

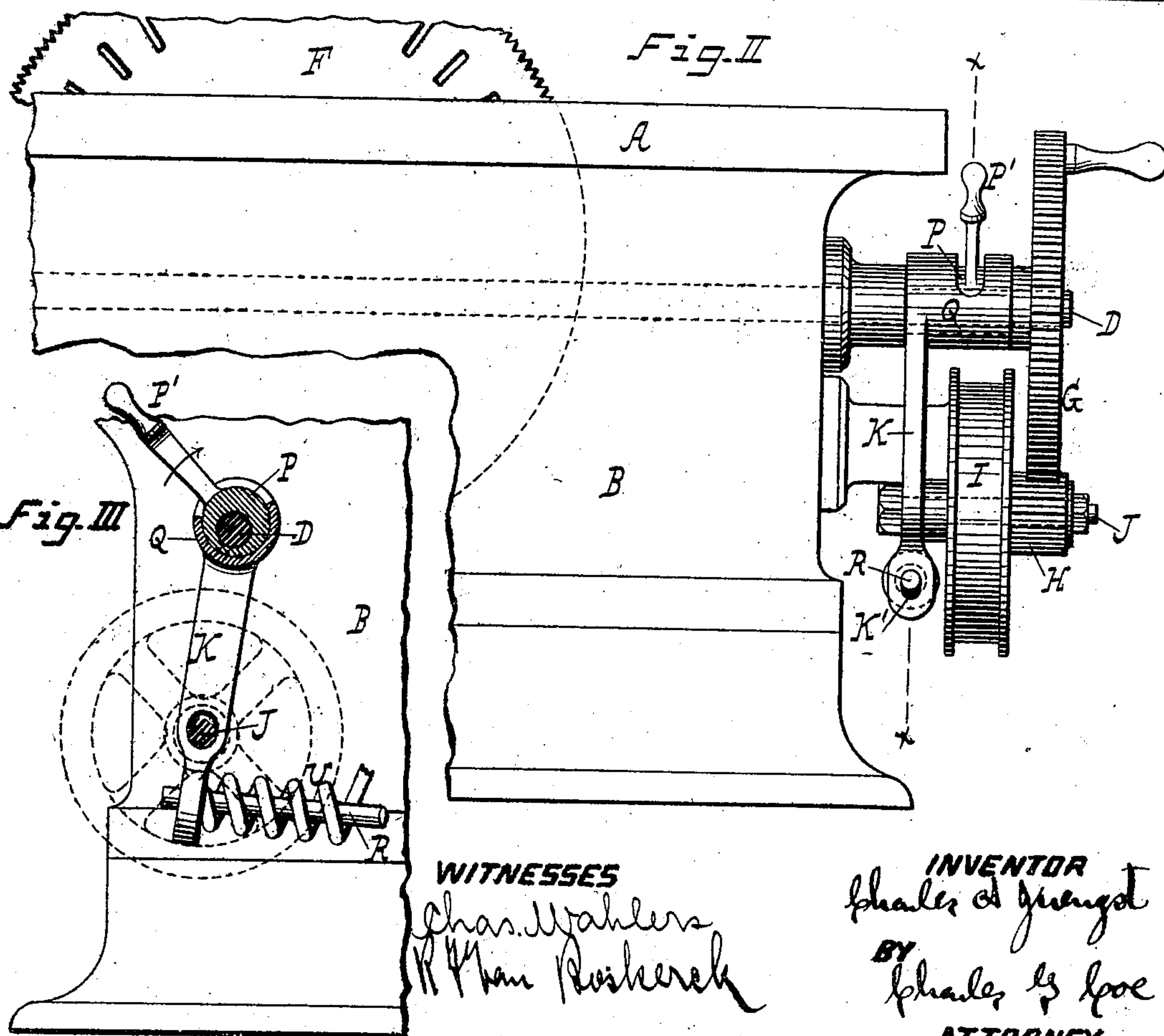
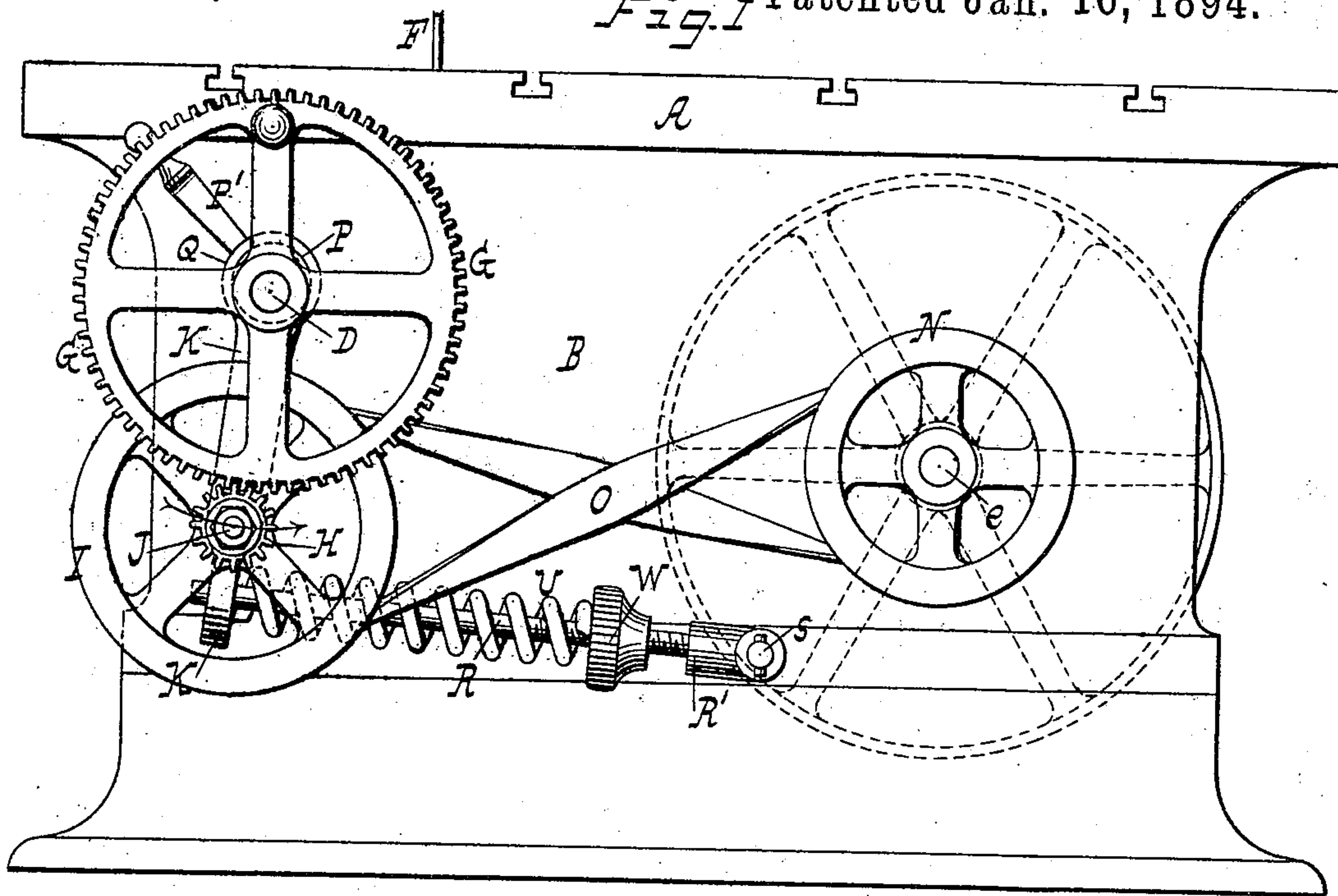
(No Model.)

2 Sheets—Sheet 1.

C. A. JUENGST.
SELF ADJUSTING FEED MECHANISM.

No. 512,972.

Fig. I Patented Jan. 16, 1894.



WITNESSES

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(No Model.)

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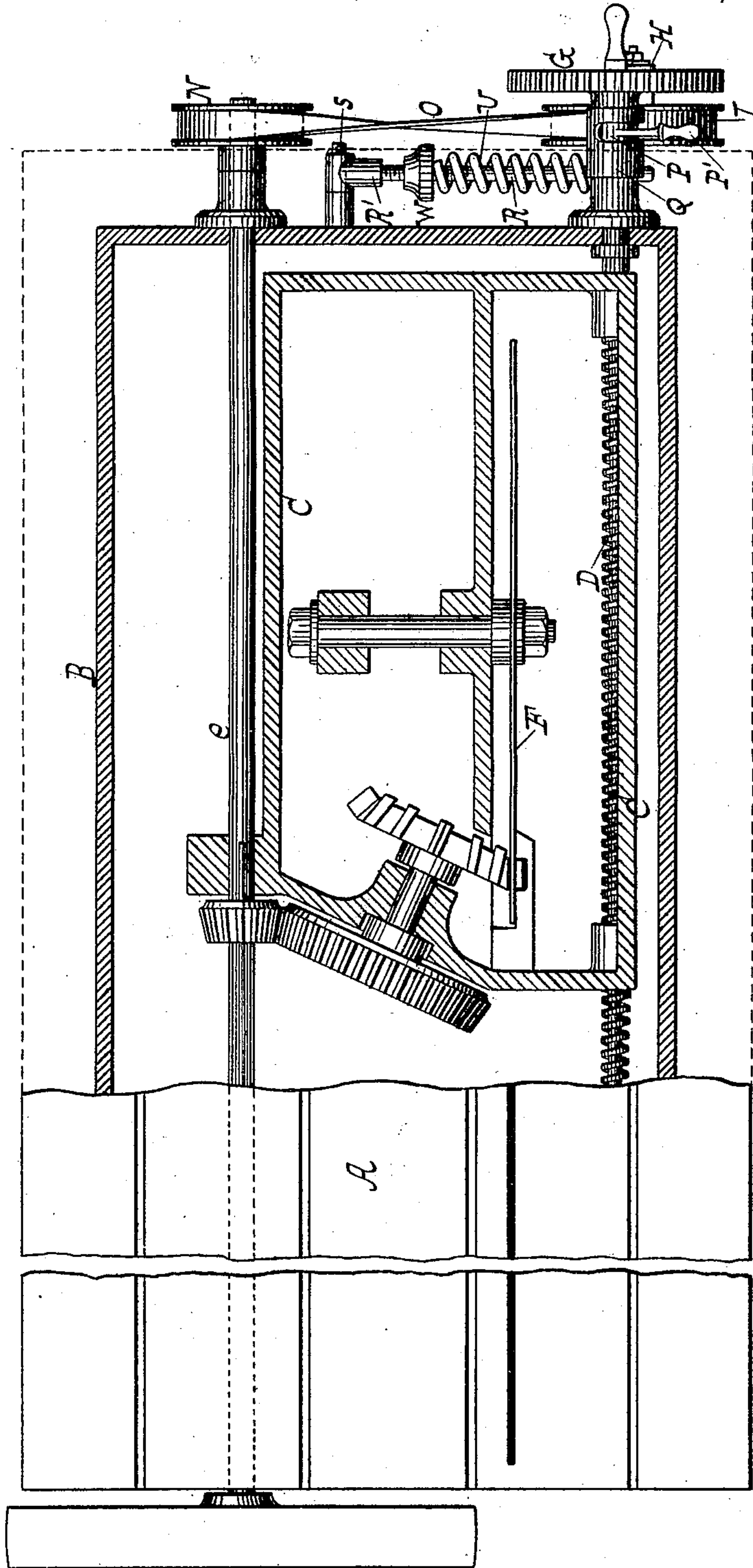
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Fig. IV



WITNESSES

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CHARLES A. JUENGST, OF CROTON FALLS, NEW YORK.

SELF-ADJUSTING FEED MECHANISM.

SPECIFICATION forming part of Letters Patent No. 512,972, dated January 16, 1894.

Application filed March 6, 1893. Serial No. 464,641. (No model.)

To all whom it may concern:

Be it known that I, CHARLES A. JUENGST, a citizen of the United States, residing at Croton Falls, county of Westchester, and State of New York, have invented certain new and useful Improvements in Self-Adjusting Feed Mechanism, of which the following is a specification.

My invention relates to mechanism for propelling the tool-carriage of a metal sawing, planing or other similar machine, by the agency of a revolving feed screw; and especially that class of such mechanism wherein the speed of the screw varies with the resistance offered by the work as for example a rail-road rail to the advance of the tool.

My invention consists of the novel features hereinafter set forth, and illustrated in the accompanying drawings, in which—

Figure I represents an end view of a sawing machine to which it is applied. Fig. II represents a side view of a portion thereof. Fig. III represents a vertical cross section on the line $x x$ Fig. II. Fig. IV represents a partial top view and partial horizontal section of the machine.

Similar letters of reference indicate similar parts.

The letter A indicates the bed of the machine, resting on the frame B, in which is located the traveling tool carriage C. This carriage C, may be of any usual or suitable construction, and it is mounted on the feed screw D, to receive the required motion therefrom, and also upon a power shaft e , from which motion is transmitted to the saw F, or other machine-tool on the carriage; the screw and shaft both extending the whole length of the machine.

Referring to the feed mechanism, the letter G, indicates a cog wheel, which is made fast on the feed screw D, at one end of the machine; H a pinion, which, under normal conditions, meshes with the cog wheel; I a main pulley, which is firmly secured to the pinion, it being alongside thereof; J an arbor, which carries the pinion and main pulley; K a swinging arm, which forms a bearing for the arbor; N a driving pulley, and O a belt connecting the two pulleys. In the example shown, the driving pulley N, is mounted on the power shaft e , and it, as well as the main

pulley I, is flanged for retaining the belt O thereon; while the belt is crossed for reversing the direction of motion of the pulleys.

The swinging arm K is hung on the feed screw D, through the medium of an eccentric P, receiving a hub Q, of the arm, for the purpose hereinafter explained; and at a point below the arbor J, the arm has a hole K', (see Fig. II) for the engagement therewith of one end of a rod R, which is hung at its other end to a pivot s , or other proper support on the machine, the rod having a head R' to receive the pivot. On the rod R, is a spiral spring U, which acts on the swinging arm K, with a tendency to force the main pulley I, away from the driving pulley N, namely, by forcing the arbor J, in that direction; on the rod being also a screw nut W, which engages the spring, bringing the latter intermediate of the swinging arm and nut; a portion of the rod being threaded to receive the nut.

The operation of the feed mechanism thus formed, is as follows: Motion is transmitted from the driving pulley N, to the main pulley I, by the belt O, and thence through the pinion H, and cog wheel G, to the feed screw D; and by the action of the spring U, the belt O, is kept normally in a state of tension, with the effect of rendering the motion of the feed screw uniform and comparatively high in rate of speed. If now the work presented to the saw F, varies in its bulk or thickness, offering a varying resistance to the advance of the saw, the greater resistance thus offered causes the carriage C, to exert a back pressure on the feed screw D, and retard its motion, together with that of the cog wheel G, whereupon the pinion H, begins to roll on the cog wheel in the direction of the arrow in Fig. I, and against the action of the spring U, reducing the distance between the pulleys I, N, and slackening the belt O; the result being to lessen the speed of motion of the feed screw and produce a comparatively slow advance of the carriage. The tension of the spring U, can be regulated by means of the screw nut W, causing it to exert a greater or lesser pressure on the swinging arm K, according to the nature of the work in the machine.

The eccentric P is loose on the feed screw D, and it usually has a handle P' for conven-

ience of its adjustment; while the hub Q, of the swinging arm, is loose on the eccentric, as more clearly shown in Fig. III. By rocking the eccentric P, on the feed screw, it acts
 5 on the hub Q, to raise or lower the swinging arm K; and in the lower position of this arm the pinion H, is thrown out of gear with the cog wheel G, so as to permit the latter to be turned independently of the remaining parts,
 10 as by hand, for returning the tool-carriage to the starting point at the end of its advance motion.

It should be remarked that instead of the swinging arm K, any other suitable bearing
 15 for the arbor J, may be employed, it being only necessary that the bearing shall be movable in the general direction in which the arm moves; and also that instead of the spring U, a weight or any other suitable tension device
 20 may be employed to act on the swinging arm, or its substitute.

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

1. A feed mechanism for a machine-tool carriage, comprising a feed screw, a cog wheel
 25 fast thereon, a pinion meshing with the cog wheel, a means for driving the pinion, with a belt, and a tension device operating to keep the belt normally in a state of tension, substantially as herein described.
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2. In combination with a machine-tool carriage, the feed mechanism comprising a feed screw, a cog wheel fast thereon, a pinion meshing with the cog wheel, a main pulley secured
 35 to the pinion, an arbor carrying the pinion and main pulley, a movable bearing for the arbor, a driving pulley, a belt connecting the two pulleys, and a tension device acting on the movable bearing to force the main pulley away from the driving pulley, keeping
 40 the belt normally in a state of tension, substantially as herein described.

3. In combination with a machine-tool carriage, the feed mechanism comprising a feed
 45 screw, a cog wheel fast thereon, a pinion meshing with the cog wheel, a main pulley secured to the pinion, an arbor carrying the pinion and main pulley, a swinging arm on the feed screw, forming a bearing for the arbor, a

driving pulley, a belt connecting the two pulleys, a rod hung to a proper support at one end and engaging the swinging arm at the other or free end, a spiral spring on the rod, acting on the swinging arm to force the main pulley away from the driving pulley, keeping
 55 the belt normally in a state of tension, and a screw-nut on a threaded portion of the rod, engaging the spring, for regulating its tension, substantially as herein described.

4. In combination with a machine-tool carriage, the feed mechanism comprising a feed screw, a cog wheel fast thereon, a pinion meshing with the cog wheel, a main pulley secured to the pinion, an arbor carrying the pinion and main pulley, an eccentric loose on the
 65 feed screw, a swinging arm forming a bearing for the arbor, with a hub loose on the eccentric, adapting the pinion to be thrown out of gear, a driving pulley, a belt connecting the two pulleys, and a tension device acting on
 70 the swinging arm to force the main pulley away from the driving pulley, keeping the belt normally in a state of tension, substantially as herein described.

5. In combination with a machine tool carriage, the feed mechanism comprising a feed screw, a cog wheel fast thereon, a pinion meshing with the cog wheel, a main pulley secured to the pinion, an arbor carrying the pinion and main pulley, an eccentric loose on the
 80 feed screw, a swinging arm forming a bearing for the arbor, with a hub loose on the eccentric, adapting the pinion to be thrown out of gear, a driving pulley, a belt connecting the two pulleys, a rod hung to a proper support
 85 at one end and engaging the swinging arm at the other or free end, a spiral spring on the rod, acting on the swinging arm to force the main pulley away from the driving pulley, keeping the belt normally in a state of tension, and a screw-nut on a threaded portion of the rod, engaging the spring, for regulating its tension, substantially as herein described.
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Witnesses:

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 CHAS. WAHLERS.