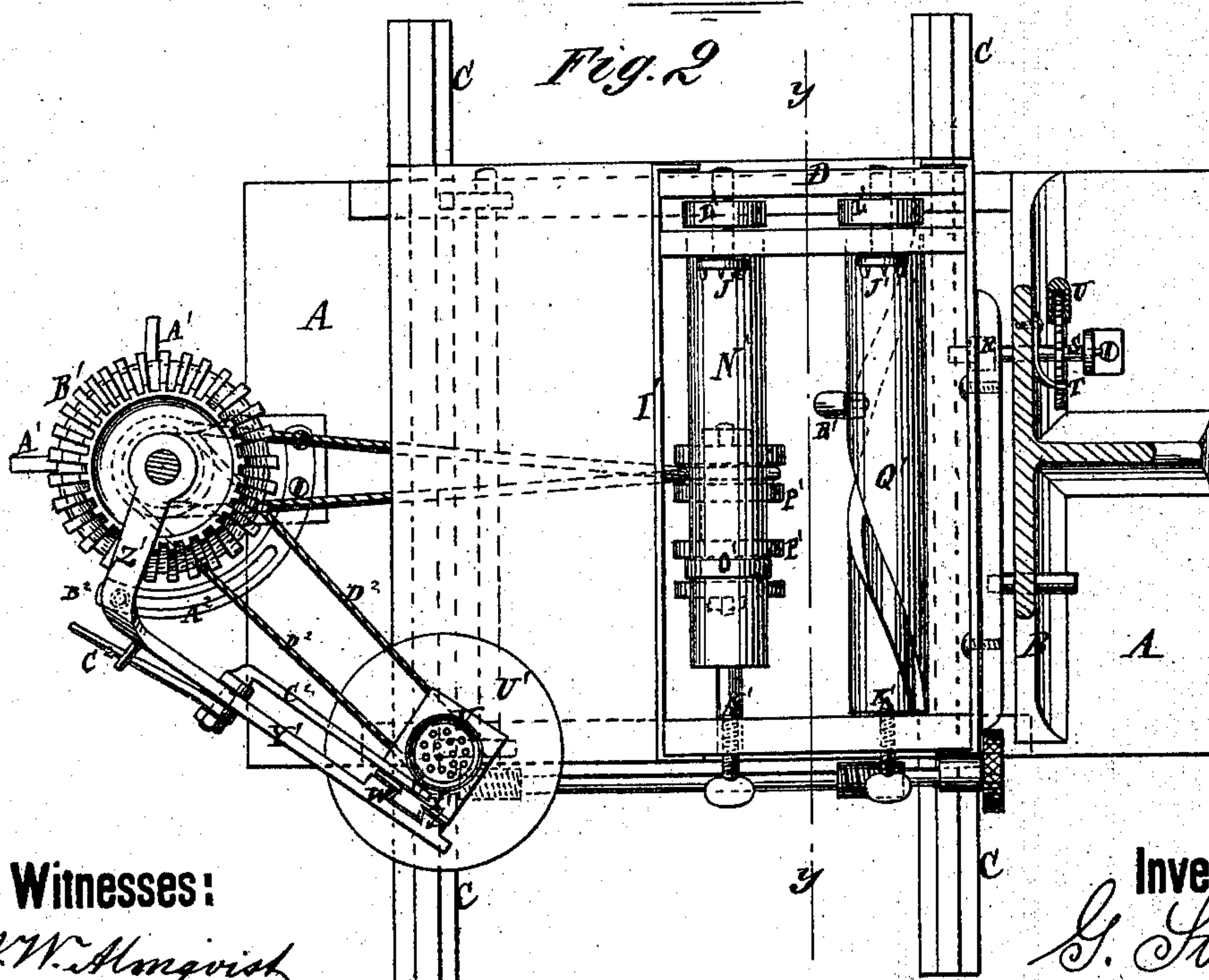


No. 144,640.

Patented Nov. 18, 1873.



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Stone-Cutters.

No. 144,640.

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Fig. 3

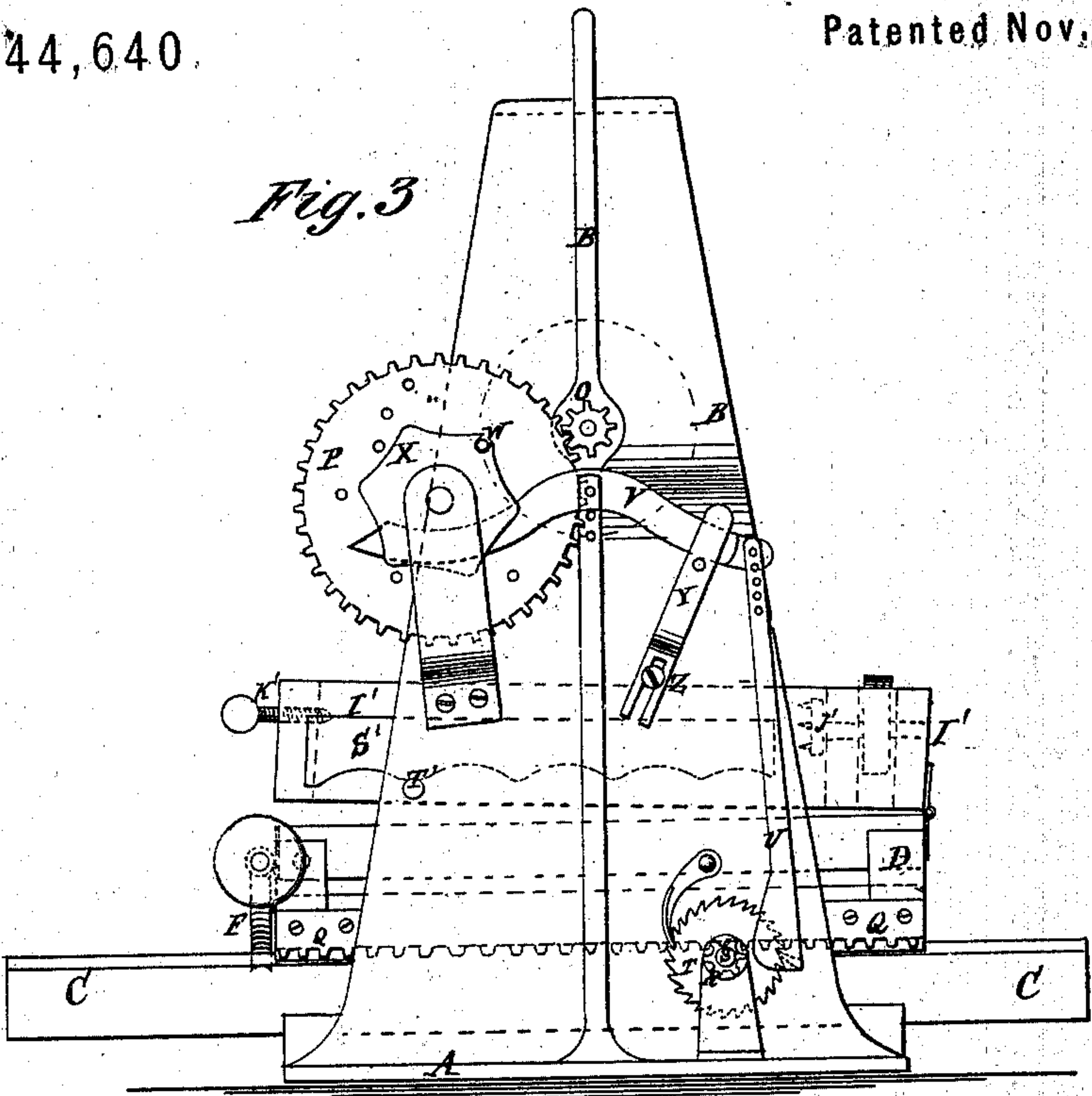


Fig. 4

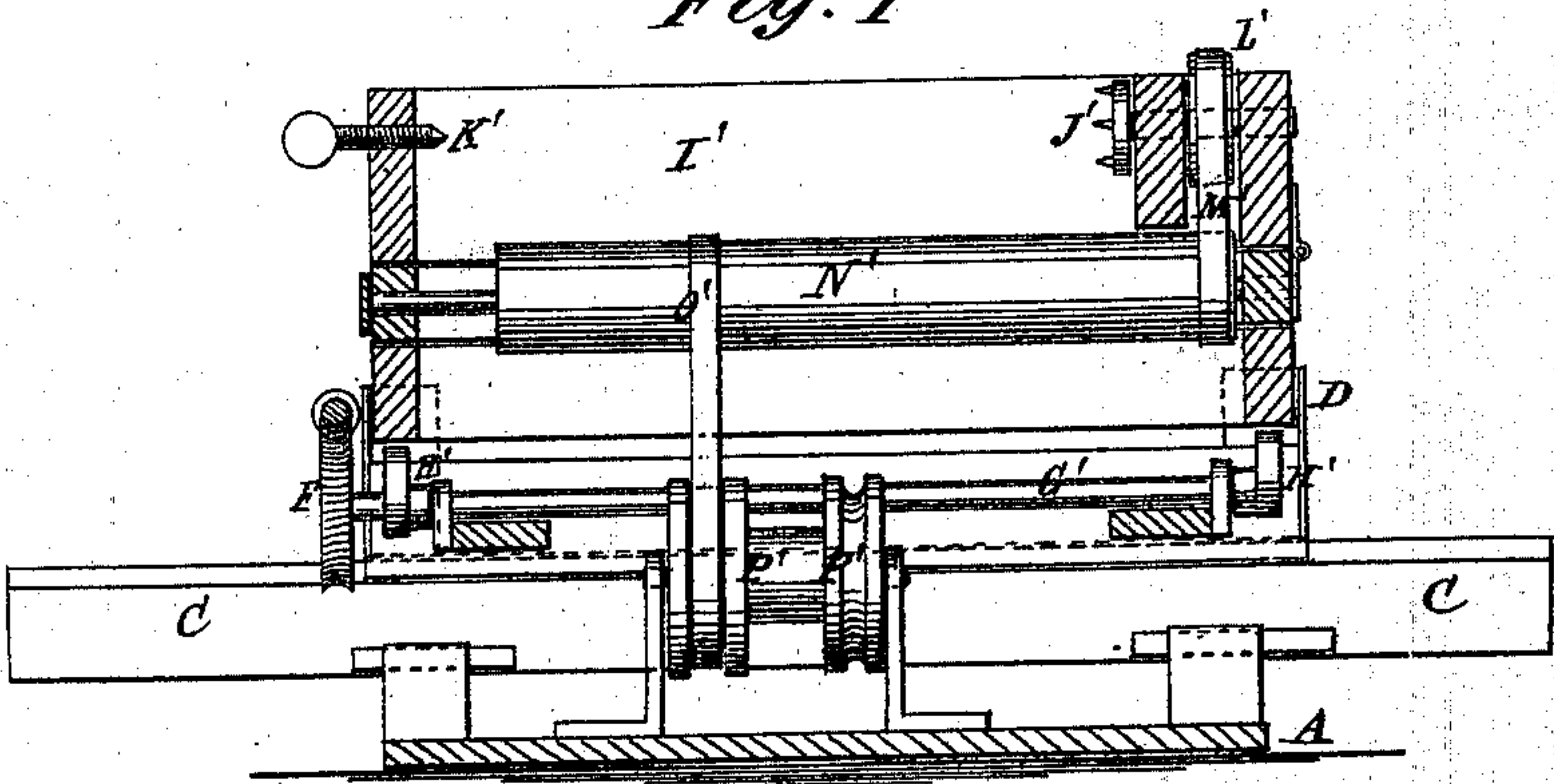
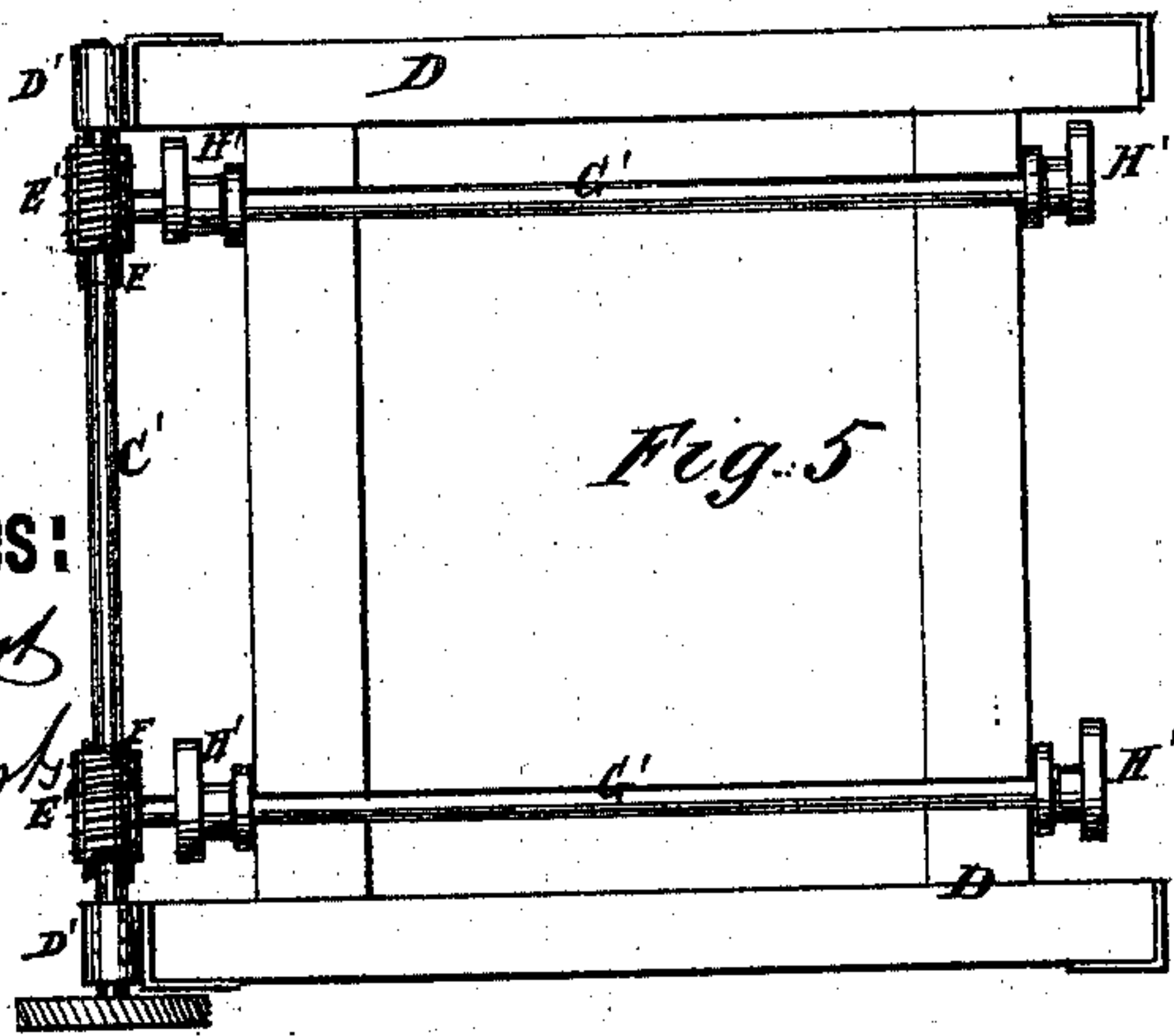


Fig. 5



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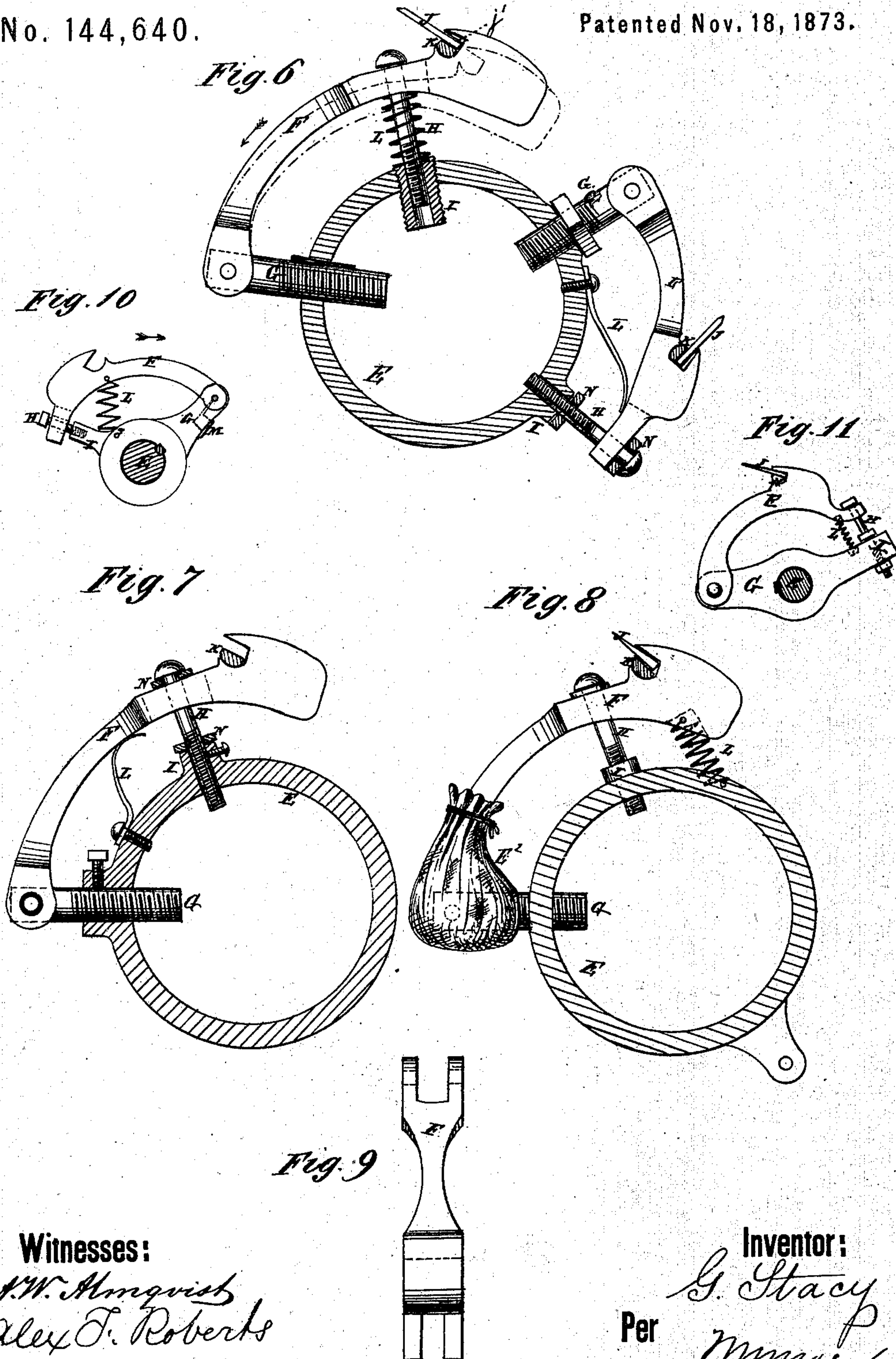
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3 Sheets--Sheet 3.

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UNITED STATES PATENT OFFICE.

GEORGE STACY, OF NANUET, NEW YORK.

IMPROVEMENT IN STONE-CUTTERS.

Specification forming part of Letters Patent No. 144,640, dated November 18, 1873; application filed May 24, 1873.

To all whom it may concern:

Be it known that I, GEORGE STACY, of Nanuet, in the county of Rockland and State of New York, have invented a new and useful Improvement in Stone-Cutters, of which the following is a specification:

Figure 1, Sheet 1, is a front view of my improved machine. Fig. 2, Sheet 1, is a top view of the same. Fig. 3, Sheet 2, is a side view of the same. Fig. 4, Sheet 2, is a detail section taken upon the line *y y*, Fig. 2. Fig. 5, Sheet 2, is a detail view of a device for adjusting the carriage. Fig. 6, Sheet 3, is a detail section taken through the line *z z*, Fig. 1. Fig. 7, Sheet 3, is the same section as Fig. 6, but showing a modification of the cutter-stock attachment. Fig. 8, Sheet 3, is another modification of the cutter-stock attachment. Fig. 9, Sheet 3, is a top view of one of the cutter-stocks. Fig. 10, Sheet 3, is a detail view of another modified form of the cutter-stock attachment. Fig. 11, Sheet 3, is a detail view of another modified form of the cutter-stock attachment.

Similar letters of reference indicate corresponding parts.

My said invention consists in combining, with the rotating cutters *H*, an intermittent feeding mechanism, so organized that each cutter shall act more than once on any one part of the stone, such feeding mechanism being adapted so that it can be set relatively to the rotation of the cutters, so to increase or decrease the number of cuts of each cutter for each intermission of the feed.

The minor parts of my said invention will be pointed out in the following description.

A represents the base, and *B* the framework, of the machine. To the base *A* are attached ways *C* to support the carriage. *D* is the carriage to receive the stones to be cut. *E* is a shaft or cylinder, the journals of which are fitted to boxes, which may be fixed or adjustable toward or from the carriage, at the election of the constructor. The cutter-stocks may be connected with a cylinder, *E*, or with the shaft, as shown with the cylinder in Figs. 1, 6, 7, 8, or the shaft, as shown in Figs. 10 and 11. *F* is the cutter-stock, which I prefer to make curved, and the forward end of which is pivoted to a stud, *G*, attached to or formed upon the cylinder or shaft *E*. The pivoting-

pin may be provided with an elastic or other washer to prevent wear, as shown in Fig. 7. The play of the rear end of the stock *F*, to which the cutter *J* is attached, is limited in its outward motion by a stop or guide pin, *H*, or its equivalent, attached adjustably and firmly to the cylinder or shaft *E*, or to a stud, *I*, attached to or formed upon said cylinder or shaft. The pin *H* passes through a slot in the stock *F*, which slot may be in the body of the stock, in front of the cutter, as shown in Figs. 6, 7, and 8; or it may be in the rear of the cutter, as shown in Figs. 10 and 11, or in any other equivalent manner. Any known method of fastening the cutter-tools in the cutter-head may be employed, no claim being here made for the device for fastening the cutter shown in the drawings, the same being made the subject of a separate claim in another application filed in the Patent Office June 21, 1873. As the cutter is secured to the stock at a considerable distance back of the stock's hinged connection with the shaft, in the rotation the cutters in that part of their circuit, in moving to the top, are thrown back—that is, toward the axis of rotation—and after passing the vertical line by their weight, aided by a spring, *L*, interposed between the stock and shaft, or some equivalent part, are thrown outward from the axis of rotation against the head of the gage-rod *H*, which gives force to the cutting action, while at the same time the cutter can yield to pass over the face of the stone when too hard to be reduced at one operation to the extent required. Rubber washers *N* may be interposed between both faces of the stock and the stops of the rod *H* to ease off the concussions. In case the cylinder *E* is made in the form of a shaft, I prefer to make the two studs *G* *I* in one piece, with a hole in its middle part to fit upon the said shaft when it is secured in place when adjusted by a key and grooves, as shown in Figs. 10 and 11. The pivoting-points of the stocks *F* should be provided with oil-reservoirs *M*, formed in or connected with the studs *G*, to keep them lubricated. Any desired number of stocks *F* may be attached to the cylinder or shaft *E*, and they should be so arranged as to operate successively. The forward or pivoted end of the stocks *F* should be covered with rubber or

other suitable material, E^2 , to protect the joint from the dust and sand. To one end of the shaft or cylinder E is secured a small gear-wheel, O , the teeth of which mesh into the teeth of a large gear-wheel, P , the journals of which rotate in boxes attached to the frame B , and to which motion may be given by any convenient power.

To one or both sides of the carriage D is attached a rack, Q , into the teeth of which mesh the teeth of a small gear-wheel, R , attached to a shaft, S , which revolves in bearings in the lower part of the frame B , and to the outer end of which is attached a ratchet-wheel, T , upon which the pawl U acts to move the carriage D forward, and thus feed the stone to the cutters. The stem of the pawl U is made long, and its upper end is pivoted to the end of a lever, V , several holes being formed in the said stem to receive the pivoting-pin, so that it may be adjusted as required. The middle part of the lever V is pivoted to the frame B by a pin, several holes being formed for said pin, so that the fulcrum may be adjusted as required. The forward end of the lever V projects beneath the shaft of the wheel P , so that it may be operated by a pin, W , attached to the wheel P . Several holes are formed in the said wheel P , at different distances from its center, to receive the pin W , so that the throw of the pawl, and consequently the extent of movement at each stroke of the pawl, may be regulated at will. By using one pin the carriage will be fed forward at each revolution of the wheel P , and by increasing the number of pins W used the carriage may be fed forward two or more times at each revolution of said wheel P . To produce a rapid intermittent feed, a circle of pins may be used, or a small scroll-wheel, X , may be placed upon the shaft of the wheel P , so as to be moved up against said wheel P , with which it may be rigidly connected by the pin W entering a notch, slot, or groove in said wheel. The face of the wheel X should be scalloped or recessed to enable it to operate the lever V . The pawl U is kept from dropping too low when the forward end of the lever V escapes from the pin W by a stop, Y , secured to the frame B by a clamping-screw, Z , which passes through a slot in the said stop and screws into the said frame.

In using the machine, the stone to be cut is laid upon the platform of the carriage D . The feed is adjusted as the character of the stone and of the work to be done may require, and the machine is started. As each cutter comes around it strikes the stone in the plane of its face and instantly rebounds, the rapidity of motion being such as to carry the cutter during its rebound over the inequalities of the surface of the stone, so that it will strike the stone but once during each revolution. The driving-gearing and feed should be so arranged that each cutter may strike one or more times before the stone is fed forward, according to the character of the work being done. The machine may be provided with a vertical shaft

or cylinder similar to the shaft or cylinder E , and provided with a set of cutter-stocks in a similar manner, except that they should be supported against the action of gravity by a bracket, A^1 , attached to said shaft or cylinder below said stocks, or by a link connected with the stock and attached to the shaft or cylinder above them. The side cutters are designed to cut one side of the stone while its top is being cut by the others. The side cylinder may be so connected that it and its adjuncts can be moved out of the way. The side cylinder or shaft may be driven from the cylinder or shaft E by bevel-gear wheels B^1 or other convenient means. C^1 is a shaft, which revolves in bearings D^1 , attached to the front bar of the frame of the carriage D , and to one of its ends is attached a hand-wheel. To the shaft C^1 are attached or upon it are formed endless screws E^1 , the threads of which mesh into the teeth of worm-wheels F , which are attached to the forward ends of two shafts, G' , which revolve in bearings attached to the frame of the carriage D , and to each of which are attached two cams, H' , upon which the platform of the carriage D rests, so that by turning the shaft C^1 the platform of the carriage may be raised and lowered to adjust it according to the size of the stone to be operated upon. One of the bearings D^1 should be secured in place adjustably, so that it may be raised to throw one of the endless screws E^1 out of gear with its screw-wheel F' , so that one side of the platform will be raised and lowered independently of the other, to enable an inclined surface to be cut for water-drips and other purposes. I' is a frame placed upon the platform of the carriage D , and hinged at its rear end to said platform. The frame I' is designed for holding stones to be cut tapering, round, conical, scroll-shaped, arched, and of other forms. For cutting round, tapering, and conical stones with straight sides, one end of the stone is placed against the clutch J' , and the point K' screwed up against the other end of the stone. The shaft of the clutch J' revolves in bearings in the rear part of the frame I' , and to it is attached a pulley, L' , around which passes a band, M' , which also passes around the roller or long pulley N' , pivoted to the platform of the carriage D , and around which passes a band, O' , which also passes around one part of the double pulley P' , pivoted to supports attached to the base of the machine, and to which motion is given by a band from the shaft or cylinder E by means of the side shaft or cylinder, or other convenient means. For cutting scroll and other forms of pillars, the stone is supported and rotated by a screw-point, K' , and clutch J' , which clutch receives motion from the roller Q' by means of a pulley, L' , and band M' , as hereinbefore described. The roller Q' receives motion from a stationary pin, R' , attached to the base A , and the upper end of which is bent over to enter a spiral groove in the roller Q' , so as to rotate the roller, and through it the stone, slowly as

the carriage is moved forward by the feed. The tapering and curved forms are given to the stone by means of a guide or pattern, S', made of the required form, and attached detachably to the side of the hinged frame I, and which is operated upon to raise and lower the forward end of the said hinged frame by a pin, T', inserted through a hole in the frame B. If desired, the stone may be smoothed as it passes from the cutters by a horizontal smoothing-wheel, U', the spindle of which is made hollow, and has a hopper, V', attached to its upper end to receive the smoothing material, and which is provided with a sieve to prevent any coarse particles from passing to the stone. The spindle of the smoothing-wheel U' revolves in brackets W', which move up and down in a slide, X', formed upon a projecting arm, Y', of the frame Z', which is pivoted to the journals of the side shaft or cylinder, or to some other suitable support, and held in position by a curved and slotted arm, A², one end of which is secured to the base A, and which is connected with the said pivoted frame Z' by a hand-screw, B², which passes through the said slot. The smoothing-wheel U' is raised to adjust it to the height of the stone by a lever, C², pivoted to the projecting arm of the pivoted frame Z', and is driven by a band, D², from the side shaft or cylinder, or other rotating part of the machine. The edges of the cutters may be made of any desired form or pattern, according to the work to be done, and so tempered, or formed thicker in some parts than in others, as to wear nearly uniform in all parts of said edges, to adapt it for cutting moldings, and similar uses. The plane of motion of the carriage, instead of being horizontal, may be inclined. It will be obvious that, instead of lifting or depressing the carriage

relatively to the cutters for stones of different thicknesses, the shaft of the cutters can be mounted in adjustable boxes, which can be moved up and down relatively to the carriage; and it will also be obvious that, instead of one shaft or cylinder with its series of cutters, two or more may be used, the stone being caused to pass successively under all of them; and, in such case, the cutting-edges may be of different form—some to rough-dress, and the succeeding ones to smooth.

I do not here claim either the revolving stocks described or method herein described for fastening the cutting-tool in the stock, having reserved these inventions for separate claims in two several applications for patents now pending in the Patent Office.

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

1. The combination of the cutting-tool J with a cutter-stock, F, hinged to the cylinder E, and by its connection with a stop, H, made to operate substantially as specified.

2. The combination of the cylinder E and its cutter-stocks F, and the intermittent and changeable feeding mechanism described, consisting of the disk-wheel P, with its changeable pins W, driven by the gear O, the lever V, the adjustable stop Y, the pawl U, and the ratchet-wheel T, substantially as specified.

3. The combination of the vertical cylinder E³ and the horizontal cylinder E, each with its revolving cutter-stocks F, whereby a stone may be dressed upon its upper side and on a side or end at right angles thereto at the same time, as specified.

Witnesses: GEORGE STACY.

JAMES T. GRAHAM,
T. B. MOSHER.