No. 682,999. Patented Sept. 17, 1901.

R. H. REID.

GRINDING AND POLISHING MACHINE.

(Application filed May 13, 1901.)

(No Model.) 2 Sheets—Sheet 1.

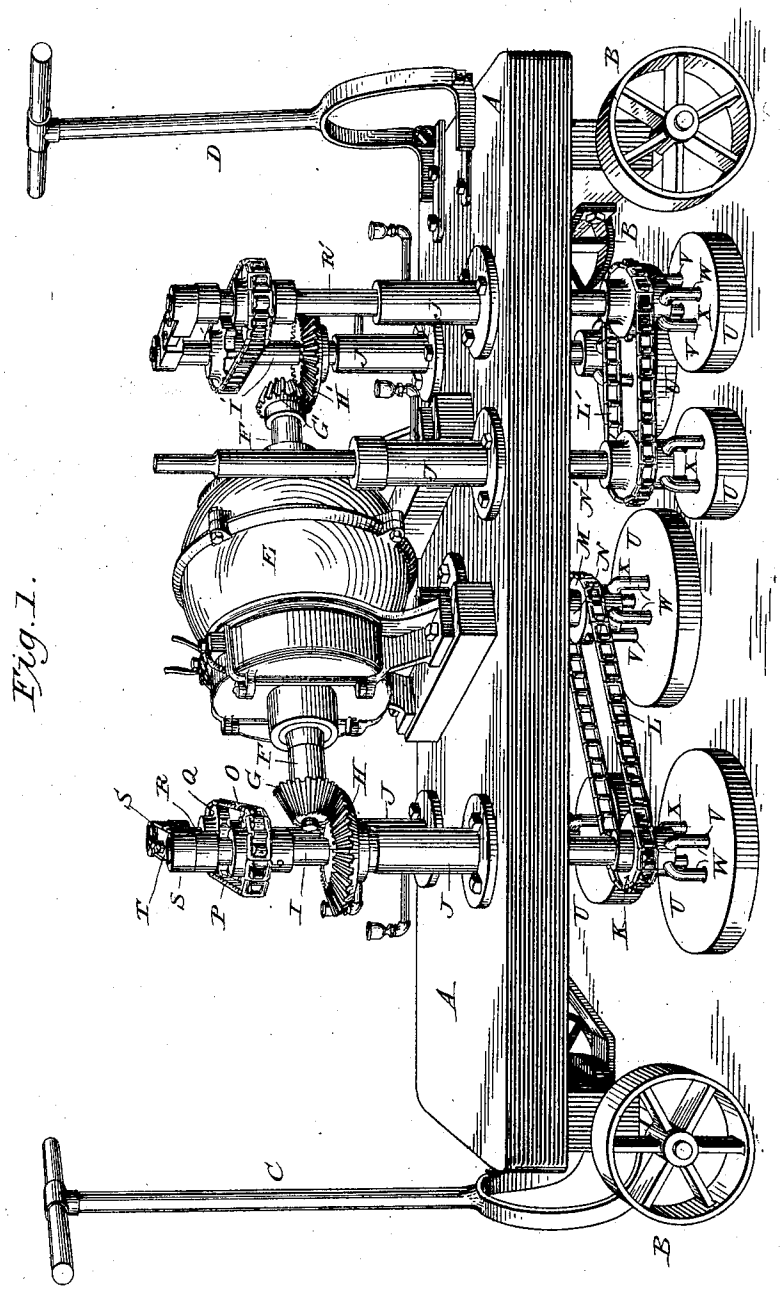


Fig. 1.

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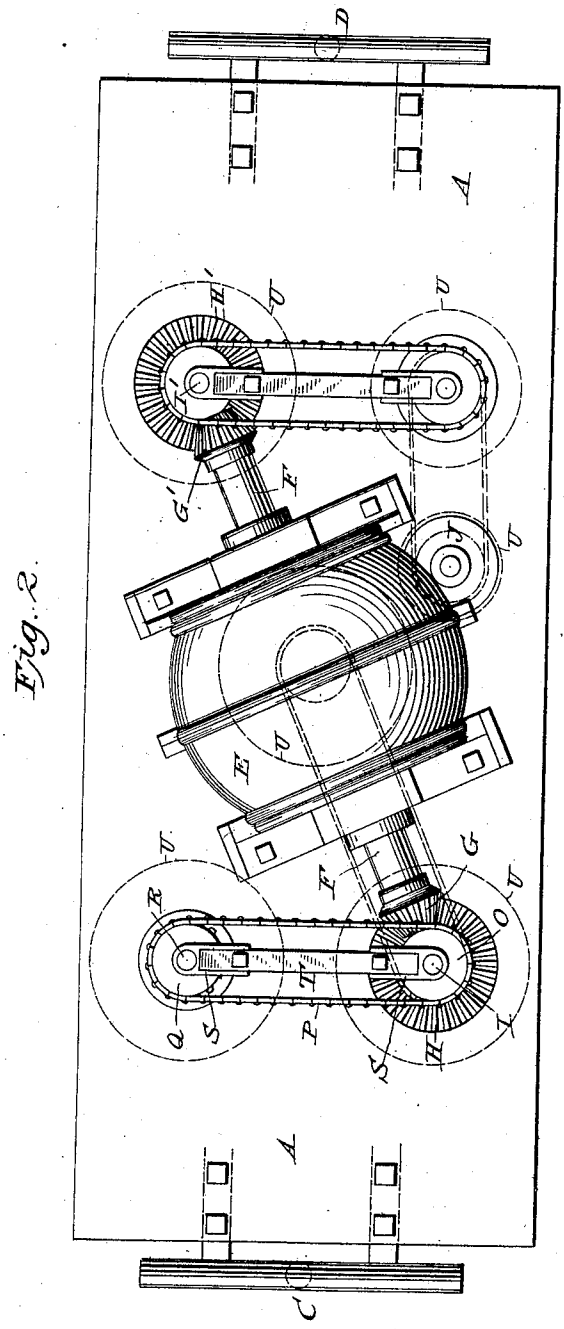


Fig. 2.

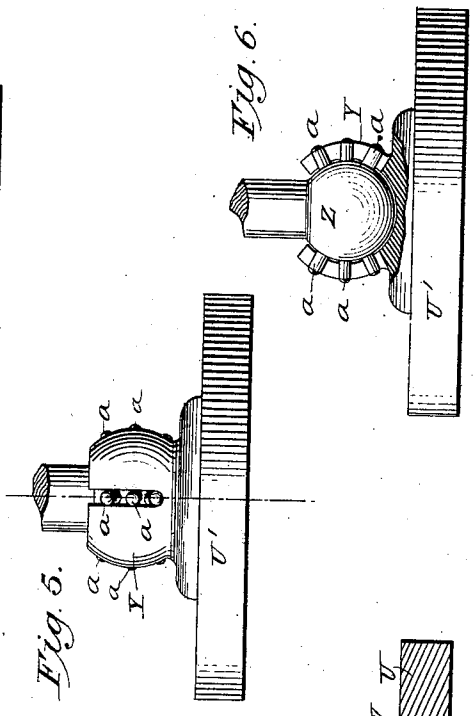


Fig. 6.

Fig. 5.

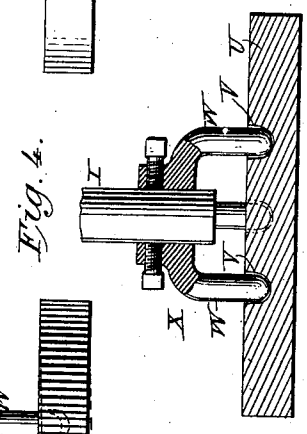


Fig. 4.

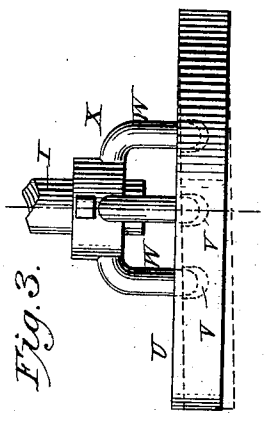


Fig. 3.

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UNITED STATES PATENT OFFICE.

ROBERT H. REID, OF NEW YORK, N. Y., ASSIGNOR TO JOHN H. SHIPWAY, OF SAME PLACE.

GRINDING AND POLISHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 682,999, dated September 17, 1901.

Application filed May 13, 1901. Serial No. 60,080. (No model.)

To all whom it may concern:

Be it known that I, ROBERT H. REID, a citizen of the United States, residing at New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Grinding and Polishing Machines, of which the following is a specification.

My present invention pertains to improvements in grinding and polishing machines for floors, the construction and advantages of which will be hereinafter set forth, reference being had to the annexed drawings, wherein—

Figure 1 is a perspective view of the apparatus; Fig. 2, a top plan view of the same; Fig. 3, a detail view showing the connection intermediate one of the shafts and the grinding and polishing members; Fig. 4, a vertical sectional view of the same; Fig. 5, a side elevation of a modified form of connection, and Fig. 6 a vertical sectional view of the same.

In finishing mosaic and tessellated floors it has been the common practice to rub down and reduce the surface thereof by hand, commonly employing a hand-tool therefor. It has also been proposed to employ machinery for such work.

The machine shown in the accompanying drawings has been found from actual and continued use to give highly efficient service and does away with the difficulties heretofore encountered in the employment of machines for this class of work.

To insure an even floor-surface, it is essential that the disks or grinding members rotate in a horizontal plane, that two or more be employed, that they work in opposition to each other—that is to say, rotate in opposite directions—and that under ordinary circumstances the disks be set out of line and their paths be made to overlap. Where but one disk or grinding member is employed, it is practically impossible to hold the machine in position or guide it about over the floor-surface, and in use a machine so constructed has been found to be more detrimental than otherwise. That the disks should work with their flat faces down is likewise necessary. Otherwise grooves would be formed in the floor. Arranging the disks out of line prevents the formation of ridges, for, as will be seen, a ridge which might be formed along the edge of one of the disks or grinding members will be obliterated by one of the other disks of the series as the machine is moved back and forth.

In the accompanying drawings there is shown an actual embodiment of my apparatus, in which A denotes the bed of the machine, mounted upon suitable wheels B, with handles C and D to facilitate easy manipulation. This portion of the apparatus is, in effect, a truck. An electric motor E is securely mounted on the bed or base and is closely housed to prevent entrance of sand or any other foreign substance. The armature-shaft F is extended out at each side and carries bevel-pinions G G′ at its ends. Meshing with said pinions are corresponding bevel-gears H H′, mounted, respectively, upon shafts or spindles I I′. Each of said shafts, as also those hereinafter referred to, passes down through a long box or bearing member J, which is securely fastened to the bed, the long bearing-surface preventing any wabbling or twisting of the shaft passing therethrough. Shaft I has secured to it beneath the bed a sprocket-wheel K, about which passes a sprocket-chain L, said chain likewise passing about a sprocket M, carried by a shaft N. A sprocket O is secured to shaft I above gear H, and a driving-chain P passes about it and a sprocket Q, mounted on a shaft or spindle R. Each of the shafts I and R is provided at its upper end with a box or bearing-block S, and these blocks are connected by a cross-bar T, which serves to securely maintain the shafts in alinement. Shaft I′ in a similar manner drives a shaft R′ through sprocket-and-chain connection, while said shaft R′ is in turn connected to a shaft N′ through sprocket-chain L′ and suitable sprocket-wheels. Each of the shafts has operatively connected to its lower end a grinding or polishing disk or member U. In the form illustrated in Figs. 1, 3, and 4 the grinding and polishing member comprises a flat disk or plate having a series of holes or recesses V formed in its upper face and into which extend the downwardly-projecting fingers W of a spider X, which is securely attached to the

lower end of the shaft. The disks or members will preferably be formed of cast-iron or zinc, though any other suitable substance may be employed. Zinc or soft iron permits the sand or other abrading substance to embed itself in the working surface, and thereby renders the action of the disks more efficient.

In Figs. 5 and 6 disk U′ is shown as provided with a hollow boss Y, which embraces a rounded head Z, formed on the lower end of the shaft. The boss is provided with a series of vertically-disposed grooves into which project pins *a*, extending out from head Z. With either form of attachment the grinding disk or member, while partaking of the rotary motion of the shaft, may, nevertheless, tilt or rock slightly to accommodate itself to any slight unevenness existing in the surface worked upon.

With the various shafts geared together as above pointed out three of the disks will rotate in one direction, while the other three will rotate in the reverse direction, thereby maintaining the machine in a fixed position. By driving from the shafts I I′ both above and below the bearing thereof the strains to which the shafts are subjected are neutralized to a greater or less extent. It will also be observed that the disks practically overlap the paths of one another, and the formation of ridges is thereby avoided.

It is manifest that any number of disks may be employed, though of course they should be made to rotate in the proper direction in order to neutralize each other in their tendency to throw the apparatus out of position. It is likewise apparent that any motor other than an electric motor may be employed, though, as will be generally understood, the electric motor is preferable from many points of view.

Having thus described my invention, what I claim is—

1. In a grinding and polishing machine, the combination of a suitable base; a series of vertically-disposed shafts carried thereby; abrading-disks carried by the lower ends of said shafts; and means for imparting rotary motion to the shafts, part in one direction and part in the reverse.

2. In a grinding and polishing machine, the combination of a wheeled truck; a series of vertically-disposed shafts carried thereby; abrading-disks carried by the lower ends of said shafts; a motor mounted on the truck; and connections intermediate the motor for imparting motion to said shafts and disks, part in one direction and part in the reverse direction.

3. In a grinding and polishing machine, the combination of a wheeled truck; a series of vertically-disposed shafts carried thereby; an abrading-disk flexibly connected to the lower end of each shaft; a motor mounted on the truck; and connections intermediate the shafts and the motor.

4. In a grinding and polishing machine, the combination of a wheeled truck; a motor carried thereby; a pair of vertically-disposed shafts geared to said motor to rotate in opposite directions; a second pair of vertically-disposed shafts carried by the truck; driving connections between each member of the first pair of shafts and a member of the second pair; and a grinding-disk flexibly connected to the lower end of each of said shafts.

5. In a grinding and polishing machine, the combination of a wheeled truck; a motor; a shaft extending out from each side thereof; pinions G, G′ carried by the ends of said shaft; a pair of vertically-disposed shafts; gears carried by said shafts and meshing with the pinions; shafts R and N operatively connected to one of said shafts; shafts R′ and N′ operatively connected to the second shaft of the pair; and grinding-disks flexibly connected to the lower ends of the shafts.

6. In a grinding and polishing machine, the combination of a wheeled truck; an electric motor carried thereby, and having its armature-shaft extending out to each side thereof; pinions G, G′ carried by the ends of said shaft; shafts I, I′ mounted on the truck; gears H, H′ carried by the shafts and meshing with the pinions; shaft N; sprocket-and-chain connections intermediate said shaft and shaft I; shaft R; sprocket-and-chain connections intermediate said shaft and the shaft I; a brace extending between upper ends of the shafts I and R; a shaft N′; sprocket-and-chain connections intermediate said shaft and the shaft I′; a shaft R′; sprocket-and-chain connections between shaft R′ and the shaft T; a brace extending between the upper end of shaft I′ and R′; and grinding-disks carried at the lower ends of said shafts I, I′, N, N′, R and R′.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ROBERT H. REID.

Witnesses:
HENRY C. FAILING,
C. C. PAULDING.