No. 680,845. Patented Aug. 20, 1901.

H. DOCK.

CENTER GRINDER ATTACHMENT FOR LATHES.

(Application filed Mar. 15, 1901.)

(No Model.) 2 Sheets—Sheet 1.

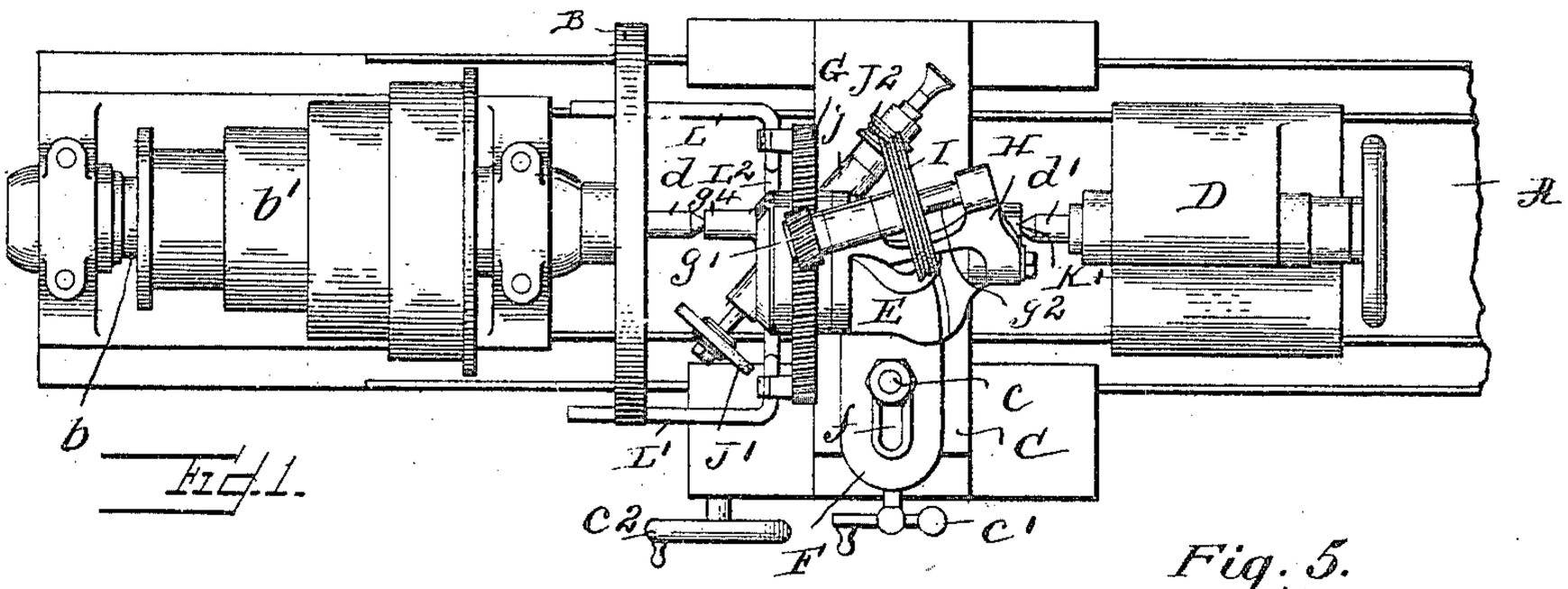

Fig. 1.

Fig. 5.

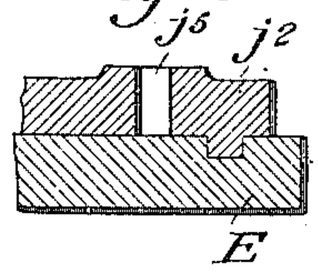

Fig. 2.

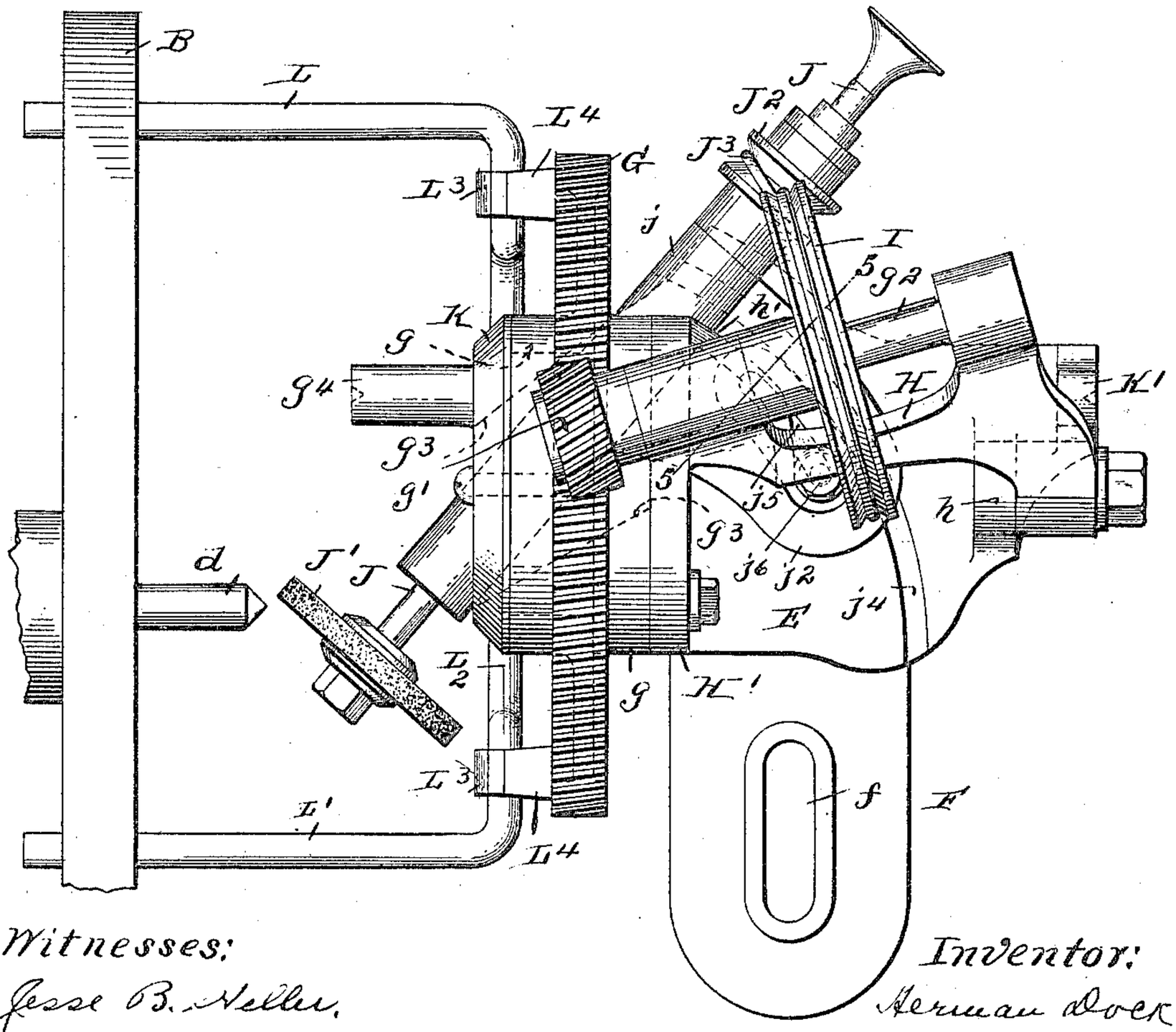

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Fig. 3.

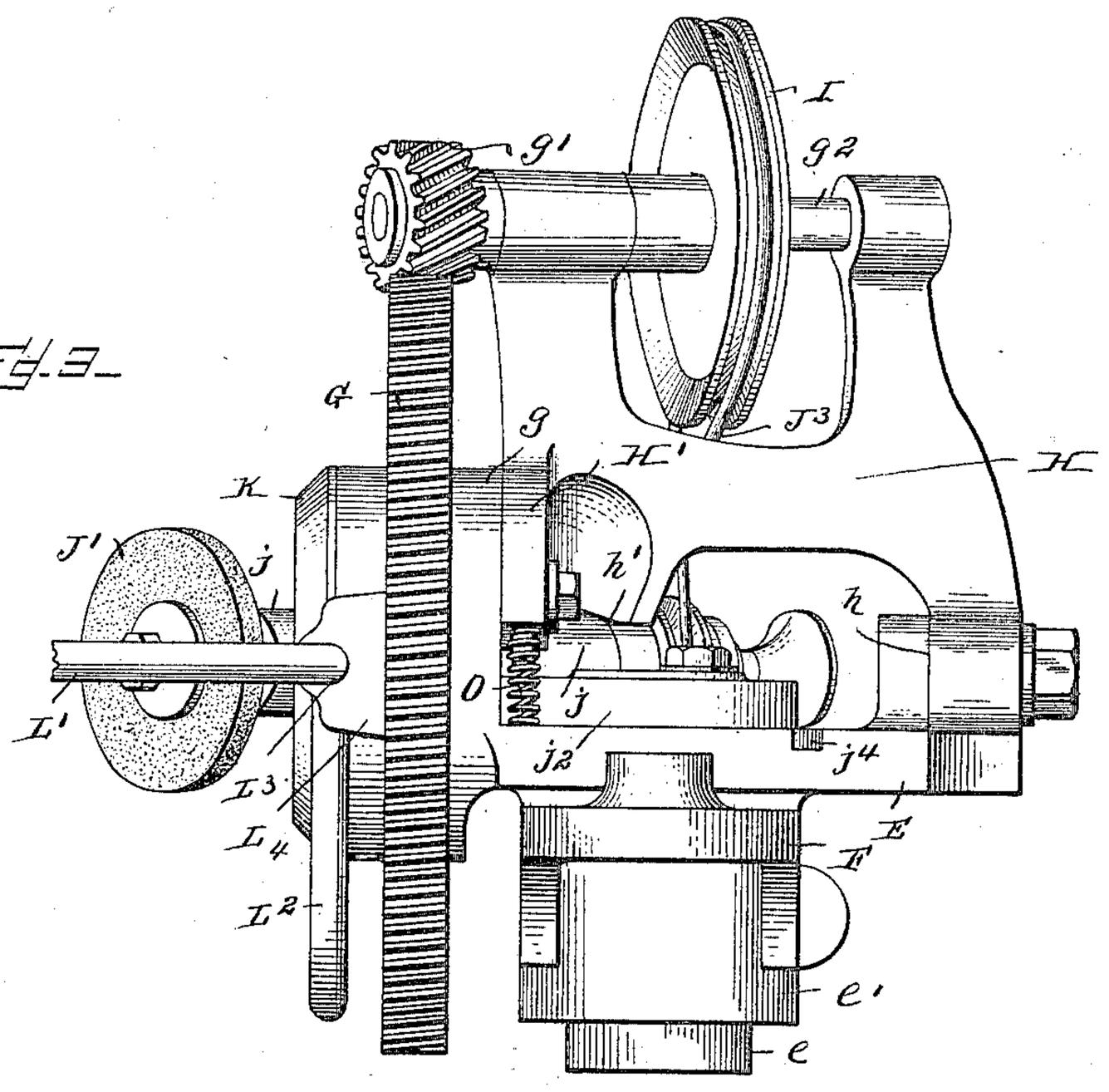
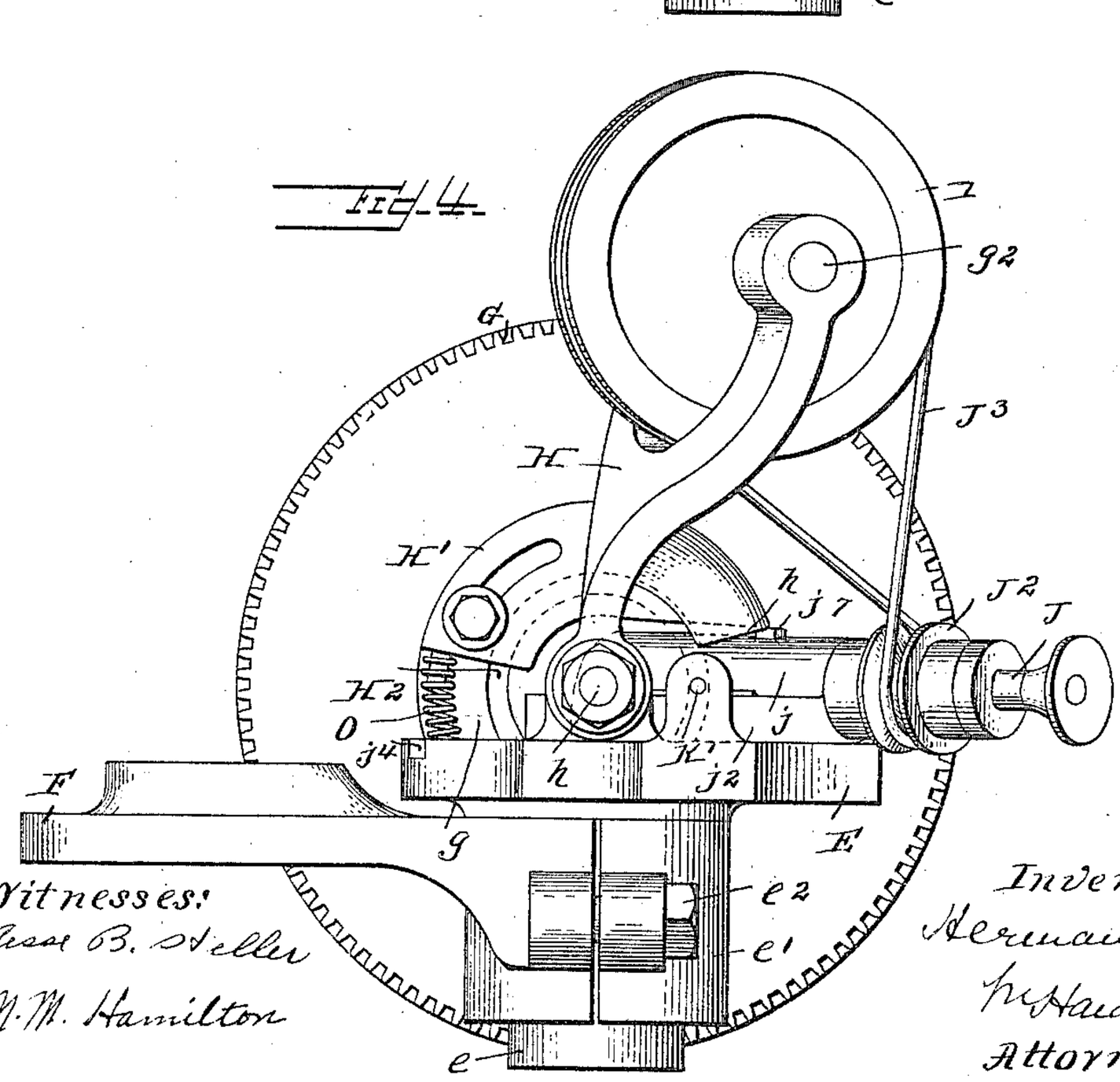


Fig. 4.



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UNITED STATES PATENT OFFICE.

HERMAN DOCK, OF PHILADELPHIA, PENNSYLVANIA.

CENTER-GRINDER ATTACHMENT FOR LATHES.

SPECIFICATION forming part of Letters Patent No. 680,845, dated August 20, 1901.

Application filed March 15, 1901. Serial No. 51,279. (No model.)

To all whom it may concern:

Be it known that I, HERMAN DOCK, a citizen of the United States, residing at Philadelphia, county of Philadelphia, and State of Pennsylvania, have invented a new and useful Improvement in Center-Grinder Attachments for Lathes, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to machines which are used to grind the centers of lathes.

The object of my present invention is to provide a single machine which will grind lathe-centers at any angle desired and vary the angle of the grinding-wheel, so as to obtain the desired angle on the centers, so that with one attachment centers of different angles may be ground.

The invention also contains improved details of construction whereby the operation of the device is improved.

Broadly considered, I accomplish the main object of my invention by providing a bearing for the revoluble spindle of the grinding-wheel, which is supported so as to be movable to vary the angular position of the grinding-wheel with reference to the center to be ground. I make the bearing movable upon its support and guided by means of a groove. I further provide locking mechanism to maintain the bearing, and with it the grinding-wheel, fixed in the desired position.

The detail improvements of my invention will be more apparent by reference to the drawings, in which—

Figure 1 is a plan view of a portion of the lathe with my improved center-grinder centered on the lathe. Fig. 2 is an enlarged plan view of the center-grinder, showing the center in position to be ground. Fig. 3 is a front view of my improved machine. Fig. 4 is an end view of the same. Fig. 5 is a detail sectional view through projection j^2 on line 5 5 of Fig. 2.

A is the bed-plate of a lathe; B, the face-plate on the shaft b, on which are the driving-pulleys b'.

C is the slide-rest, carrying the tool-rest c. The slide-rest C is movable longitudinally and transversely upon the bed of the lathe, the hand-crank c' operating for the transverse movement and the wheel c^2 for the longitudinal movement.

D is the tail-stock, movable longitudinally on the bed-plate. In the face-plate B is placed the live-center d of the lathe, and in the tail-stock D is placed the dead-center d', all as in the ordinary lathes.

My center-grinder attachments consist of the following.

E is the main support or frame of the center-grinder attachment, having the depending post e. Surrounding this post is the split sleeve e', having the set-screw e^2 for clamping it around the post.

F is a projection from the sleeve e', having the slot f for attachment to the tool-rest c.

G is the main driving-wheel for the grinding attachment. This wheel G is rotatably mounted upon a projection g from the support E. The driving-wheel G is a gear-wheel. Meshing with the gear-wheel G is the gear g' on the shaft g^2. This shaft g^2 is supported in bearings in the hanger H. This hanger H is pivotally supported at one end upon the support E at h, which point is in line with the center or gear wheel G. The other end of the hanger H has a base-plate H', having a projection entering the concentric groove H^2 in the projection g. Splined upon the shaft g^2 is the pulley-wheel I. Through the projection g is formed the elongated lateral orifice g^3. Projecting through this orifice g^3 is the spindle-bearing j. Within this bearing is the spindle J, carrying at its outer end the grinding-wheel J'. Splined to the other end of the spindle J is the spindle-driving pulley J^2. From the pulley I to the spindle-driving pulley J^2 runs the belt J^3. The spindle-bearing has a projecting portion j^2, provided on its under surface with a downward projection j^3, which enters and rests in a groove j^4 in the support or frame E. In the projecting portion j^2 is the slot j^5. Through this slot and a screw-threaded orifice in the frame E passes a bolt j^6, by which the projection j^2 may be clamped to frame E at any position of the movement of the projecting portion j^2 in the groove j^4. The free end of the hanger H is provided with an upwardly-inclined cam-surface h'. Upon the spindle-bearing is the pro-

jection j^7. This projection j^7 in the movement of the projecting portion j^2 of the spindle-bearing in the groove j^4 will act on the cam h', swinging the hanger and the wheel I and gear g' on a center coincident with that of the wheel G. Secured to projection g is a plate K, carrying a projection g^4 for centering the grinding attachment at one end upon the lathe, and K′ is a projection from the support E for centering the other end of the grinding attachment upon the lathe.

L L′ are arms connected together by a yoke L^2. These arms are swiveled in bearings L^3 in projections L^4 from the wheel I. In the face-plate C are orifices or slots in which these arms can enter.

The grinding attachment is connected to the lathe in the following manner: The attachment is first connected to the tool-rest by means of the slot f. The attachment is then brought up to the live-center d and the dead-center d' moved up. The attachment is adjusted on the tool-rest until the orifice in the projection g^4 coincides with the live-center and the orifice in the projection K coincides with the dead-center. The attachment is then clamped in that position to the tool-rest. The dead-center is then moved away and the slide-rest operated to move the attachment away from the live-center. The attachment is then moved transversely to bring the projection g^4 out of alinement with the live-center. It is then moved longitudinally and transversely until the grinding-wheel rests against the side of the live-center, when the machine is ready to grind the center. The arms L L′ are entered into the slots or orifices in the face-plate and the face-plate revolved, which, through the mechanism described, rotates the grinding-wheel. Moving the slide-rest transversely and longitudinally provides the proper feed for grinding the center. In order to vary the angle of the grinding-wheel with my improved machine, all that is necessary is for the operator to move the projecting portion j^2 and clamp it at the desired point. The movement of the spindle-bearing through the projection j^7 and cam h' maintains the distance between the pulleys I and J^2 constant, the cam h' being maintained in contact with the projection j^7 by means of the springs O. The lateral position of the two wheels may be adjusted by sliding the wheel I on its shaft.

By my construction I am enabled in a single grinding-machine to grind lathe-centers at any desired angle.

Having now fully described my invention, what I claim, and desire to protect by Letters Patent, is—

1. In a lathe-center-grinding machine, in combination, a main driving-wheel, power-transmitting projections coöperating with the driver, a grinding-wheel disposed between said projections and operative connection between the driver and the grinding-wheel for actuating the latter and means to vary the angular position of the grinding-wheel.

2. In combination with the face or drive plate of a lathe, of a driver for a center-grinding attachment, power-transmitting projections connecting the driver and face or drive plate, a grinding-wheel disposed between said projections and operative connection between the driver and the grinding-wheel for actuating the latter and means to vary the angular position of the grinding-wheel.

3. In a lathe-center-grinding machine, in combination with the grinding-wheel and a revoluble spindle for the same, of a bearing for said spindle, said bearing being supported so as to be movable to vary the angular position of the grinding-wheel with reference to the center to be ground, a spindle-driving wheel upon the spindle, a driving-wheel for said spindle-driving wheel, means to drive said last-mentioned wheel and means to maintain a constant distance between the two wheels at all positions of the spindle.

4. In a lathe-center-grinding machine, in combination with the grinding-wheel and a revoluble spindle for the same, of a bearing for said spindle said bearing being supported so as to be movable to vary the angular position of the grinding-wheel with reference to the center to be ground, a spindle-driving wheel upon the spindle, a driving-wheel for said spindle-driving wheel, means to drive said last-mentioned wheel and connection between said wheels, a swinging hanger for the shaft of the wheel driving the spindle-driving wheel, a cam upon said hanger and a projection upon the spindle-bearing adapted in its movement to swing said hanger and maintain a constant distance between the two wheels.

5. In a lathe-center-grinding machine, in combination with the grinding-wheel and a revoluble spindle for the same, of a bearing for said spindle said bearing being supported so as to be movable to vary the angular position of the grinding-wheel with reference to the center to be ground, a spindle-driving wheel upon the spindle, a driving-wheel for said spindle-driving wheel, means to drive said last-mentioned wheel and connection between said wheels, a swinging hanger for the shaft of the wheel driving the spindle-driving wheel, a cam upon said hanger and a projection upon the spindle adapted in its movement to swing said hanger and maintain a constant distance between the two wheels, said wheel driving the spindle-driving wheel being splined upon its shaft.

6. In a lathe-center-grinding machine, in combination with the grinding-wheel and a revoluble spindle for the same, of a bearing for said spindle, a support having a groove in which the bearing is movable and guided, a spindle-driving wheel upon the spindle, a driving-wheel for said spindle-driving wheel, means to drive said last-mentioned wheel and

connection between said wheels, a swinging hanger for the shaft of the wheel driving the spindle-driving wheel, a cam upon said hanger and a projection upon the spindle-support adapted in its movement to swing said hanger and maintain a constant distance between the two wheels.

In testimony of which invention I have hereunto set my hand at Philadelphia on this 12th day of March, 1901.

HERMAN DOCK.

Witnesses:
M. M. HAMILTON,
G. IRWIN HUTTON.