E. T. Nichols,

Polishing Marble.

No. 48,832. Patented July 18, 1865.

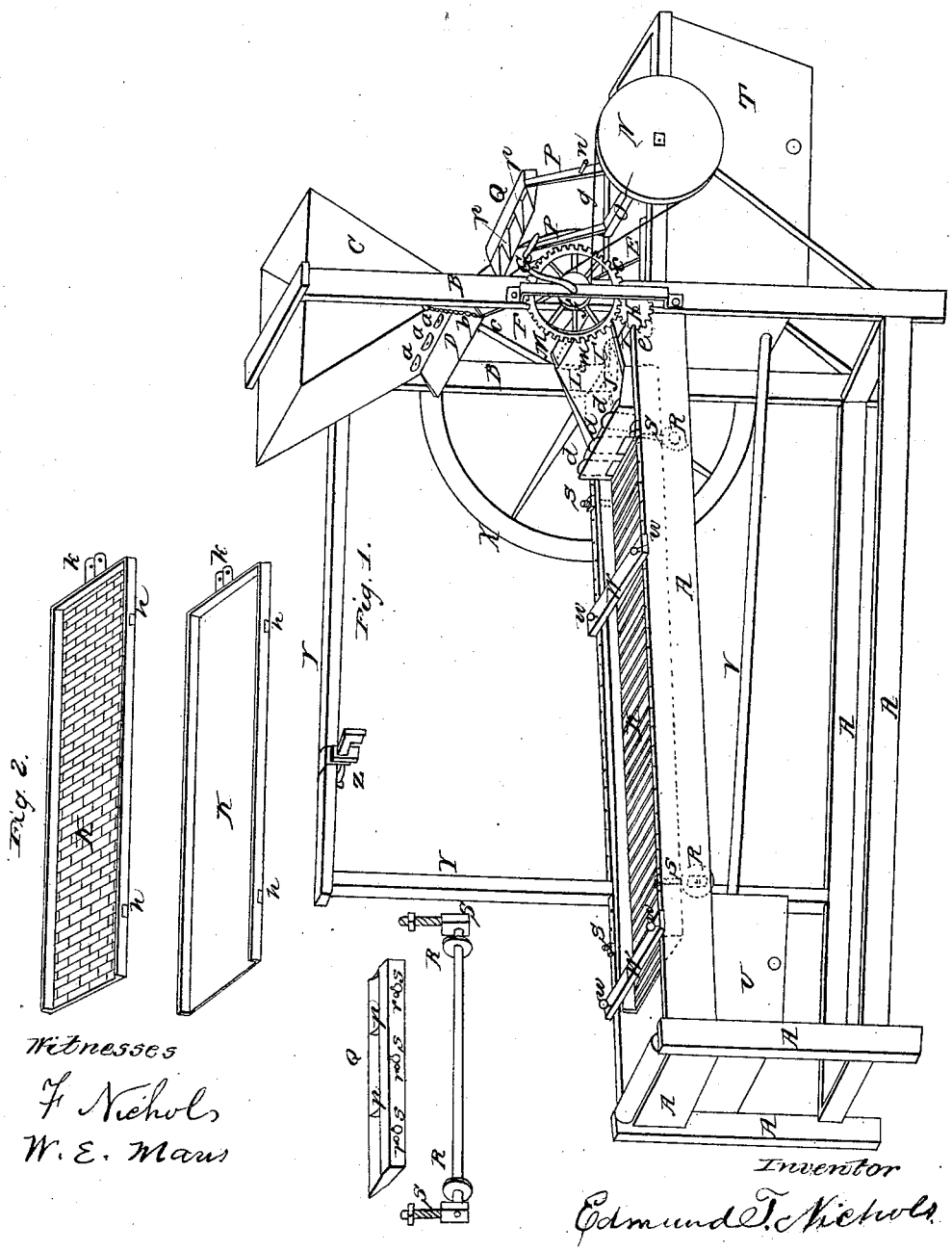

Fig. 1.

Fig. 2.

Witnesses

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EDMUND T. NICHOLS, OF JOLIET, ILLINOIS, ASSIGNOR TO HIMSELF AND FRANCIS M. NICHOLS, OF SAME PLACE.

IMPROVED MARBLE-POLISHING MACHINE.

Specification forming part of Letters Patent No. **48,832**, dated July 18, 1865.

To all whom it may concern:

Be it known that I, EDMUND T. NICHOLS, of Joliet, in the county of Will and State of Illinois, have invented a new and useful Improvement in Machines for Polishing Marble and other 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, and to the letters and figures marked thereon, which form part of this specification.

In said drawings, Figure 1 represents a perspective view of my invention; and Fig. 2 shows detached views of various parts of the same, hereinafter more fully described.

The nature of my invention consists in the employment of an adjustable inclined polishing-bed having a vibratory or reciprocal movement, whereby the marble or other stone lying close upon said bed is thoroughly polished by the frictional action upon the same produced by said reciprocating motion of the aforesaid polishing-bed.

My said invention further consists in a novel arrangement for supplying sand and water to said polishing-bed, for the purpose of facilitating and improving the polishing process; and also in a novel device whereby the water which has once been used can be returned to the reservoir, whence it is conveyed to the machine and used again repeatedly, thus effecting a great economy in the use of water necessary in the operation of the machine.

My invention also embraces sundry details of construction and arrangement which will hereinafter be fully and at large set forth.

To enable those skilled in the art to understand how to construct and use my invention, I will proceed to describe the same with particularity, making reference in so doing to the aforesaid drawings.

A represents the frame of the machine, that end thereof at which the sand and water is supplied being a little higher than the opposite end, so that the polishing-bed, which is arranged within said frame, as hereinafter described, lies in an inclined position to facilitate the passage over it and between it and the stone to be polished of the sand and water admitted, as hereinafter specified.

B represents two upright posts or standards which support the sand box or hopper, (marked C,) as shown.

D represents a hinged bottom to the sand-box C, being hinged at one edge and kept up close against the sand-box so as to prevent the escape of the sand by a spiral spring, *b*, or its equivalent. Directly above said hinged bottom there are arranged three or more cut-off slides, (marked *a*,) which are separately adjustable, and which, when all closed, also prevent the passage of sand from the box C. By means of said slides the amount of sand passing from the box may be regulated, and it may be distributed to that part of the polishing-bed which is desired to be so supplied. From the front edge of said hinged bottom D there extends downward the cord or chain *c*, whose lower end is attached to the movable arm E, which is pivoted to the frame at *e*.

G represents the crank by means of which the machine is operated, motion being imparted to the shaft I, which propels or moves the polishing-bed by means of the spur-wheels F H, and to the drum N by means of the drum *f* and band *g*. The said drum N is fixed rigidly upon the shaft O, each end of which shaft is supported in suitable bearings in the sides of the water-reservoir. (Marked T.)

Upon the ends of the arms P, fixed radially upon the shaft O, there is arranged the bucket Q, which, as the shaft O revolves, dips water from the reservoir and pours it upon the inclined table L, whence it flows down upon the polishing-bed through the gates *d*. The said bucket Q is designed to be divided into as many compartments as there are slides *a*, the number of the gates *d* being the same, also, as the number of said slides. Each of said compartments is provided with a small aperture, (marked *r*,) which may be opened or closed, when desired, by means of the valves *s*. At the back of said inclined table L there is arranged upon central pivots at each end a movable leaf, (marked M,) which is kept down upon and in the same plane with said table L by the weights *m*, attached to its front edge, the said leaf, when in that position, extending back beneath the circular path of the bucket Q, to catch the water therefrom, but turning upon its said pivot-bearings to permit said bucket to pass down when discharged. The pin *n*,

projecting from the arm P, as shown, presses upon the aforesaid arm E and presses or draws down the hinged hopper-bottom, and allows the sand to fall therefrom upon said inclined table L, to be washed upon the polishing-bed K, until said pin *n* passes said arm E, when the sand-box is closed by the operation of the aforesaid spring *b*.

The shaft I, before mentioned, is provided with a crank-elbow, as shown at I′, to which is attached one end of a pitman-rod, J, the other end being attached to the polisher K at *k*. (Seen in Fig. 2.) The said polisher is constructed of cast-iron or other suitable metal, and has its polishing-surface covered with transverse channels, or smoothed or roughened in any suitable manner to adapt it to the nature of the block to be polished. The said polisher is supported between the upper timbers of the frame upon the rollers R, whose shafts are supported in the adjustable boxes S, whose arms pass up through the frame and are fastened by means of the nuts shown or by any other suitable means. By this arrangement the inclination of the polisher may be varied so that the sand and water may be caused to flow down more or less rapidly, according to the weight of the stone upon the same, as the heavier the stone is the more sand and water is required. The water and sand flow down from the polisher, and are received in a tank or receiver, (marked U,) said receiver being connected by means of a tube or trough, V, to the reservoir T, so that the waste water flows back into said reservoir and can be used repeatedly, as hereinbefore mentioned. The slab of marble or other stone is placed upon the polisher, and is prevented from moving with the same by the bars W, which are fastened to the frame at each end of the slab, as shown. When it is desired to polish the edge of the slab it is turned up so as to present its edge to the polisher, when it is retained in position by attaching the clamp Z to its upper edge; or a series of slabs may be arranged side by side and fastened together in any suitable manner, and thus the edges of several blocks be polished at once. When the sand and water are needed upon one side only of the polisher, the corresponding slide *a* and gate *d* are opened and the others closed, while the corresponding aperture *r* in the bucket Q is closed and the others opened, so that the water escapes from those compartments whose apertures are open in the ascent of the bucket, and only that compartment which corresponds to the open slide and gate retains and pours out the water upon the aforesaid table L. By placing a layer of felt upon the polishing-bed what is called the "putty polish" or "gloss finish" is produced.

h h (shown in Fig. 2) represent small rollers arranged in the sides of the reciprocating polishing-bed, to reduce the friction, while the frame A serves as a guide for its motion.

Having described my improvement in machines for polishing marble and other stone, I will now specify what I claim therein and desire to secure by Letters Patent—

1. The employment of a reciprocating inclined polishing-bed, K, arranged and operating substantially as and for the purposes specified and shown.

2. In combination with said reciprocating polishing-bed, the employment of the anti-friction rollers R and adjustable bearings S, arranged as and for the purposes described.

3. In combination with the sand-box C, the hinged bottom D, spring *b*, and slides *a*, all arranged and operating substantially as shown and set forth.

4. The combination and arrangement of the hinged bottom D, spring *b*, chain *c*, and arm E, as and for the purposes described.

5. Providing the inclined table L with the pivoted adjustable leaf M, arranged substantially as and for the purposes specified.

6. The employment of a revolving bucket, Q, arranged and operating substantially as and for the purposes shown and described.

7. The combination and arrangement of the reservoir T, the revolving bucket Q, inclined table L, polishing-bed K, receiver U, and tube or trough V, operating substantially as and for the purposes described.

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Witnesses:

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