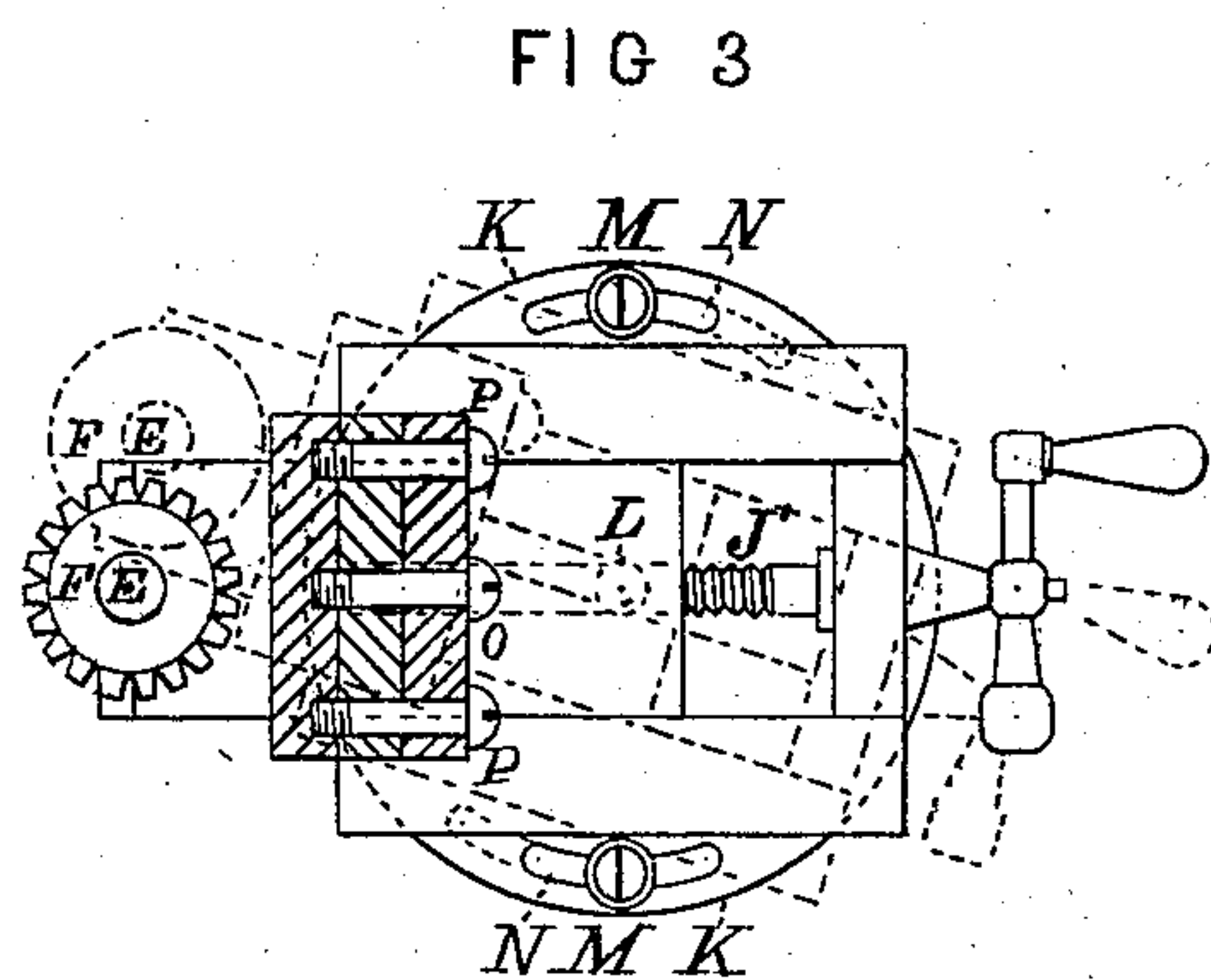
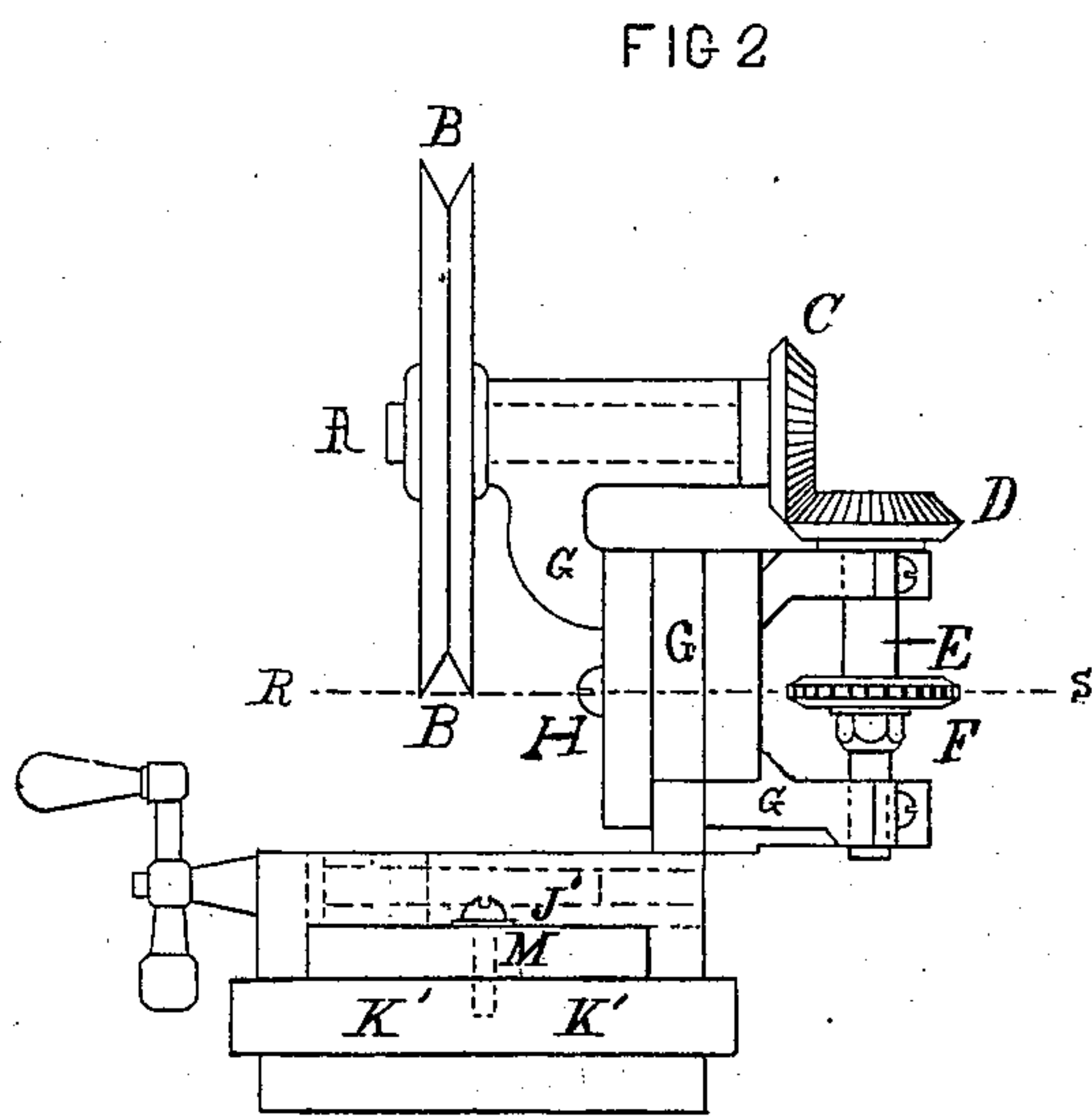
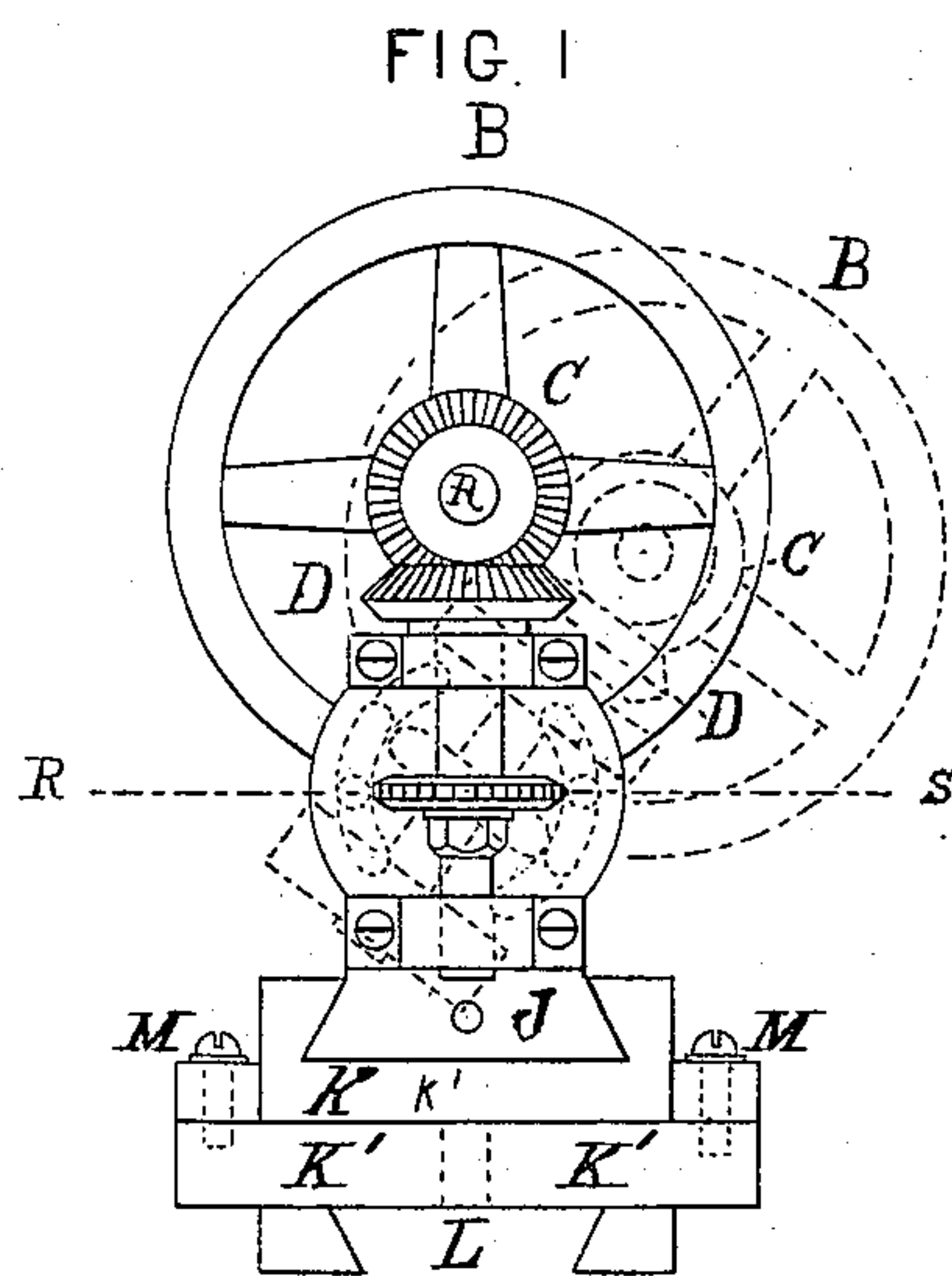


J. W. FOSTER.

Gear Cutting-Machines.

No. 136,429.

Patented March 4, 1873.



WITNESSES

Geo. H. Stanley
Thos. P. Barnfield

INVENTOR

John W. Foster.

UNITED STATES PATENT OFFICE.

JOHN W. FOSTER, OF PAWTUCKET, RHODE ISLAND, ASSIGNOR OF ONE-HALF HIS RIGHT TO EDWARD A. GREENE, OF SAME PLACE.

IMPROVEMENT IN GEAR-CUTTING MACHINES.

Specification forming part of Letters Patent No. 136,429, dated March 4, 1873.

To all whom it may concern:

Be it known that I, JOHN W. FOSTER, of Pawtucket, in the county of Providence and State of Rhode Island, have invented certain Improvements in a Gear-Cutting Machine, to be attached to and used with ordinary lathes, of which the following is a specification:

My said invention relates to an improved device for cutting gearing, to be used in connection with any ordinary lathe, and to be attached to or detached from said lathe at pleasure, said invention or device being peculiarly well adapted to making repairs in a mill, as well as to general use in this department of mechanics.

The accompanying drawing is hereby made a part of this specification. Of this drawing, Figure 1 is a front elevation; Fig. 2 is a side elevation; and Fig. 3 is a sectional plan.

The several and respective parts are indicated by the following index-letters, the same parts being referred to by the same letters in the several figures.

A is a horizontal shaft running through the top of the frame G and through the driving wheel or pulley. B shows said driving wheel or pulley. C is an upper bevel-gear, connecting with and working into D, a lower and counter bevel-gear. E is a perpendicular shaft, on which the cutter F is placed, and on the top of which is the bevel-gear D. F is the cutter, which, being rapidly revolved and operated in the manner substantially as hereinafter set forth, is the instrument by which the blank gear is cut. G shows the external frame of the device. H is an axis or common center, on which the operating part of the machine is turned, either to the right or to the left, when and as far as desired, for the purposes and in the manner substantially as hereinafter described, and as indicated by the dotted lines of Fig. 1. J shows a slide, of which frame G is a part, and J' shows a screw-shaft, by means of which a forward and backward motion is imparted to said slide when and as desired, in the manner and for the purposes substantially as hereinafter set forth. K is the base, and K' the sub-base, of the machine, by which, with the aid of the screws M M, my said invention may be fitted onto and operated with any ordinary lathe. L is a pivot, on which the base

and the entire device is turned, either to the right or to the left, when and as far as desired, in the manner and for the purposes and objects substantially as hereinafter described, and as indicated by the dotted lines in Fig. 3. M M are screws, by which the base is secured to its sub-base K'. N N show elongated slots in the base, through which the screws M M are passed, and which, when said screws have been slightly loosened, allow the whole machine to be turned to the right or left, as above mentioned, and as indicated by the dotted lines in Fig. 3. O P P are smaller screws, which, after the use of the screw-shaft J' has left the operating part of the machine where it is wanted, will hold the whole firmly in position. R S are sectional lines to indicate the corresponding parts of Fig. 1 and Fig. 2.

The frame-work of my said invention, together with its several operating parts, is made of iron, with the exception of the cutter F, which is of hardened steel. The old and common index-plate may be used with this device. Power is communicated by a belt running over the driving wheel or pulley B, and this, by means of the connecting-shaft A and the beveled gearing C D, rapidly revolves the upright shaft E on which the cutter F is placed.

My said invention is placed on and fastened to any ordinary lathe by means of the base K and screws M M, the pulley B being next to the operator and the cutter F facing the blank gear placed on an arbor on the centers of the lathe. Said blank gear (and any desired number may be so placed) are placed on said arbor in such a way that the cutter F shall impinge on said blank gear to an extent equal to the desired depth of the groove between the teeth of the gear to be cut. Said blank gear being securely held on said arbor directly in front of said cutter F, the operation of my said device is from right to left, plowing out the surface of said blank gear in a rapid, easy, and successful manner. My said invention is attached to the lathe through the medium of base K'.

To cut gearing of coarse teeth by any of the machines now in use requires at least two cuts to complete a single furrow. The device herein set forth completes it rapidly and easily with one cut, and carries that cut as easily and as rapidly through any reasonable number of

blank gear that may have been placed on said arbor in front of the cutter F. In the practical use of said invention no uncommon or extra device is needed or used to adapt the driving-power to the varying position of the cutter. My said invention is adapted to the cutting of all the different kinds of gear now in use. To cut plain or spur gear the placing and operation of the device is the same, substantially, as above set forth. To cut bevel gear and spiral gear is as easily done by making the requisite changes in the relative position of the machine, which are effected by turning or inclining the operating parts to the right or left on the axis H, as indicated by the dotted lines of Fig. 1; and these requisite changes are further accomplished by turning the whole device right or left on the pivot L, aided by the slots N N and the screws M M, substantially as indicated by the dotted lines of Fig. 3. For the purpose of cutting bevel gear a forward and backward motion, which may be readily controlled by the operator, is necessary for the operating parts; and this is attained by means of the screw-shaft J', which is operated by an external handle, as shown in Figs. 2 and 3. If the slots N N should prove not sufficiently long to allow the whole

device to be turned on the pivot L as far to the right or left as may be desired, the screws M M may be taken out of their proper holes in the base K' and inserted in other holes in said base, which will carry the machine as far to the right or left as any possible circumstances can require.

The term "operating parts," as used in this specification and in the claims, refers to and is intended and meant to include all that part of the device that is or may be turned or inclined to the right or left on the axis H, as above set forth.

Claims.

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

1. The combination of the base and sub-base with the operating parts, substantially as herein described.
2. The combination of the slide J and screw J' with the operating parts and the bases K and K', substantially as described.

JOHN W. FOSTER.

Witnesses:

GEO. H. STANLEY,
THOS. P. BARNEFIELD.