

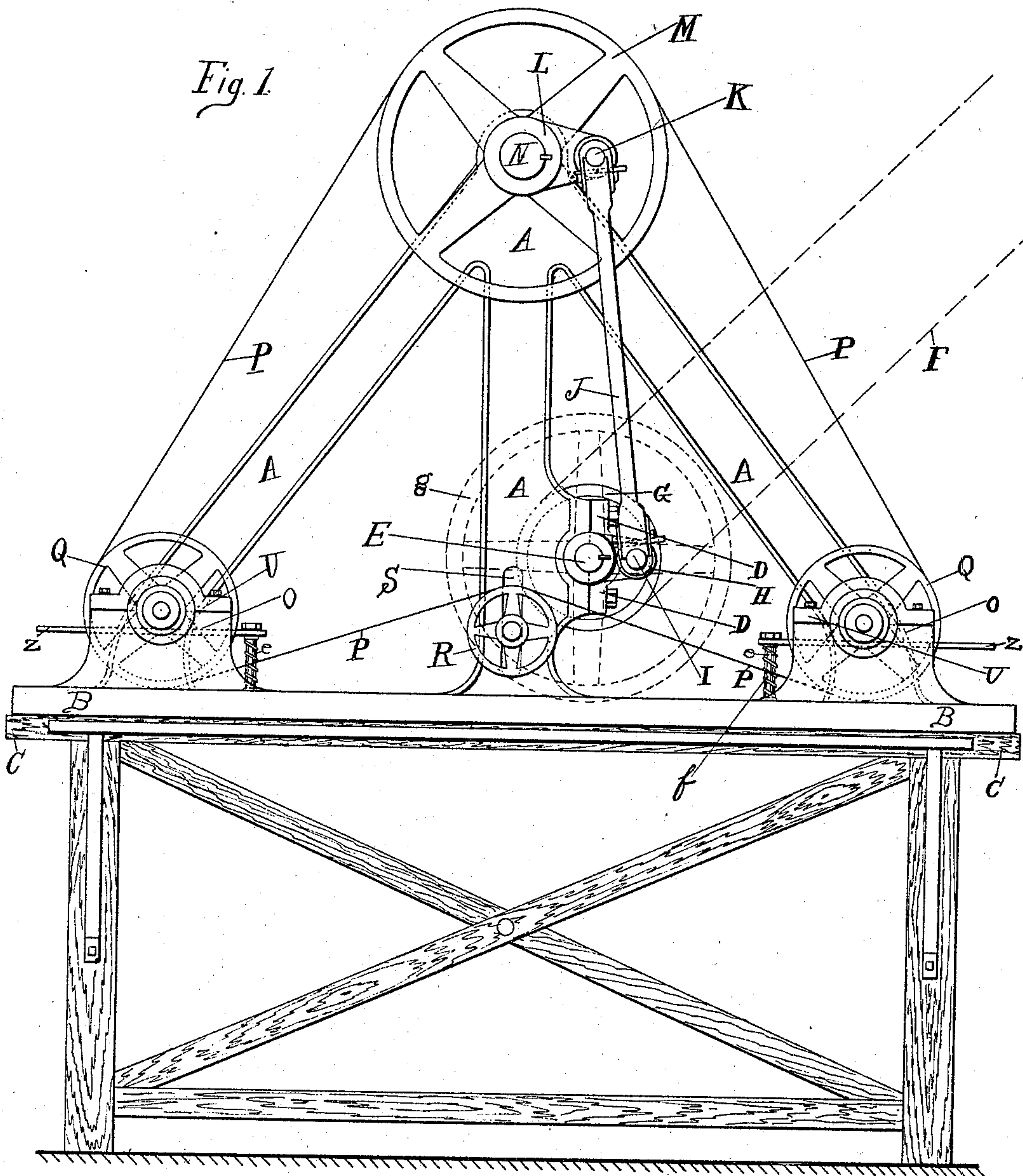
(No Model.)

3 Sheets—Sheet 1.

L. D. BIDDLE.
MACHINE FOR GRINDING COCKS OR TAPS.

No. 570,431.

Patented Oct. 27, 1896.



WITNESSES:

E. M. Dayton
C. D. Mackay

Lemuel Dawson Biddle

INVENTOR

BY *E. M. Dayton*
ATTORNEY

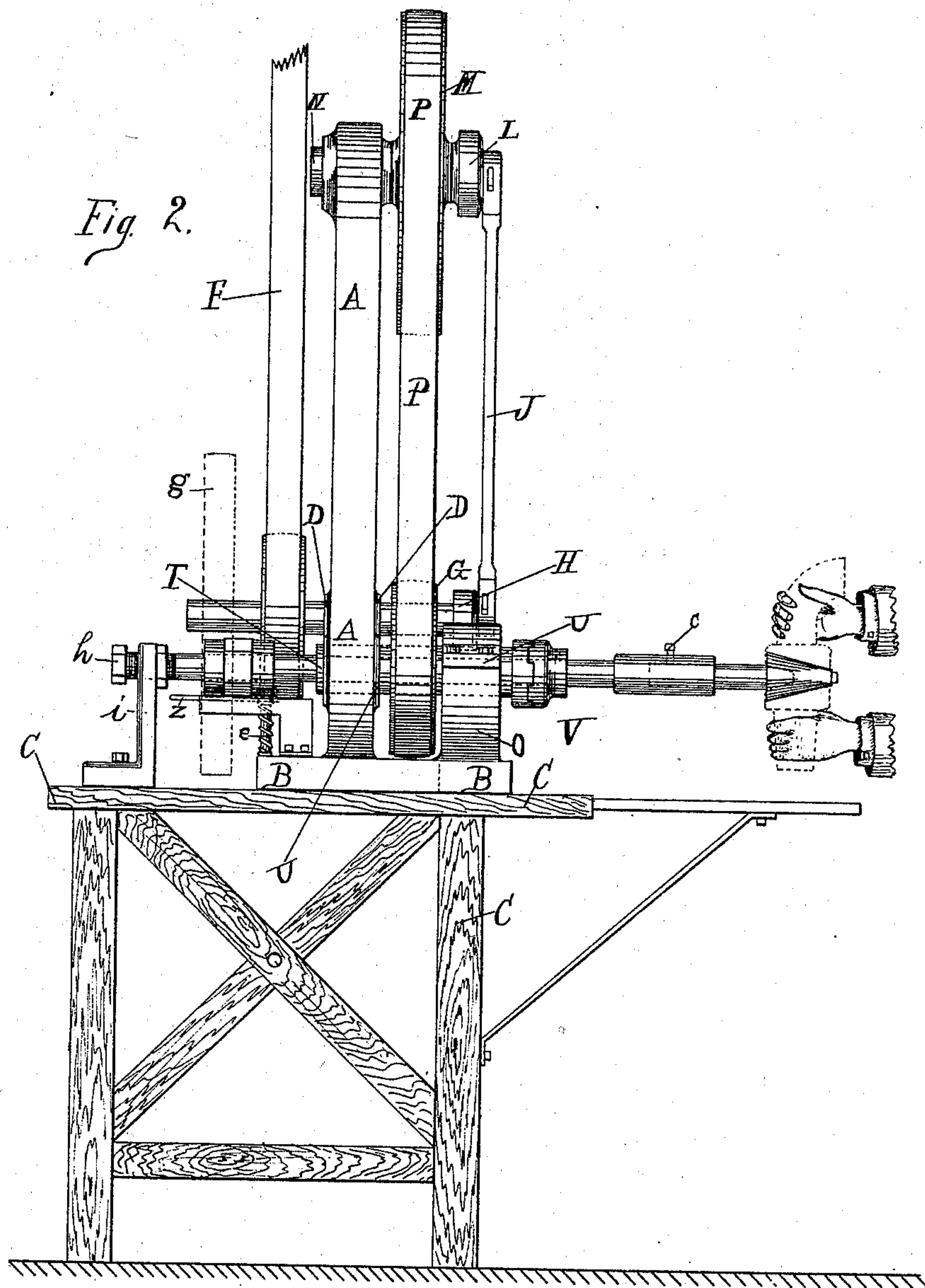
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(No Model.)

3 Sheets—Sheet 3.

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Fig. 3.

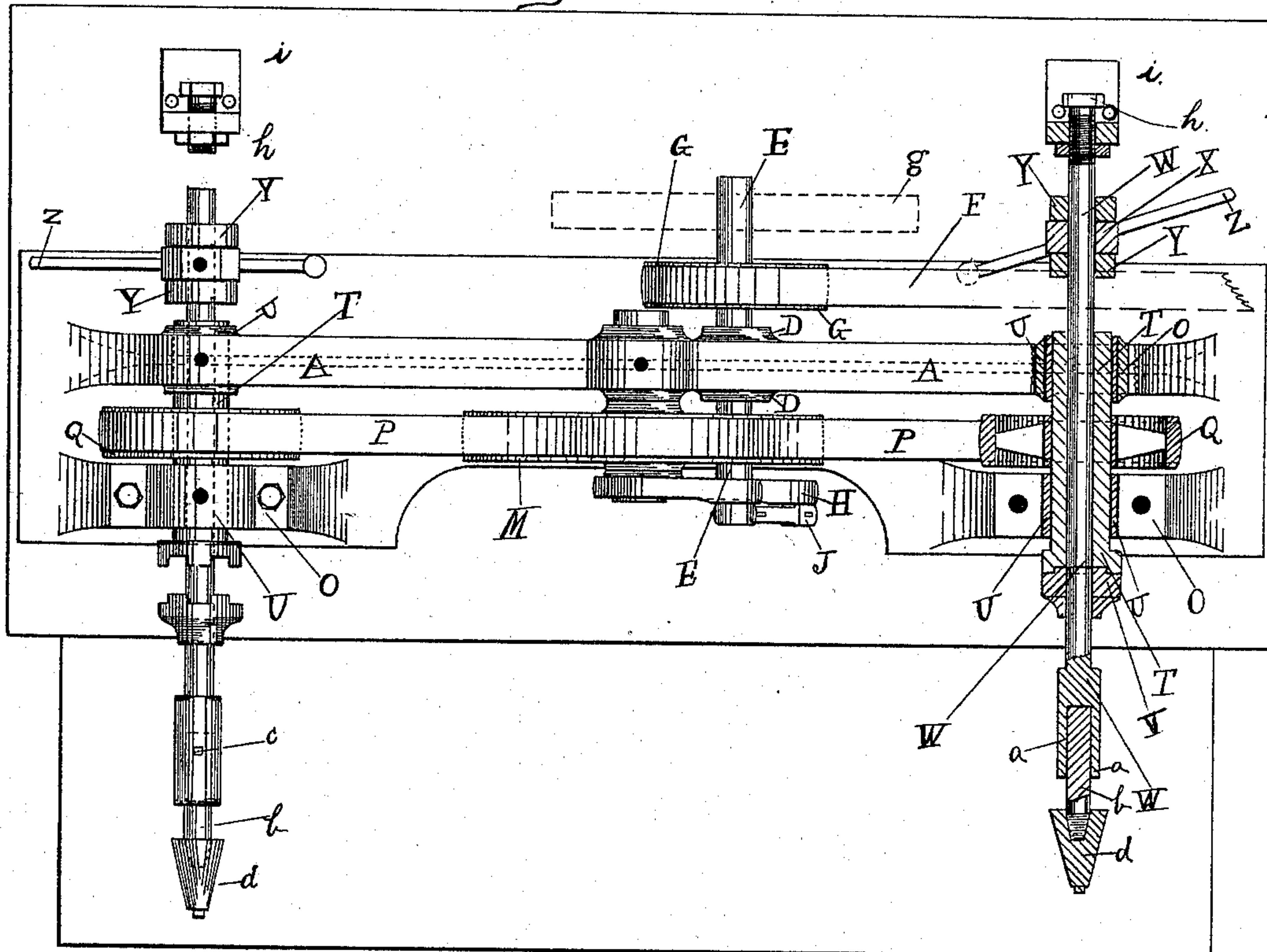


Fig. 4.



Fig. 5.



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UNITED STATES PATENT OFFICE.

LEMUEL DAWSON BIDDLE, OF LOS ANGELES, CALIFORNIA, ASSIGNOR OF
ONE-HALF TO ANDREW DAVID GARRISON, OF SAME PLACE.

MACHINE FOR GRINDING COCKS OR TAPS.

SPECIFICATION forming part of Letters Patent No. 570,431, dated October 27, 1896.

Application filed September 16, 1895. Serial No. 562,707. (No model.)

To all whom it may concern:

Be it known that I, LEMUEL DAWSON BIDDLE, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented certain new or Improved Machines for Grinding Cocks or Taps, of which the following is a full, clear, and exact description or specification, reference being had to the accompanying sheets of drawings, and to the letters marked thereon.

The object of my invention is to provide a machine having one, two, or more mandrels or holders upon one end of each of which the plug or plugs of the taps or cocks to be ground are carried and to which the requisite circular reciprocal motion is imparted during the act of grinding the plugs of the taps or cocks into their barrels or seats, thus doing away with the existing practice of performing the operation of grinding taps or cocks by hand, at the same time lessening the cost of the said operation.

On the annexed sheets of drawings, Figure 1 is a front elevation of my machine for grinding taps or cocks, as above referred to. Fig. 2 is an end elevation of the same. Fig. 3 is a plan of the same machine. Figs. 4 and 5 are details, hereinafter more particularly referred to.

As shown by the figures, the several parts of the mechanism are carried in the triangular-shaped framing, marked A, provided with a base B, the lower part of which is supported upon a table C, to which it is firmly secured by bolts or other suitable connections.

At one side of the central upright part of the framing A there is carried in bearings D, so as to be freely revolved, the shaft E. This shaft E is driven by a belt F. (Shown in dotted lines in Fig. 1 and in full lines in Figs. 2 and 3.) The belt F passes partly around the pulley G, and in so doing produces a continuous rotation to the pulley G, the shaft E, and the crank H, carried at the outer end of the shaft E.

To the crank-pin I of the crank H the lower end of the pitman J is connected, as shown, and the upper end of the pitman J is connected to the crank-pin K of the crank L. The length or radius of the crank L is greater than the length or radius of the crank H, and therefore by means of this arrangement the

continuous rotary motion of the crank H is converted into an alternately-reciprocating motion of the crank K, and therefore of the pulley M, carried upon the same shaft E as that to which the crank K is connected. At the outer end of each half of the triangular framing A bearings O are formed, as shown in the drawings, and more particularly in the plan at Fig. 3, at the right-hand side of each figure, the parts constituting these bearings and their connections being shown in horizontal section. A continuous belt P passes over the upper pulley M and partly around the two lower pulleys Q. The belt-tightening pulley R is carried in the slot at the central part of the framing A, as shown at Fig. 1, and accordingly as the stud on which the pulley R is carried is raised upward or downward in the slot S so the amount of tension upon the belt P can be regulated and adjusted from time to time, as required.

From the arrangement of the rotating shaft E, the pitman J, the crank K, the pulley M, and the two pulleys Q it follows that the pulleys Q and the two parts connected with it have a constantly reciprocating rotatory motion imparted to them, and it is here explained that the pulley M and the pulleys Q are of such relative diameters to each other that each pulley Q has rather more than a complete rotation imparted to it alternately in opposite directions as the machine is in operation. By means of the foregoing arrangements not only is the reciprocating rotatory motion in each direction equal and opposite, but by reason of the momentum which the belt P has imparted to it there is a constantly creeping motion of the belt P around the pulleys M Q Q in addition to the reciprocating motion.

The pulleys Q are carried upon tubular axes T, which are again carried in bearings U. The front end of each tubular bearing U is formed with a clutch V, which is shown closed in Fig. 2, at the right-hand side of Fig. 3, but is shown open on the left-hand side of Fig. 3. The object of the clutches V is to engage or disengage the mandrels W with or from the tubular axes T, so that when engaged therewith, as shown at Fig. 2, at the right-hand half of Fig. 3, the mandrels W and the parts carried thereby have the same reciprocating motion imparted to them as is imparted to the pul-

leys Q, while when disengaged therefrom, as shown in the left-hand half of Fig. 3, the mandrels W and their connections are stationary. At the rearward end of the mandrels W a clutch-operating ring is fitted between two collars Y, and a clutch-lever Z is connected with each clutch-operating ring X, so that by moving either lever Z its connected mandrel W is engaged or disengaged from the reciprocating tubular axis T, and this is put out of motion as required without stopping the other parts of the machine. The front end of each mandrel W is formed with a chuck *a*, into which the piece *b*, for attaching the plug of the cocks or taps to be ground, is held by means of the set-screw *c*.

As shown in the drawings, the plugs *d*, to be ground into the barrels of the cocks or taps to which they belong, are carried upon holders *b*, formed with a tapered screwed end, as shown more particularly in horizontal section at the right-hand half of Fig. 3, and the act of grinding is performed by holding the barrel of the cock or tap in the hands of the attendant, as shown in the dotted lines at Fig. 2, who alternately presses the barrel against and withdraws it from the plug, which is previously covered with oil and emery powder or other grinding substance, so that while holding it with the necessary pressure the machine hereinbefore described and shown on the annexed drawings operates the plugs reciprocatingly, so as to produce the necessary grinding action of the plugs into the barrels. The plugs *d* (shown attached to the machine in Figs. 2 and 3) are such as are used in certain connecting parts of the Westinghouse air-brake; but when plugs of a different shape at their ends—for example, with a square or oblong end—are used, then the holder *b* is removed from the chuck *a* and another holder—such as is shown at Figs. 4 and 5—is inserted in the chuck *a*.

The spiral spring *e* is situated around the stud upon which the lever Z is carried, and this spring, being compressed, forces each lever Z upward, so as to be at all times engaged with the clutch-ring X upon the mandrel W.

For the purpose of producing as much as possible a balance of all the moving parts the shaft E is by preference provided with a fly-wheel, as shown in dotted lines marked *g* in Figs. 1, 2, and 3, but this is no necessary part of my invention, and therefore may be dispensed with.

For the purpose of preventing undue wearing of the clutches and the hollow bearings, which might be brought about by reason of the frequent coupling and uncoupling of the clutches V in the act of grinding the plugs of taps or cocks into their seats or barrels, a provision is made for preventing these parts being driven back all together closer than is admissible by a certain stop. In Figs. 1 and 3 this stop is marked *h*, and it consists of a screw-stud passing through the upper end of

a head-stock *i*, fastened down by bolts to the table C, upon which the machine is carried.

The stop *h* is coaxial with each mandrel W, and passes by means of a screw-thread through the upper part of the head-stock *i*, so that in its position of projection through the head-stock *i* outward, the inner end of each mandrel W, is capable of being adjusted from time to time, as required, and it is against this adjustable stop that the pressure produced by the attendant in pressing the barrel or casing of the tap or cock against the plug takes place.

For the purpose of insuring the stop *h* always occupying a definite position of adjustment it is provided with a check-nut, which is shown on the drawings, and which is tightened up against the head-stock as soon as the stop *h* has been adjusted into a definite and necessary position.

Having now fully described and ascertained the nature of my said invention and the manner in which the same is carried into practical effect, I desire to observe in connection that what I consider to be novel and original, and the invention to be secured to me by Letters Patent, is as follows:

1. In the tap or cock grinding machine, the combination of the hollow cylindrical sleeve, having a clutch-piece at its outer end, a mandrel passing through each of said sleeves, a pulley carried upon said sleeve for reciprocating it and the mandrel, the mandrel carrying the other half of the clutch, the clutch engaging and disengaging lever for the purpose of throwing the mandrel into and out of gear, the chuck at the outer end of said mandrel for holding the attachment-piece, the attachment-piece connecting the plug with or disconnecting the plug from said mandrel, the inner stop in the head-stock, all operating together in the manner and for the purposes, substantially as set forth.

2. The machine for grinding taps or cocks consisting of the combination of a continuously-revolving crank-shaft, the attachment connecting the crank to another crank of larger radius, the crank of larger radius and shaft reciprocated by the attachment, the belt-pulley upon the shaft which carries the crank of larger radius, the belt operated by the pulley upon the reciprocating crank-shaft, the pulleys upon the sleeves which drive the mandrels actuated by the reciprocating belt, the clutches and gear for engaging and disengaging the said mandrels with the operating-clutches and the said stops, all operating together in the manner and for the purposes, substantially as set forth.

In testimony whereof I have hereunto set my signature in presence of two subscribing witnesses.

LEMUEL DAWSON BIDDLE.

Witnesses:

ST. JOHN DAY,
E. M. DAYTON.