grinder requires only one arm B for actuating it from the face-plate, and this arm has a telescopic section B' , which permits said arm to be extended to suit the

30 position of the grinding attachment. To accommodate the grinder to various tapers of the center a , the supporting-arm D is simply turned upon the tool-post C to the proper angle, the slight variation in the angle at which

35 arm B strikes the pin l making no practical difference in the working of the attachment.

It will be seen that in my attachment all of the driving-gears are positive toothed gears, and all are arranged on one side of the crown-

40 wheel E and between it and the emery-wheel, which gives a most direct, simple, and positively-acting mechanism.

As a modification I may dispense with some of the gear-wheels and drive the emery-wheel

45 by a sleeve t , having a small pinion p on its end engaging directly with bevel-teeth on a main drive-wheel E^3 , as shown in Fig. 2. This is a simpler arrangement, but does not give so high a speed for the emery-wheel; but by making

50 the emery-wheel of larger diameter and causing it to move at the grinding-point in opposition to the direction of the center, as shown, good results may be obtained. As in the former case the gears are all positive toothed

55 gears and are all arranged on one side of the main gear-wheel and between it and the emery-wheel.

Instead of driving the center-guide from an arm projecting from the face-plate of the

60 lathe I may drive my device in the same manner in which a taper shaft is driven.

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

- 65 1. A center-grinding attachment for lathes,

comprising a main toothed gear-wheel having a tappet lug or pin on its periphery, means for supporting the said wheel, an emery-wheel with shaft, a stationary frame for holding the shaft of the emery-wheel at an oblique angle

70 to the axis of the main drive-wheel, and an intermediate toothed transmitting-gear arranged exclusively on one side of the main driving-gear and between it and the emery-wheel and forming a positively-acting driv-

75 ing mechanism, said main driving-gear being arranged to be rotated by a tappet-arm from the face-plate of the lathe substantially as described.

2. A center-grinding attachment for lathes,
- 80 comprising a main toothed wheel, a wrist for rotarily supporting said wheel, said wrist having a rigid bracket-arm projecting on one side of the main wheel for connection with
- 85 and support by the tool-post of the lathe, and said wrist having on the other side of the main wheel a stationary framework, and an emery-wheel and toothed gears mounted on
- 90 said framework on the same side of the main wheel and forming a positive driving mechanism between the main gear and the emery-wheel substantially as described.

3. A center-grinding attachment for lathes,
- 85 comprising a main toothed wheel, a wrist for rotarily supporting said wheel, said wrist
- 95 having an oblique channel-way through the same and a rigid supporting-arm on one side of the toothed wheel and a rigid stationary frame on the other side of said wheel, an emery-wheel and toothed gears both arranged
- 100 on the inner side of the main gear, and a sliding adjusting-rod for the emery-wheel extending through the wrist-axis of the main gear-wheel substantially as described.

4. A center-grinding attachment for a lathe
- 105 consisting of a supporting-frame, a crown-wheel having teeth on the inner side, and an emery-wheel and intermediate gears directly and positively connecting the emery-wheel
- 110 to the crown-wheel, said crown-wheel being provided with a projection adapted to be operated by a tappet action from the face-plate of the lathe substantially as described.

5. A center-grinding attachment for a lathe,
- 115 consisting of a stationary and rigid frame, a main toothed gear having a projection from its periphery extending outwardly from the center, an emery-wheel and toothed gears
- 120 positively connecting the emery-wheel directly to the main toothed gear and lying between the two, and a single tappet-arm for transmitting the power of the face-plate of the lathe to the grinder, the plane of the main gear-wheel and position of the entire rigid
- 125 frame being made adjustable to various angles to the tappet-arm substantially as and for the purpose described.

6. A center-grinding attachment for a lathe,
- 130 consisting of a stationary frame, a main toothed gear-wheel having teeth on the side

of the same and a projection from its outer periphery, a shaft arranged parallel to the plane of said main gear and having a pinion on its outer end meshing with its teeth and
5 an internal bevel-gear on its inner end, an oblique shaft having a bevel-gear on its inner end meshing with internal bevel-gear, and an adjustable emery-wheel mounted on the said shaft, all being arranged on the same side of the main gear as described. 10

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Witnesses:

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