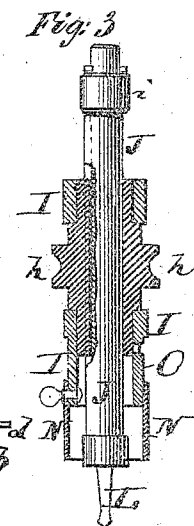
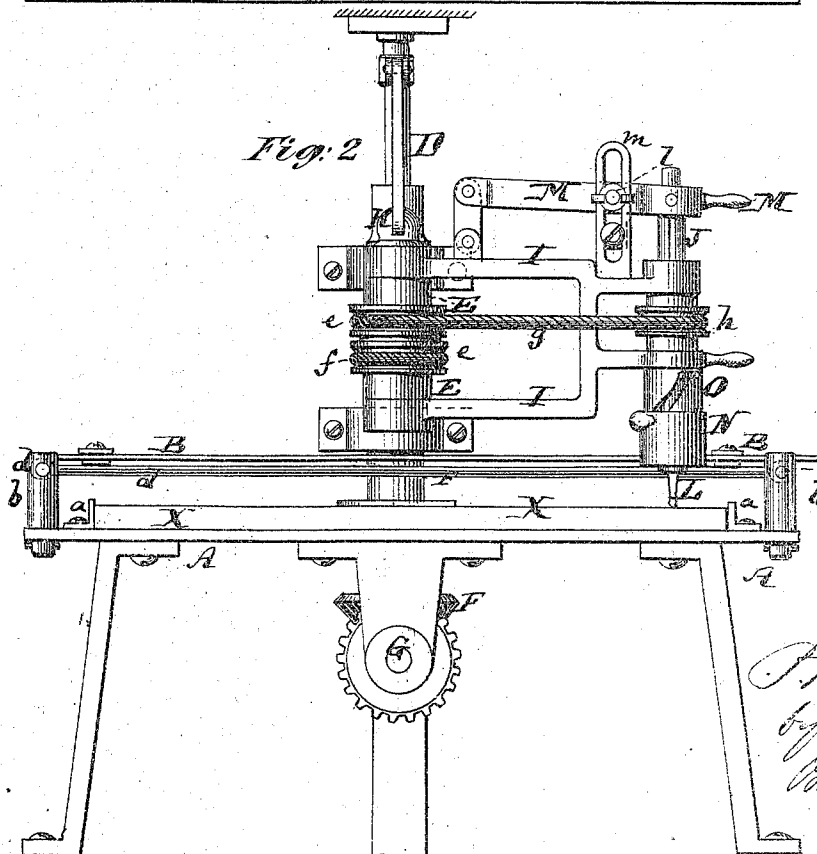
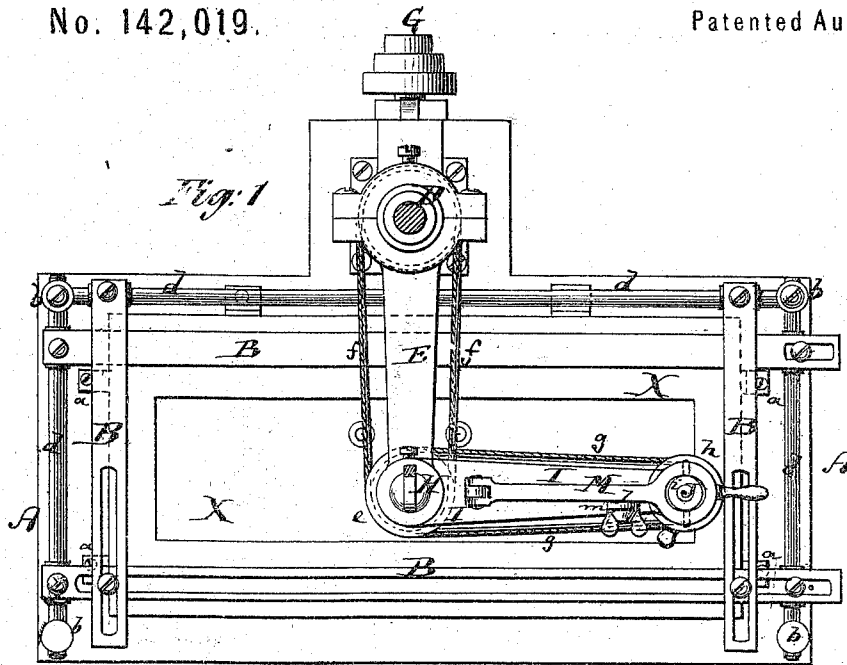


P. H. HOPKINS.

Machines for Cutting, Rubbing, and Drilling Stone.

No. 142,019.

Patented August 19, 1873.



*P. H. Hopkins
by his Attorneys
Brown & Allen*

*Witnesses } Michael Ryan
 } Fred Holmes*

UNITED STATES PATENT OFFICE.

PATRICK H. HOPKINS, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN MACHINES FOR CUTTING, RUBBING, AND DRILLING STONE.

Specification forming part of Letters Patent No. **142,019**, dated August 19, 1873; application filed June 16, 1873.

To all whom it may concern:

Be it known that I, PATRICK H. HOPKINS, of the city of Brooklyn, in the county of Kings and State of New York, have invented a new Machine for Cutting, Rubbing, and Drilling Stone, of which the following is a specification:

Figure 1 represents a plan or top view, partly in section, of my improved machine for cutting, rubbing, and drilling stone. Fig. 2 is a side elevation of the same; Fig. 3, a detail vertical section through the tool-holder.

Similar letters of reference denote corresponding parts of the different figures.

The object of this invention is to construct an apparatus for rubbing marble slabs, blocks, or stones of all descriptions, for drilling, sawing, or cutting, and otherwise treating the same without the use of expensive and cumbersome mechanism, and without occupying too much room during such process of rubbing, drilling, or cutting.

Heretofore machines for this purpose were mostly made with devices for moving the stone to be cut, rubbed, or drilled, so as to bring the requisite part under the cutting, rubbing, or drilling tool, and consequently it was necessary to allow space enough for each machine to admit twice the length and twice the width of the stone.

My invention consists in providing on the stationary supporting-frame an adjustable guide-frame for giving any desired outline to the edges, moldings, &c., to be formed on the stone. My invention also consists in arranging a vertically-adjustable sleeve on the holder of the tool, which sleeve, during the process of rubbing, cutting, &c., moves along the above-mentioned adjustable guides, while for operating it is raised out of the way of such guides to bring the tool, if necessary, close to the outer part of the stone.

In the accompanying drawing, the letter A represents the supporting-table or frame of the machine. Upon it is placed the slab or stone X to be cut, rubbed, or drilled, such slab or stone being held in place by suitable lugs *a* projecting from the table. From the latter also project short posts or standards *b* that hold horizontal guide-rods *d*, which rods serve as supports for slotted bars B B, that

form a rectangular frame at suitable plane above the slab X. The guide-rods B B are slotted, as shown, and connected by pins or screws, and can be adjusted to produce a frame of suitable size and shape, their inner edges serving as guides for the shank or holder of the rubbing or cutting tool, which hereinafter will be more fully described. On a stationary vertical post, D, which may be firmly connected with the frame A or with the supporting structure or house in which the machine is set up, is swiveled a forked frame, E, between the arms of which an upright shaft, F, is arranged, in line with said post D, a bend being made in the latter to accommodate the said shaft F, which also extends through the lower part of D to receive rotary motion by gearing or otherwise from a horizontal driving-shaft, G. In the outer end of the forked frame E is placed a vertical rod, H, which serves as swivel-pin for another forked frame, I, that is swiveled to the end of E. Pulleys *c* are hung around the pin H, and a belt extends from the shaft F around a pulley, *e*, while another belt, *g*, extends from a pulley, *e*, to a pulley, *h*, hanging in the outer part of the frame I, said pulley *h* embracing a vertical pin or shaft, J, that is fitted through the outer end of the frame I. By groove and feather the pulley *h* connects with the shaft J to revolve the same, though allowing it to move freely up and down. By this arrangement of the jointed frames and belt connections rotary motion is imparted under all circumstances to the shaft J whenever the shaft G is revolved, and at the same time the shaft J can, on its jointed support, be brought close to the shaft F, or at suitable distance therefrom, as far as the length of the frames E and I will permit. To the lower end of the shaft J is secured a boring, cutting, or rubbing tool, L, which is directed to the requisite points on the slab B, and then revolved, as described, and at the same time fed down. A sleeve, *i*, which loosely embraces the upper part of the shaft J, but which is fitted between shoulders or into a groove of such shaft J, is embraced by an eye portion of a lever, M, which lever is pivoted by a standard projecting from the frame I. By means of the lever M the shaft J can be raised or lowered at will, although at

the same time it will be free to revolve. A set-screw, *l*, projecting from the lever *M* through a slotted post, *m*, that projects from the frame *I*, allows the lever *M* to be secured at any suitable height, and allows, consequently, a similar fastening of the shaft *J*. The latter can thus be set at any desired height for rubbing or cutting stones, while for boring purposes the shaft is fed down gradually. *N* is a sleeve fitted around a lower cylindrical projection, *O*, of the frame *I*, which projection embraces the shaft *J*, as shown in Fig. 3, and which has an inclined slot, as shown in Fig. 2, to receive an inwardly-projecting pin of the sleeve *N*. When the said sleeve *N* is let down, as in Fig. 2, it comes in line with or beneath the guide-frame *B*, and serves while in contact with such guide-frame to hold the tool at the requisite distance, and to guide it properly.

For drilling purposes, however, the sleeve *N* is moved up and locked in the upper end of the slot in *O*, whereby the sleeve *N* is carried out of the way of the frame *B* to permit the drilling-tool to be adjusted at any suitable distance from the edge of the stone.

I claim—

1. The vertically-adjustable sleeve *N* fitted around the cylindrical grooved projection *O* of the frame *I*, and embracing the lower part of the shaft *J*, substantially in the manner described.

2. The guide-frame *B* composed of slotted rods or bars, and arranged on a machine for cutting, rubbing, or drilling stone around the jointed tool-holder, substantially as specified.

PATRICK H. HOPKINS.

Witnesses:

FRED. HAYNES,

MICHAEL RYAN.