

M. J. CUNNINGHAM.

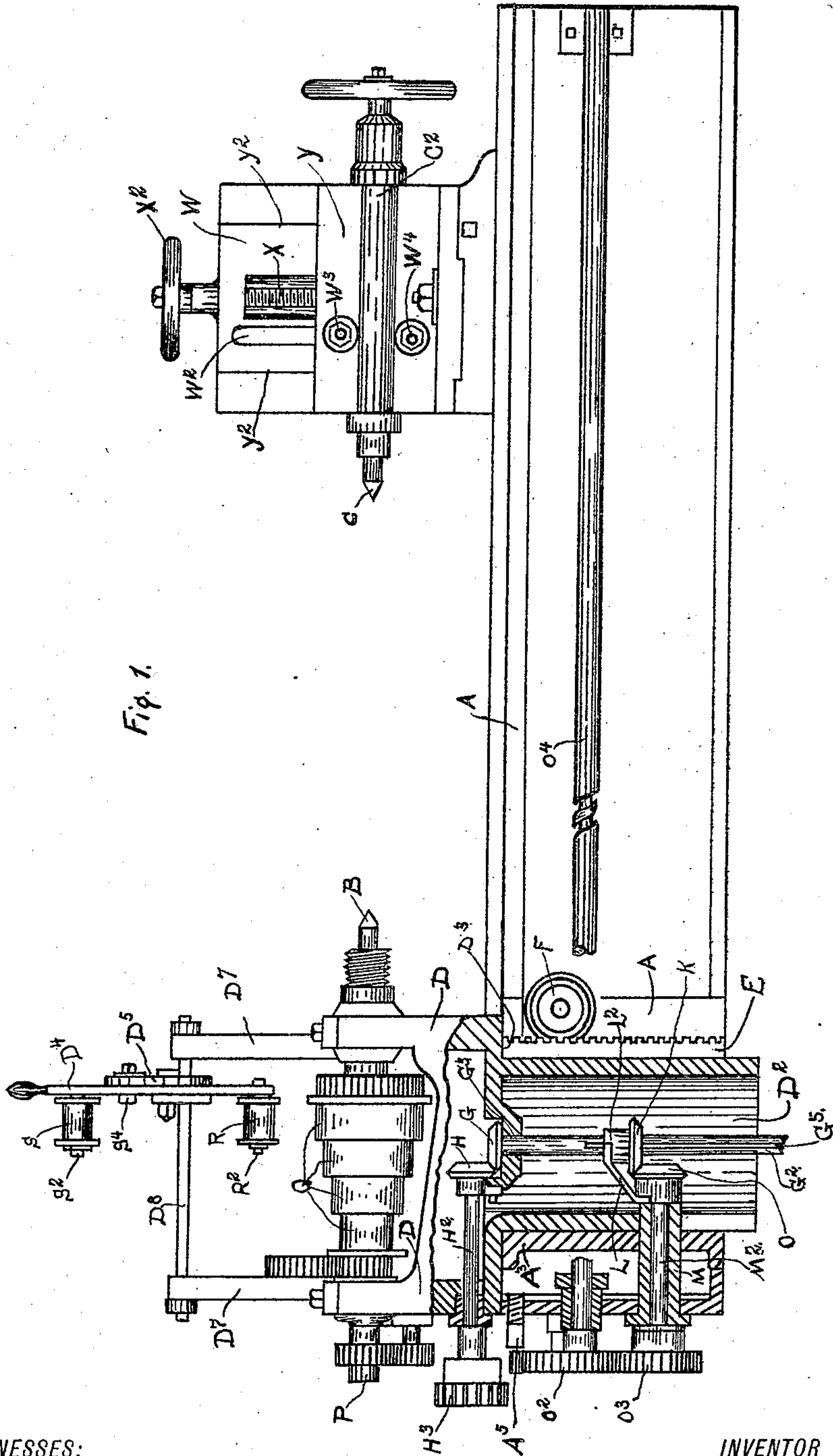
LATHE.

APPLICATION FILED JULY 5, 1906.

944,480.

Patented Dec. 28, 1909.

3 SHEETS—SHEET 1.



WITNESSES:

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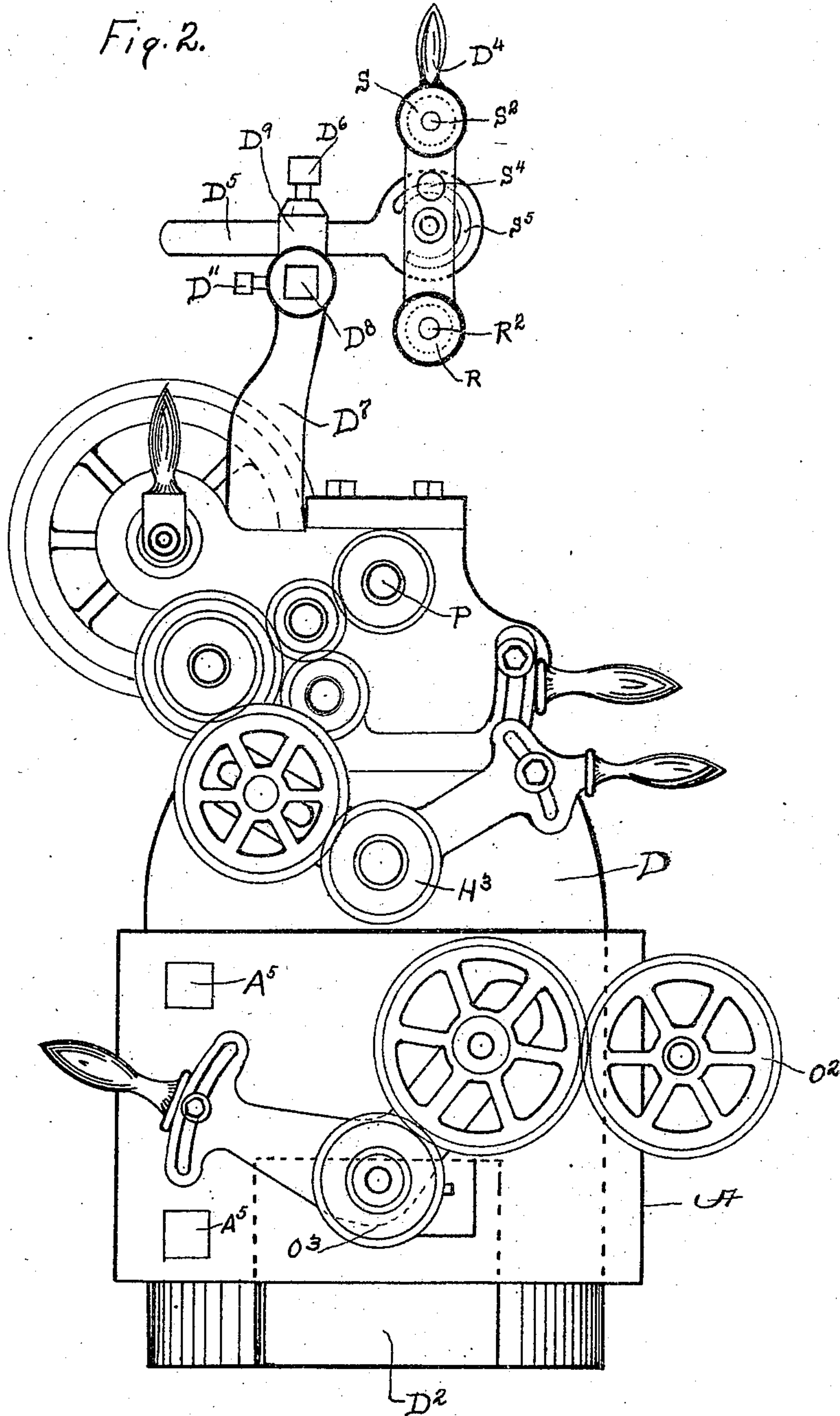
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3 SHEETS—SHEET 2.

Fig. 2.



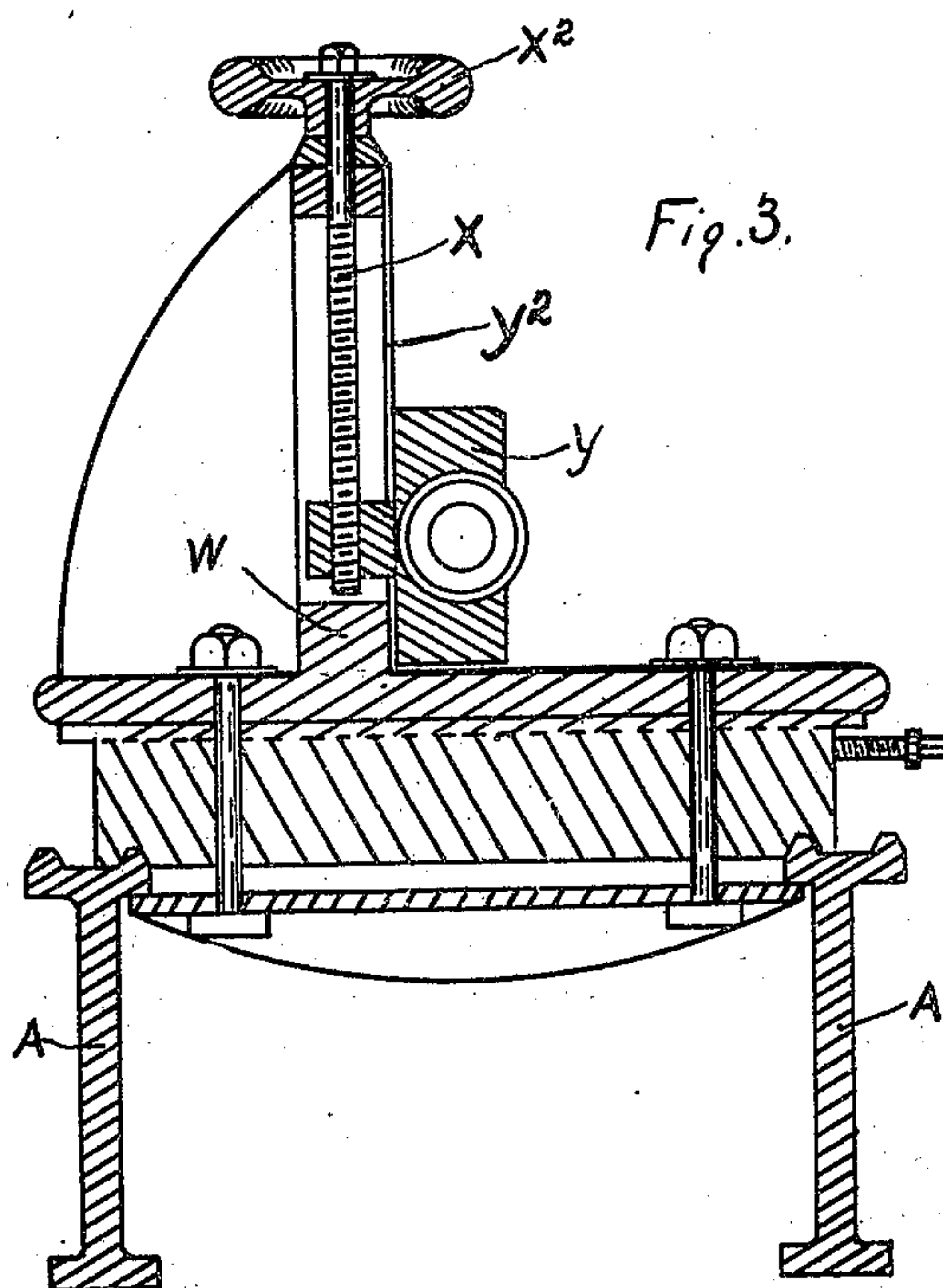
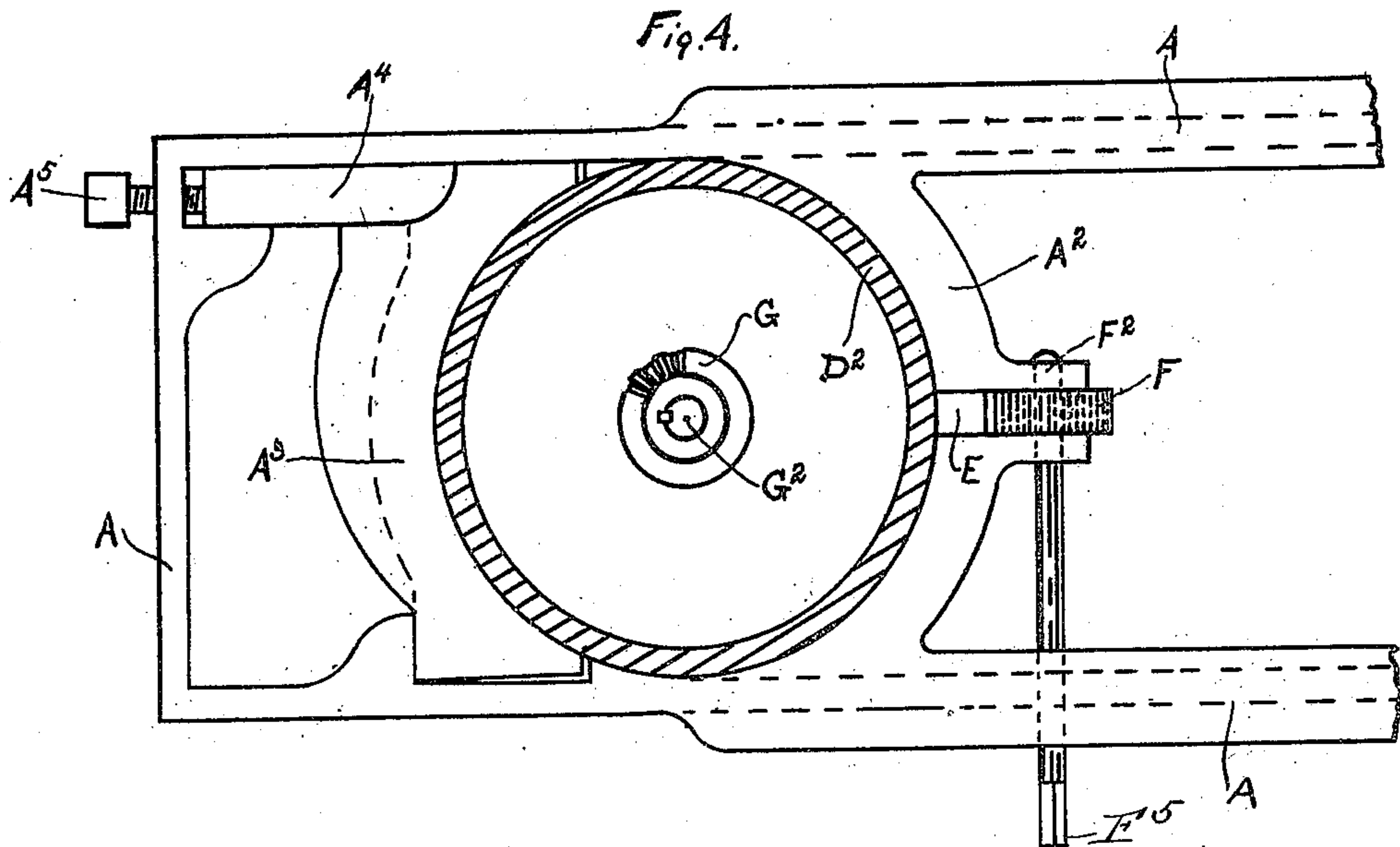
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# UNITED STATES PATENT OFFICE.

MARTIN J. CUNNINGHAM, OF SPRINGFIELD, MISSOURI.

LATHE.

944,480.

Specification of Letters Patent.

Patented Dec. 28, 1909.

Application filed July 5, 1906. Serial No. 324,885.

*To all whom it may concern:*

Be it known that I, MARTIN J. CUNNINGHAM, a citizen of the United States, residing at Springfield, in the county of Greene and State of Missouri, have invented new and useful Improvements in Lathes, of which the following is a specification.

My invention relates to improvements in lathes, the object of which is to provide a cheap, simple and convenient means of adjusting the height of the head and tail blocks of the lathe, and also for providing a lathe for boring and cutting threads on a taper. These objects I attain by means of the device illustrated in the accompanying drawings forming a part of this specification in which:—

Figure 1, is a view in elevation of the entire device partly cut away to show the gearing. Fig. 2, is an end view in elevation of lathe gearing showing opening at lower end of head block sleeve. Fig. 3, is a vertical cross section of the tail block and lathe bed. Fig. 4, is a plan view of a part of the frame showing the opening around the pinion for the sleeve of the head block with the pinion which raises it by means of the rack at the side.

Similar letters indicate corresponding parts in the several figures.

A, is an ordinary frame of the lathe, made any desired size and shape, said frame is provided with head and tail blocks which I so construct as to adjust them up and down to vary the swing of the lathe to any desired height.

B, is the ordinary head point or center of the lathe.

C is the ordinary tail point or center of the lathe.

D, is the head block of the lathe. It is made with a circular sleeve, D<sup>2</sup>, which extends down through the frame of the lathe.

E, is a rack slidable in the frame and provided with a pinion F, for moving the same up and down. Said rack at its upper end rests against the lower side of the head block at point D<sup>3</sup>, and as the rack rises it elevates the head block and as it lowers lets the head block down. This I accomplish by means of a suitable crank or wrench upon the end F<sup>5</sup> of the shaft F<sup>2</sup>, which carries the pinion F.

To provide a continuous action of the gear wheels G and H as the head block moves up and down, the shaft G<sup>2</sup>, of the gear wheel G

slips up and down through the beveled gear wheel K and the arm bearing L<sup>2</sup> of the arm L of the sleeve M. This may be accomplished by having a slot G<sup>5</sup> in the shaft G<sup>2</sup>, and an ordinary feather in the gear wheel K. The said shaft G<sup>2</sup>, is provided with a suitable bearing at G<sup>3</sup>, in the sleeve D<sup>2</sup> of the head-block. The bearing L<sup>2</sup> of the shaft G<sup>2</sup> is secured by an arm L, to the sleeve M, which is secured to the lathe frame A. Said sleeve M, is provided with a shaft M<sup>2</sup>, passing through its center to support the bevel gear wheel O, and by means of this sleeve M, and arm L, is kept in contact with bevel gear wheel K, through which the shaft G<sup>2</sup> passes up and down with the head block to which it is connected by means of bearings G<sup>3</sup>. Said sleeve D<sup>2</sup> of the head block is provided with an opening to let the head block move up and down and angularly without interfering with sleeve M.

Gear G is kept in contact with beveled gear H as its shaft H<sup>2</sup> is also provided with bearings in the head block and moves up and down with the head block. Shaft H<sup>2</sup> is provided with a cog wheel H<sup>3</sup>, at its outer end and is driven by the ordinary chain of gear wheels from the end of the spindle P. The said spindle P is operated the same as the ones now in use, by the belts on the cone pulley Q.

When the head block D, is elevated the belts on the cone pulleys are kept tight by any suitable means. I prefer using two pulley wheels R and S mounted on the two brackets D<sup>7</sup> attached to said head block which brackets are connected by a square rod D<sup>8</sup> at the top. For this purpose said pulleys R and S have studs R<sup>2</sup> and S<sup>2</sup> secured to a lever D<sup>4</sup>, on an arm D<sup>5</sup> for adjusting the tension of the belt by turning the said pulleys upon a center between them to form a loop in the belt to take up and let out as much slack as desired when the head block is raised or lowered. This is accomplished by having the lever D<sup>4</sup> turn upon a quadrant in the arm D<sup>5</sup> and secured in its position by means of a bolt S<sup>4</sup> which passes through a concentric slot S<sup>5</sup> in arm D<sup>5</sup>. Said bolt is provided with a suitable nut for tightening the bolt S<sup>4</sup> in the slot S<sup>5</sup> at the desired position. The arm D<sup>5</sup> passes through a block D<sup>9</sup> and by a set screw D<sup>6</sup> is set at the desired position. Said block D<sup>9</sup> has a square hole to fit the square rod D<sup>8</sup> and is secured in position by a set screw



D<sup>11</sup>. The gear wheels may be changed at any elevation of the head block to cut different screw threads as the gearing is not affected by the raising or lowering of the head block.

By reason of the fact that the sleeve M, is secured to the frame A it thus keeps the bearing of the gear wheel O which operates the shaft gear O<sup>3</sup>, almost in the same position with reference to the lead screw gear O<sup>2</sup>, thus driving the lead screw O<sup>4</sup> in all possible positions of the head block.

Tail block W of the lathe is also made so as to adjust the center point C up and down as desired. For this purpose one part of the tail block is provided with a slot W<sup>2</sup> and another part which supports the center C is provided with bolts W<sup>3</sup> and W<sup>4</sup>, which engage in the said slot permitting the same to be moved up and down by means of the screw X and the lever or wheel X<sup>2</sup>, and the same is secured in position by means of the bolts W<sup>3</sup> and W<sup>4</sup>. The part Y of the tail block which contains the spindle C<sup>2</sup> rests against the shoulder Y<sup>2</sup> of the upright portion of the part W of the tail block for giving it a firm support and receiving the end thrust.

By reason of the fact that the head block D is formed below into a circular sleeve D<sup>2</sup>, it may be turned at any desired angle for boring and cutting threads in a tapering hole when desired, the beveled gears G and

K being in the center of the said sleeve D<sup>2</sup> of the head block are thus not affected by the turning of the head block of the lathe. Said sleeve D<sup>2</sup> is held in the desired position by means of a semicircular form A<sup>2</sup> of the frame A, on one end, and a loose circular segment A<sup>3</sup> on the other end, said loose segment A<sup>3</sup> being held in position by any suitable means and tightened by set screws A<sup>5</sup> and spacing block A<sup>4</sup> which tighten the segment A<sup>3</sup> against the head block sleeve D<sup>2</sup>.

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

In a lathe, the combination with a frame, of a head-block mounted for partial rotation in said frame, a spindle mounted upon said head-block, means for bodily elevating said head-block, a vertical shaft centrally located within the head-block, a sliding bevel pinion splined upon said shaft, a lead screw, a horizontally disposed shaft, connections between said shaft and said lead screw, and a bevel pinion upon the inner end of said shaft meshing with the first named bevel pinion.

In testimony whereof I affix my signature, in presence of two subscribing witnesses.

MARTIN J. CUNNINGHAM.

Witnesses:

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LEE HARCUM.