(No Model.)

4 Sheets—Sheet 1.

T. F. CURLEY.

HONING MACHINE.

No. 584,626. Patented June 15, 1897.

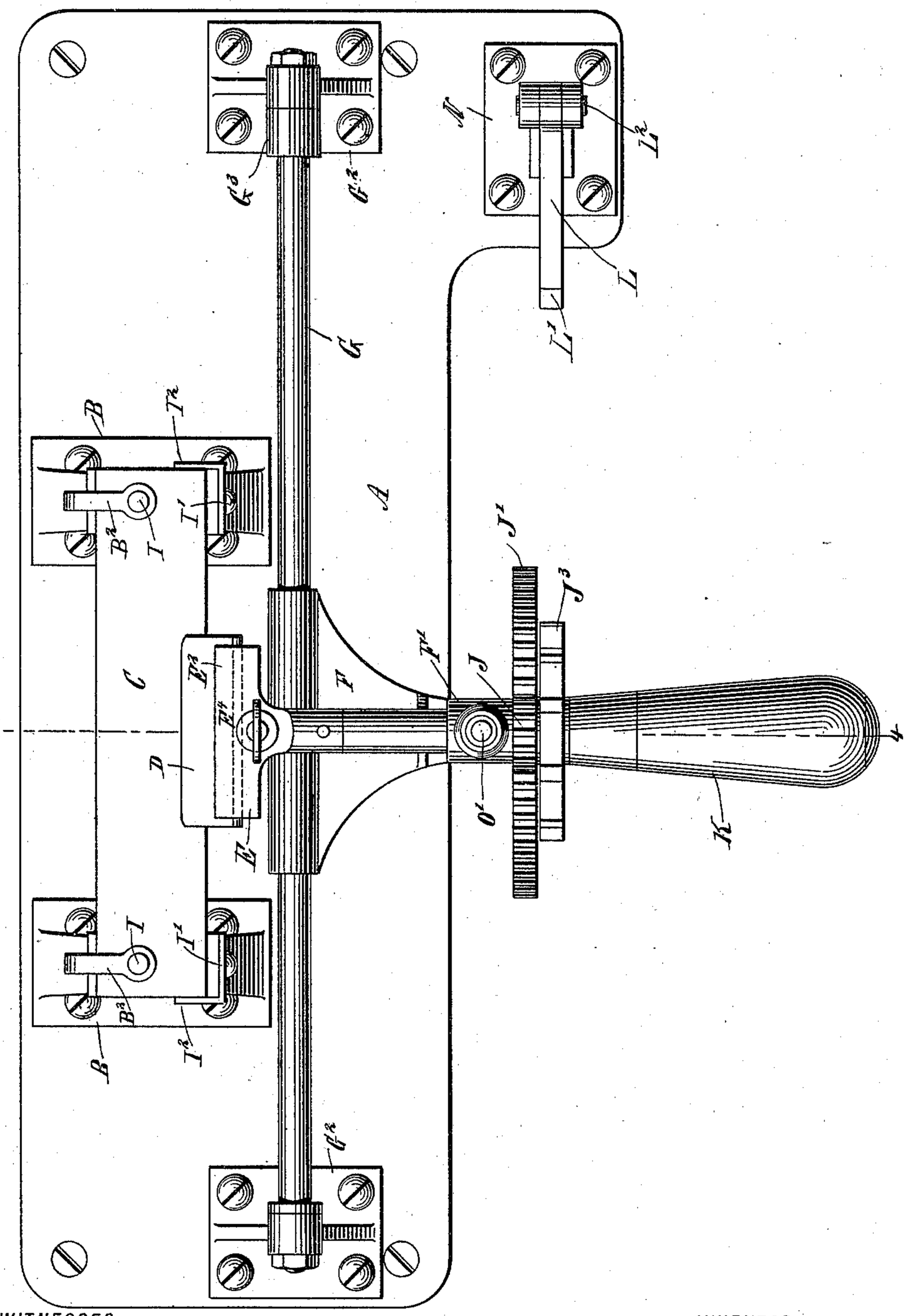

Fig. 1.

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(No Model.)

4 Sheets—Sheet 2.

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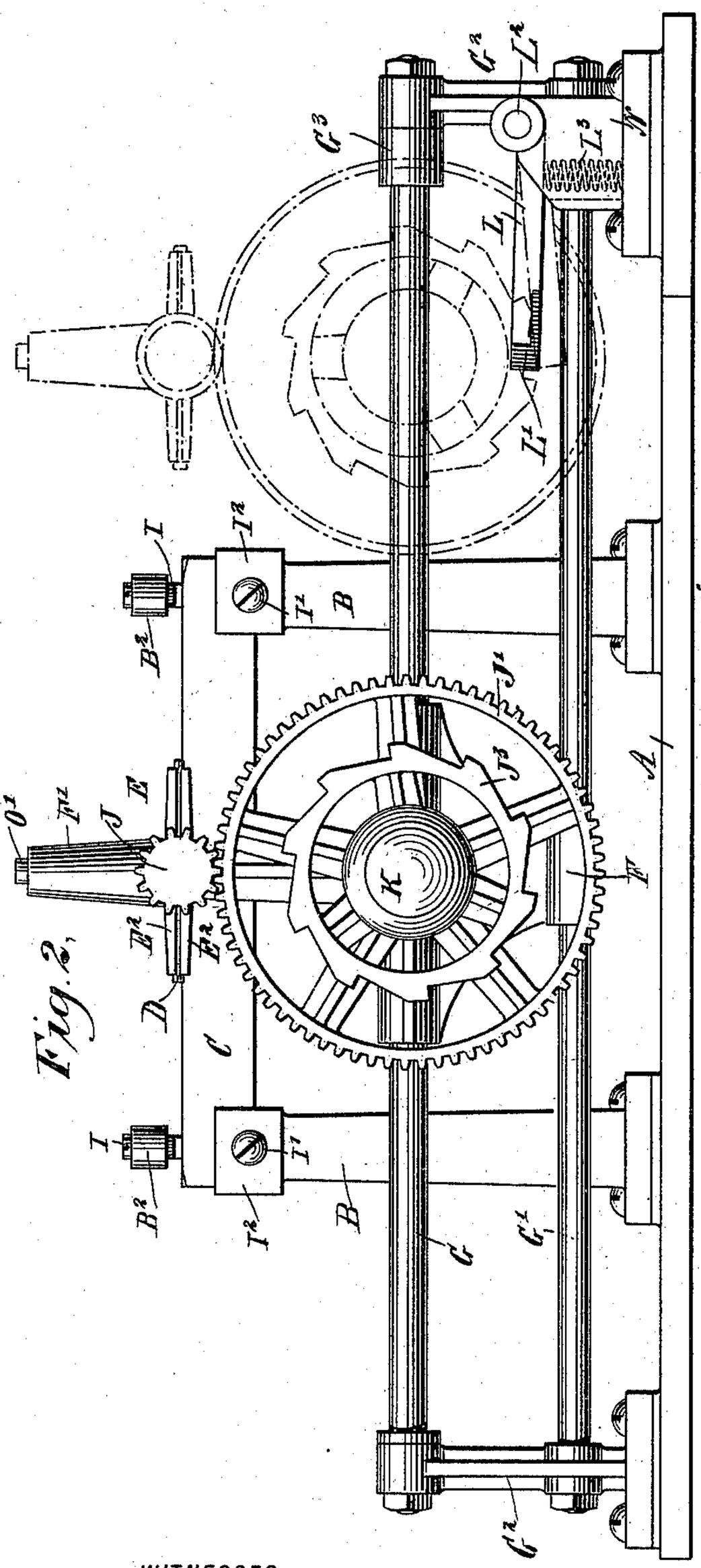

Fig. 2.

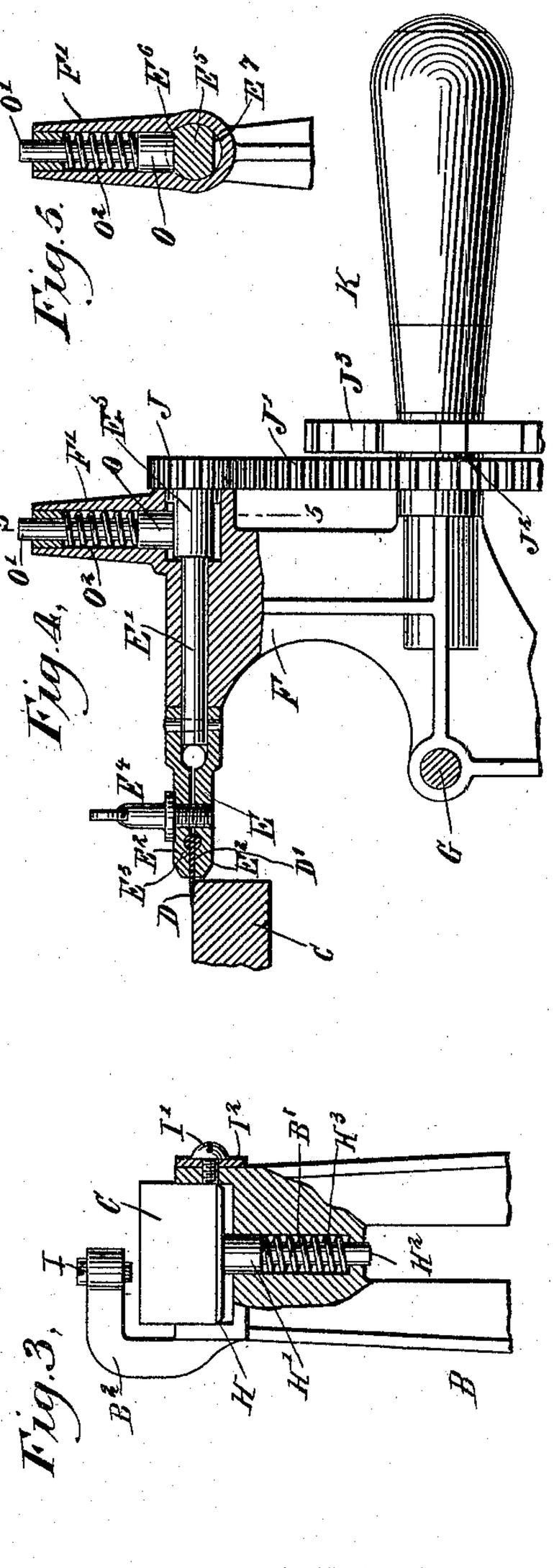

Fig. 5.

Fig. 4.

Fig. 3.

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HONING MACHINE.

No. 584,626. Patented June 15, 1897.

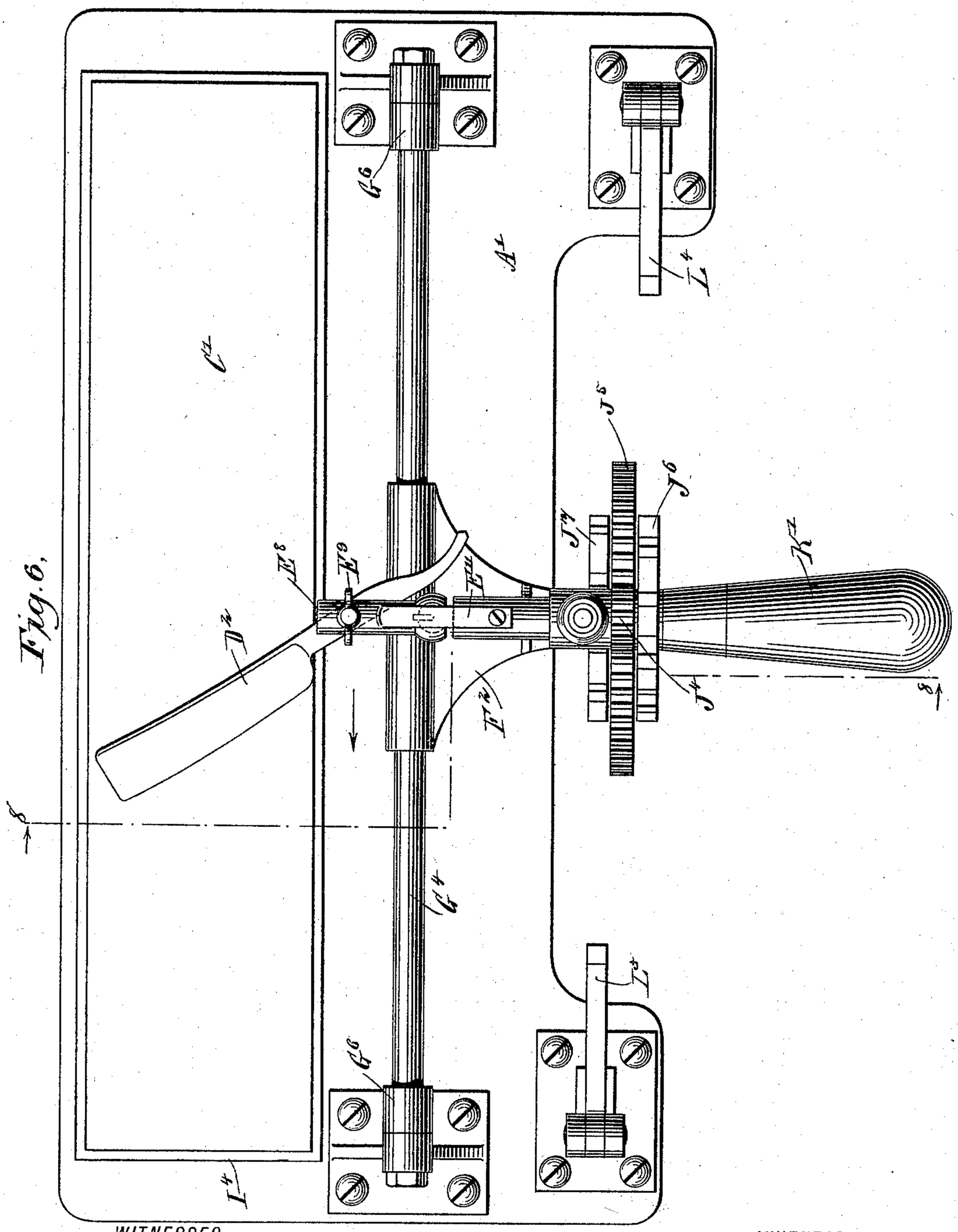

Fig. 6.

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HONING MACHINE.

No. 584,626. Patented June 15, 1897.

Fig. 7.

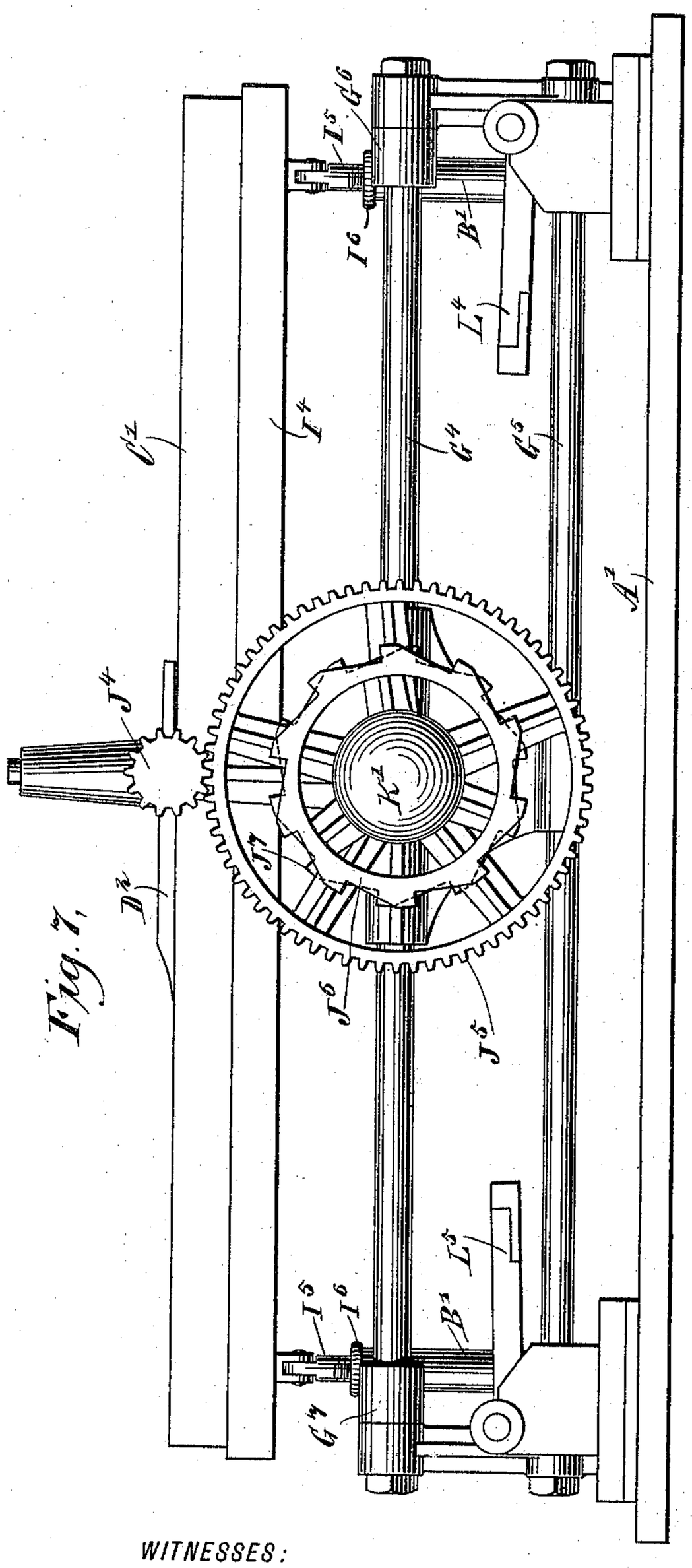
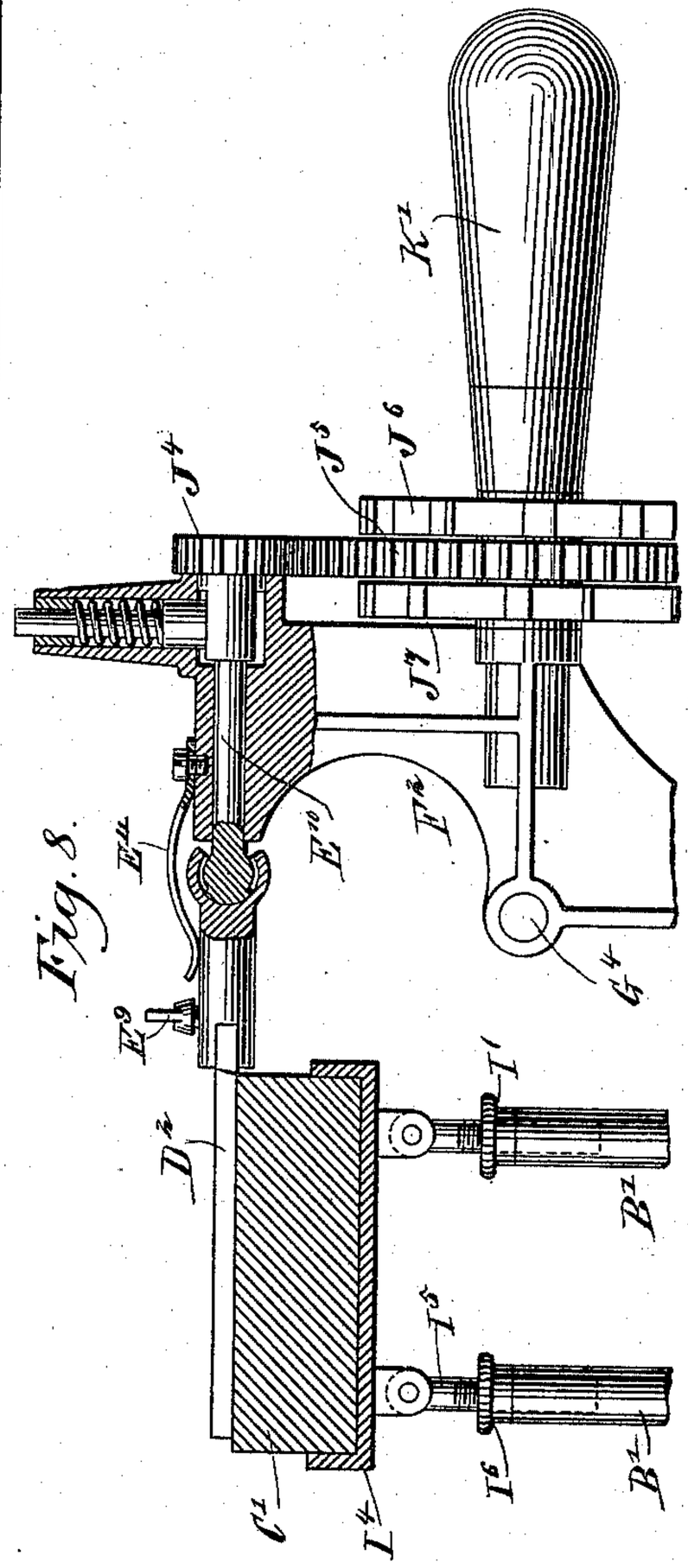


Fig. 8.



WITNESSES:

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UNITED STATES PATENT OFFICE.

TERENCE F. CURLEY, OF BROOKLYN, NEW YORK.

HONING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 584,626, dated June 15, 1897.

Application filed May 12, 1896. Serial No. 591,237. (No model.)

To all whom it may concern:

Be it known that I, TERENCE F. CURLEY, of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Honing-Machine, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved machine for sharpening the blades of ordinary razors, safety-razors, and other tools, the machine being simple and durable in construction, easily manipulated, and arranged to hold the cutting edge of the blade in proper relation to the grinding-stone and to properly draw the blade over the stone and reverse the position of the blade automatically.

The invention consists principally of a reciprocating carriage and a blade-holder journaled in the carriage and adapted to be turned at the end of the stroke of the carriage to reverse the position of the blade.

The invention also consists of certain parts and details and combinations of the same, as will be fully described hereinafter and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan view of the improvement as arranged for safety-razor blades. Fig. 2 is a front elevation of the same. Fig. 3 is an end view of the honing-stone and its support, parts being in section. Fig. 4 is a transverse section of the improvement on the line 4 4 of Fig. 1. Fig. 5 is a sectional front elevation of the locking device for the shaft of the blade-holder, the section being on the line 5 5 of Fig. 4. Fig. 6 is a plan view of the improvement as arranged for ordinary razor-blades and the like. Fig. 7 is a front elevation of the same, and Fig. 8 is a transverse section of the improvement on the line 8 8 of Fig. 6.

The improved honing-machine, as shown in Figs. 1 to 5, is mounted on a suitably-constructed base A, provided with standards B, forming a support for a honing-stone C, mounted yieldingly in said supports, as hereinafter more fully described. Over the top surface of this stone C is adapted to be drawn the razor-blade D to be honed and sharpened, said blade being secured in a holder E, having a shaft E′, mounted to turn in a suitable bearing formed transversely in a carriage F, fitted to slide longitudinally and mounted on suitable guide-rods G G′, secured at their ends in brackets G^2, secured to the base A. Thus when a reciprocating motion is given to the carriage F, as hereinafter more fully described, then the cutting edge of the blade D is drawn over the top surface of the honing-stone C, said blade D receiving a half-turn at the end of each full stroke, so as to alternately bring the opposite sides of the blade in contact with the honing-stone.

Now in order to hold the honing-stone with the proper force against the blade D, I support the honing-stone at its ends on plates H, each provided with a downwardly-extending pin H′, fitted to slide in a bore B′, formed in the corresponding standard B.

On the lower reduced end H^2 of each pin H′ is coiled a spring H^3, the lower end of said spring resting on the bottom of the bore B′ and its upper end resting against the shoulder formed at the junction of the body of the pin H′ and the reduced portion H^2. (See Fig. 3.) The upward movement of the honing-stone C is limited at each end by a set-screw I, screwing in a bracket B^2, formed on the corresponding standard B. Endwise movement of the honing-stone C is prevented by angle-irons I^2, fastened by set-screws I′ to the standards B, one arm of each angle-iron projecting over the end of the honing-stone C, as plainly indicated in Fig. 1.

The blade-holder E is provided with two jaws E^2, between which passes the back portion of the blade D to be honed, the back of the blade fitting into enlarged recesses E^3, formed opposite each other on opposite sides of the jaws E^2, as plainly indicated in Fig. 4. A clamping-screw E^4 serves to draw the jaws E^2 together, so as to securely clamp the blade D in position in the holder, the clamping-screw when slack permitting of readily withdrawing the blade from the holder by moving the blade endwise at the time the blade D is out of engagement with the honing-stone C.

On the forward end of the shaft E′ of the holder E is secured a pinion J in mesh with a gear-wheel J′, mounted to rotate loosely on a stud projecting from the carriage F, said stud

being formed at its front end into a handle K, adapted to be taken hold of by the operator, to permit the latter to push the carriage F longitudinally on the guide-rods G G′ to draw the blade D over the honing-stone C.

In order to give a half-turn to the holder E and the blade D carried thereby at the end of each full stroke, I provide the following device: On the hub J^2 of the large gear-wheel J′ is secured a ratchet-wheel J^3, adapted to be engaged by the free end L′ of a pawl L, fulcrumed at L^2 on a bracket N, secured to the base A at one end thereof, as plainly indicated in Figs. 1 and 2. A spring L^3, held on the bracket N, holds the pawl L normally in an approximately horizontal position, whereby the end L′ is in the path of one of the lowermost teeth of the ratchet-wheel J^3, so that when the operator pushes the carriage F to the right then the said teeth of the ratchet-wheel J^3 moves in engagement with the end L′, and on the further movement of the carriage F to the right the ratchet-wheel is given a quarter-turn by the said pawl. The motion thus given to the ratchet-wheel is transmitted to the gear-wheel J′, which by being in mesh with the pinion J causes the shaft E′ to make a half-turn, so that the holder E and the blade D make a complete half-turn and reverse the position of the blade.

On the rod G is secured a stop-collar G^3, adapted to be engaged by the carriage F at the time the latter is moved to an extreme right-hand position, and this collar G^3 is so located relatively to the pawl L that when the carriage has been moved into the extreme right-hand position then the pawl L has turned the ratchet-wheel J^3 a distance, so as to cause a half-turn of the holder E and the blade D.

In order to lock the shaft E′ in position after a half-turn has been given to it, I provide the enlarged end E^5 of the shaft with two oppositely-arranged flat surfaces E^6 E^7, (see Fig. 5,) adapted to be alternately engaged by the under surface of a pin O, fitted to slide vertically in a bearing F′, formed on the carriage F. The pin O is provided with a reduced part O′, on which is coiled a spring O^2, resting with one end against a fixed part in the bearing F′ and with its lower end on the pin O, so as to hold the same in engagement with the flat surface E^6 or E^7. Now it will be seen that by this arrangement the shaft E′ is not liable to turn accidentally during the time the blade D is drawn over the honing-stone C, but the said pin O on account of being mounted yieldingly permits the shaft E to turn at the time the ratchet-wheel J^3 is actuated by coming in contact with the pawl L, as above explained. The ends of the honing-stone C are preferably rounded off, as indicated in Fig. 2, to permit the blade D to readily enter on the top surface of the stone when the carriage F is reciprocated in the manner previously described.

Now it will be seen that by the arrangement described the stone C is held yieldingly and with the proper force against the blade D, so that a proper honing of the latter is assured, it being understood that the blade is drawn with its under surface forward and backward over the stone before the position of the blade is reversed, so that the blade is drawn with one side forward and backward over the stone before a reversal of the blade takes place.

It is understood that if the operator desires he can move the carriage forward and backward a sufficient distance to retain the under side of the blade D in contact with the honing-stone during several strokes before moving the carriage F to the extreme right-hand position for reversing the position of the blade.

It will be seen that the honing-stone C can be tilted into any desired position by the operator placing blocks under the rear portion of the honing-stone C at the plates H.

The machine illustrated in Figs. 6, 7, and 8 is more especially designed for sharpening any kind of a tool D^2, and in this case the stone C′ is held in a box I^4, supported on screw-rods I^5, screwing in nuts I^6, held on posts B′, erected on the base A′. By this arrangement the stone and its box may be raised or lowered or tilted to bring the surface thereof into proper relation to the tool D^2 to be sharpened. The tool D^2 is secured in the forked end of the holder E^8 by a bolt E^9 passing through the pivot-opening of the tool.

The holder E^8 is pivotally connected with the shaft E^{10}, journaled in the carriage F^2, mounted to slide on the guide-rods G^4 G^5, supported in suitable brackets. The outer end of the shaft E^{10} carries a pinion J^4 in mesh with a gear-wheel J^5, mounted to rotate on a stud held in the carriage F^2, the stud being provided with the handle K′ for moving the carriage forward and backward. On the gear-wheel J^5 are secured the ratchet-wheels J^6 and J^7, having their teeth standing in opposite directions, as shown in Figs. 7 and 8. The ratchet-wheel J^6 is adapted to be turned by a pawl L^4, arranged on one side of the machine, and the ratchet-wheel J^7 is adapted to be turned by a pawl L^5, held on the other side of the machine. Now it will be seen that when the carriage is moved forward and backward the pawls L^4 and L^5 alternately act on the ratchet-wheels J^6 and J^7 to turn the gear-wheel J^5 alternately in opposite directions to impart a like motion to the shaft E^{10} and holder E^8 to reverse the position of the tool D^2 at the end of each full stroke of the carriage. The rod G^4 is provided at its ends with stop-collars G^6 for limiting the movement of the carriage, as previously explained.

By having the holder E^8 pivoted on the shaft E^{10} the tool D^2 can readily turn over on its back at the end of each stroke of the carriage, and without causing binding of the tool on the stone. A spring E^{11}, held on the carriage

F^2, presses on the holder E^8 to force the tool with sufficient force into contact with the stone C′ to insure proper honing.

It is understood that the operator can give a short stroke to the carriage, so as to avoid reversing the position of the tool, the latter then being moved forward and backward over the stone with one face only in engagement with the stone.

It will be readily seen that for the device described for use with the ordinary razor, where the razor is reversed at the end of each stroke, the wheel J^5 need be only a segment and the ratchet-wheels J^6 and J^7 may be replaced by a downwardly-projecting arm which will engage the pins or stops L^4 and L^5. In a machine in which the reversing motion is a continuous one, as in the one shown in Figs. 1 to 4, this could not be done. The machine as shown is one which may be used for honing either kind of razor.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. A honing-machine provided with a reciprocating carriage, a tool-holder adapted to carry the tool to be sharpened, the holder being provided with a shaft mounted to turn in said carriage, a pinion secured on said shaft, a gear-wheel in mesh with said pinion and mounted to turn on said carriage, a ratchet-wheel attached to said gear-wheel, a pawl having a stationary fulcrum and in the path of said ratchet-wheel, so that upon moving the carriage the ratchet-wheel is moved in engagement with the pawl and turned to reverse the position of the holder, and a spring-pressed pin adapted to engage flattened surfaces on said shaft, to lock the latter in position after it is turned by the ratchet-wheel, substantially as shown and described.

2. In a honing-machine, the combination of a reciprocating carriage having a shaft and attached pinion therein, a razor-holder carried on said shaft, a gear engaging the pinion, and a ratchet-wheel attached to the gear, with a fixed pawl at the end of the travel of the carriage and adapted to engage the ratchet-wheel to turn the same, substantially as described.

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Witnesses:
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JNO. M. RITTER.