N. W. ROBINSON, F. W. SMITH & H. CAMPBELL.

Machine for Grinding Marble and Tile.

No. 162,253. Patented April 20, 1875.

Fig. 1.

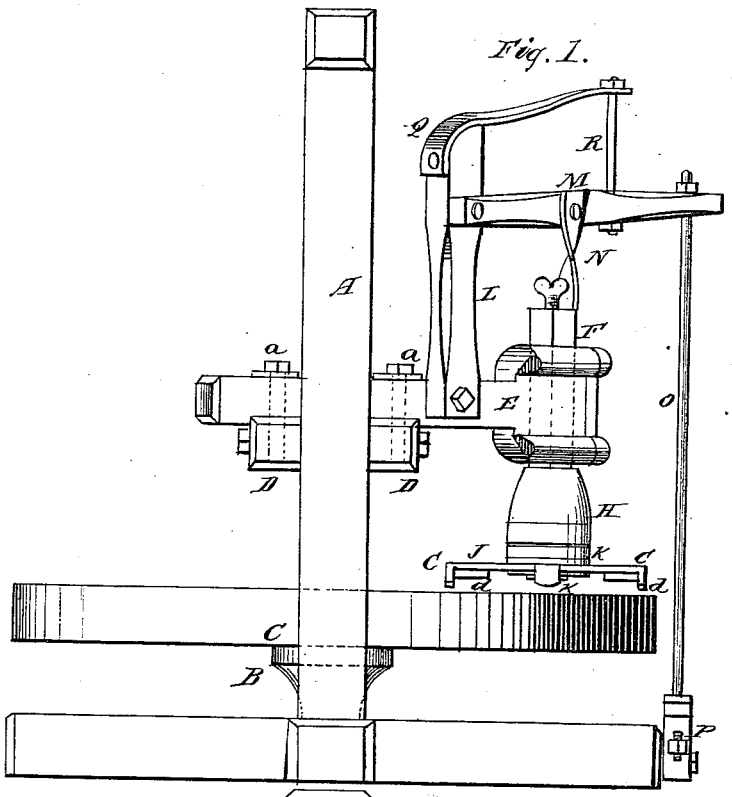


Fig. 2.

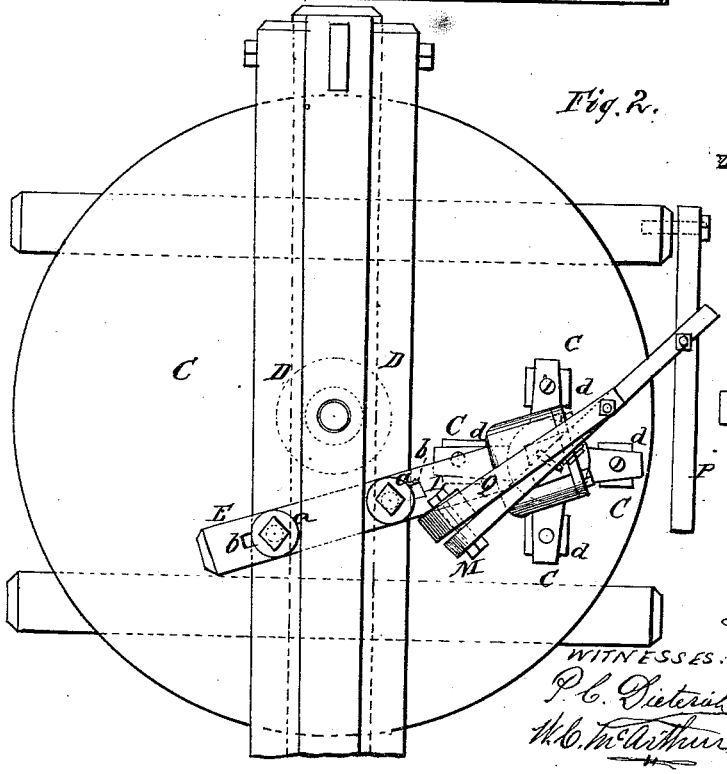


Fig. 3.

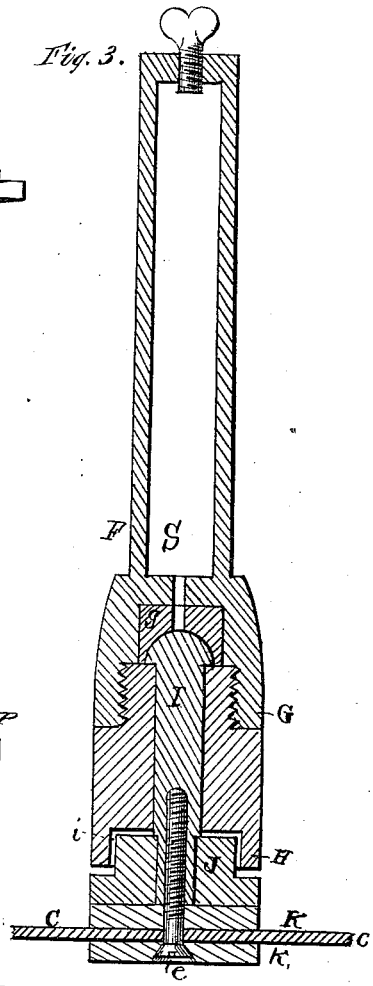
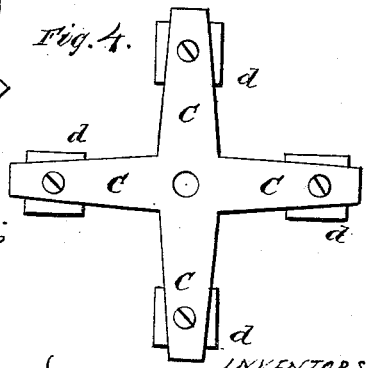


Fig. 4.



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UNITED STATES PATENT OFFICE.

NORMAN W. ROBINSON, FRANK W. SMITH, AND HENRY CAMPBELL, OF BURLINGTON, VERMONT.

IMPROVEMENT IN MACHINES FOR GRINDING MARBLE AND TILE.

Specification forming part of Letters Patent No. **162,253**, dated April 20, 1875; application filed November 10, 1874.

To all whom it may concern:

Be it known that we, NORMAN W. ROBINSON, FRANK W. SMITH, and HENRY CAMPBELL, of Burlington, in the county of Chittenden and State of Vermont, have invented certain new and useful Improvements in Machines for Grinding Tile and Marble; and we do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification, and in which—

Figure 1 is a side elevation, and Fig. 2 a plan view, of our machine. Fig. 3 is a half-size sectional view of the slide F, spindle I, and disk J.

Similar letters of reference indicate corresponding parts.

A represents an upright frame, which supports the upright shaft B, on which is mounted the rubbing-bed C for grinding marble. To the posts A are attached horizontal timbers D, to which is attached by bolts *a* the horizontal arm E, upon which is mounted the whole machine (except the foot-lever) for grinding marble. The arm E is adjustable by means of the slots *b*, so the machine can be moved in and out over the face of the rubbing-bed, to equalize the wearing of the bed. On the outer end of the adjustable arm E is attached a suitable bearing for the slide F, which slides up and down in its bearing for the purpose of bringing the disk J and springs *c* down upon the marble. On the lower end of the slide F is attached by the screw-joint G a socket, H, which forms a bearing for the spindle I, and a recess, *i*, for the protection of the upper end or hub of the disk J and spindle I from the injurious effects of the water and sand used in grinding marble. To the lower end of the disk J are attached two rubber disks, K, and the springs *c*, shown more clearly in Fig. 3, with the outer ends of the springs broken off, the rubber disks forming a yielding bearing for springs *c* and for the marble, when placed directly under the center of the disk. The springs *c*, shown more clearly in Fig. 4, are made in the form of a cross, with their ends equidistant from the center. There are blocks *d* attached to the under sides of the outer ends of the springs for holding the marble. The ends of the springs are turned down and extend below the blocks *d*, which form a hook to hold the marble in position while being ground. The springs and disks are secured to the spindle I by the screw *e*. L is a post attached to the sliding arm E. M is a lever with one end attached to the post. N is a connection between the lever and the slide F. O is a connection between the lever M and the foot-lever P. Q is a spring attached to the post L. R is a connection between the spring and the lever M, the spring always holding the slide and disk up from the rubbing-bed when the machine is not in operation. S is a chamber in the slide F to be filled with cotton, to retain oil for oiling the spindle I.

The tile, two or four pieces, may be placed under the blocks, which are attached to the under side of the springs *c*; or one piece may be placed directly under the disk. The foot-lever P is pressed down, which, by means of the connections O and N with the lever M and slide F, presses the springs down firmly upon the marble, holding it in contact with the rubbing-bed until ground to a smooth surface. The increased velocity of the outer portion of the bed that is in contact with the marble gives it a rapid rotary motion, the disk revolving with the spindle I, the oval head of the spindle sustaining the pressure in a suitable bearing, *g*. When the grinding is finished the foot-lever is released, the spring raises the disk up, and the marble is removed. The operation is rapidly repeated, thereby saving much time and expense in finishing marble, and giving it a much smoother surface than can be obtained by any other mode of grinding.

What we claim as new, and desire to secure by Letters Patent, is—

1. In a stone-grinding machine, the combination of the spindle I with the disk J and rubber disk K, and spring-arms *c*, substantially as and for the purposes herein set forth.

2. The construction and arrangement of the socket H, with the spindle I, disk J, and the slide F, substantially as and for the purposes herein set forth.

3. The combination of the adjustable arm E, the slide F, post L, lever M, spring Q, and connections O, N, and R, substantially as and for the purposes herein set forth.

In testimony that we claim the foregoing as our own, we affix our signatures in presence two witnesses.

NORMAN W. ROBINSON.
FRANK W. SMITH.
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Witnesses:
D. W. ROBINSON,
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