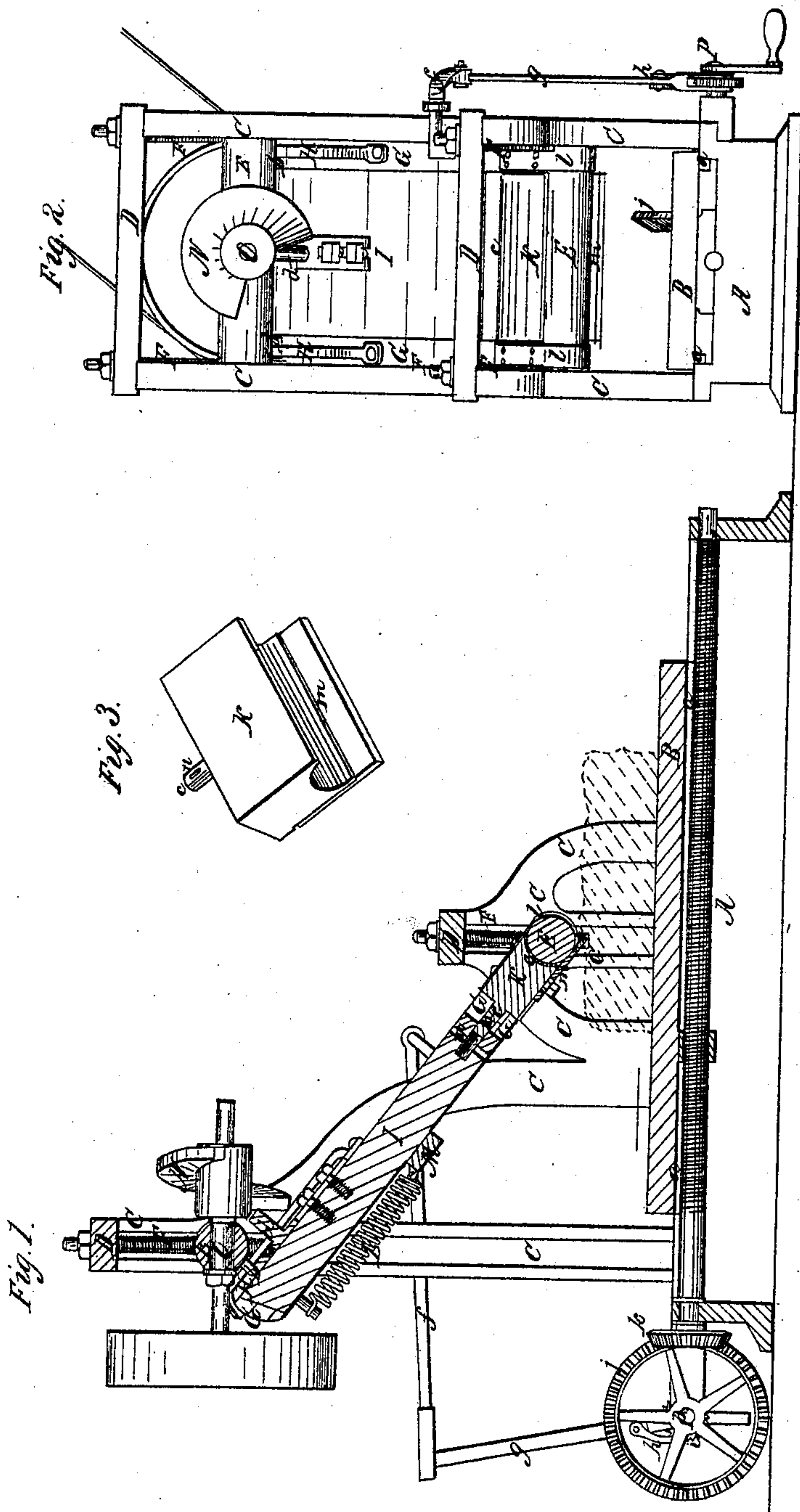


E. G. Hastings,
Dressing Stone.

N^o 10,636.

Patented Mar. 14, 1854.



UNITED STATES PATENT OFFICE.

ELBRIDGE G. HASTINGS, OF BROOKLYN, NEW YORK.

MACHINE FOR DRESSING STONE.

Specification of Letters Patent No. 10,636, dated March 14, 1854.

To all whom it may concern:

Be it known that I, ELBRIDGE G. HASTINGS, of the city of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Machinery for Dressing Stone; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a longitudinal vertical section of the machine. Fig. 2 is a front elevation of the same. Fig. 3 is a perspective view of the cutting tool and the stock to which it is attached.

Similar letters of reference indicate corresponding parts in the several figures.

The nature of my invention consists in the employment of a cylindrical cross-head, by which the ways or guides, which carry and give direction to the motion of the tool-stock, are supported in front, and on which they turn freely; and of a tool-stock, to which the cutting tool is attached, having in its lower side a recess corresponding more or less nearly to the curvature of the said cross-head; which said cross-head thus serves also as a rest or stop, at whatever angle the said ways or guides may be adjusted, and determines always the depth of the cut, and causes a perfectly true surface to be produced on the stone.

To enable those skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

The several parts of the machine are supported upon a strong bed, A, of iron or timber which is furnished with suitable ways or guides, a, a, to receive the horizontal work carried on table B; and has standards, or side frames, C, C, either cast, bolted or otherwise secured to it for the purpose of carrying the adjustable ways or guides which receive and give the proper direction to the movements of the hammer and cutting tool. These standards are stayed or strengthened by struts, D, D, extending across the machine, and they are furnished with suitable grooves or slots to form guides for two cross-heads E, E', which are parallel with each other, but in different vertical planes, and support the adjustable ways or guides before referred to; the cross-head E', serving also as the ad-

justable rest or stop which regulates the depth of cut.

Each cross-head is supported by two vertical screws, F, which work in female screws in their ends and are fitted to the standards in such a way with journals and bearings as to be capable of turning freely; but incapable of moving longitudinally; consequently, when the screws are turned the cross heads are raised or lowered. The two screws of each cross-head may be geared together, so that both may be compelled to turn together, and thus insure an equal movement to both ends of the cross-head; or may be unconnected as shown in the drawing and each worked separately.

The adjustable ways or guides, G, G, in which the hammer and tool stock work, consist of strong pieces of iron or timber, which are attached to the cross-head E' by strap joint connections, l, l, with journals near enough to the ends of the cross-head to bring the ways close to the standards, and are suspended from the cross-head E by hooks or studded links b, b, which enter or fit in slots or parallel spaces formed between the top or front face of the ways and metal bars, H, H, secured thereto. These slots or spaces allow for the varying distance between the cross-heads caused by any change which may be made in their respective elevations to alter the inclination of the line of the movement of the hammer and tool.

The hammer, I, consists of a heavy block of cast iron, furnished with suitable tongues to enter grooves in the ways or guides G, G, or otherwise fitted to slide therein.

The tool, m, is of well known construction, being in fact a chisel formed in one or more pieces, so that its edge may, if desired, extend all across the surface to be cut; it is attached to a stock, K, which consists of a metal block fitted to the ways or guides in the same manner with the hammer, and capable of being attached to or detached from the hammer, and used in either condition, attached or detached. As it is perhaps preferable in most instances to use the tool detached from the hammer, it is shown in that condition in the drawing, see Fig. 1, where the stock K may be seen to have a shank, c, which enters a hole in the bottom of the hammer, and may be secured therein by a pin passing through small holes, n, n, made through the hammer and the said

shank. The weight of the hammer will in many instances be sufficient to cause its uninterrupted descent to give a sufficiently forcible blow; but in order to increase the force I attach springs, L, to the hammer and to a cross piece, M, which connects the ways, G, G, together, in such a manner that they are caused to expend by the lifting of the hammer, and their contraction, when the hammer is set free, exerts force in the direction of the hammer's descent.

The hammer may be raised, or drawn back by any suitable means, but I employ for that purpose a cam, N, on a shaft which works in a bearing in the cross head E. This shaft receives a continuous rotary motion from any prime mover. The cam is a portion of a screw thread and acts on a fixed stud on the hammer, raising the hammer to any desired height according to the position of the stud, *d*, and when the back end of the cam passes that stud, leaving it free to fall. The tool-stock, when it is detached from the hammer, rests upon the cross-head, E', which is placed at the proper height to regulate the depth of cut. This cross-head has an india rubber cushion, *e*, or other suitable spring applied in such a way to the part where the stock comes in contact, that when the hammer is not in contact with the stock, the latter is kept partly raised above the dressed portion of the stone to allow the edge of the tool to clear it, and prevent it dragging on the surface, but that when the cushion or spring is compressed to its utmost degree by the hammer striking the tool stock, the edge enters the stone the required depth. This spring also prevents violent concussion being produced by the blow of the hammer. When the tool-stock and cutting tool are attached to the hammer, the cross-head E serves substantially the same purpose, as when they are detached, arresting the hammer when the cutting edge has descended to the proper depth.

Between the successive strikes of the hammer the carriage, B, is moved the required distance to present the undressed part of the stone to the successive operations of the chisel, being moved by a screw and nut in the same way as the work carriage of many other machines. The screw receives motion always while the hammer is rising, the said motion being given by means of a rod *f*, which is attached to the hammer and con-

nected with a lever, *g*, fitted loosely on a transverse shaft, P, at the back of the bed, A, and carrying a pawl, *h*, which engages with a ratchet wheel, *i*, on the said shaft, the shaft being geared with the screws by a pair of bevel wheels *j*, *k*.

The inclination of the line or plane of motion of the hammer and cutting tool, or the angle formed by the said line or plane with the surface of the block may be varied to any degree between parallelism with the said surface and the least acute angle that can be required, by adjusting the two cross-heads to bring the ways to the desired angle.

The several modes in which I have contemplated the application of the principle of my invention, are:—Cutting a level surface on stone of any degree of hardness, by the use of a toothed tool, or of a smooth edged tool of sufficient width to cut across the entire surface at every blow, or of less width; producing thereon a surface of any required style, by variations in the tools, the force and direction of the blows, and the rate of the feed; cutting thereon all manner of straight moldings, by the use of tools adapted to each; cutting curved surfaces, by raising or lowering the cutting tool as the stone passes under it; cutting as above on the edge or side, instead of on the upper surface of the stone,—the position of the several parts of the machine being changed as required for that purpose; in which case the sliding hammer moves horizontally, resting on one edge, and is impelled against the back of the cutting tool, or with the tool, if attached, against the stone, by force of the springs or their equivalent alone.

What I claim as my invention, and desire to secure by Letters Patent, is—

Making the cross-head E' of cylindrical form, and the tool-stock K with a corresponding concavity, substantially as shown; so that the ways or guides, which carry and give direction to the motion of the said tool-stock, turn freely on the said cross-head, and the said cross-head serves as a rest or stop at whatever angle the said ways or guides may be adjusted, and thus always determines the depth of the cut, and causes a perfectly true surface to be produced on the stone.

ELBRIDGE G. HASTINGS.

Witnesses:

L. F. COHEN,
E. C. POLHAMUS.