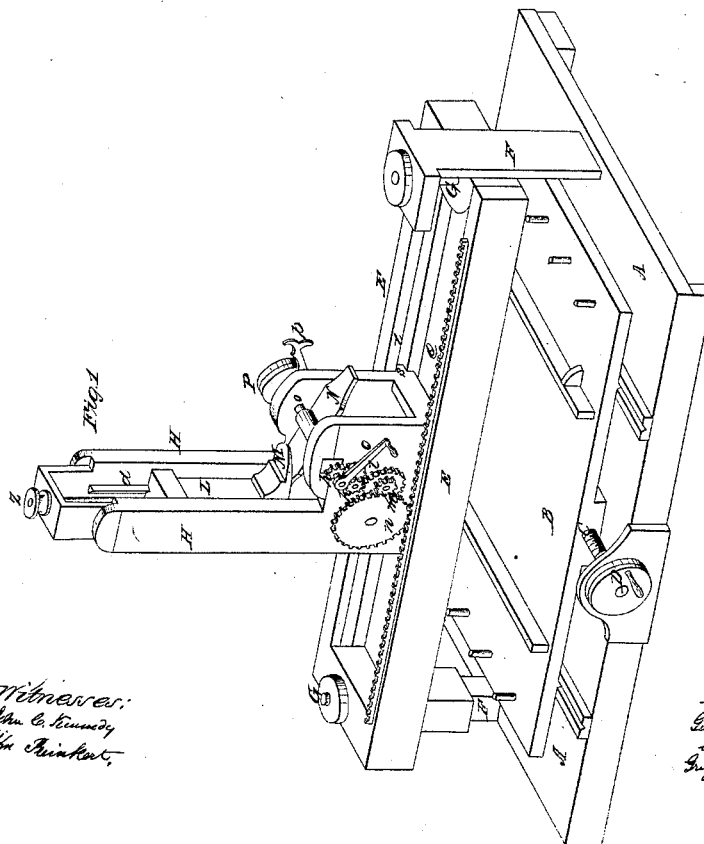
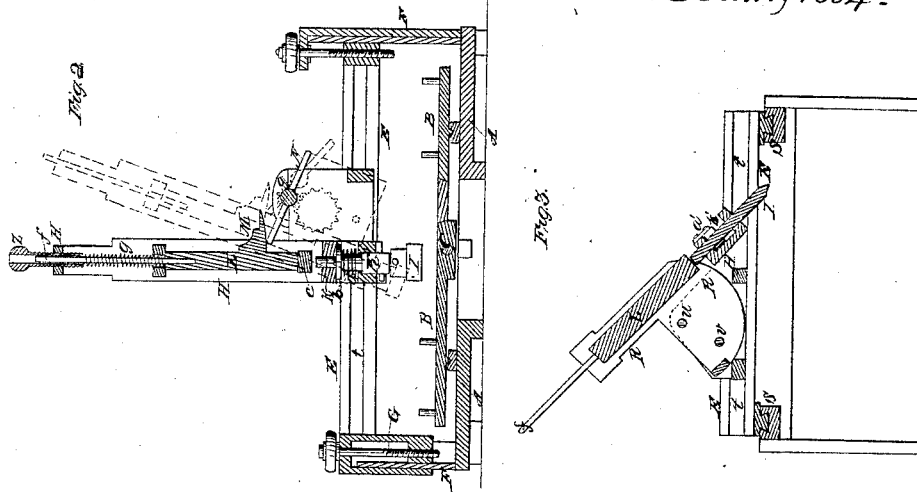


G. Cuppers,

Dressing Stone.

N^o 45,591.

Patented Dec. 27, 1864.



Witnesses:
John C. Kennedy
John Binkert

Inventor:
Gustavus Cupper
by his attorneys
Wagner & Coffey

UNITED STATES PATENT OFFICE.

GUSTAVUS CUPPERS, OF NEW YORK, N. Y.

STONE-CUTTING MACHINE.

Specification forming part of Letters Patent No. 45,591, dated December 27, 1864.

To all whom it may concern:

Be it known that I, GUSTAVUS CUPPERS, of the city, county, and State of New York, have invented certain new and useful Improvements in Stone-Cutting Machines; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, in which—

Figure 1 represents a perspective view of said stone-cutting machine. Fig. 2 represents a longitudinal vertical section through the same. Fig. 3 represents a detached view, hereinafter to be referred to.

A represents the bed-plate, which supports the entire machine.

B represents a sliding plate or platform, which supports the stone to be cut. It is moved laterally by means of the feed-screw C, which is operated by belt-pulleys D, or by a crank.

E represents an adjustable frame, which is supported on the standards F. It can be raised and lowered by means of the set-screws G, and it supports a vertical frame, H, on which the operating parts of the machine are mounted. These operating parts consist in a chisel, I, which is secured to the chisel-shaft K, the latter being held in the frame H by means of the spiral spring a, which rests on the frame H, and whose upper end bears upon the flange b of the chisel-shaft, which is operated by a hammer.

L represents the hammer. It may be made of metal or wood, and when made of the latter material its lower end is armed with a solid metal head, c. It is guided in its motion by the guide-tongues d, which fit into corresponding grooves in the hammer-shaft. It is provided with a toe, M, against which a lifter, N, operates, and thus raises the hammer, which in descending strikes the chisel-shaft K and the chisel I to operate upon the stone; but the tension of the spring a is such that after each blow of the hammer it raises by its recoil the chisel, which thus remains a short distance above the face of the stone, ready for the next blow; and I thus imitate the operation of cutting the stone by hand, but effect it in a more regular and perfect manner. The hammer L is provided at its upper end with a rod, f, which passes through the upper part of the

frame H. A spiral spring, g, is placed upon said rod, and its end bears against the regulating-screw Z, which operates so as to tighten or loosen the spring g, so that the hammer may strike with the desired force, and by its recoil it causes the hammer to strike the chisel, in addition to its weight, thereby imitating the short and sharp blows executed by the swinging motion of the hammer when operated by hand. The lifter N may be operated either by means of a crank, O, or by power through the belt-pulleys P. The frame H, supporting the working parts of the machine can slide longitudinally within the frame E, so as to feed the chisel lengthwise over the stone. I make this feed automatic by the employment of suitable gearing, h i k l m n, (shown in Fig. 1,) which gear with the rack Q on frame E, and thus feed the chisel regularly to its work.

It is desirable that such feed may be made variable, so as to adapt it to coarse or fine cutting, and I so arrange the shaft o of the lifter that it can be moved longitudinally to some extent, and that it can be locked in the desired position by a pawl, p. I can thus shift the pinion h (shown in Fig. 1) to gear with pinion i, or that pinion q on the rear side of the machine, and shown in Fig. 2, shall be in gear with its spur-wheel r. The two pinions are respectively geared in such a manner that the feed of the frame is regulated according to the pinion set in gear with its respective spur-wheels.

From the above description it will be seen that as the machine is operated the lifter N raises the hammer L, which, by its weight and the recoil of the spring g, strikes the chisel-head K and the chisel after the stroke of the hammer is thrown upward by the recoil of the spring a, while the frame H and the chisel are fed automatically the length of a cut by the gearing above described, and when one cut is finished the stone is fed laterally for the succeeding cut by means of the feed-screw C.

It is well known that in rough-hewing stones a pointed chisel is used, which is held in an oblique position, while for smoothing, an edged chisel is used, which is held either in a perpendicular or slightly-inclined position. To make my machine adaptable to performing those operations, I construct the frame H in such a manner that it can be turned to any desired inclination and can be secured therein.

This may be effected by pivoting the frame H to the frame E and tongues *s*, which slide in guide-grooves *t*, as represented in Figs. 1 and 2, or by means of an arrangement represented in Fig. 3, where I use a pivoted chisel-frame, R, within the sliding frame H, the hinged chisel-frame turning upon the pivot *u*, and being secured in its position by means of a pin or set screw, *v*. I thus make my machine adaptable to rough hewing as well as to finishing work by simply adjusting the inclination of the chisel-frame and by using a chisel adapted to the work to be performed.

For cutting very large stones I find it better to use a frame which is susceptible of being moved longitudinally as well as transversely, so that the stone can remain stationary, as it would require considerable power to move a very large stone on the feed-plate B, Fig. 1. This may be effected by using a frame represented in Fig. 3, in which E represents the ways or guides on which the frame H is fed longitudinally, and S represents the ways on which the frames H and R are fed transversely. These frames are placed above the stone in the desired position, and the cutting of each face can be performed without moving or feeding the stone.

Recoil-springs of various constructions may be used in place of the spring *a* under the chisel—such, for instance, as the india-rubber spring *a'*, (shown in Fig. 3,) one end of which

is secured to the sleeve *b'* of the chisel and the other end to the chisel-frame H, the spring causing the chisel to rise after each blow of the hammer.

Having thus fully described the nature of my invention, what I claim herein as new, and desire to secure by Letters Patent, is—

1. Pivoting the chisel-frame H to the main frame E of the stone-cutting machine, so as to maintain a vertical position or to adjust the inclination of the chisel for rough-hewing and finishing, substantially in the manner and for the purposes described.

2. The combination of a pivoted adjustable chisel-frame with a spring or recoil chisel, when constructed and operated substantially as and for the purposes described.

3. The combination of the pivoted adjustable chisel-frame H with the frames E and S, for the purpose of feeding the chisel in two different directions over the stone, substantially as herein described.

4. The combination of the frames A B E with the sliding and hinged chisel-frame H and spring or recoil chisel K, when constructed and operated substantially as and for the purpose described.

GUSTAVUS CUPPERS.

Witnesses:

JAMES A. MCCREA,
JAMES G. MCADAM.