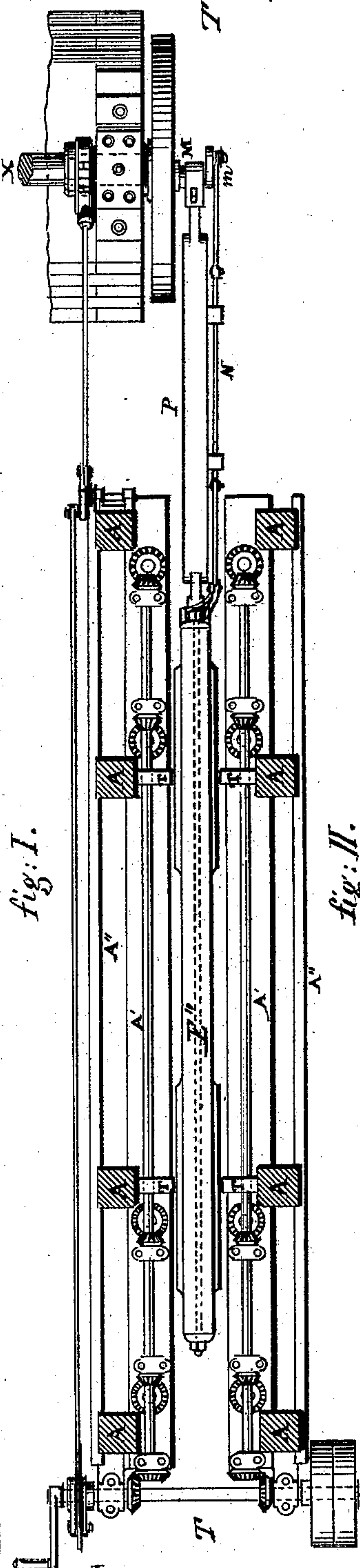
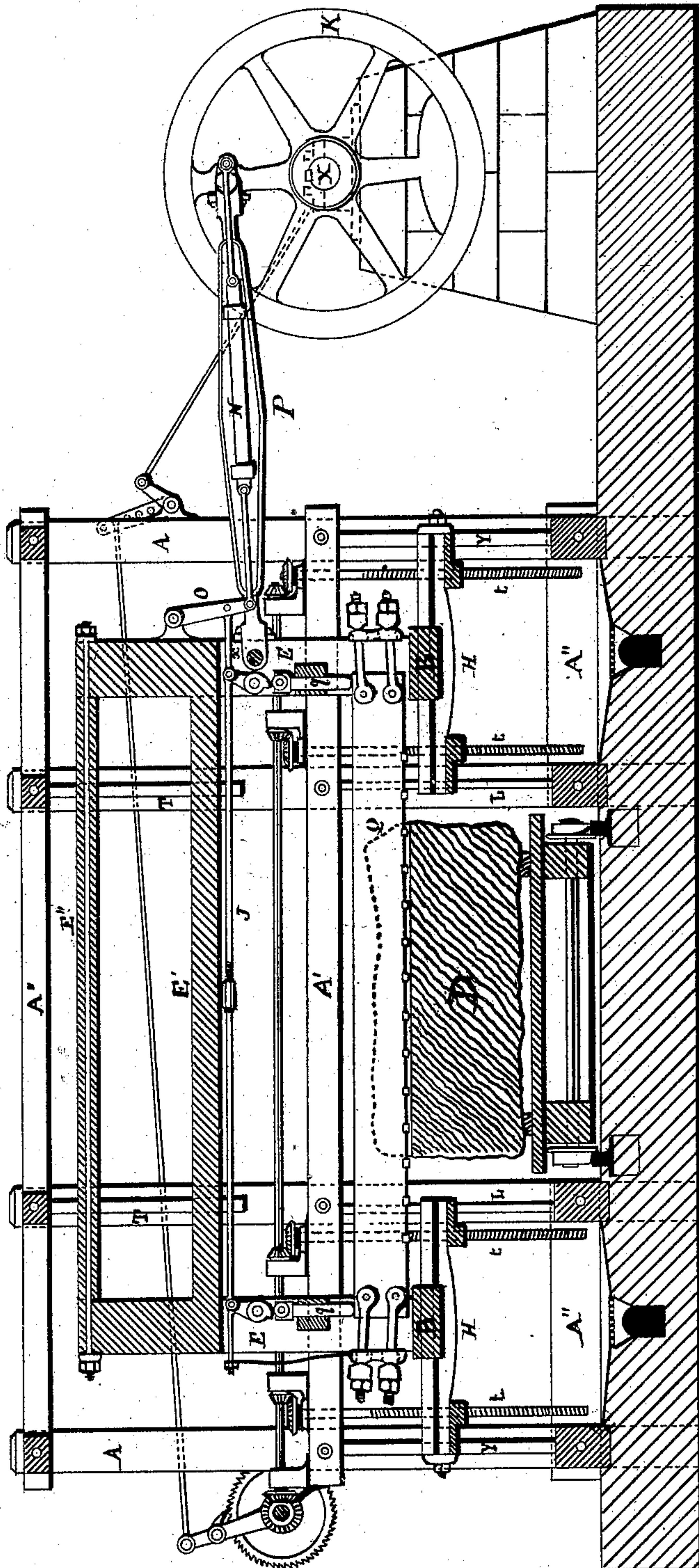


J. L. YOUNG, H. YOUNG & H. G. HUBERT.

RECIPROCATING DIAMOND SAW-MACHINE.

No. 173,709.

Patented Feb. 15, 1876



Witnesses:
Andrew Main
J. H. Wakeman.

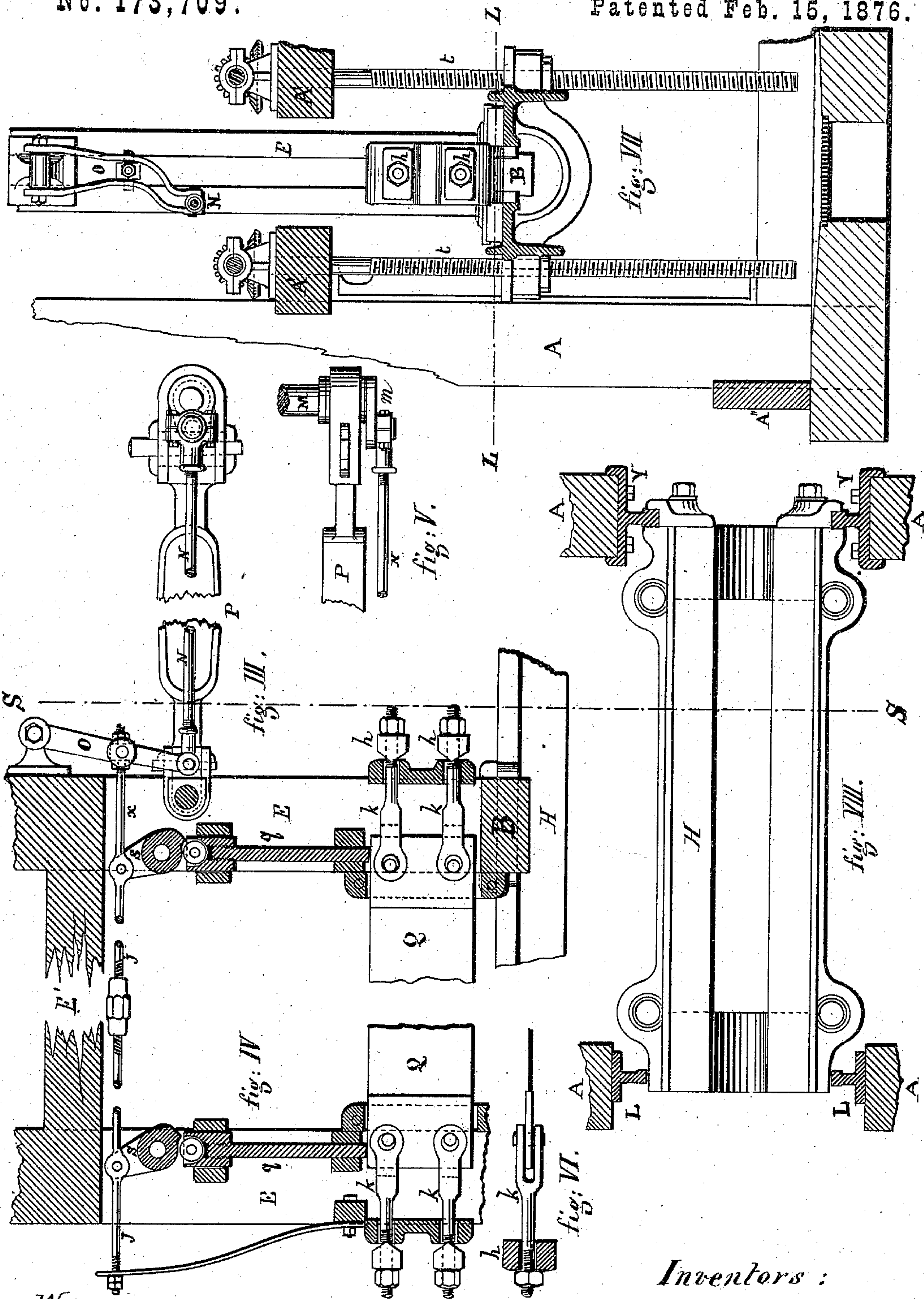
Inventors
Hugh Young
James L. Young
H. George Hubert

J. L. YOUNG, H. YOUNG & H. G. HUBERT.

RECIPROCATING DIAMOND SAW-MACHINE.

No. 173,709.

Patented Feb. 15, 1876.



Witnesses:
 Andrew Main
 J. R. Roakeman

Inventors:
 Hugh Young
 James L. Young
 H. G. Hubert

UNITED STATES PATENT OFFICE.

JAMES L. YOUNG, OF ANCRAM, AND HUGH YOUNG AND H. GENGEMBRE HUBERT, OF NEW YORK, ASSIGNORS TO HUGH YOUNG, OF NEW YORK, N. Y.

IMPROVEMENT IN RECIPROCATING DIAMOND-SAW MACHINES.

Specification forming part of Letters Patent No. **173,709**, dated February 15, 1876; application filed October 19, 1874.

To all whom it may concern :

Be it known that we, JAMES L. YOUNG, of Ancram, in the county of Columbia, New York, HUGH YOUNG, of the city of New York, in the county and State of New York, and H. GENGEMBRE HUBERT, of the city of New York, aforesaid, have invented a Reciprocating Diamond-Saw Machine, of which the following is a specification :

This invention relates to that class of machines in which a saw-blade, armed or protected with diamonds, and having the duplex-reciprocating motion described and claimed in the patent of H. Young and J. L. Young, dated October 18, 1870, and numbered 108,424, is employed for cutting or dividing stone; and it consists in the combination, one with the other, of the different parts of said machine, whereby a more complete, efficient, and reliable machine is obtained than those hitherto constructed.

In our drawings, Sheet I illustrates the general plan of our diamond-saw machine, and Sheet II is devoted to details of construction of the same.

Figure I represents our reciprocating diamond-saw machine in sectional elevation, through the line T' T'. Fig. II is a top-view of the same. Fig. III represents in detail a portion of the sash-end E, pitman P, &c. Fig. IV is also a detail of the sash, blade, &c. Both of these figures are drawn in section through the line T T. Fig. V is a top view of the pitman and of the crank-pin of the crank-wheel K. Fig. VI is a detail of the "buckle" k, used for stretching the saw-blade Q, and of the rock-block h. Fig. VII is a transversal section through S' S' of part of the machine, and Fig. VIII is a top view of the ways H, showing their position between the posts A, sected at L L.

The frame of our reciprocating diamond-saw machine is composed of the posts A, the pieces A' and A'', and of such braces and blocks as are required to make a rigid and permanent frame-work, the whole properly bolted and stayed by iron bolts in such a manner that the posts A will retain a perfectly erect or perpendicular position and the middle pieces A' a true horizontal position. The lower end of the

posts A are imbedded in suitable foundations, or fastened to proper framing, to insure stability and guard against undue vibration of the frame. Y and L are vertical guides, mounted and fastened to the posts A, for the purpose of guiding the ways H in a vertical direction. H are the horizontal ways, or frames, which are fitted properly between the guides Y and L with suitable gibs, in such a manner that said ways H can move freely in a vertical direction, but cannot move either sidewise nor lengthwise of the machine. *t t* are screws, with collars at top end, passing through holes in the pieces A' and hanging from the same by their collars resting upon suitable friction-steps. The top ends of the screws *t* are provided with suitable gearings, bevel-wheels, &c., to impart a rotary motion to the screws *t*, and the several screws *t* are connected together so as to move simultaneously. The screws *t* have nuts fastened to or upon which rest the ways H, in such a manner as to support said ways H in a perfectly horizontal position, and the connections between the screws *t*, by giving to them all and at the same time a movement of rotation, will cause the two ways H to be elevated or lowered, and yet retain at all times a perfectly horizontal position.

We have represented in our drawings the bevel-wheels, pinions, shafts, ratchet-wheels, lever, links, eccentric, hand-crank, and pulleys which are, or may be, used for moving the ways H up or down, either by power, by hand, or by the action of the shaft X. These we have thought necessary to illustrate the working of our improved machine, but we do not claim any novelty in this arrangement for working the screws *t*.

The sash E E' E'' is mounted upon suitable slide-blocks, B, having proper adjustable gibs to regulate the position of said blocks B upon the ways H in such a manner as to allow the sash E E' E'' to move with ease and be guided in a rectilineal direction upon said slides H, and in a perfectly parallel relation to the longitudinal central line of the machine.

The combination of the frame A A' A'', the guides Y L T, the screws *t*, (connected as described,) and of the ways H with the sash E

E' E'' enables us to impart a correct rectilinear reciprocating motion to the sash E E' E'' by means of ordinary mechanism, and to depend upon that rectilinear motion being always correct and parallel to the center line of the machine, whether the ways H be elevated or lowered.

Q is the saw-blade, armed with or protected by diamonds or other hard stones, in any ordinary or improved manner, and which receives, besides the reciprocating motion imparted thereto by the motion of the sash E E' E'', the "push" or "lift" motion described in the aforesaid Young's patent, by means of the following mechanical combination:

k are "buckles" or tension-bolts, which are used for stretching the blade Q. These buckles k are pivoted to the blade Q by steel pins, and they pass through rock-blocks h, having angular or knife-edges next to the bearing-places on the sash-ends E, so as to insure a perfect bearing of the nuts of the buckle k upon the rock-blocks h, and allow of the blade Q being depressed or pushed downward out of its tensile line without causing friction on the blocks h. q are pushers or sliding pieces, guided top and bottom, and provided with friction-wheels at top. S are cam-levers, pivoted upon pins in the sash-ends E, the cam part of the cam-levers S so acting upon the wheels of the pushers q that, when the cam-levers are rocked to the right, they will cause the pushers q to push the blade Q down away from the levers S, and when the said levers S are rocked to the left, they will release the pushers q and allow the blade Q to rise and return to its original position. J is a link-rod connecting the cam-levers S, one with the other, to insure a simultaneous action of said levers S, and x is a link connecting both levers S to the lever O, for operating the said cam-levers S. O is a lever, pivoted at top to a fixed point on the sash-end E, and at bottom connected to the rod N. The rod N is, in turn, connected to the pin of a small crank, m, keyed fast to the crank-pin M of the crank-wheel K, and guided with proper slide-boxes fastened to the pitman P, so as to follow the motion of said pitman P and yet slide freely lengthwise therewith, obeying the action of the small crank m. X is the main shaft, mounted in suitable pillow-blocks upon substantial foundations, and having suitable pulleys to communicate to it a rotary motion. The small crank

m is keyed upon the crank-pin M in such a position, relatively to the main crank K and sash E E' E'', that it will move the rod N and act upon the cam-levers S in such relation to the reciprocating motion of the said sash E E' E'' as to cause the blade Q to be pushed down, held down, and released in the proper portion of its reciprocating motion for the best working of said blade—that is to say, that it will push the blade Q down when at the one end of a stroke thereof, hold it down during the motion of the blade in one direction, release and allow said blade to rise at, or nearly at, the other end of the stroke thereof, and leave it up during all the return-stroke, in order to operate the diamonds set in or protecting the blade Q, in accordance with requirements of and in the manner described and claimed in the aforesaid Patent No. 108,424, issued to Young October 18, 1870.

We claim no novelty for any of the individual parts which we have been obliged to describe herein in detail so as to explain the relation of our improvement to the whole machine, nor do we claim any novelty in the motion of the blade Q; but

What we do claim as our invention, and desire to secure by Letters Patent, is—

In diamond saws for cutting stone; where the blade is to receive the duplex motions claimed in the Letters Patent of Young's, October 18, 1870, and No. 108,424—

1. The combination of the ways H, screws t, slide-blocks B, sash E E' E'', and blade Q, substantially as illustrated and described, to obtain the rectilinear and parallel motion of the said blade Q, as herein set forth.

2. The combination of the buckles k, rock-blocks h, and blade Q, substantially as described, to allow of the said blade Q receiving the "push" or "lift" motion herein mentioned.

3. Transmitting the power for effecting the aforesaid push or lift motion of the blade Q from the shaft X through the same crank-wheel K which is used for imparting to the sash E E' E'' and blade Q the above-mentioned rectilinear parallel motion, substantially as and for the purpose herein specified.

JAMES L. YOUNG.

HUGH YOUNG.

H. GENGEMBRE HUBERT.

Witnesses:

ANDREW MAIN,

T. B. WAKEMAN.