

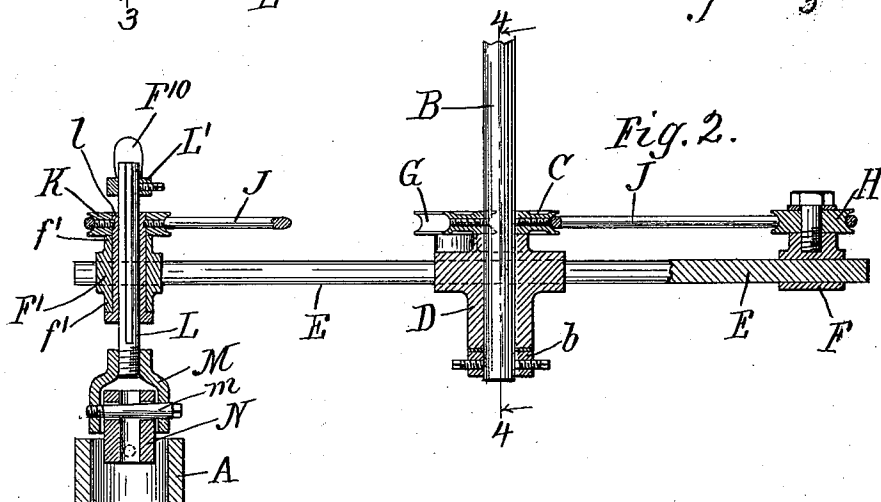
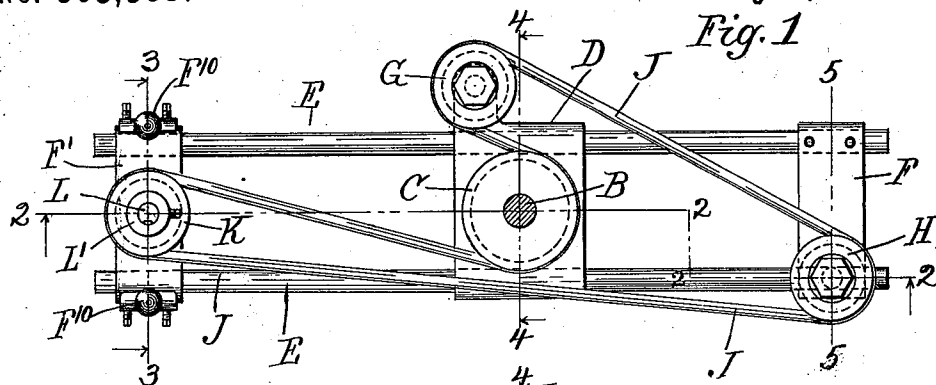
(No Model.)

2 Sheets—Sheet 1.

J. FLINDALL & F. J. MALLY.
STONE DRESSING MACHINE.

No. 563,583.

Patented July 7, 1896.



Witnesses.

E. T. Wray.
Jean Elliott

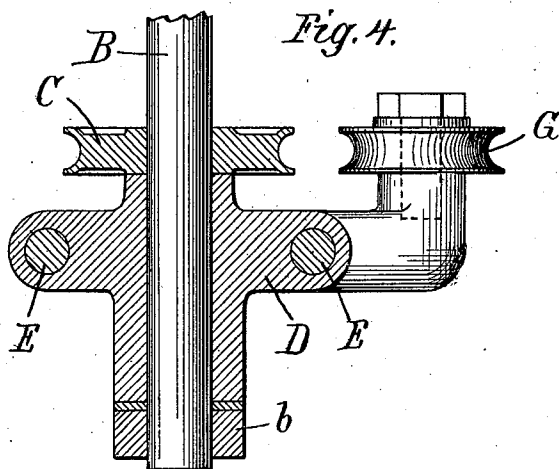
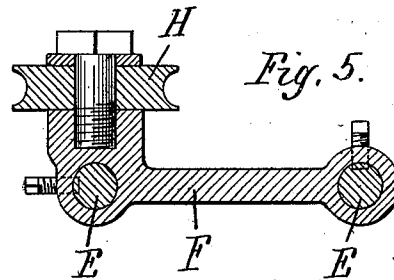
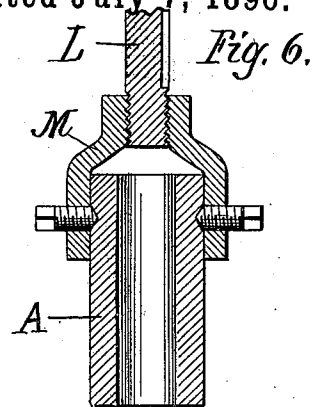
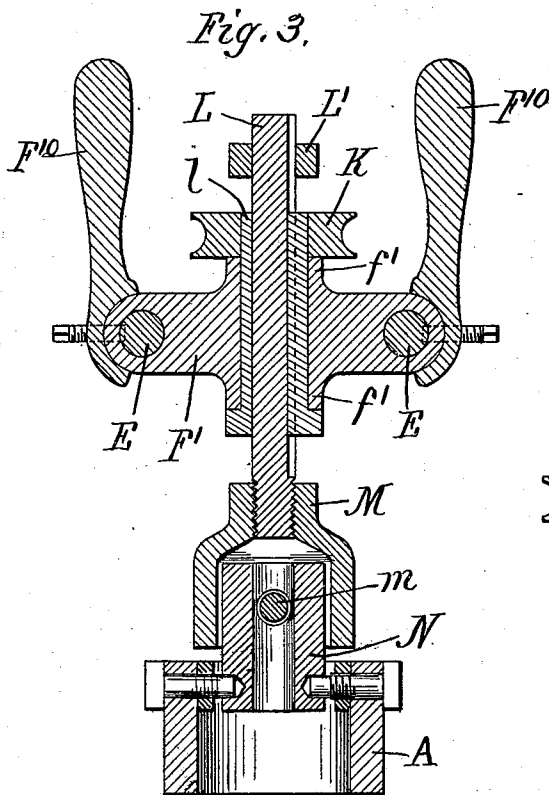
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UNITED STATES PATENT OFFICE.

JOHN FLINDALL, OF CHICAGO, AND FRANK JOSEPH MALLY, OF CICERO,
ILLINOIS.

STONE-DRESSING MACHINE.

SPECIFICATION forming part of Letters Patent No. 563,583, dated July 7, 1896.

Application filed December 9, 1893. Serial No. 493,280. (No model.)

To all whom it may concern:

Be it known that we, JOHN FLINDALL, residing at Chicago, and FRANK JOSEPH MALLY, residing at Cicero, county of Cook, and State of Illinois, citizens of the United States, have invented certain new and useful Improvements in Stone-Dressing Machines; which are fully set forth in the following specification, reference being had to the accompanying drawings, forming a part thereof.

The purpose of this invention is to provide an improved device for dressing and finishing slabs of granite, marble, or other stone, or any material which can be dressed and finished by similar methods.

The invention consists in the novel form of dressing-tool and in the details of construction of the machine for driving such tool.

In the drawings, Figure 1 is a plan of the driving mechanism of our improved machine, the main driving-shaft, which is a vertically-depending shaft, being shown in horizontal section below its bearings. Fig. 2 is a section at the line 2 2 2 on Fig. 1, showing the tool in operation upon the slab which is being dressed on the table, the latter being shown in elevation. Fig. 3 is a detail section at the line 3 3 on Fig. 1. Fig. 4 is a detail section at the lines 4 4 on Figs. 1 and 2. Fig. 5 is a detail section at the line 5 5 on Fig. 1. Fig. 6 is a detail section of the tool-holder and the tool secured rigidly therein, as used for certain parts of the work.

The peculiar tool which we employ for the work in question is a single hollow cylinder A, the annular surface of the end of which is the operating surface and is narrow relatively to the bore or cavity of the cylinder, such cylinder being revolved and at the same time moved laterally or radially while the operating end is in contact with the stone to be dressed or polished. The advantage of this form of tool over a tool representing a solid face is very great, as found by experience, the solid form of tool being liable to jump from its work and perform it unevenly, probably because of the accumulation under it and at different points under its working face of the grindings or dust dressed off from the

stone, which causes it to tilt and operate unevenly on the stone.

The superiority of a single ring over a plurality of rings is that the outer rings of a series, wearing much more rapidly than the inner rings, on account of their greater velocity, soon wear out of contact with the surface to be dressed, and, by their momentum doing no work cause the inner ring, which is doing the work, to gyrate and tilt and scratch, instead of dressing the stone. A dressing-tool of given hardness and operating within certain limits as to speed will produce the best result, a higher or lower speed being less efficient, (though the speed should be varied for stones of different texture.) When a plurality of rings is employed, only one of them can operate at the best speed, and since, after the outer rings are worn out of touch with the stone, so that the inner one is doing all the work, the amount of work done will be limited by that which can be done by the slowest or inner ring running at a speed which will not cause the momentum of the outer rings to exceed the control of the operator's hand. The presence of the outer rings is a detriment to the operation of the tool, and the single ring or cylinder is the most efficient and practicable.

The same form of tool may be used both for grinding and polishing or buffing, the material of the operating end being modified according to the work, any ordinary buffing-surface being substituted for the metal or other grinding surface, which will be used for the original smoothening or dressing prior to polishing. This tool, in order to work with perfect adaptation to the stone, is so hung that it may have freedom to oscillate or tilt in any direction in order to keep the working end flat upon the surface of the stone, even though the latter may not be perfectly level and may incline in different directions at different parts. Otherwise—that is to say, if the tool were rigid with its driving-shaft—the slightest variation of level or discrepancy between the level of the stone and level of the working face of the tool would cause the latter to operate only by one edge

upon the stone, and so to groove and scratch it instead of dressing it smoothly. The tool is designed to be moved over the surface of the stone while it revolves over its own axis, and thus to accomplish the dressing and polishing. The mechanism shown is adapted to accomplish the purposes described—that is, to give the tool the movements and accommodation to the surface of the stone necessary to its proper work. B is the driving-shaft, which is vertical and depends from its bearings, which are not shown.

C is the main driving-pulley rigid on the shaft B. Below this pulley, loose on the shaft, and retained thereon by a stop-collar b, there is a block D, through which extend two parallel bars E E, adapted to slide freely lengthwise through the block and connected together at their ends respectively by the cross-bars F F', making a rigid four-sided frame having free endwise movement back and forth through the block D. On the block D there is vertically journaled the pulley G, and on each of the bars F F', respectively, the pulleys H and K.

J J is a driving belt or cable which encompasses the several pulleys described, as shown in Fig. 1—viz., passing half-way around the driving-pulley C, it extends thence from one side over the pulley G, thence to the pulley H at one end, thence back to the pulley K at the other end, and thence to the other side of the driving-pulley. It will be seen that this arrangement of belt and pulleys permits the four-sided frame to slide back and forth through the block C without slackening or tightening the belt or cable J appreciably, the slack afforded by the approach of the pulley H to the center being compensated by that taken up by the departure of the pulley K from the center, or so nearly that practically the tension of the belt is unaffected by the change of position. The pulley K is fixed fast to a sleeve l, which is journaled in the cross-bar F', which is provided with vertical bosses j' j' to afford a long horizontal bearing for the sleeve, and in this sleeve a vertical shaft L is feathered, so that it is adapted to slide up and down through it, but to be revolved with it. A stop-collar L' may be secured to the upper end of the shaft to prevent it falling out from the sleeve, and to the lower end there is secured the collar M. This collar is made fast to the shaft in any convenient manner.

N is a sleeve which enters loosely into the lower end of the collar, which is expanded at the lower end, as illustrated, and is pinned to the collar by a single pivot-bolt m, passing diametrically through the collar and sleeve and permitting the sleeve to swing freely to the extent that the looseness of its fit with the collar will permit.

A tool A is pivoted to the lower end of the sleeve N in the same manner as the latter is pivoted to the collar M, but on a pivot at right angles to the pivot of the sleeve to the collar,

so that either one pivot or the other, or both together, operating to permit movement of the parts, adapts the tool to take a position with its face at a slight angle in any direction to a horizontal plane or a plane at right angles with the shaft L.

Handles F¹⁰ F¹⁰ are secured to the cross-bar F', by which the operator may manipulate the device, moving the tool sidewise in any direction over the surface of the stone, swinging the frame about the shaft B and sliding the bars through the block D, and so reaching any point of the surface and moving in any direction over the surface as the work may require.

For some special parts of the work of dressing, as when a corner is to be dressed off in a pattern which is being worked on the face of the stone, it may be necessary to have the tool or to have a special tool rigid with the shaft, instead of pivoted to it in the manner above described, and when such an operation is to be performed a tool of the general shape of the collar N may be secured rigidly to the shaft L and brought down to the face of the stone at the proper point. This will be done only at the one particular point, and not for the general purpose of dressing the surface, and when dressing such particular point the stone and tool may be adjusted so that the face of the tool accurately agrees with the plane of the stone at that point; but this could not be done for the purpose of generally dressing the entire surface, and this is not a departure from our invention, but only shows that the machine is not, by reason of its adaptation to the general purpose of dressing the surface without danger of scratching, unadapted for the particular work which is occasionally required, as above described.

We claim—

1. In a machine for dressing and polishing stone, in combination with a fixed bed, a vertical shaft depending above the plane of the bed, and a pulley on such shaft; a block pivoted on the shaft, and a frame adapted to slide horizontally through the block; a shaft journaled vertically in the sliding frame, and a dressing-tool at the lower end of the shaft; a compensating pulley on the sliding frame, and a guide-pulley on the block through which it slides, and the driving-belt encompassing the pulleys: substantially as set forth.

2. In a machine for dressing and polishing stone, in combination with the fixed table and vertical shaft depending above the plane of the table; a block mounted freely upon such shaft, and the frame adapted to slide back and forth through the block; a driving-pulley on the shaft; a pulley fixed to the sleeve, journaled vertically in the frame at one end, and a compensating pulley journaled on the frame at the other end, and a guide-pulley journaled on the block, and the belt encompassing said pulleys; the tool-driving shaft feathered in the sleeve and adapted

to be rotated thereby and slide vertically therein; and the dressing-tool at the lower end of the feather-shaft having universal pivotal connection therewith: substantially
5 as and for the purpose set forth.

In testimony whereof we have hereunto set our hands, in the presence of two witnesses,

at Chicago, Illinois, this 27th day of November, A. D. 1893.

JOHN FLINDALL.

FRANK JOSEPH MALLY.

Witnesses:

W. O. HOUCHENS,

JEAN ELLIOTT.