

No. 690,763.

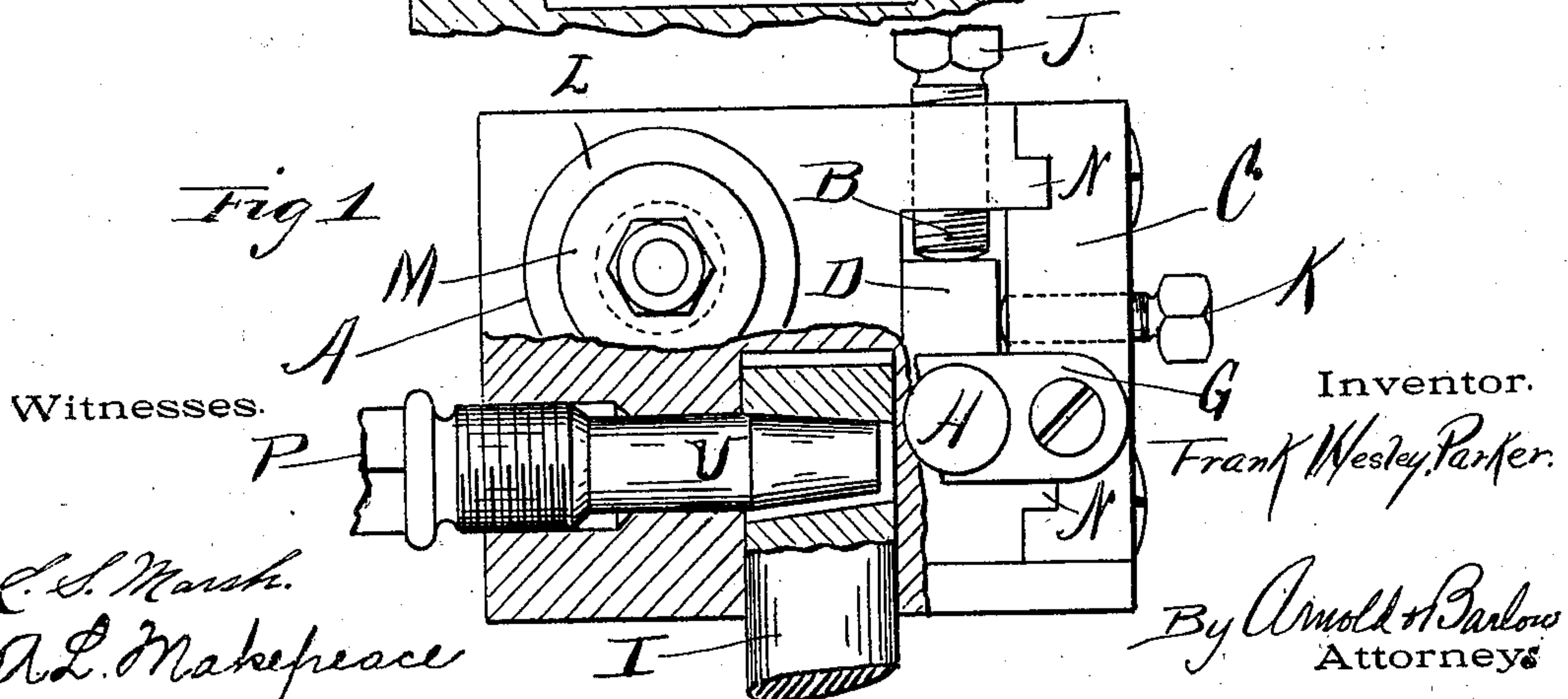
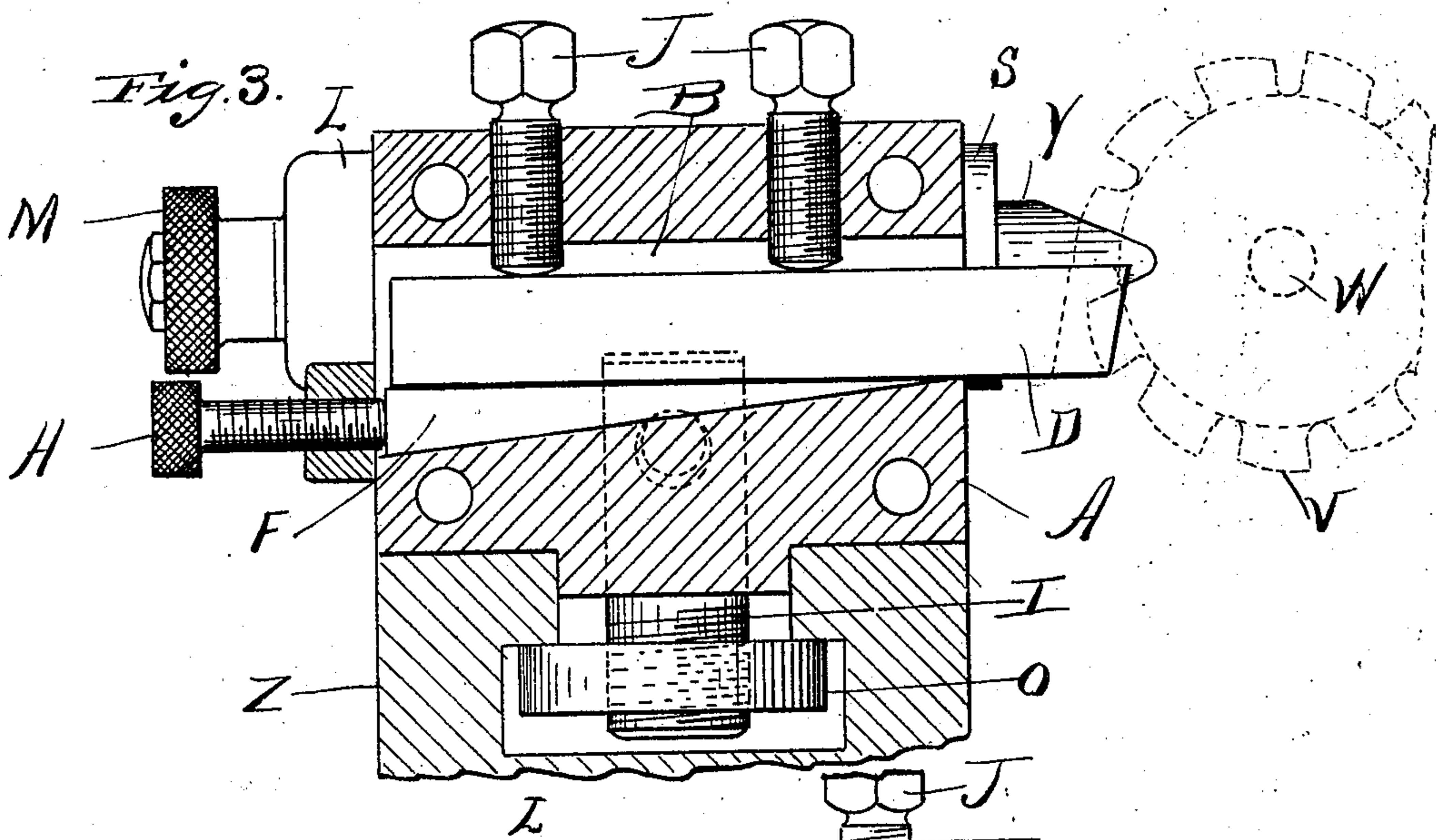
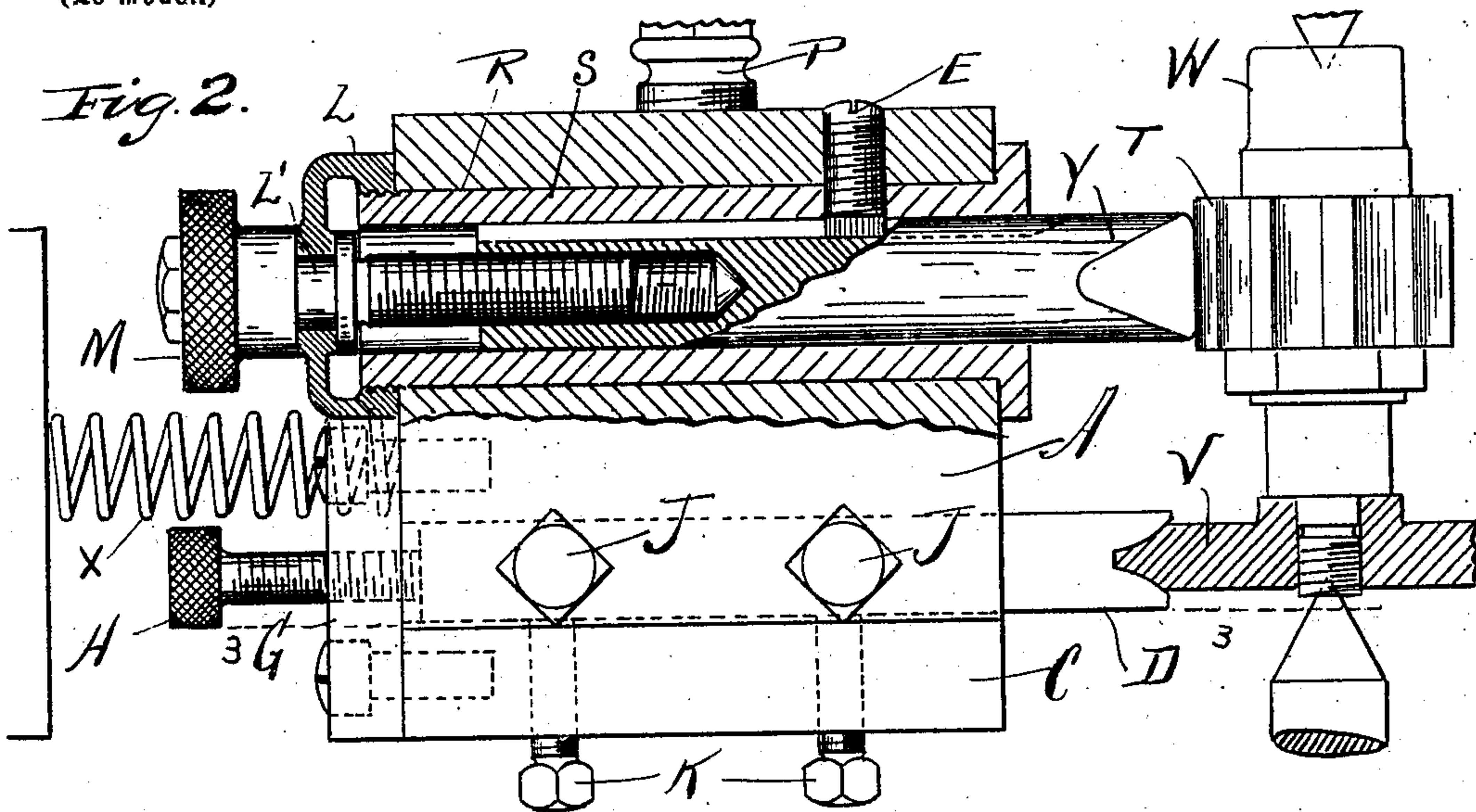
Patented Jan. 7, 1902.

F. W. PARKER.

LATHE ATTACHMENT FOR RELIEVING THE TEETH OF CUTTERS.

(Application filed May 20, 1901.)

(No Model.)



Witnesses.

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LATHE ATTACHMENT FOR RELIEVING THE TEETH OF CUTTERS.

SPECIFICATION forming part of Letters Patent No. 690,763, dated January 7, 1902.

Application filed May 20, 1901. Serial No. 61,042. (No model.)

To all whom it may concern:

Be it known that I, FRANK WESLEY PARKER, a resident of the city of Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Lathe Attachments for Relieving the Teeth of Cutters; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention consists of mechanism intended to be attached to an engine-lathe or like machine-tool for the purpose of relieving or backing down the teeth of formed cutters used in cutting the teeth of gear and in various milling operations, the object being to accomplish this reduction of the rear portion of the tooth with facility and correctness, retaining the exact contour of the tooth in cross-section, that in grinding back the face of the tooth in sharpening the cutter the original shape will be retained. It is fully described and illustrated in this specification and the annexed drawings.

Figure 1 represents a view of the front of the attachment, partly in section. Fig. 2 shows a top view of the attachment and an arbor carrying a cutter to be relieved and a templet or form to guide the shaping-tool. Fig. 3 shows a vertical section taken on line 3-3, Fig. 2, showing the arrangement for adjusting the tool and securing it in position.

The construction and operation of the attachment are as follows:

A is a block of cast-iron which carries all the working parts of the attachment and which is arranged to be held on the slide-rest of a lathe in the place of the ordinary tool-post. The block A has a horizontal groove B planed in one side of it to receive the tool D, and a wedge F, that lies below the tool, and the lower side of the groove is made on an incline to the upper side, so that the upper side of the wedge F and the upper side of the groove B will be parallel with each other. A milled-head screw H is fitted to screw through a bar G on the front end of the block and press against the outer end of the wedge F (see Fig. 3) and push it in to raise the tool D and keep its

cutting edge on a level with the center of the cutter when it becomes necessary to grind off the top of the tool in sharpening it.

Two set-screws J J are made to screw through the upper side of the groove B to press down on the tool D and hold it firmly when cutting. A cap C, made preferably of steel, is fitted with an upper and a lower rabbet N N in the block A (see Fig. 1) to cover the tool-slot B, and two set-screws K K are fitted to screw through the cap C against the tool D to hold it laterally.

By means of the rabbets N N the strain of the set-screws J on the cast metal over the slot is mainly transferred to the steel cap C, which is better able to stand it.

A hole R is made horizontally through the block A to receive a sleeve S, of hardened steel, in which a follower Y is fitted to slide, so that its inner end will rest against the templet T on the arbor W with the cutter V. A milled-head screw M is held by a cap L, attached to front of the block A, which fits into a groove L' in the body of the screw M (see Fig. 2) and prevents it from moving in or out, and the screw is fitted into the center of the follower Y, so that by turning the screw M the follower can be set in against the templet or drawn back. A screw key or spline E is put in the side of the block A and fitted in the groove made in the follower Y to prevent it from turning when the screw is operated and also by so doing maintain the position of the point of the follower to the form. The block A is held on the lathe-carriage Z by a stud I, that has a collar O fitted to screw on its lower end and slide in the groove usually occupied by the head on the lower end of the tool-post. (See Fig. 3.) This stud I projects up in a hole in the bottom of the block A, (see Fig. 1,) where the block is broken away. A transverse screw P is made to screw through the side of the block A and has a taper portion U, that enters a correspondingly tapered hole in the stud I and tightens the block A down on the slide-rest Z when the screw P is turned in, the screw-collar O being intended only to fit the length of the bolt to different depths of carriage-slots.

The operation is as follows: The arbor W, on which the templet T and cutter V are

held, is provided with a nut to set them, so that the recesses in the former will agree with the teeth partly made on the latter. The cross-carriage of the slide-rest of the lathe is released from the feed-screw, so as to be free to move easily back and forth across the lathe. The tool-post is then removed and the block A set in its place, the bolt and screw-collar O taking the place of the lower end of the tool-post. The collar O having been previously adjusted, the screw P is turned in and the stud I drawn up by taper portion U of that screw, so as to hold the block A firmly in place on the slide-rest Z. The arbor W, with the cutter V and the templet T screwed to it, the two having been set on the arbor so that the teeth of the cutter and the templet will agree, is then put on the lathe-centers and held in the usual way. The follower Y and the tool D are then set, so that when the cutter D rests on the top of a cutter-tooth the end of the follower Y will rest on the top of a tooth of the templet T, and they are then secured firmly in the block by means of the set-screws, as before described. The rest Z with block A are pressed in toward the arbor W by a spring X or by a weight, if preferred, so as to hold the end of the follower Y against the templet or form T and oblige the follower to move in and out of the recesses in it, which motions are communicated to the block A and tool D and cause the tool to leave the teeth of the cutter in exactly the same shape as the profile of the templet.

The shape of the end of the tool D, which determines the shape of the cutter-teeth, is exactly the same in cross-section square to its face all the way from the upper side to the lower side, and consequently has to be ground on top to sharpen it. When this is done, the tool D has to be raised to keep its cutting edge level with the center of the cutter, which is accomplished by means of the screw P and wedge F, as before described.

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

1. In a lathe attachment for the purpose de-

scribed, the combination of a block having a reciprocating motion with the slide-rest, a tool to shape the teeth of a cutter adjustably held in said block, a follower also held adjustably in said block to bear on a templet or form held on the same arbor with the cutter, with means for holding said block on the slide-rest of a lathe, substantially as described.

2. The combination of a block, a tool to shape the teeth of a cutter held in a slot in said block, a cap to cover said slot fitted to the side of said block by rabbeting, two set-screws to hold the tool vertically, two set-screws in said cap to hold the tool laterally, means for raising said tool, substantially as described.

3. The combination of a block, a tool held in said block to shape the teeth of a cutter, a wedge and screw to raise said tool, a follower to rest on a templet and control the motion of said block and tool, with means for holding said block on the slide-rest of a lathe, substantially as described.

4. The combination of a block, a shaping-tool held in said block, a wedge and screw to raise said tool, a follower also held in said block, means for adjusting and holding said follower, a stud having a screw-collar on its lower end, a hole in the under side of said block to receive said stud, a screw fitted into the side of said block, and having a tapering end entering a taper hole in said stud, substantially as described.

5. The combination of a block, a shaping-tool held in said block, a wedge and a screw to adjust said tool, a follower held in said block, a screw held by a cap on the front of the block and fitted to screw into said follower to adjust it, a stud held in a hole in the bottom of said block, a screw fitted in the side of said block and having a tapering end fitting into a hole in said stud, substantially as described.

In testimony whereof I have hereunto set my hand this 17th day of May, A. D. 1901.

FRANK WESLEY PARKER.

In presence of—

BENJ. ARNOLD,

HOWARD E. BARLOW.