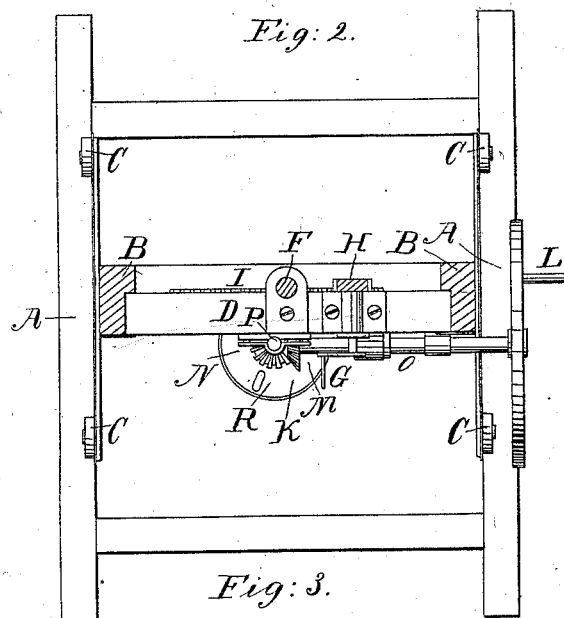
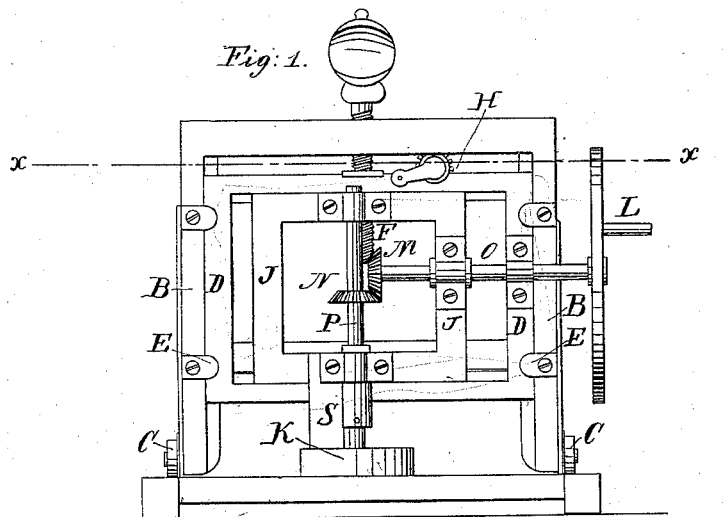


*J. Harsha.*

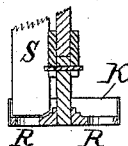
*Grinding and Polishing Stone.*

*N<sup>o</sup> 48,062.*

*Patented June 6, 1865.*



*Fig: 3.*



*Witnesses,  
Charles D. Smith  
W. F. Hall*

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Per. Mumtaz  
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# UNITED STATES PATENT OFFICE.

JAMES HARSHA, OF CIRCLEVILLE, OHIO.

## IMPROVED STONE GRINDING AND POLISHING MACHINE.

Specification forming part of Letters Patent No. 48,062, dated June 6, 1865.

*To all whom it may concern:*

Be it known that I, JAMES HARSHA, of Circleville, in the county of Pickaway and State of Ohio, have made new and useful Improvements in Machines for Grinding and Polishing Stones; and I do hereby declare the following to be a full, clear, and exact description of the nature, construction, and operation of the same, reference being had to the annexed drawings, which are made part of this specification, and in which—

Figure 1 is an elevation of the machine. Fig. 2 is a section on the line *x x*, Fig. 1, looking downward, forming a plan of the parts below the section line. Fig. 3 is a vertical sectional view of the lower portion of the revolving device, showing the rubber and scraper.

The same letters refer to corresponding parts in the different figures.

The object of my improvement is a device for grinding or polishing the surface of stone or marble; and it consists in an improvement in the grinder and in the scraper, which, maintaining its position in the revolving grinder, feeds the sand or other grinding material to the holes in the grinder, through which it exudes, to enter between the surface of the grinder and that of the stone or marble under treatment.

To enable others skilled in the branch of manufacture to which my invention appertains to construct and use my invention, I will proceed to describe it.

A is a bed-frame, upon which the carriage B traverses in one direction on the rollers C over the stone or slab of marble which lies within the bed-frame. The frame or gate D has a vertical motion in the carriage, its sides being guided by the cleats E, and the vertical motion is induced by the screw F in the upper beam of the carriage B. The motion of the carriage on the bed-frame may be called the "longitudinal motion," while that at right angles to it I call the "transverse," and this is effected by the hand-crank G, which operates the pinion H, and the rack I, which being fastened to the upper side of the inner frame, J, moves the latter transversely on the gate D, in order, in connection with the longitudinal motion already described, to bring the grinder K over the required portion of the

stone or marble under treatment. This being accomplished, the gate is lowered by the revolution of the screw F, to bring the grinder K to its work, and the latter is then rotated by means of the winch L, shaft O, and bevel-gearing M N, the latter being on the upright shaft P, to whose power end the grinder K is attached by a rocking joint of the universal or gimbal construction, which allows it to set parallel with the surface of the stone, even when the latter is not in a plane at exact right angles with the shaft P. The grinder is made with a hollow above, adapted to contain sand or other grinding or polishing material, according to the nature of the operation. This cavity connects, by orifices R, with the upper surface of the stone under treatment, and the sand, for instance, is moved toward the holes by the scraper S, which is attached to the inner frame, J, so as always to maintain its proper relative position to the grinder. It will be seen that as the scraper is attached to the frame J, and the shaft P sets out from the same, the edge or lower end of the scraper is tangential to the hub of the grinder, and not radial with its axis. The object of this is to scrape the contents of the grinder toward the orifice, and this would not be accomplished by making its edge cross the radial orifice parallel therewith, as in that case it would merely make a track of its own width, banking up the sand in front of it, if it were sufficient in quantity to more than occupy the margins at the inner and outer edge of the scraper. The holes R in the grinders are partially stopped on the upper edges by blocks, which regulate the amount of sand which shall pass, while they are open at bottom, and contain the sand which passes between the grinder and the stone in a gradual stream.

The operation of the machine has been described incidentally in the course of the description, and it will not be necessary to make any special detail of it under this head. Suffice it to say that the four motions described are the means by which the machine is made available upon the surface of the stone and marble, and the grinder is caused to rotate and traverse to perform the office described, the nature of its work differing according to the coarseness or fineness of the grinding material

with which the grinder is supplied. This variation will make the difference between a grinder and a polisher, and the piece K may be shod with leather, felt, or any other material which makes a convenient medium for the application of a polishing material.

By placing a block of moderate size in a holder, in the place of a grinder K, it may be made to revolve in contact with a grinding-surface or with another stone to work them mutually.

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

1. The combination of the carriage B, gate D, and inner frame, J, operated substantially as described, so as to secure the vertical ro-

tary and two horizontal motions, for the purpose described.

2. The grinder K, with its orifices, constructed in the manner described, for the transmission of the grinding material to the impinging surfaces.

3. The scraper S, in the described relational position to the orifices R in the grinder K.

To the above specification of my improvements in machines for grinding and polishing stone, marble, &c., I have signed my hand this 13th day of April, 1865.

JAMES HARSHA.

Witnesses:

EDWARD H. KNIGHT,  
CHARLES D. SMITH.