

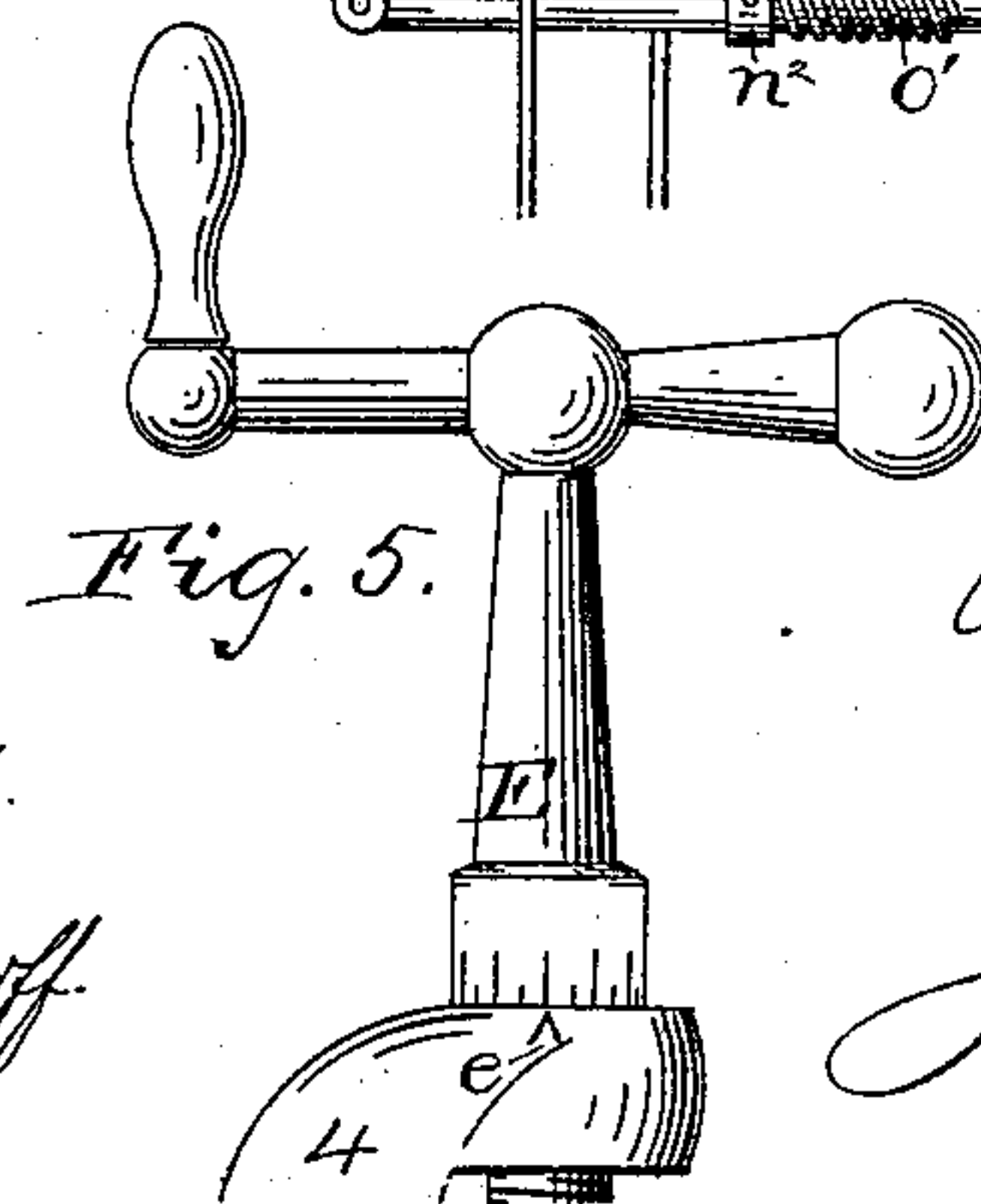
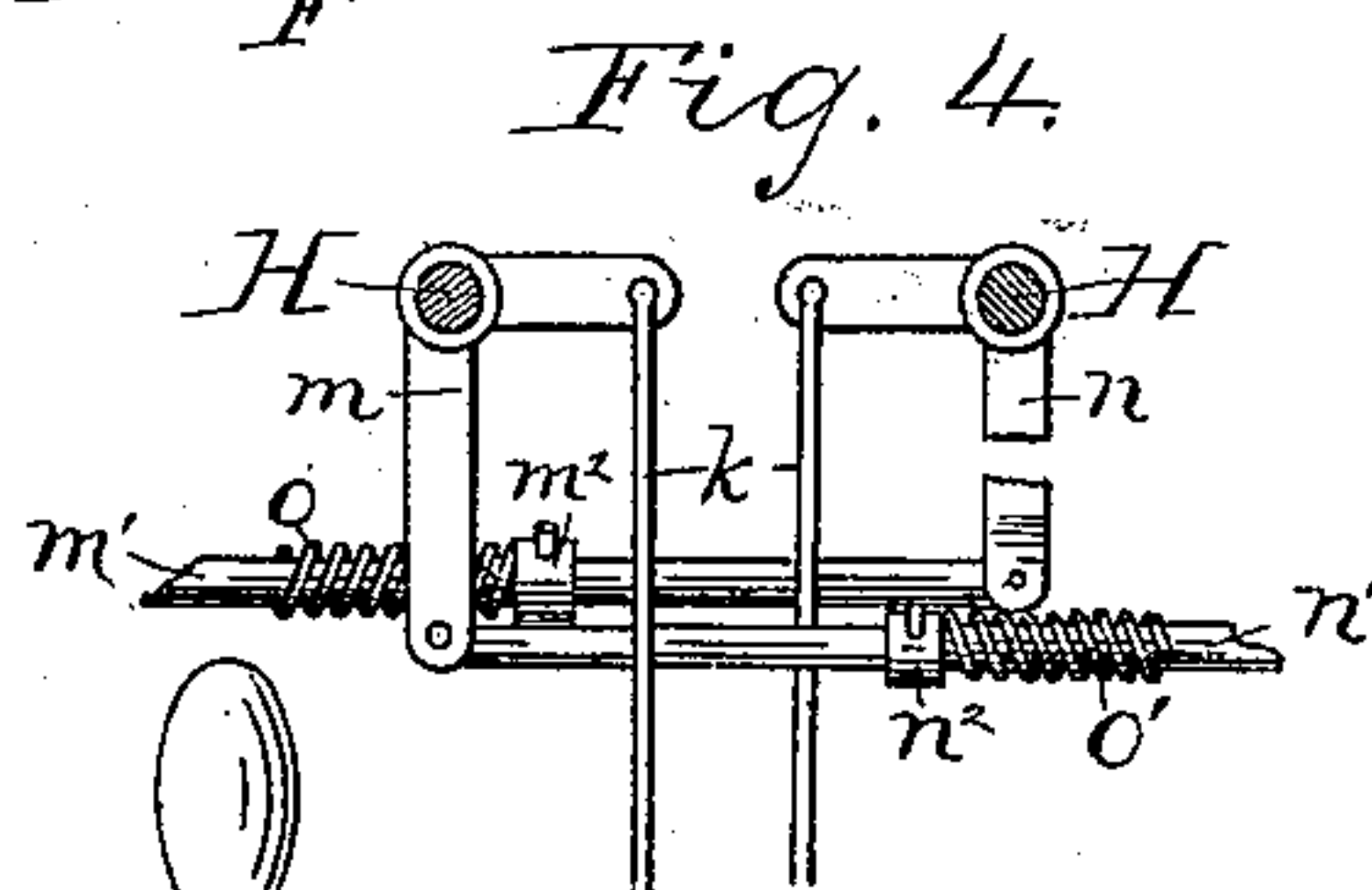
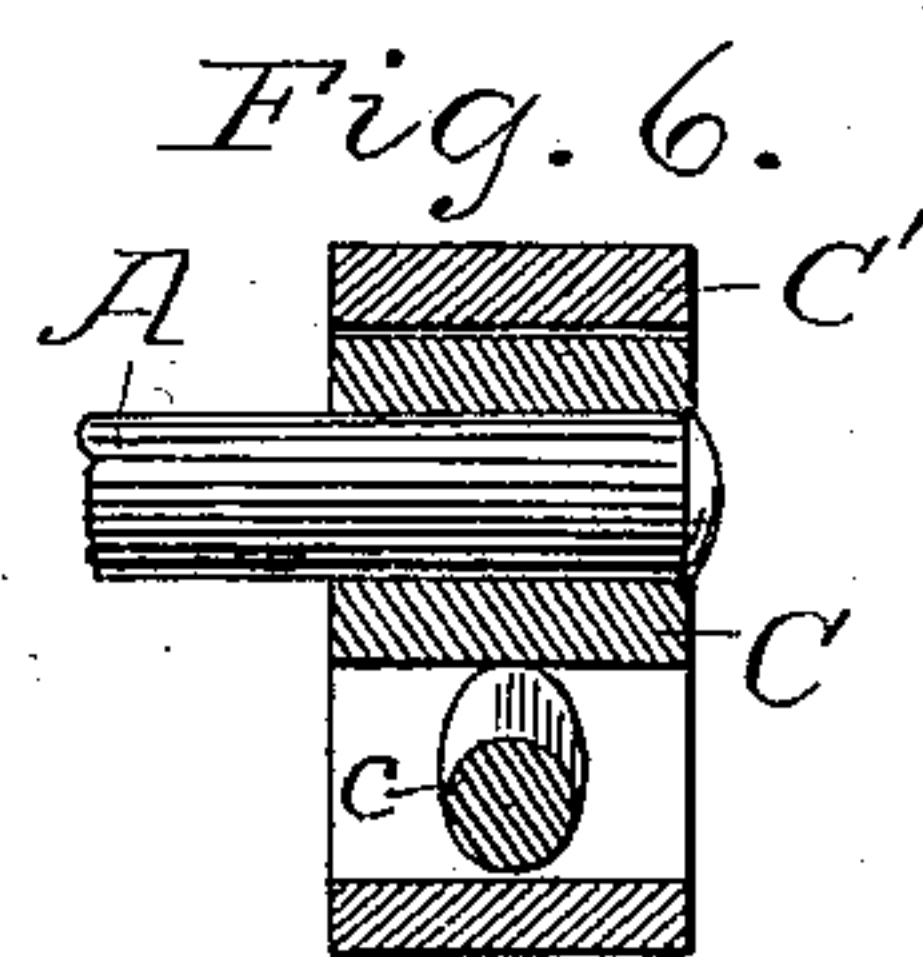
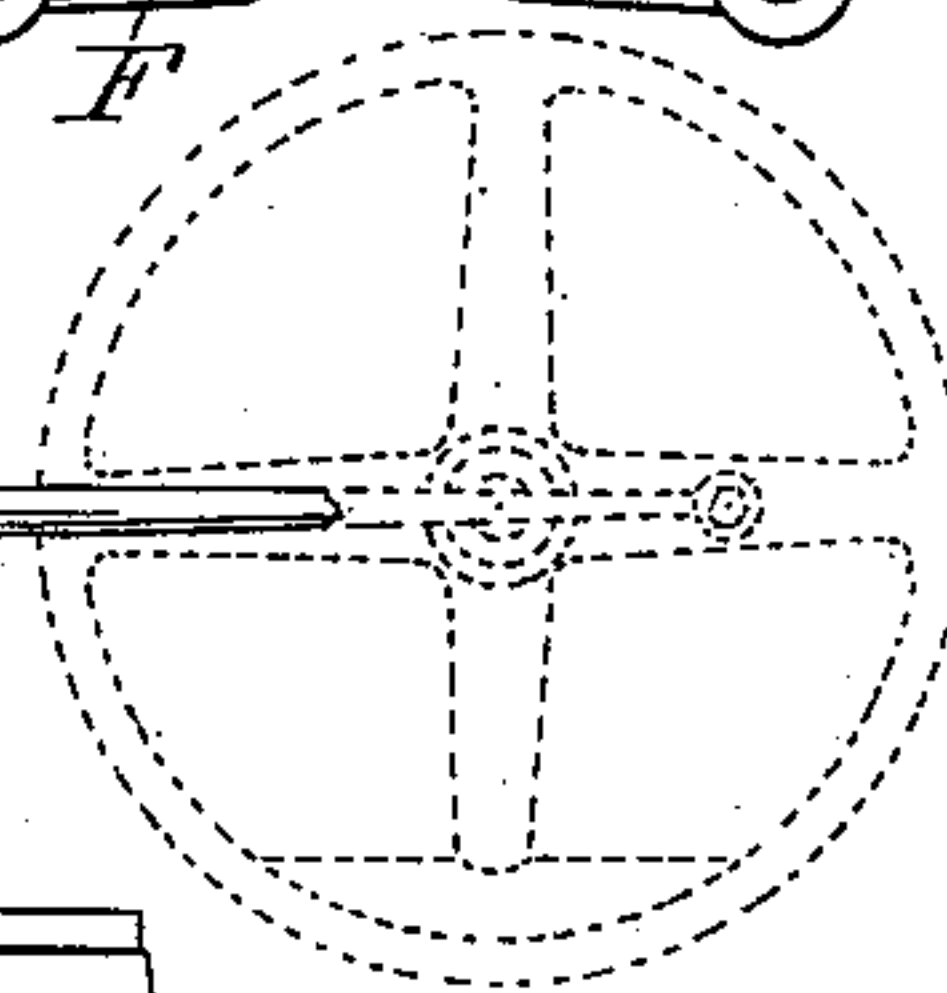
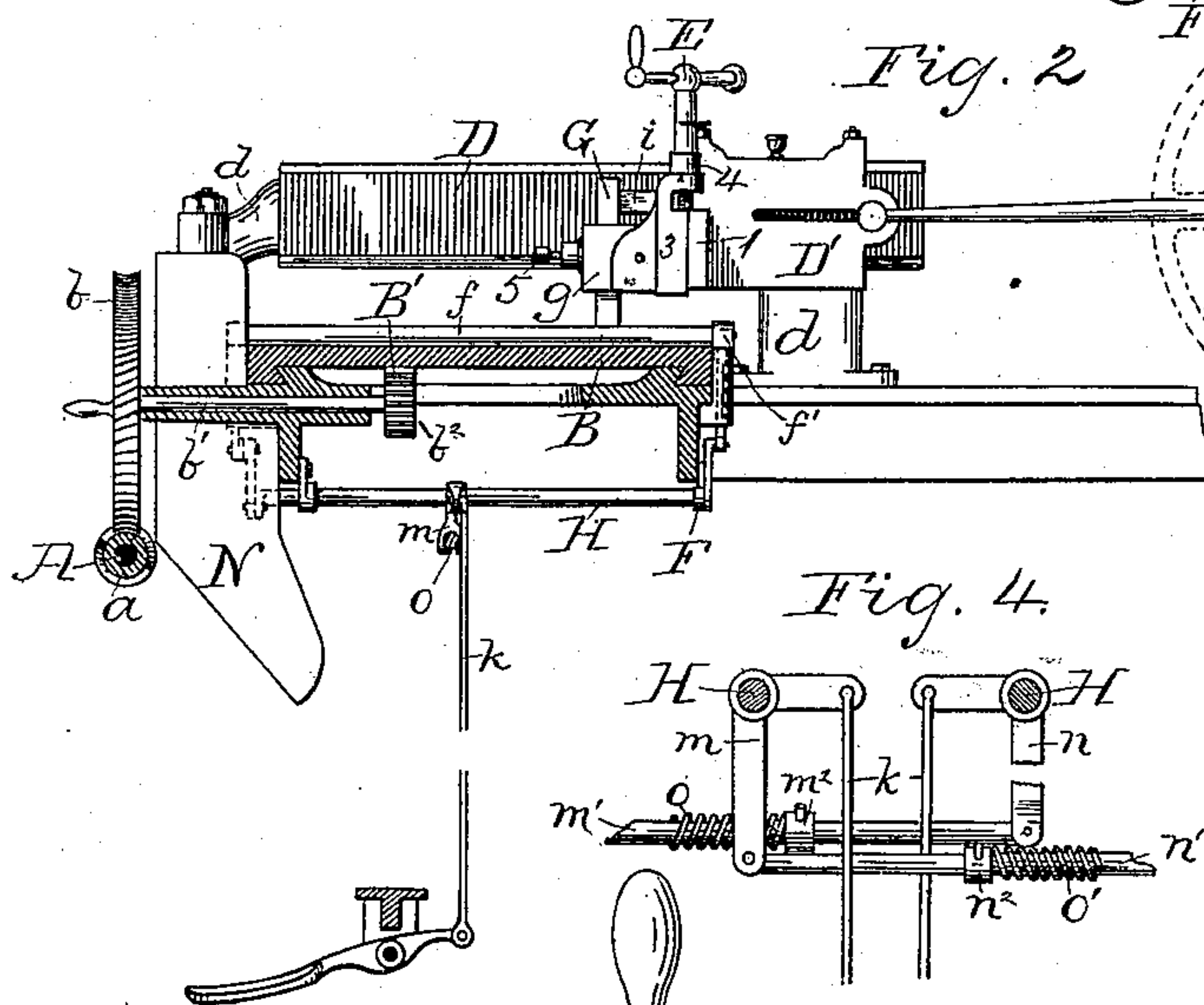
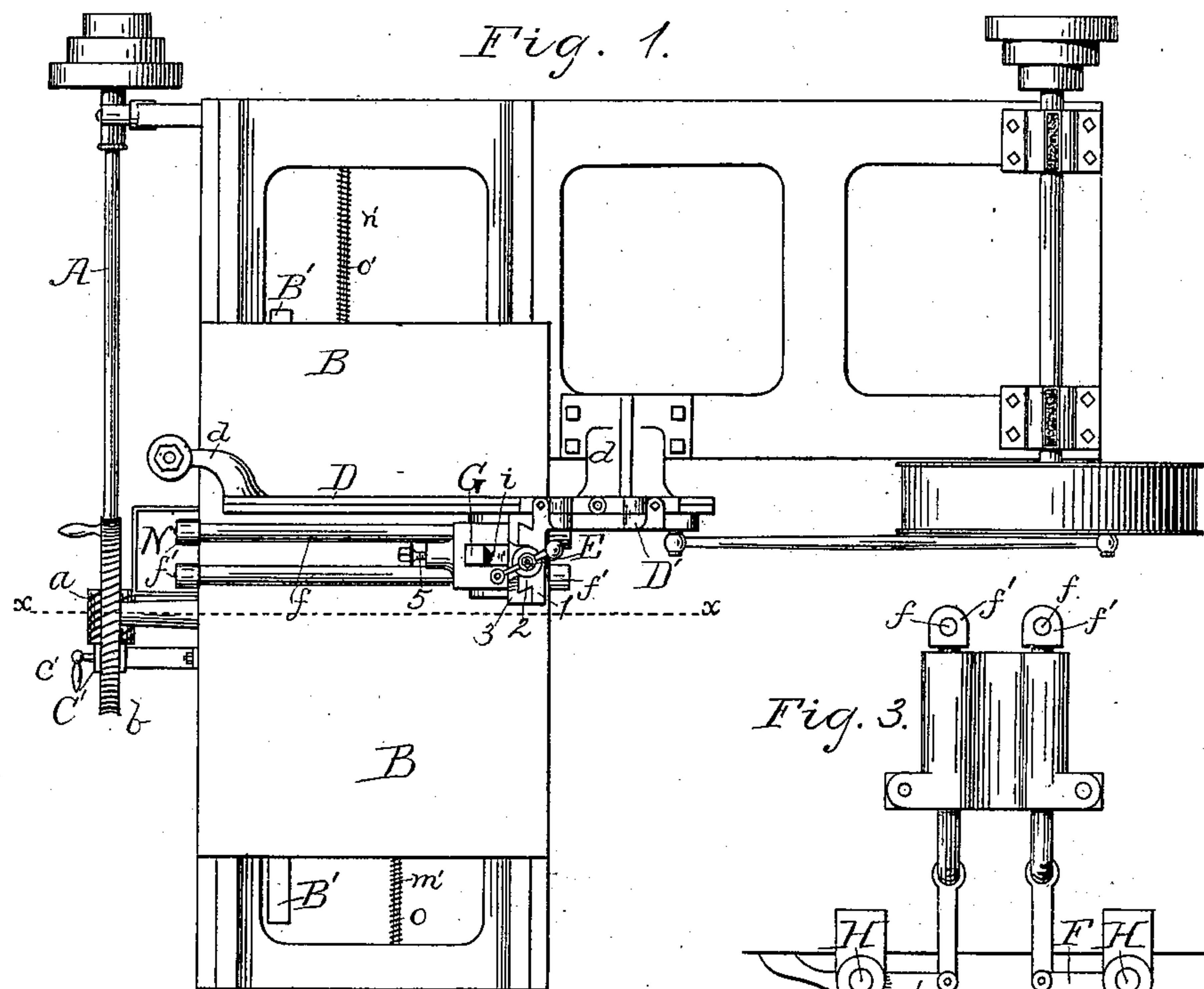
(No Model.)

G. E. LLOYD.

## STEREOTYPE PLATE ROUGHING MACHINE.

No. 333,018.

Patented Dec. 22, 1885.



WITNESSES:

Edward W. Schirach.

Herman F. Hackendoff.

Fig. 5.

George E. Lloyd  
INVENTOR

BY  
*James H. Coyne*  
ATTORNEY



# UNITED STATES PATENT OFFICE

GEORGE E. LLOYD, OF CHICAGO, ILLINOIS.

## STEREOTYPE-PLATE ROUGHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 333,018, dated December 22, 1885.

Application filed May 12, 1885. Serial No. 165,170. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE E. LLOYD, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful  
5 Improvements in Roughing-Machines; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same,  
10 reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

The object of my invention is to provide a machine commonly called a "roughing-machine" by stereotypers and electrotypers, by  
15 whom it is used to plane metal.

The principal features of this machine which I claim to be new are, the means by which the depth of the chisel can be regulated and ascer-  
20 tained, and the improved means for operating the feed-rollers, which are parallel and continuous with the path and stroke of the chisel, substantially as hereinafter set forth, and as illustrated in the drawings, in which—

25 Figure 1 is a plan view of the machine. Fig. 2 is a transverse vertical section taken on line *x x*, Fig. 1. Figs. 3 and 4 are detail views showing means for operating the feed-rollers; and Figs. 5 and 6 are detail views showing,  
30 respectively, the gage-screw and the worm-shaft bearings.

By referring to the drawings it will be observed that the frame supporting the machine is of an inverted-L shape, and has the drive-  
35 shaft journaled transversely on one end of said frame. On the inner end of said drive-shaft is the large drive-pulley, and on the other a speed-pulley, which, through the medium of a suitable belt, engages a speed-pulley on the  
40 end of and drives the worm-shaft A. This worm-shaft is placed parallel to the outer side of that part of the frame at right angles to that on which the drive-shaft has its bearings.

On the end of the shaft A opposite to that  
45 on which is placed the speed-pulley is a worm, *a*, which engages a spiral gear, *b*, which is fast on the outer end of the shaft *b'*, which passes laterally through suitable bearings in the table-frame to under the bed B of the machine,  
50 where a pinion, *b*<sup>2</sup>, is made fast to its end, that engages a rack, *B'*, arranged longitudinally

on the under surface of this bed B. The bed B is constructed as shown, and has a reciprocal motion parallel to the shaft A on the table-frame. It will be noticed that when the bed  
55 has gone the full length of its stroke toward the end of that arm of the L-frame on which it moves it would be forced out of engagement with pinion *b*<sup>2</sup>, if no means were devised to return it to its original position. This can be  
60 done much quicker by hand than by the devices actuated by the screw-gear; therefore I accomplish this by making the bearings of shaft A contiguous to the speed-pulley oscil-  
65 latory in the direction of the shaft, as shown in Fig. 1, and the bearings of said shaft at its other end I give a vertical reciprocal motion, sufficient to throw the worm in and out of en-  
70 gagement with the spiral gear. This is accomplished by journaling the end of said shaft in a suitable block, C, which, by means of a small cam, *c*, placed under it and operated  
75 by the handle *c'*, is given a reciprocal motion in the elongated slot in a head, C', supported in the end of a suitable bracket extending from the side of said table-frame.

When it is desired to restore the bed B to its normal position, I throw the worm out of engagement with spiral gear *b*, and then, grasping a handle extending laterally from  
80 one of the arms of said gear, reverse its motion, and through the medium of pinion *b*<sup>2</sup> restore it to its original position.

Supported transversely above the bed by brackets *d d* is a guide, D, upon which the  
85 carrier D' reciprocates. This carrier D' is operated by a suitable pitman, which is pivoted on a suitable stud extending from said carrier, and at its other end is journaled on a suitable stud extending from one of the arms  
90 of the drive-pulley.

Extending laterally from the side and end of the carrier farthest from that end to which is pivoted the pitman is an arm, 1, which has a dovetail tenon, 2, that enters a corresponding  
95 mortise in the head 3. This head has extending vertically and over the arm 1 a lug, 4, through which passes vertically the screw E. This screw passes vertically into the arm 1, and as it is screwed in or out carries the head  
100 with it, thus raising or lowering the same. The boss surrounding the handle of this screw



is graduated, and on the lug is an index, *e*. Thus the exact vertical movement of the head 3 can be gaged.

Extending from head 3, parallel to the guide 5 D, are two lugs, between which is pivoted a stock, *g*, through which the chisel G passes vertically, and is held secure by the screw 5, passing laterally into said stock. The block has a slight oscillation, and in order to counteract it I place a rubber cushion or spring, *i*, between 10 the upper end of the chisel G and the head 3. The chisel G reciprocates transversely over the bed B, between the two parallel feed-rollers *f f*, which are journaled in the bearings on the 15 top ends of the vertically-reciprocating rods *f' f'*, which move in suitable guides secured to the vertical sides of the table-frame. To the lower ends of these rods *f'* are pivoted pitmen, the lower ends of which latter are 20 pivoted to the extremity of the arms F, extending in toward each other from the ends of the rock-shafts H, which are journaled in or below the sides of the table-frame and pass transversely under the bed of the machine. 25 These rock-shafts are provided with transverse arms between their bearings, to the extremities of which are connected the vertical connecting-rods *k*, which are connected at their lower ends to the treadles, which latter are 30 fulcrumed at about their centers of length. Thus when the foot is pressed on the treadles, or one of them, the arm to which the connecting-rods *k* are pivoted at their upper ends is oscillated upward, thereby oscillating the 35 rock-shaft and the arms F in the same direction, and lifting the rollers *f f* from the bed.

In order to restore the rock-shaft and the contingent mechanism to their normal positions when the foot is removed from the treadles, 40 I extend perpendicularly downward from the said rock-shafts the arms *m* and *n*. These arms have pivoted to them the rods *m'* and *n'*, which pass horizontally under the adjacent rock-shaft to and into a suitable aperture in 45 the ends of the table-frame. These rods are provided with collars *m<sup>2</sup> n<sup>2</sup>*, and surrounding the rods between said collars, and the boss surrounding the aperture into which the said

rods enter are expansion-springs *o o'*, which, as the rollers are raised, as hereinbefore de- 50 scribed, are compressed, and which, by their expansion-power, restore the rock-shafts, &c., to their normal position when the foot is removed from the treadles.

On the outer side of the machine is a chute, 55 N, into which the metal shavings are carried by the action of the chisel. This chute directs said shavings and fine particles of metal away from worm and spiral gear to under the bed of the machine. 60

What I claim is—

1. The combination, in a roughing-machine, with the shaft A, journaled in oscillatory bearings near one end, block C, in which the other end is journaled, head C', and cam *c*, as 65 shown, of the spiral gear *b*, shaft *b'*, pinion *b<sup>2</sup>*, and bed B, having rack B', as set forth.

2. The combination, with bed B, of the rollers *f f*, rods *f' f'*, arms F, suitably connected to said rods *f'*, rock-shafts H, having laterally- 70 extending arms, connecting-rods K, and treadles.

3. The combination, with bed B, of the rollers *f*, rods *f'*, arms F, suitably connected to said rods *f'*, rock-shafts H, having lateral 75 arms extending from both shafts, H, toward each other, connecting-rods and treadles, vertical arms *m* and *n*, rods *m'* and *n'*, and springs *o* and *o'*, arranged substantially as and for the purpose set forth. 80

4. In a roughing-machine, the combination, with the carrier having an arm, 1, provided with tenon 2, of the head 3, having lugs, between which is pivoted the stock *g*, holding the chisel G, and having a lug, 4, having an 85 index, *e*, made in its upper surface, and screw E, passing vertically through said lug 4, and having a graduated boss adjacent and made with reference to said index *e* on the lug 4.

In testimony that I claim the foregoing as 90 my own I hereunto affix my signature in presence of two witnesses.

GEORGE E. LLOYD.

Witnesses:

JAMES H. COYNE,

FRANK D. THOMASON.