

No. 863,497.

PATENTED AUG. 13, 1907.

N. BARRY, JR.  
TOOL HOLDER.

APPLICATION FILED MAY 24, 1906.

3 SHEETS—SHEET 1.

Fig. 1

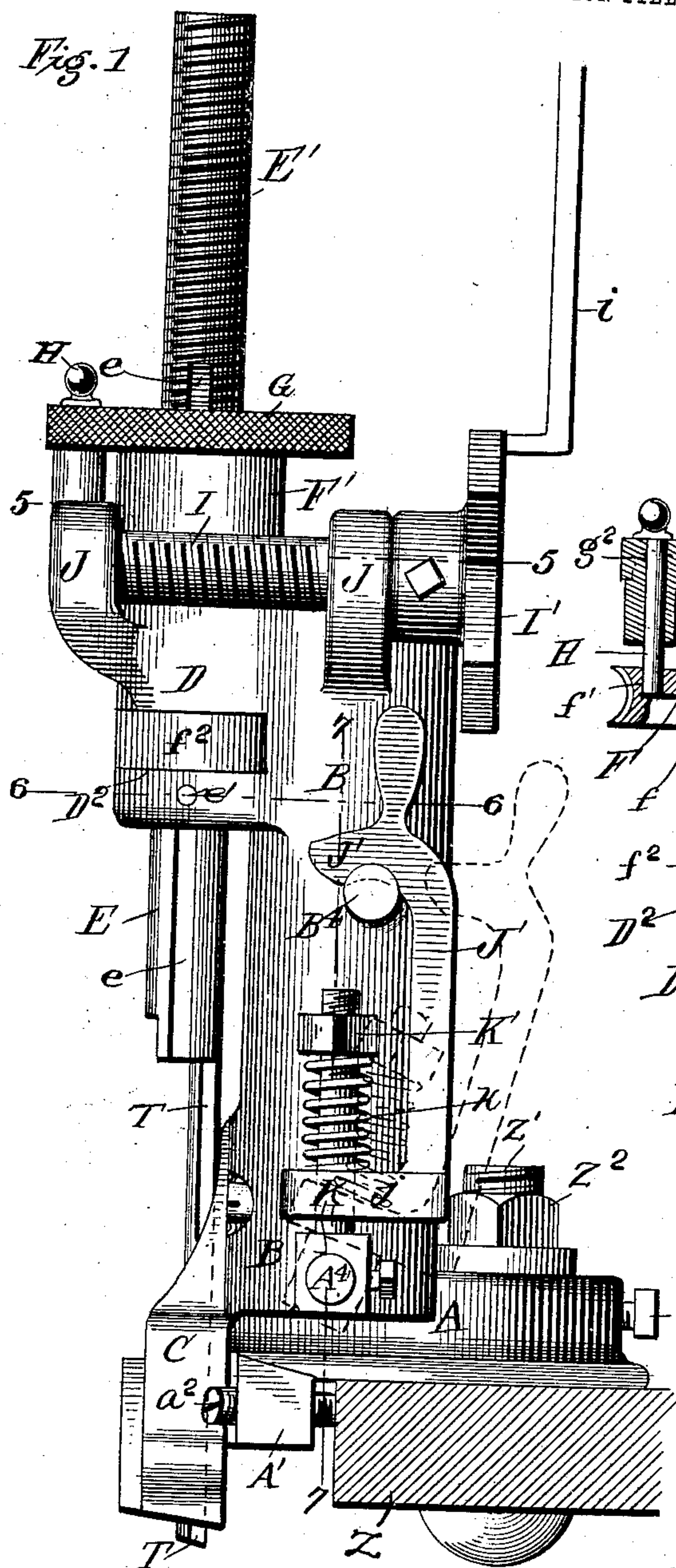
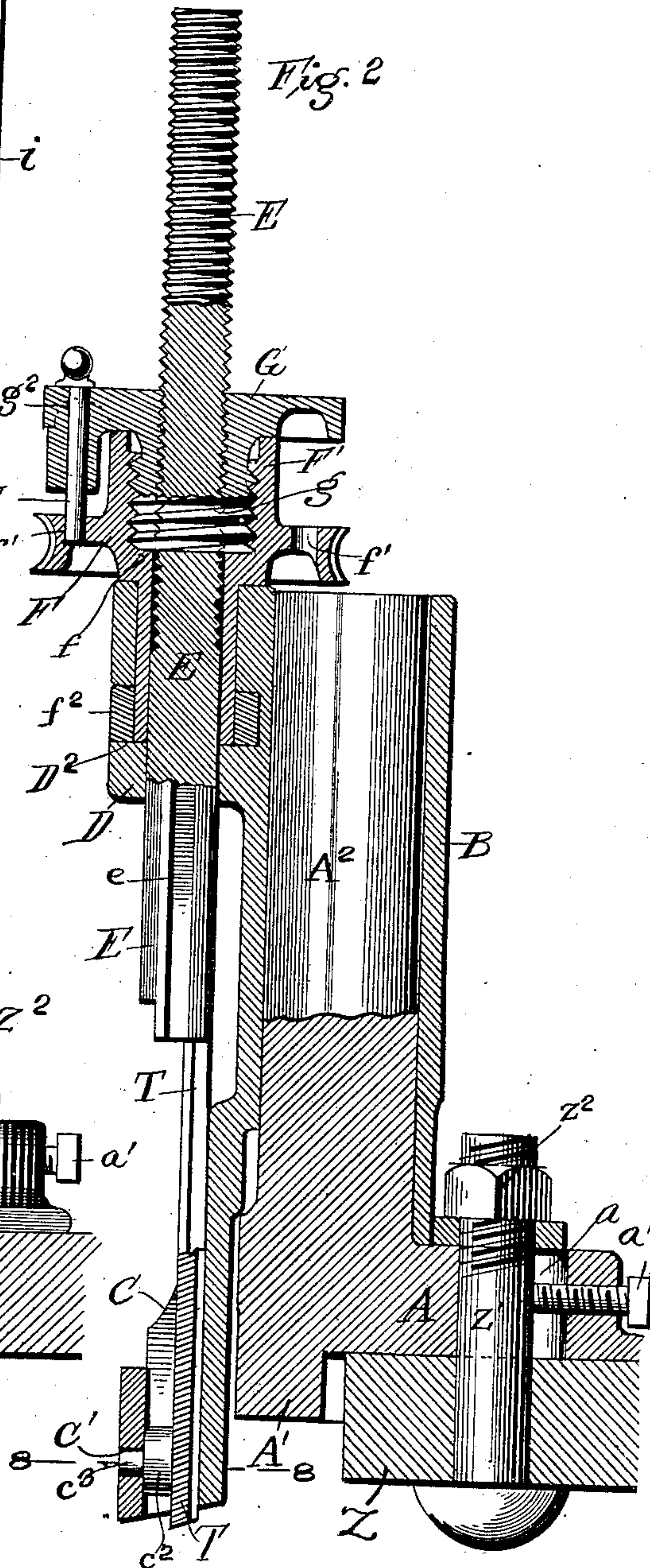


Fig. 2



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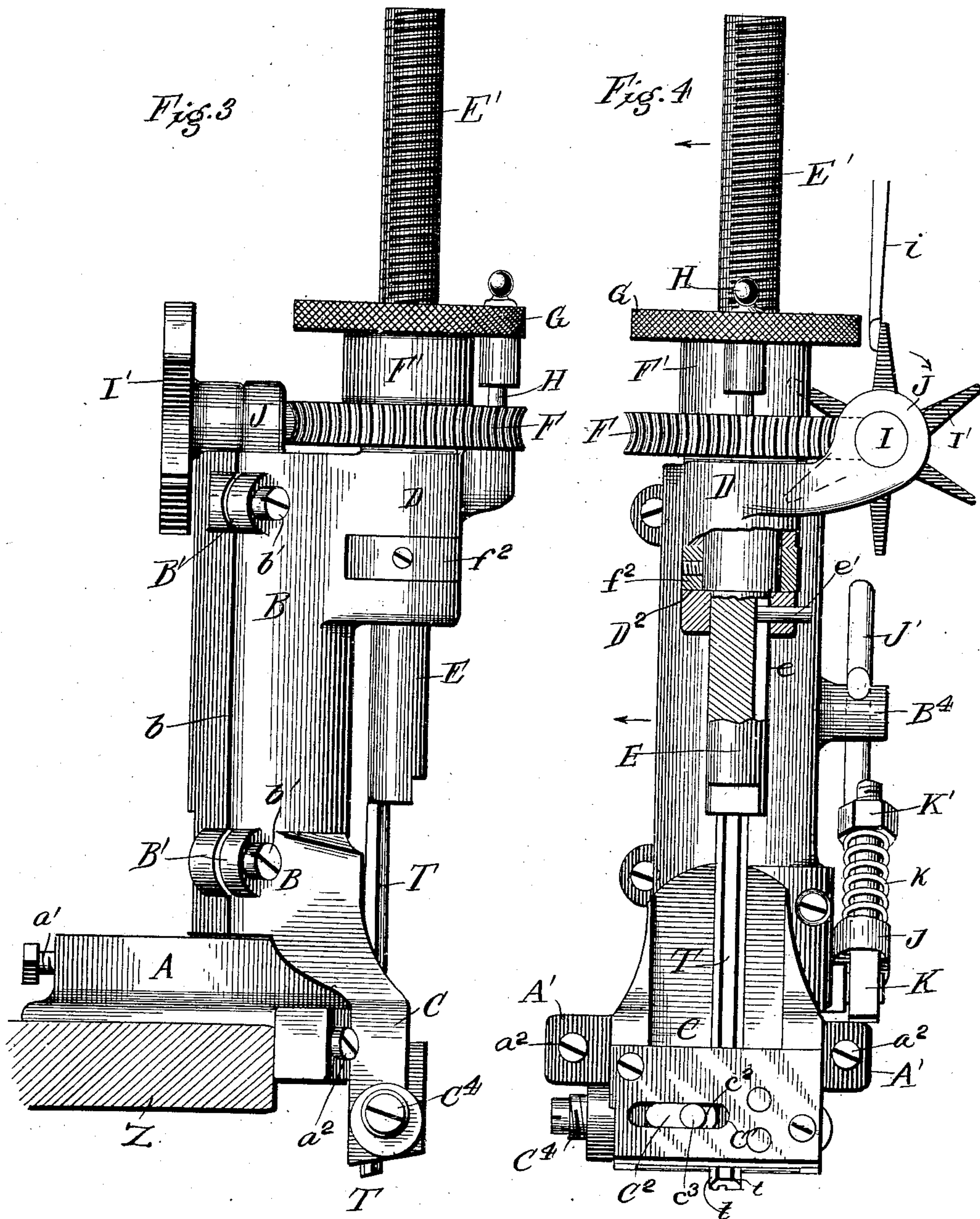
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3 SHEETS—SHEET 2.



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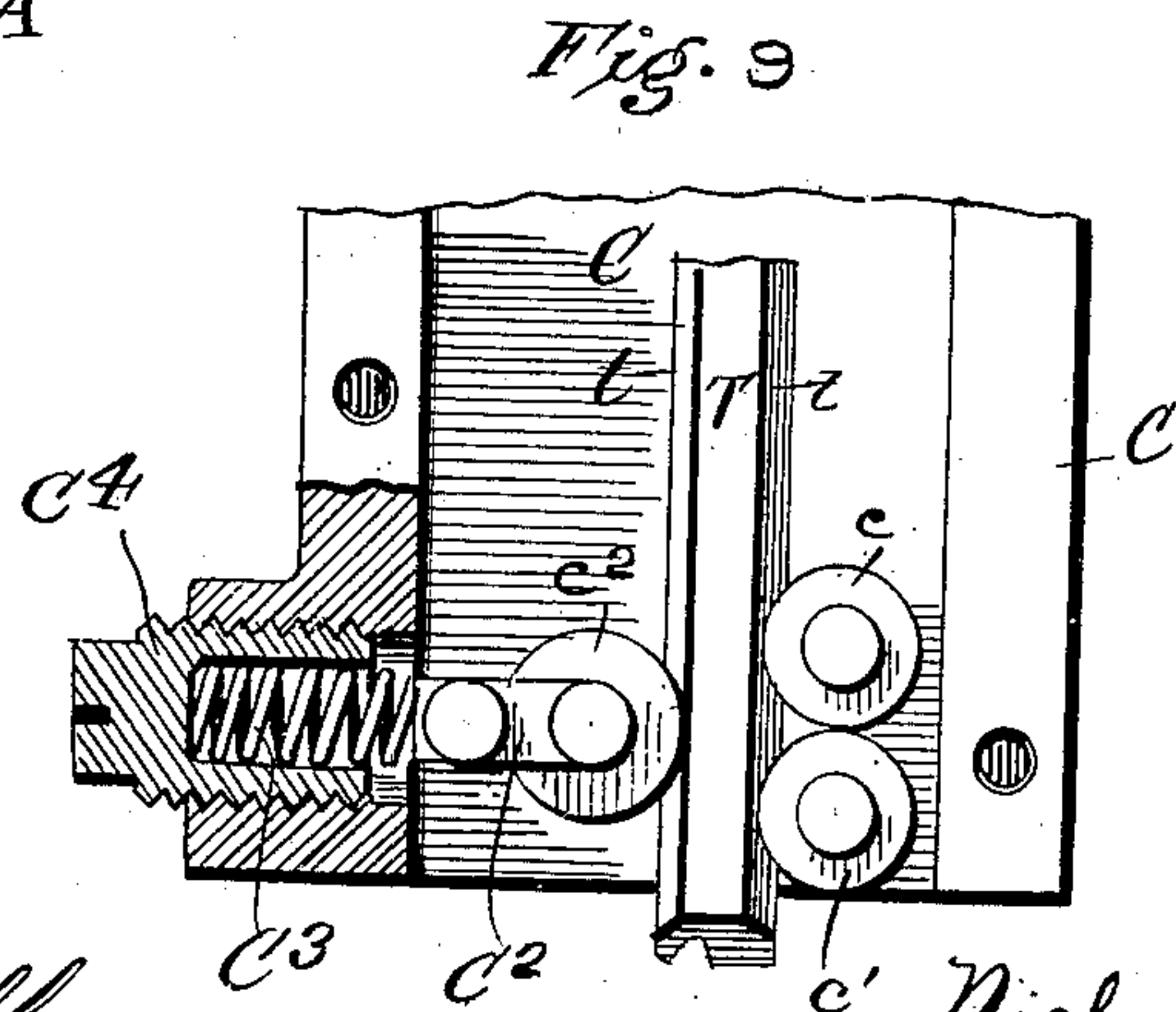
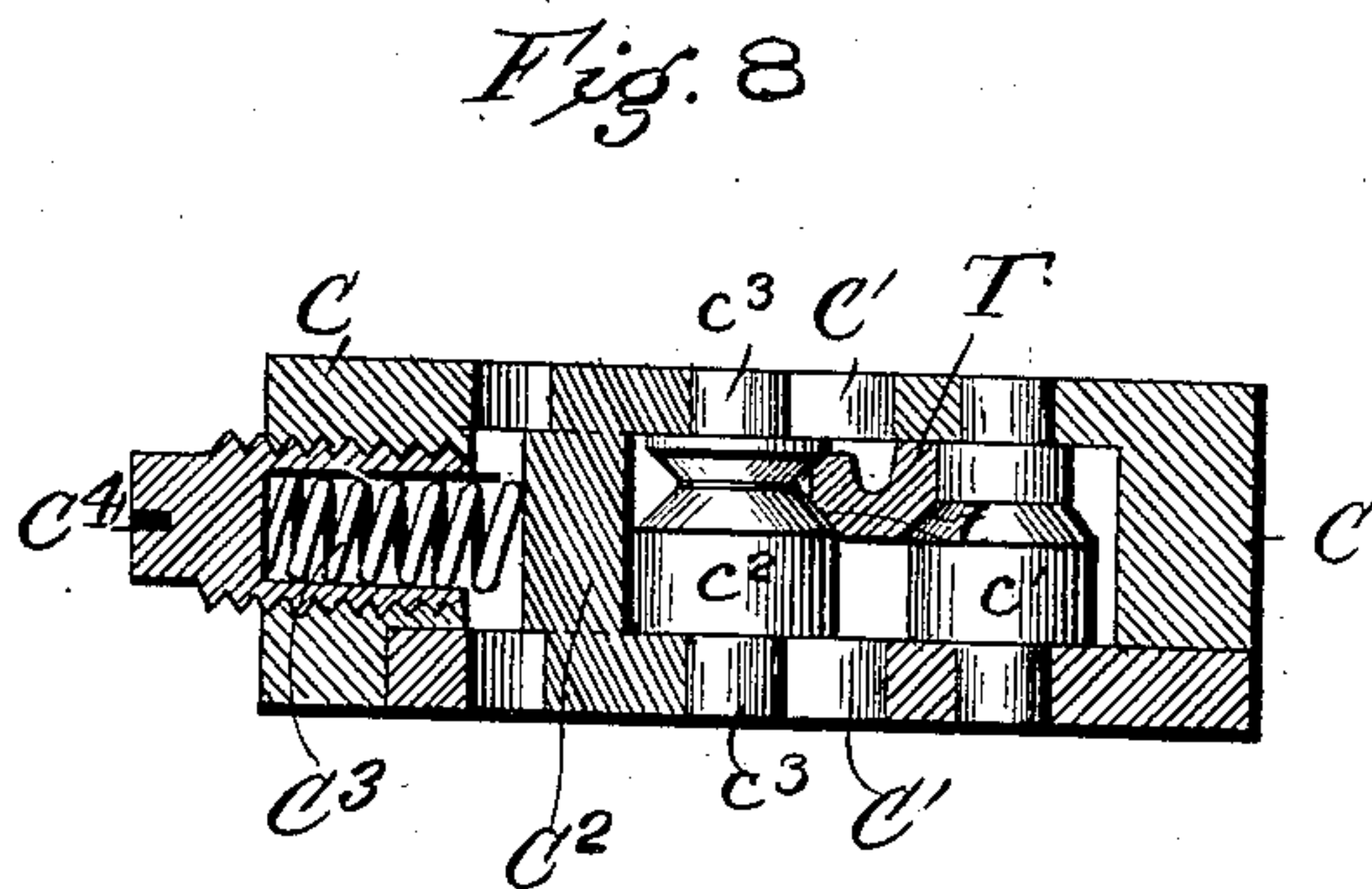
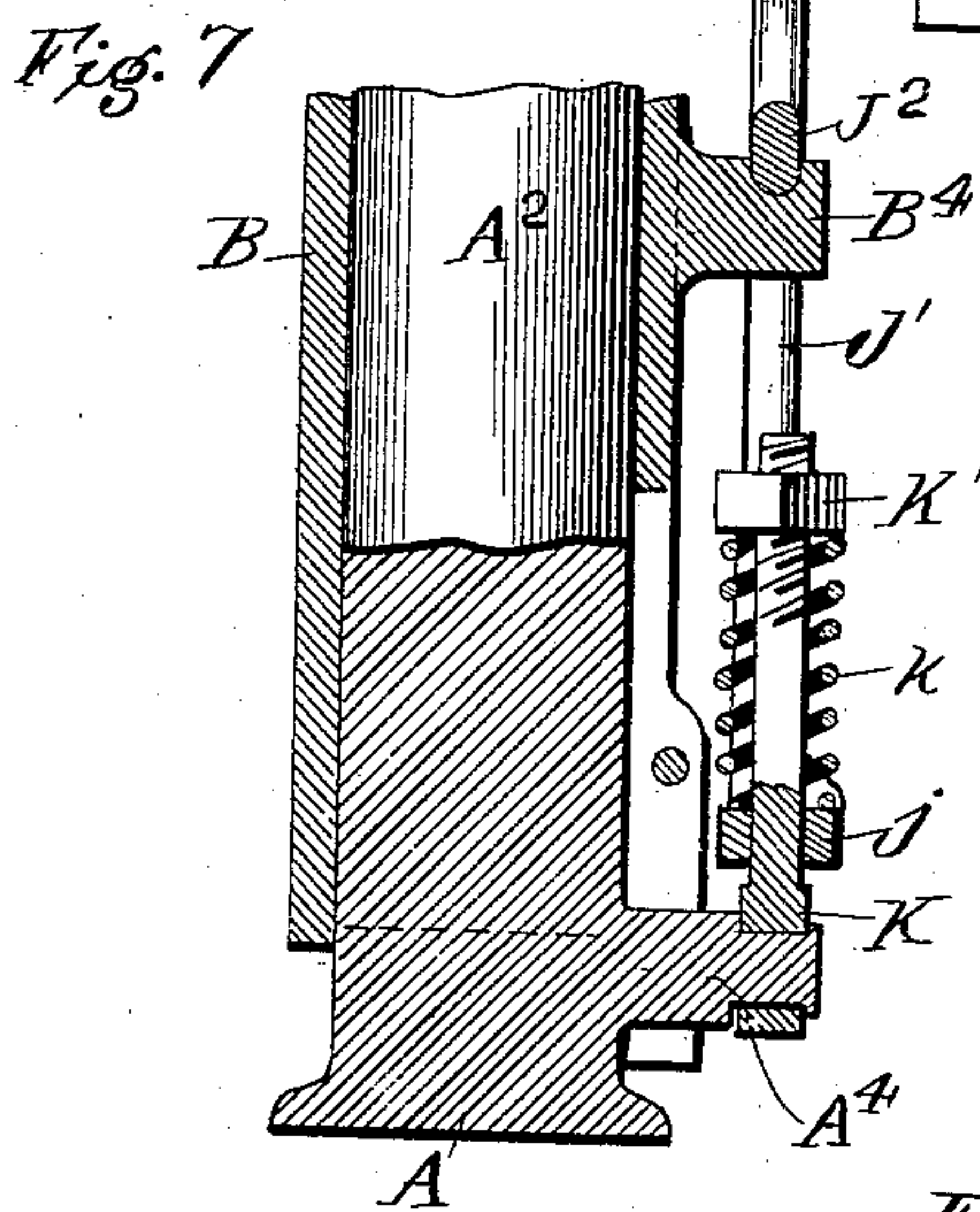
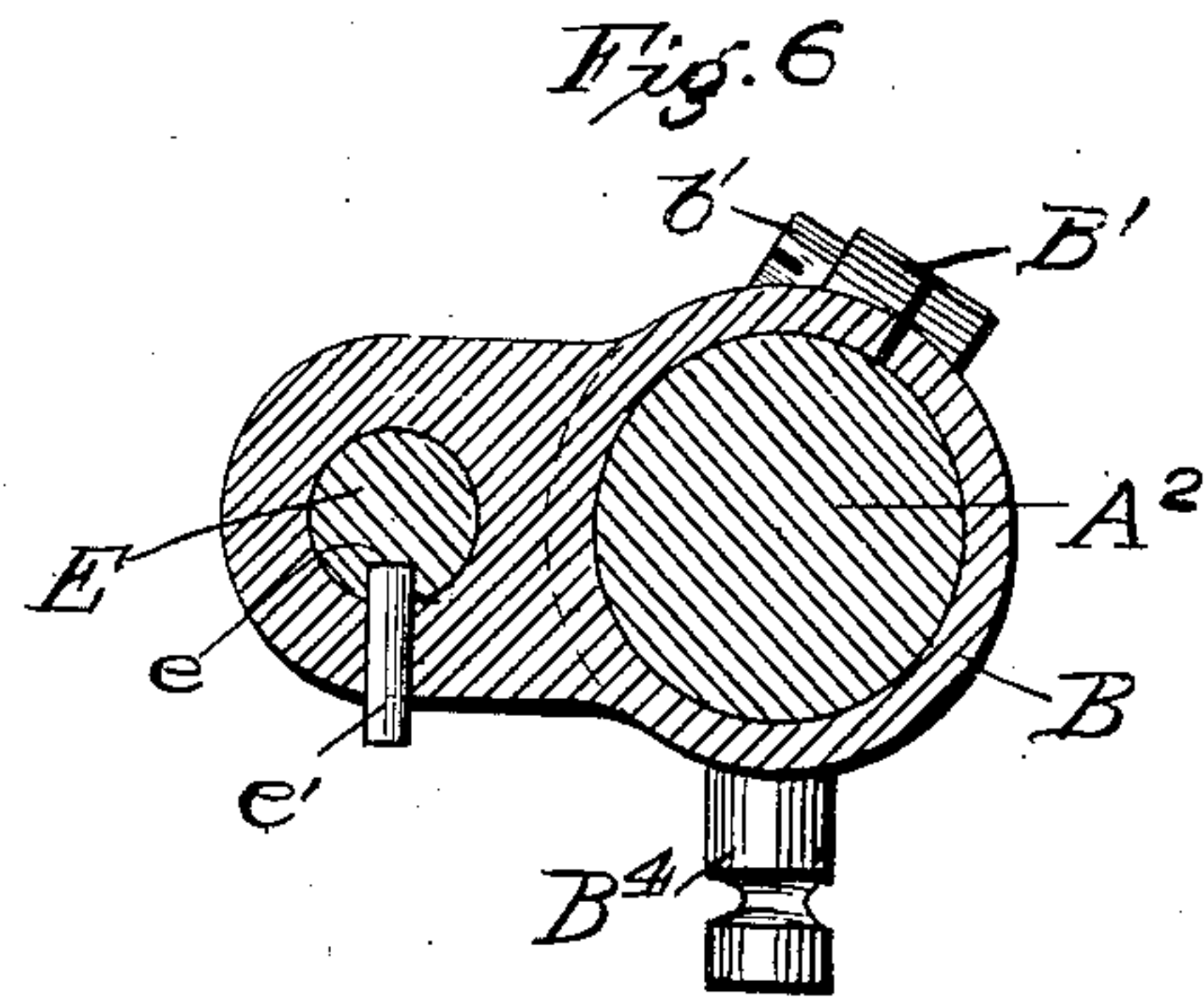
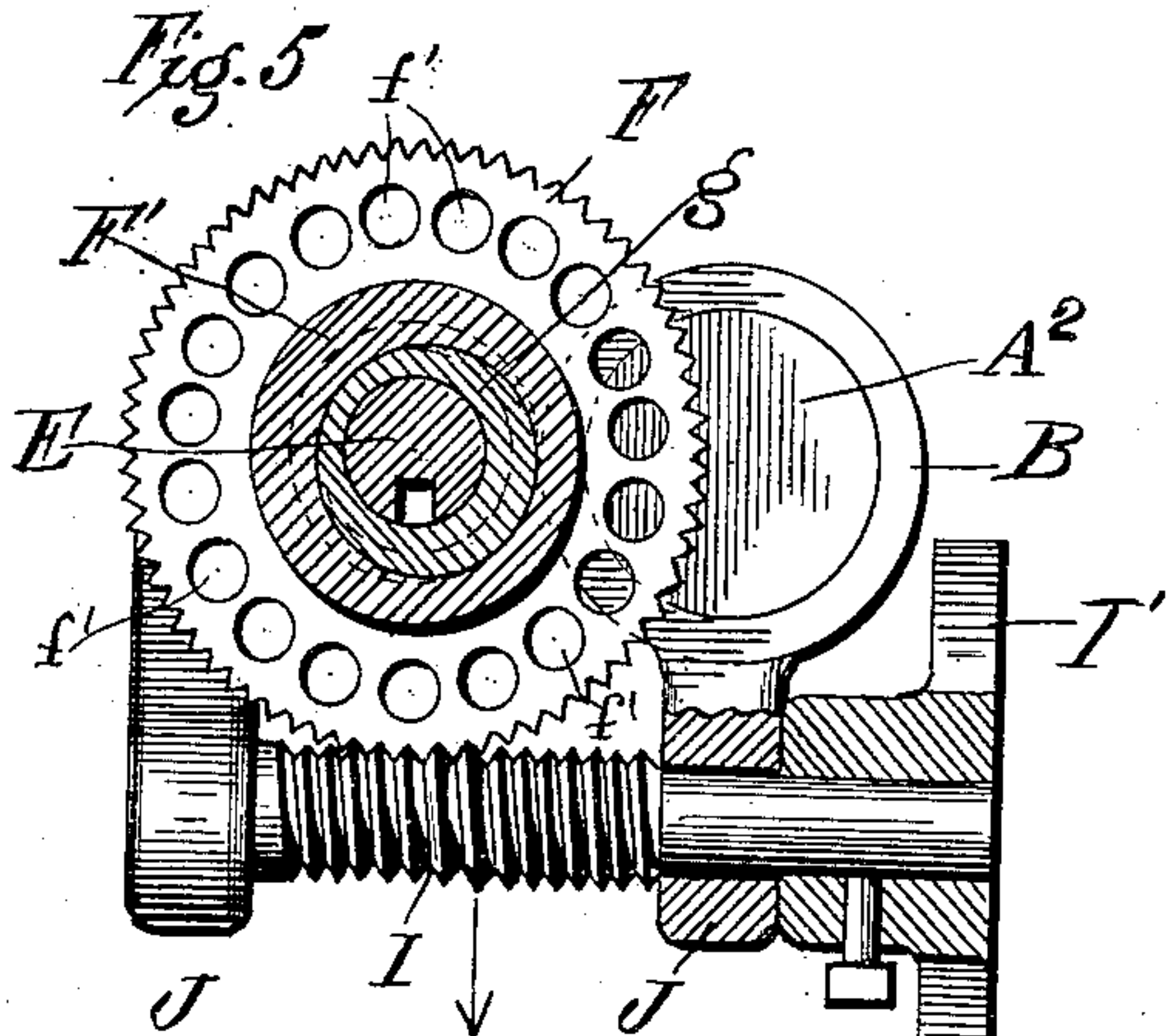
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3 SHEETS—SHEET 3.



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# UNITED STATES PATENT OFFICE.

NICHOLAS BARRY, JR., OF MUSCATINE, IOWA.

## TOOL-HOLDER.

No. 863,497.

Specification of Letters Patent.

Patented Aug. 13, 1907.

Application filed May 24, 1906. Serial No. 318,544.

*To all whom it may concern:*

Be it known that I, NICHOLAS BARRY, Jr., of Muscatine, in the county of Muscatine and State of Iowa, have invented certain new and useful Improvements in Tool-Holders; and I hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form part of this specification.

This invention is an improved tool-holder especially designed for use in connection with the button machines shown in United States Patent No. 643,587 granted to me on February 13th, 1900, but adaptable to other machines where it is desired to have the tool fed gradually, as it wears, toward the work.

The objects of the present invention are first, to enable the tool to be fed forward as it is gradually worn away, until practically the entire tool is used up, without having to adjust or set the tool but once, when it is first put in the machine; second—to automatically feed the tool very gradually as it wears; third—to maintain a uniform working pressure upon the tool; fourth—to provide roller grippers for holding the tool, which will admit its being fed forward without relaxation of their hold thereupon; fifth—to provide a spring tension for holding the tool to its work; and sixth—to provide an automatically tool-clamping holder self-adjusting to different sizes of tools.

The invention consists in the novel constructions and combinations of parts hereinafter claimed, and I will now describe the tool-holder as illustrated in the accompanying drawings in which—

Figure 1 is a side elevation of the complete tool-holder showing the spring tension devices in released position by dotted lines. Fig. 2 is a vertical central section through the complete holder. Fig. 3 is an opposite side elevation of the device. Fig. 4 is a front elevation thereof partly in section. Fig. 5 is a detail transverse section on line 5—5, Fig. 1. Fig. 6 is a detail section on line 6—6, Fig. 1. Fig. 7 is a detail section on line 7—7, Fig. 1. Fig. 8 is an enlarged detail section on line 8—8, Fig. 2. Fig. 9 is an enlarged front view of the clamp devices with face plate removed.

The complete tool-holder comprises a supporting member whereby it is adjustably attached to and mounted upon the machine; and a tool-holding member which is removably attached to the supporting member and held thereon by an adjustable spring.

The supporting member has a base portion A provided with a slot *a* through which passes a securing bolt *Z'* attached to the part *Z* of the machine to which the tool-holder is applied, the support being retained on the bolt by a nut *Z*<sup>2</sup>. When applied to my aforesaid patented machine, the tool-holder takes the place of the holder lettered *j* in said patent, and the part *Z* corresponds to the upper disk lettered *J* in said patent.

The base portion A has a depending flange A' opposite the edge of part *Z*. An adjusting screw *a'* is tapped through the end of part A to engage bolt *Z'*, and adjusting screws *a*<sup>2</sup> are tapped through flange A' to enable the tool-holder to be adjusted so that the tool will be exactly centered over the work.

From base portion A rises a standard A<sup>2</sup> preferably circular in cross section, on which is slidably engaged the sleeve B of the tool-holding member. This sleeve may be longitudinally slitted as at *b* and provided with ears B', at opposite sides of the slit, connected by bolts *b'* by which the sleeve can—if desired—be caused to hold more or less tightly on the standard A<sup>2</sup>, and its casual vibration on the standard prevented.

The tool-holder is provided with a depending portion C in which the tool clamping devices are located. These clamping devices consist of two vertically aligned rolls *c*, *c'* and an opposed roll *c*<sup>2</sup>, located opposite and intermediate the rolls *c*, *c'*, so as to clamp the tool T thereagainst. The tool T may be of any desired cross section, but is preferably beveled on its edges, as at *t*, and the peripheries of the clamping rolls *c*, *c'*, *c*<sup>2</sup>, are similarly beveled to fit closely against the tool and hold it securely against lateral vibration. The roll C<sup>2</sup> has its shaft *c*<sup>3</sup> journaled in slots C' in the walls of the portion C, and a yoke C<sup>2</sup> is arranged at the outer side of the roller and its extremities bear against the trunnions *c*<sup>3</sup> of roll *c*<sup>2</sup>, and said yoke is pushed inward by a helical spring C<sup>3</sup> interposed between the yoke and a socketed bolt C<sup>4</sup> tapped into an opening in the wall of portion C, so that by adjusting said bolt the tension of spring C<sup>3</sup> can be adjusted and regulated so as to cause the roll clamps to firmly hold the tool at all times, and so as to adjust the roll *c*<sup>2</sup> relatively to rolls *c*, *c'* to accommodate different widths of tools. By this means the tool is parallel with the sleeve at all times, and as it wears it is fed forward or downward between the rolls by the following devices.

On the upper end of the sleeve B is a forwardly projecting portion D which is vertically bored for the accommodation of a push-rod E which is in alinement with the tool T, and whose lower end is adjusted to rest upon the upper end of the tool. This rod E is non-rotatable, and has a key-slot *e* engaged by a pin *e'* tapped through the lower portion of enlargement D. The upper part of rod E is screw-threaded, as at E' and is guided in the hub *f* of a worm-gear F. The lower end of the hub of said gear fits in a circular enlargement of the opening in portion D, and is rotatably confined in said enlargement by means of a collar *f*<sup>2</sup> pinned on the lower end of the hub and working in a slot D<sup>2</sup> in the enlargement D as shown, so that the worm-gear can rotate around the rod E without any endwise movement; and rod E can slide through the worm-gear without rotational movement.



The worm-gear F has an enlarged internally threaded socket F' in its upper end, which is engaged by the exteriorly threaded hub g on a hand-nut G which is also internally threaded to engage the threads E' of rod E.

5 After the hand-nut G is run on the rod E the latter is inserted through the worm-gear and opening in enlargement D until its lower end nearly rests upon the upper end of the tool, then the hand-nut is turned so that its threaded hub screws into the threaded socket

10 in the worm F until the end of rod E rests upon the upper end of the tool T. Then the hand-nut is locked to the worm F, by means of a pin H passing through one of a series of holes  $g^2$  in nut G and engaging one of a series of holes  $f'$  in worm-gear F. Then the further

15 movement of rod E is controlled by the rotation of worm-gear F, which is turned by means of a worm I, journaled in bearing lugs J, J, on the upper end of sleeve B. Said worm can be turned by any proper means. As shown, the worm-shaft is provided with a

20 star tappet wheel I' adapted to engage a fixed tappet  $i$  located at a suitable point in the path of the tool-holder, when the latter is mounted to move as in my aforesaid patent, so that at regular intervals a partial rotation is imparted to worm I and thus the tool is very gradually

25 fed down to compensate for wear of the tool. If the tool-holder is used on a hand machine the worm can be turned by hand as the operator finds it desirable to do so.

The tool-holder can be clamped on the standard A<sup>2</sup> so as to hold the tool positively to its work; or it can be

30 loosened thereon and hold the tool to its work by the weight of the parts; but I prefer to have the tool holding member loose upon the standard and hold it to its work by spring pressure; and for this purpose I employ a hook-member J' which is provided with an eye  $j$  at its

35 base through which passes a bolt K pivoted on a stud A<sup>4</sup> attached to the base A, and a stout helical spring  $k$  is strung on bolt K between the eye-lug  $j$  and a nut K' on the bolt. The hook end J<sup>2</sup> of member J is adapted to be swung into engagement with a lug B<sup>4</sup> on the side of

40 sleeve B, as shown in Figs. 1 and 4, and when so engaged the tool-member will be held down upon the standard by the tension of spring  $k$ , and the tool can yield if the resistance of the work is sufficient to overcome the spring  $k$  and weight of parts.

45 The advantages of the improved tool-holder over that shown in my aforementioned patent are that in the prior holder the tool can be set out about one inch and the whole tool-holder plate which the old tool-holders are fastened upon must be fed down until this inch or

50 so of tool is ground away, then the tool-plate is raised, raising all the holders, and the tools must be all reset out another inch or so,—and thus several resetting operations are necessary before the tools are used up; but by the present invention the tool-holder support does

55 not have to be raised or lowered to feed the tools, but

the latter are individually fed downward between the rollers, or other suitable clamps, by the action of the feed-rod, until the entire tool is practically used up. The tool is held more rigidly by the new device, and the push-rods can be readily set to different lengths of 60 tools, and will feed them steadily and uniformly downward as they wear, and after they are once properly positioned no subsequent adjustments or resetting of tools is required. Further the pressure of the tool on the work is regulable to a nicety by means of the spring. 65

The tool T can be made of any desired cross section, but the style shown is preferred as it reduces the amount of metal necessary to grind in keeping the tool in cutting condition; and also insures a firmer clamp of the rolls thereon and effectively prevents lateral twisting 70 of the tool in the clamp.

Having described my invention what I claim as new and desire to secure by Letters Patent is:—

1. In a tool-holder, the combination of tool-clamping devices, an endwise movable rod adapted to force the tool 75 through the clamping devices, a rotatable wheel through which the rod passes, a threaded nut engaging said rod, means for locking the nut to said wheel, and means for operating said wheel, substantially as described.

2. The combination of a standard, a tool-holding device 80 slidably mounted on said standard, a bolt pivotally connected to the standard, a hook catch slidably connected with the bolt and adapted to detachably engage the tool-holder to confine it yieldably on the standard, and a spring on said bolt retaining the catch thereon, substantially as 85 described.

3. In a tool-holder, the combination of opposed tool clamping rolls adapted to hold the tool against lateral oscillation; with means for feeding the tool longitudinally 90 between the rolls.

4. In a tool holder, the combination of a set of grooved opposed tool clamping rolls adapted to hold a tool against lateral oscillation; with means for forcibly feeding the tool 95 between the rolls.

5. In a tool-holder, the combination of fixed and yield- 95 able opposed tool clamping rolls adapted to hold a tool in position relative to its work and at a predetermined distance therefrom; with means for automatically feeding the tool as it wears endwise between the rolls.

6. In a tool-holder, the combination of tool clamping devices, a feed rod for moving the tool through said devices, a 100 rotatable wheel through which the rod passes, a threaded nut engaging said rod and having a threaded engagement with the wheel, means for locking the nut to the wheel, and means for automatically rotating the wheel. 105

7. In combination, a set of clamping devices adapted to hold a tool, a threaded non-rotatable feed-rod, a rotatable but not endwise movable worm gear surrounding the rod, a feed nut threaded to the rod, means for locking the feed- 110 nut to the worm-gear, a worm engaging said worm-gear; and means for operating said worm, substantially as described.

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

NICHOLAS BARRY, JR.

In presence of—

BESSIE WILLIAMS,  
M. W. STAPLETON.