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G. V. BLACK.

Marble Dressing and Carving Machine.

No. 122,754. Patented Jan. 16, 1872.

Fig: 1.

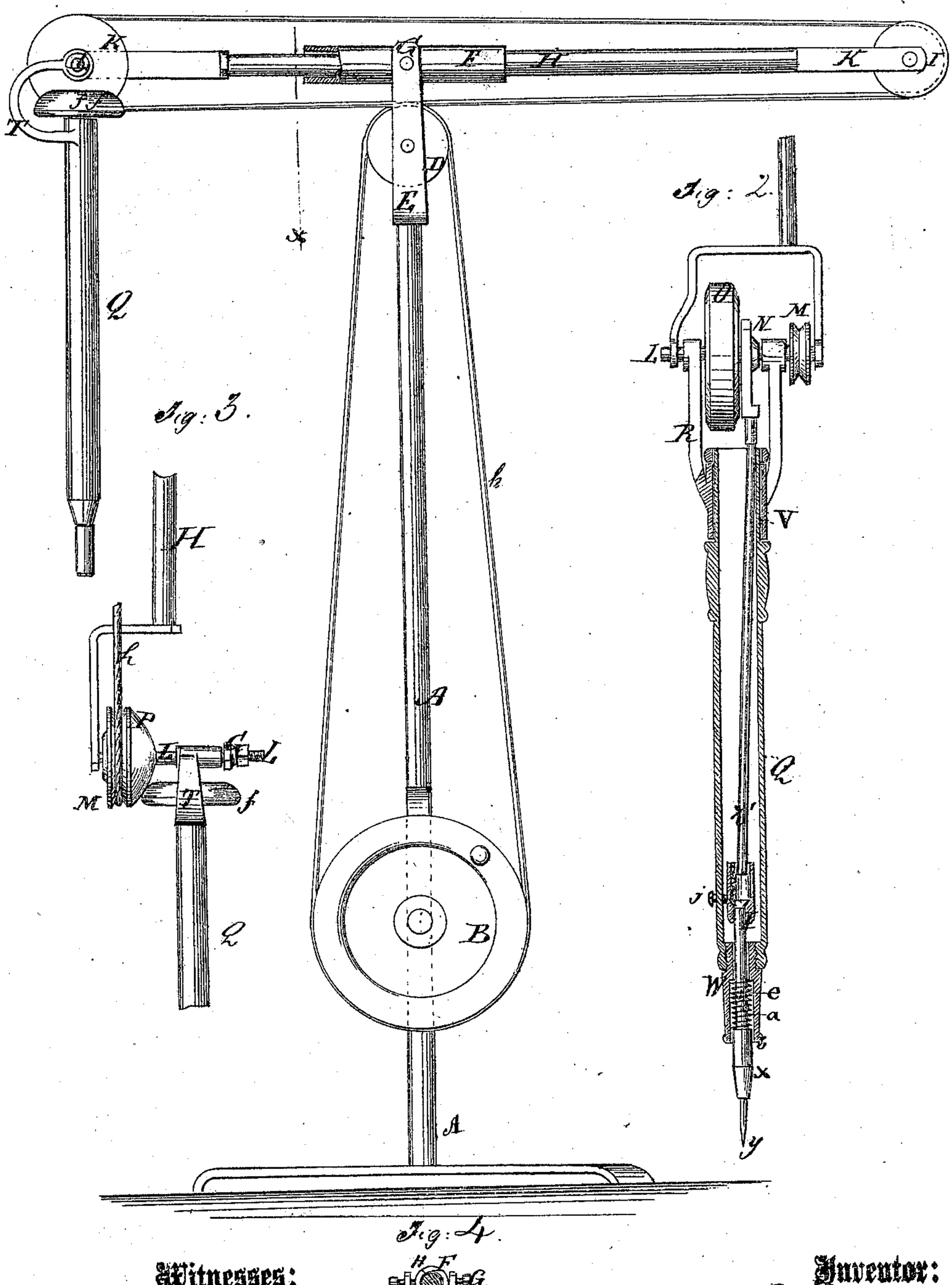

Fig: 2.

Witnesses:

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UNITED STATES PATENT OFFICE.

GREENE V. BLACK, OF JACKSONVILLE, ILLINOIS.

IMPROVEMENT IN MARBLE-DRESSING AND CARVING MACHINES.

Specification forming part of Letters Patent No. 122,754, dated January 16, 1872.

To all whom it may concern:

Be it known that I, GREENE V. BLACK, of Jacksonville, in the county of Morgan and State of Illinois, have invented a new and Improved Marble-Dressing and Carving Machine; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification.

My invention relates to improvements in machines for dressing and carving marble; and it consists in a tubular stock or case containing a drill or carving-tool capable of reciprocating or rotating, or both, jointed to the end of a rod or shaft mounted in a tube pivoted in the top of a stand, so that it can oscillate around the vertical axis of the stand; also, on its own axis, and slide freely endwise.

This rod carries at one end a pulley and crank or eccentric shaft for actuating the drill for causing it to strike blows while it is slowly turned by the hands of the attendant. Or the said shaft may gear with the shaft of the drill by bevel-gears, to give it a constant rotary motion while being held in contact with the work by the attendant, and motion is imparted to said shaft by a belt working from a driving-pulley below, over a guide-pulley in the top of the stand, under the rod, and thence in one direction to the pulley working the drill, and in the other direction on a guide-pulley in the opposite end of the drill-holding rod in such manner that its action is not interfered with by the shifting of the drill-holding rod endwise, all as hereinafter described.

Figure 1 is a side elevation of my improved machine. Fig. 2 is a view of some of the parts in section and some in elevation, showing the arrangement of the drill with its stock, and the connection of the same with the holding-rod when geared for a reciprocating motion. Fig. 3 is an elevation of some of the parts, showing connection of the drill and its tube with said holding-rod when geared for a rotary motion; and Fig. 4 is a section on the line *x x* of Fig. 1.

A is a stand, of any suitable kind, intended to be portable. B is a driving-pulley and balance-wheel, mounted on a pivot projecting from said stand and provided with a foot-treadle or any other competent means of working it. D is a pulley with two grooves, or it may be two independent pulleys, mounted in a crotch, E, in the top of the stand A, said crotch being capable of turning on its vertical axis, and it carries a tube, F, on trunnions or pivots G, which allow it to oscillate vertically. H is a long and strong rod fitted in tube F, to turn on its axis and slide endwise. It carries a guide-pulley, I, in a crotch in one end. At the other end it carries a shaft, L, with a pulley, M, eccentric N, and a balance-wheel, O; or said shaft may carry a friction-wheel, P, instead of the eccentric, according to whether the drill is to have blows imparted to it, impelling it endwise against the work, or is to be rotated. Q is a hollow drill-stock pivoted to the shaft L either by a crotch, R, or a single bent arm, T, and connected to the crotch so as to turn on its axis, as indicated at V; or it may be permanently connected to the arm T or crotch if the drill is to revolve. The lower end of this stock carries a socketed piece, W, in which the drill-holding mandrel X may reciprocate in the one case or revolve in the other. When designed to be actuated by a blow this holder is reduced in size in the upper part and extends up through the socketed piece W into the hollow space of the tube Q above, and has a cup-shaped piece, Z, in which the lower end of a long rod, Z′, which is worked by the eccentric N, acts to strike the blow upon the drill. A spring, *a*, is coiled in the holder X, above the shoulder *b*, and acts upon the shoulder *e* of the piece W, to push the drill down out of reach of the end of the rod Z′, when it is lifted off the work for changing it from one place to another, so that at such times the drill will not be subjected to the action of the blows. This facilitates the adjustment of the drill to the work. The drill is subjected to the blows again when being placed on the work. The stock Q is pressed down till the cup Z is forced up to within reach of the rod Z′. If the drill is to be revolved by the driving-gear the drill-holder is not allowed to move endwise in the socketed piece W, and is extended up through the tube Q and provided with a friction-wheel, *f*, to be acted on by the wheel P. To keep these wheels always in contact, and to adjust them so that they will not bind too much, I arrange the arm T, by which the tube Q is suspended from shaft

L, so that it can slide toward and from the wheel P, and provide adjusting-nuts *g* on the shaft to act against the tubular part of said arm T, as shown. The belt *h* extends from the driving-wheel B up to the pulley D on both sides. From the right-hand side it passes over said pulley to the left, and thence to the pulley M at the left-hand end of rod H; thence to the pulley I in the other end of rod H; and thence to and over the pulley D, and down the left-hand side of it to the pulley B again. This arrangement admits of shifting the rod H lengthwise or turning it on its axis; it also admits of turning crotch E a half revolution without interfering, to any material extent, with the even working of the said belt. Thus the drill may be pointed in any required direction for ordinary work of the kind for which the machine is intended. The cup-shaped piece Z should be arrested at the right point in moving upward against the rod Z′ by a set-screw, *j*, or other suitable device, for the best effects are produced when it receives the blow as near the end of the downward movement of the rod as possible.

When this machine is run at a high speed—say two thousand strokes per minute—it is very efficient in carving and sculpturing upon marble, being perfectly manageable and capable of having the drills pointed in any direction, and will do the cutting required in lettering marble as fast as the tool can be properly guided and directed on the surface by an expert.

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

1. The belt *h*, double pulleys B D, swiveled crotch-piece E, and tube F, combined with the rod H, having pulley at each end, as described, when applied in stone-drills so that said rod H may be adjusted in different directions without stopping or changing belt.

2. The bit-mandrel X, the socket-piece W, and the swiveled tube Q, combined as described, when applied in stone-drills so as to admit of the bit being rotated or reciprocated.

3. The spring bit-holder X, socket W, tube Q, and reciprocating rod Z′, in combination with a tube I, applied as and for the purposes set forth.

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Witnesses:

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