

Machines for Grinding and Polishing Stone.
No. 135,535. *Fig. 1* Patented Feb. 4,

Patented Feb. 4, 1873.

A detailed technical drawing of a mechanical assembly, identified as Fig. 2. The diagram shows a complex arrangement of components, including a central vertical shaft or piston rod passing through several horizontal frames or cylinders. Key labels include 'C' for the main chamber, 'E' for upper and lower connecting rods or guides, 'F' for internal valves or pistons, and 'H' for another internal component. Various other parts are labeled with lowercase letters like 'a', 'b', 'c', 'd', 'e', 'f', 'g', 'h', 'i', 'j', 'k', 'l', 'm', 'n', 'o', 'p', 'q', 'r', 's'. Numbers '1' and '2' are also present near specific joints or connections. The overall structure appears to be part of a larger machine, possibly a steam engine or pump, designed for fluid control or power transmission.

[illegible]

S. W. Piper.
L. N. Höller.

AM. PHOTO-LITHOGRAPHIC CO. N.Y. (OSBORNE'S PROCESS)

UNITED STATES PATENT OFFICE.

JAMES FINN, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN MACHINES FOR GRINDING AND POLISHING STONE.

Specification forming part of Letters Patent No. 135,535, dated February 4, 1873.

To all whom it may concern:

Be it known that I, JAMES FINN, of Boston, of the county of Suffolk and State of Massachusetts, have invented a new and useful or Improved Machine for Grinding or Polishing Stone; and do hereby declare the same to be fully described in the following specification and represented in the accompanying drawing, of which—

Figure 1 is a top view; Fig. 2, a tranverse section; and Fig. 3, a longitudinal section of it.

This machine is particularly designed for the gritting and polishing of marble slabs, it being capable of operating at one and the same time on two or more of different thicknesses, or on one or more slabs of variable thickness, as each of the tools is provided with a separate spring for pressing it into contact with the slab and allowing it to conform or adjust itself to the varying surface or thickness of the slab. The tool, when in operation, not only moves lengthwise over the slab, but is gradually moved widthwise of it, so as to dress or polish it from edge to edge, or from one to the other of the two opposite edges, all of which is performed automatically, and far more economically than the usual process of hand-gritting or polishing.

In such drawing, A denotes the frame of the machine. Within such frame is the platform or bed B, upon which the marble or stones C D to be ground or polished are laid and fixed. Directly over the bed is the reciprocating carriage E, which is a rectangular frame, supported in bearings *a a*, that admit of such frame being moved in opposite directions horizontally and longitudinally of it. Extending across the said carriage or frame E are two parallel rods, *b b*, upon which the dressing or polishing tool-carrier F is arranged, the rods going through its two longitudinal bars *c c*. The said bars *c c* slide freely on the rods *b b*, and are connected by the connector or plate G, slotted lengthwise and laterally, in manner as shown at *d*, and *e e e e*. The connector arranged on the two bars *c c* is secured to them by clamp-screws *f* going through the transverse slots and being screwed into the said bars. Each of the said bars *c c* carries a series of gritting or polishing tools or stones or devices, *h*, secured in forks *i*, whose shanks extend up through hollow standards *k* erected on the bar,

as shown. Each shank not only is encompassed by or provided with a helical spring, *l*, for depressing the fork, but has a screw, *m*, cut on its upper part to receive a lever-nut, *n*, which, bearing upon the top of the standard, serves as an adjustable stop to regulate the extent of depression of the fork and its tool. Furthermore, there extends across the upper part of the frame A a driving-shaft, H, provided at its middle with a screw or worm, *n'*, and at its two ends with two cranks, *o o*, from whose wrists connecting-rods *p p* lead to and are pivoted to the carriage E. While the shaft H may be in the act of being revolved, a reciprocating rectilinear movement will be imparted to the carriage E, and the gritting or polishing-tools, which by the springs *l* will be forced down closely upon the upper surface of the stone or stones. Besides the driving-shaft H there is a secondary shaft, I, which is arranged vertically in the frame A, and in other respects, as shown, and carries a worm-gear, *r*, to engage with the worm *n'*. There is fixed upon the lower end of the shaft I a crank, *s*, whose wrist *t* is adjustable on the crank lengthwise thereof, and is provided with a clamp-nut, *u*, to fix it in position nearer to or further from the shaft I, as may be required. The crank is slotted lengthwise, to receive the shank of the wrist, such shank being furnished with a screw to engage with the said nut. The wrist extends into the longitudinal slot of the connector-plate G, and may be provided with a friction-roller, as shown at *v*.

While the driving-shaft H is in revolution, a rotary motion of the secondary shaft I will be imparted to such shaft, whose crank, by its action upon the connector-plate, will cause it and the tools to be moved laterally or transversely of the machine, first in one and next in the opposite direction. Thus each tool while in operation will not only be moved back and forth longitudinally of the machine, but will have reciprocating transverse movements. In this way the whole upper surface of the stone or slab of marble, for instance, will be subjected to the action of the tools, whether they be for gritting or for polishing it.

I make no claim to the machine for grinding and polishing glass shown in the Patent No. 79,131, to Kendall & Hathaway, in which a reciprocating table is used for supporting

and moving the glass plate under the grinding-tools. I have no such movable table in my machine, the stone to be ground resting on a stationary table.

I claim as my invention as follows, that is to say—

1. The reciprocating carriage E, the tool-carrier bars *c c*, the slotted connector G, cranked shaft I, gear *r*, worm *n'*, and shaft H, combined and arranged together and in the frame A, and relatively to the bed B thereof, substantially in manner as described.

2. The combination of each of the tool-forks *i*, its spring *l*, supporting-standard *k*, screw *m*, and nut *n*, all arranged as described.

3. The combination and arrangement of the above with the bar *c* applied to the carriage E, and provided with operative mechanism, substantially as specified.

JAMES FINN.

Witnesses:

R. H. EDDY,
J. R. SNOW.