

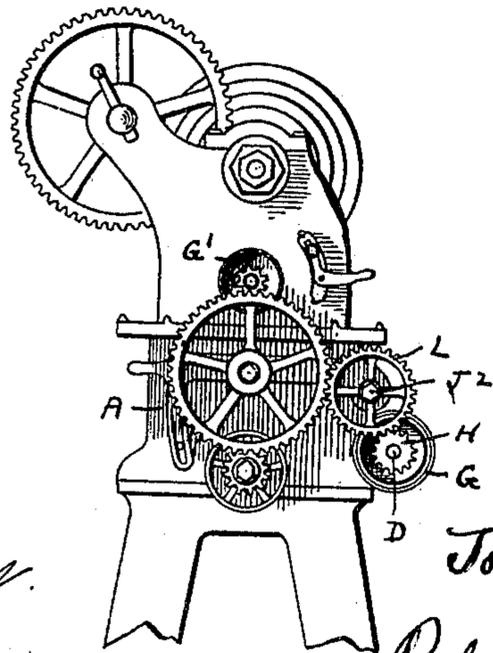
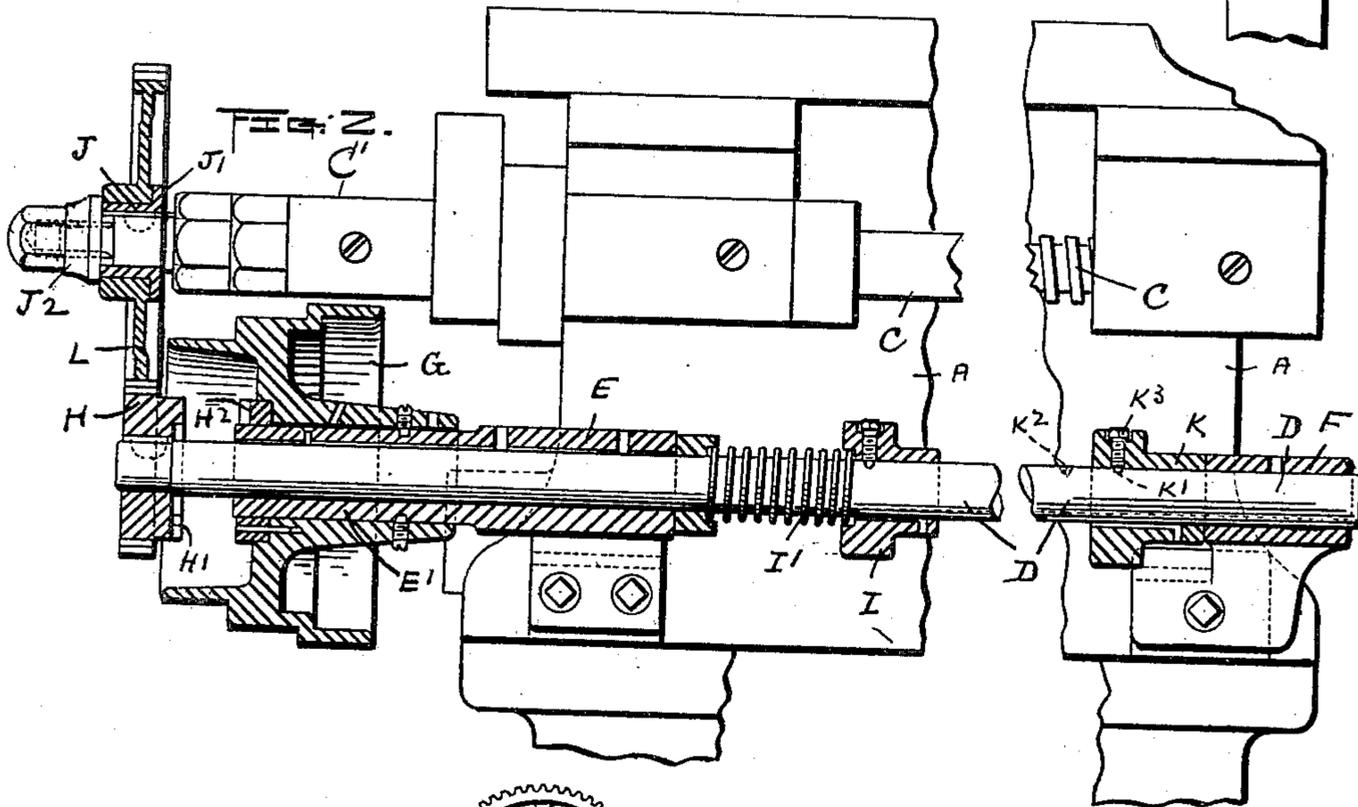
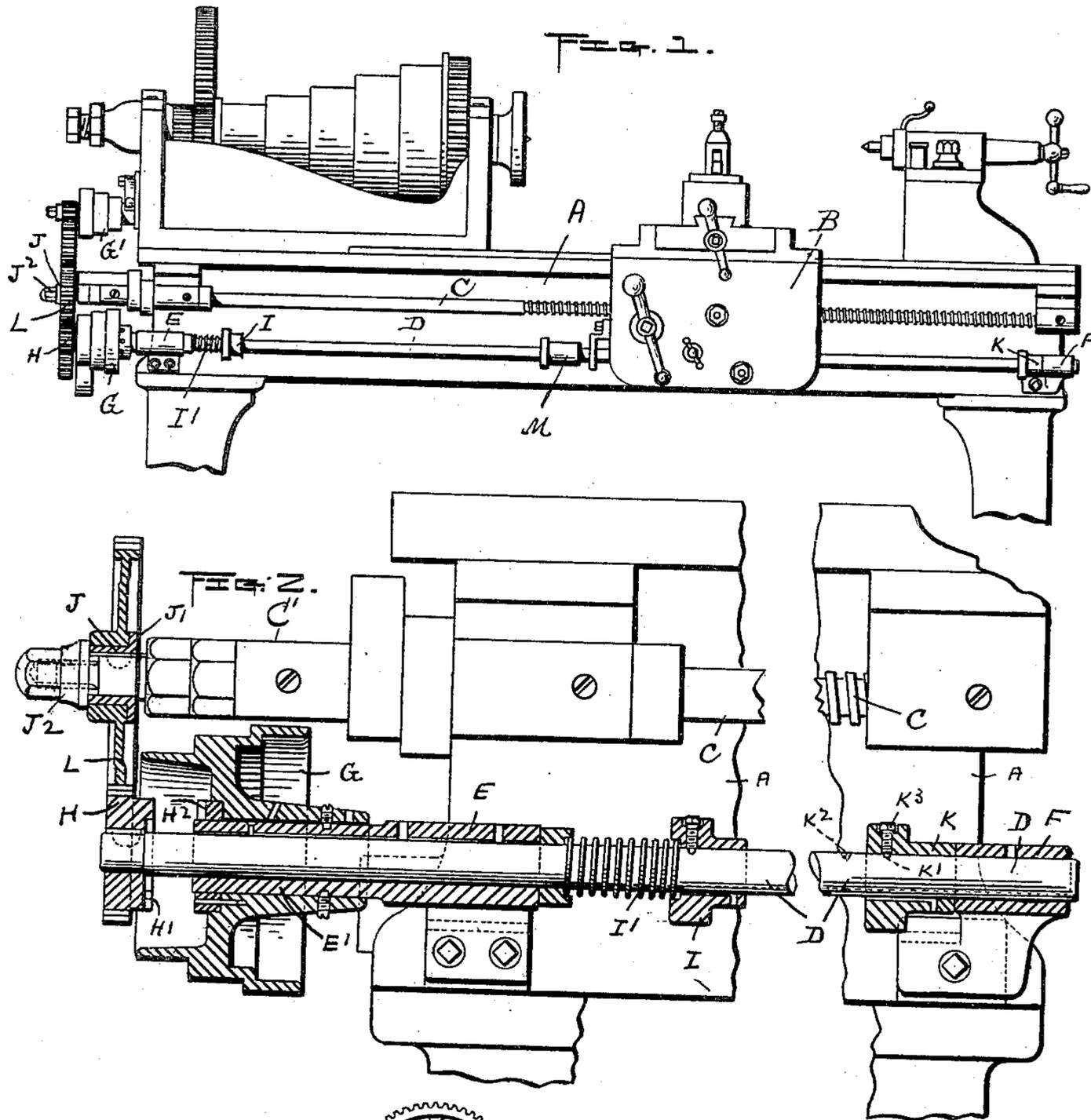
No. 649,504.

Patented May 15, 1900.

J. R. BACK.  
TURNING LATHE.

(Application filed Feb. 28, 1899.)

(No Model.)



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# UNITED STATES PATENT OFFICE.

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## TURNING-LATHE.

SPECIFICATION forming part of Letters Patent No. 649,504, dated May 15, 1900.

Application filed February 28, 1899. Serial No. 707,134. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN R. BACK, a citizen of the United States, residing at Worcester, in the county of Worcester and Commonwealth of Massachusetts, have invented a certain new and useful Improvement in Turning-Lathes, of which the following is a specification, accompanied by drawings forming a part of the same, and in which—

10 Figure 1 represents a front elevation of a turning-lathe embodying my invention. Fig. 2 is a front view of a portion of the lathe with the parts concerned in my present invention shown in sectional view, and Fig. 3 is an end  
15 view of the lathe.

Similar reference-letters refer to similar parts in the different views.

20 My present invention relates to that class of lathes employed for turning metal; and the objects of my invention are to provide means for driving the feed-rod at will either by a belt or a geared connection with the live-spindle and also to provide means for stopping the feeding motion of the cutting-tool at any  
25 desired point along the bed of the lathe; and it consists in the construction and arrangement of parts, as hereinafter described, and set forth in the annexed claims.

30 Referring to the drawings, A denotes the bed of the lathe, and B the carriage, which supports the cutting-tool and is capable of a feeding motion along ways upon the bed of the lathe in the usual manner.

35 Journalled in bearings upon the front of the lathe-bed A is a rotating screw-threaded shaft C, known as the "lead-screw," and also a rotating shaft D, known as the "feed-rod." Both the lead-screw C and feed-rod D are operatively connected at will with the carriage  
40 B in order to impart a feeding motion to the cutting-tool by means of mechanism which will be well understood by those conversant with this class of machines, and is therefore not herein described or shown in the drawings.  
45

My present invention relates to the mechanism by which the feed-rod D is driven and automatically disconnected at any desired point in the movement of the carriage along  
50 the ways of the lathe.

The feed-rod D is journalled in bearings E

and F, attached to the lathe-bed, and is capable of longitudinal movement. The bearing E is provided on one side with an extension E', on which a cone-pulley G rotates loosely, 55 having a belt connection with a driving cone-pulley G', operatively connected with the live-spindle of the lathe in the usual manner. Attached to the feed-rod is a gear H, having upon one side clutch-teeth H', arranged to engage similar clutch-teeth H<sup>2</sup> on the side of the rotating cone-pulley G. A collar I is attached to the feed-rod D, and between the collar I and the bearing E is a spiral spring I', with its tension applied to slide the feed-rod in its  
60 bearings toward the right. The lead-screw C projects beyond its journal-bearing C' and carries a collar J, having a spline connection with the lead-screw and provided on one end with a flange J'.  
65

70 A gear L is held upon the collar J by a nut J<sup>2</sup> and is capable of rotating thereon between the nut and flange J'. The gear L is operatively connected with the live-spindle in the usual manner by what is known as "change-gear" and is adapted to engage the gear H  
75 on the feed-rod D when the feed-rod has been moved toward the left far enough to bring the gear H into the plane of the gear L and cause their teeth to engage. The sliding  
80 movement of the feed-rod D as it is actuated by the spiral spring I' is limited by a collar K, which is attached to the feed-rod and arranged to bear against the journal-bearing F. Holes K' and K<sup>2</sup> are countersunk in the  
85 feed-rod D to receive the set-screw K<sup>3</sup> in the collar K. When the set-screw enters the hole K', the feed-rod is held against the tension of the spring I', with the gear H in engagement with the gear L, and when the set-screw  
90 K<sup>3</sup> enters the hole K<sup>2</sup> the spring I' is allowed to expand and carry the clutch-teeth H' into engagement with the clutch-teeth H<sup>2</sup>, causing the feed-rod to be driven by the pulley G. Changing the position of the collar J will  
95 cause the feed-rod to be driven by either the pulley G or the gear L.

Adjustably attached to the feed-rod D is a collar M in the path of the carriage B as it is traversed along the ways of the lathe. The  
100 collar M is placed on the feed-rod D, so that the contact of the carriage B will move

the feed-rod toward the left against the tension of the spiral spring I' when the cutting-tool has traversed across the work held in the lathe. By adjusting the collars, as above described, the feed-rod may either driven by direct connection with the cone-pulley G or by the engagement of the gears H and L, as may be desired, and in either case the stopping mechanism is made to operate to throw the feed-rod D out of engagement with the driving power at any desired point in the traversing motion of the carriage. When the feed-rod is driven by a gear connection from the live-spindle, the gear L is an intermediate gear turning loosely upon the flanged collar K; but in case the lead-screw is to be rotated the gear L and collar K are removed and a gear placed upon the lead-screw having a spline connection therewith and adapted to be driven in the usual manner from the live-spindle. When the feed-rod is driven from the gear L, a positive feeding motion is given to the carriage B and a greater variation of the feeding motion is secured by means of the change-gears of different diameters provided with a lathe for varying the speed of the lead-screw in the usual and well-known manner.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a metal-turning lathe, the combination with a feed-rod capable of a longitudinal movement in its bearings, of a rotating pulley journaled concentrically with said feed-rod, a clutching mechanism between said pulley and said feed-rod arranged to be operated by the sliding motion of the feed-rod, a rotating driving-gear, a gear attached to said feed-rod and arranged to be carried into and out of engagement by the sliding motion of said feed-rod, whereby said feed-rod is driven at will by said driving-gear or by said pulley, substantially as described.

2. In a metal-turning lathe, the combination of a carriage, a feed-rod by which said carriage is traversed along the bed of the lathe, said feed-rod being capable of a longitudinal movement in its bearings, a driving-pulley, a clutching mechanism between said driving-pulley and the feed-rod, a driving-gear, a gear attached to said feed-rod and arranged to be brought into engagement with said driving-

gear, a spiral spring by which said feed-rod is moved lengthwise in one direction to bring said feed-rod into engagement with the driving power, means for engaging said feed-rod with the carriage to move it in the opposite direction and disengage it from the driving power, and an adjustable collar carried by said feed-rod, by which its position is determined either in engagement with said driving-pulley or with said driving-gear, substantially as described.

3. In a metal-turning lathe the combination with a feed-rod capable of a longitudinal movement in its bearings, of a rotating pulley journaled concentrically with said feed-rod, a clutching mechanism between said rod and said pulley and arranged to be operated by the sliding motion of said rod, a driving-gear, a gear attached to said feed-rod and arranged to be carried into and out of engagement by the sliding movement of said rod and a spring applied to said rod to move it in one direction, substantially as described.

4. In a metal-turning lathe, the combination with a feed-rod capable of a longitudinal movement in its bearings, a spring by which said rod is moved in one direction, a collar adjustably attached to said rod and in the path of the tool-carriage of the lathe, an independently-rotating pulley having clutch-teeth, clutch-teeth carried by said feed-rod arranged to engage the teeth on said pulley, a driving-gear and a gear on the feed-rod arranged to engage said driving-gear, substantially as described.

5. The combination with a carriage and a feed-rod capable of an endwise movement, of a pulley G, a clutching mechanism between said feed-rod and said pulley, a driving-gear L and gear H attached to said rod, a spiral spring I' by which said feed-rod is moved in one direction an adjustable collar M in the path of the carriage and an adjustable collar K, by which the action of said spiral spring is limited to hold the feed-rod in operative connection with either said pulley G or said gear L, substantially as described.

Dated this 23d day of February, 1899.

JOHN R. BACK.

Witnesses:

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